CATIE:
ANNUAL REPORT
2024

Actions Executed and Results Achieved

CATIE

Solutions for Inclusive Green Development
Soluciones para el Desarrollo Verde Inclusivo

Content

List of Acronyms

ABC	American Bird Conservancy
ACP	Panama Canal Authority
BANHPROVI	Honduran Bank for Production and Housing
BID	Inter-American Development Bank
BLF	Biodiverse Landscapes Fund
BP	Biennial Plan 2023-2024
BPAs	Best agricultural practices
CATIE	Tropical Agricultural Research and Higher Education Center CATIE
CBIT	Capacity Building for the Paris Agreement Implementation
CCAC	Climate and Clean Air Coalition
CEDIA	Ecuadorian Corporation for the Development of Research and Academia
CIRAD	French agricultural research and international cooperation organization
CNCC	National Climate Change Council's
CODESOSA	Commission for the Sustainable Development of the Sarapiquí River Basin
COMCURE	Commission for the Planning and Management of the Reventazón River Basin
COMSA	Marcala Organic Coffee S.A.
CONACADO	National Confederation of Dominican Cocoa Producers
CONIAF	National Council for Agricultural and Forestry Research of the Dominican Republic
CPT	Tri-National Policy Committee
COSUDE	Development Cooperation in the South
CSF	Conservation Strategy Fund
CO2	Carbon Dioxide

DVI	Inclusive Green Development
DNA	Deoxyribonucleic Acid
EbA	Ecosystem-based Adaptation
EbA Lac	Scaling Ecosystem-Based Adaptation Measures in Rural Latin America
ECAs	Farmer Field Schools
EEPFIH	Indio Hatuey Experimental Pastures and Forages Station
ERAs	Entrepreneurial Rural Associations
EU	European Union
EWS	Early Warning Systems
FAO	Food and Agriculture Organization
FIAES	El Salvador Investment Fund
FNGA	First Nations Governance Act
FONADEFO	National Forest Development Fund
FUNDER	Foundation for Rural Business Development, Honduras
GAC	Global Affairs Canada
GADs	Decentralized Autonomous Governments (a term commonly used in Latin America, particularly in Ecuador, to refer to local and regional government entities)
GHG	Greenhouse gas emissions
GHGI	Greenhouse Gas Inventory
GIZ	German International Cooperation Society
GTA	Technical Advisory Groups
IApA	Agricultural Innovations for Climate Adaptation
ICRAF	World Agroforestry Centre
IDIAP	Institute of Agricultural Innovation of Panama

IDRC	International Development Research Centre
IICA	Inter-American Institute for Cooperation on Agriculture
IKI	International Climate Initiative
INIA	National Institute of Agrarian Innovation of Peru
INNOVEA	Global coffee breeding network
INTA	National Institute of Agricultural Technology
IUCN	International Union for Conservation of Nature
JUPROA	Proactive Youth of the Amazon
KfW	Development Bank of the State of the Federal Republic of Germany
KoLFACI	Korean Cooperation for Food and Agriculture in Latin America
LAC	Latin America and the Caribbean
MAF	Mitigation Action Facility
MAG	Ministry of Agriculture and Livestock in Costa Rica
MARN	Ministry of Environment and Natural Resources
MIDA	Ministry of Agricultural Development of Panama
MINAE	Costa Rica's Ministry of Environment and Energy
MINAM	Ministry of the Environment of Peru
MRV	Measuring, reporting, and verifying
NAMA	Nationally Appropriate Mitigation Action for the Coffee Sector
NAR	Regenerative Agri-Food Businesses
NbS	Nature-based solutions
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
PARES	Sustainability in Latin American Landscapes
PCCMCA	Central American Cooperative Program for the Improvement of Crops and Animals
PEI	Institutional Strategic Plan 2021-2030
PENS	Organic species
PiNN	Innovation and Human Capital Program for Competitiveness
PITAG	Agricultural and Agroforestry Technological Innovation Program
PNCBMCC	National Forest Conservation Program for Climate Change Mitigation
PNGS	Institutional strengthening through the National Sustainable Livestock Platform
PNUD	United Nations Development Programme
OF	Funding opportunities
RLABM	Latin American Model Forest Network
R&R	Rehabilitation and renewal
R2R	Ready to respond
SAF	Promotion of Agroforestry Systems
SAG	Agricultural and Livestock Service
SBD	Development Banking System
SECAC	Central American Agricultural Council Secretariat
SEDEPRO	Amazonian Departmental Productive Service for Comprehensive Technical Assistance and Employment Promotion
SERNA	Secretariat of Natural Resources and Environment of Honduras
SICA	Central American Integration System
SILVASA	Water and Sanitation Surveillance System
SOs	Strategic objectives
UADY	Autonomous University of Yucatán
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
USDA	United States Department of Agriculture
VMS	VISA Management System
WCR	World Coffee Research
WMO	World Meteorological Organization
WRI	World Resources Institute

Executive Summary

Background: CATIE's Annual Report for 2024 is based on its planning and programming framework as outlined in its Strategic Plan 2021-2030 (PEI), its Biennial Plan 2023-2024 (BP) and in its Plan Operativo 2024 (POA). The PEI is CATIE's long-term strategy while its BP and the POA 2024 respectively translate the PEI into actionable medium-term and short-term priorities. Together, these plans serve as the guiding strategies for the institution's actions, aligning these with its overarching vision of achieving Inclusive Green Development (DVI) in Latin America and the Caribbean (LAC) and the Center's commitment to addressing the developmental problems and pressing challenges in the hemisphere such as climate change, natural resource degradation and social inequities while promoting sustainable agricultural practices and biodiversity conservation. It addresses these challenges through strategic actions in applied scientific research, strengthening institutional capacity though education and training, and outreach services to deliver meaningful results across the LAC. This Annual report serves as an accountability narrative that highlights CATIE's progress and advances in 2024. Its purpose is to inform member countries and other stakeholders on the institution's achievements and results.

Major Achievements and Results in 2024: In 2024, CATIE consolidated and expanded its regional and international leadership role through various projects and strategic actions. CATIE's global leadership in key themes such as coffee and cacao crop development were highly recognized in the Commemoration of the 75th Anniversary of the International Coffee Collection, the 80th Anniversary of the International Cocoa Collection and the International Coffee Congress, events that it hosted in 2024. Its collection of more than 2,000 accessions and more than 1,250 accessions available to coffee and cacao farmers respectively globally was recognized as legacies to humanity.

Participation in COP29 Global Conference: The Director General participated in the global conference at COP29 in Azerbaijan in November 2024, emphasizing the institution's commitment to addressing climate change issues including climate resilience in the context of sustainable development. He engaged in high-level discussions with Ministers and leaders of various development and cooperation agencies and potential doors on CATIE's role in important projects being executed on climate change and sustainable development in the Americas. He also established important contacts and contributed to having strategic dialogues on watershed management and climate adaptation and strengthened alliances with other global leaders on future collaborations in these areas.

CATIE's operations continued in 2024 to contribute to Strategic Objective 1 (SO1) of its Strategic Plan. These include applied and basic research at the country and regional levels, emphasizing data-driven solutions to enhance climate resilience, production transformation and sustainable rural development, and to generate and apply scientific and technical knowledge to drive DVI. Key achievements through its interdisciplinary research approach included advances in climate-smart agricultural practices, biodiversity conservation, watershed management, food

security, the development of low-emission livestock models, scaling of agroforestry innovations, and cutting-edge research in coffee and cacao breeding for climate resilience, among others. CATIE also increased its collaboration with the private sector in 2024 in LAC, the most notable being the Nestlé Dairy Product Data Collection Program, funded by Anthesis Lavola and executed in LAC that supports Nestlé's commitment to reducing agricultural climate impacts.

A large number of externally-funded projects and actions were executed in the counties in Central America and Mexico, South America and the Caribbean to contribute to the above results. The most notable of these were: the TRANSFORMA INNOVA Program; the MAF-Ganadería HN Project in Honduras; the Sustainable Livestock Intensification and Tree Integration Project; the PiNN project that contributes to enhancing food and nutritional security in Guatemala; the Strengthen the Resilience of Rural Families in Nicaragua to Climate Change project; SERVIR Central America; the INNOVEA Coffee Breeding Project; the REFORES project; the AGROINNOVA project; and the cacao plantation rehabilitation project, among others.

CATIE's commitment to scientific research and knowledge dissemination for DVI is reflected **in its 2024 annual publications report,** indicating an impressive list of 195 publications comprising academic **theses, technical reports, a book, book chapters and articles in international journals that covered** multiple themes. This extensive body of work underscores CATIE's dedication to advancing **sustainable development through science,** strengthening its role as a leader in research and innovation, and knowledge management. Applied research projects on coffee and cacao such as KoLFACI and ECOFFEE advanced sustainable practices and scientific understanding across 16 countries, including Costa Rica, El Salvador, and the Dominican Republic

The Center's researchers participated in 64 scientific events across 11 countries, presenting 41 oral presentations, 18 posters, and 5 panel discussions. These contributions spanned across from Costa Rica, Panama, Honduras, Mexico, Colombia, Peru, El Salvador, Belgium, Germany, and France to the Netherlands. Key events included the 18th North American Agroforestry Conference (Costa Rica, February), PCCMCA (Costa Rica, June), Congreso Científico Agropecuario Internacional FCA-PROMEGA (Panama), I Precongreso Latinoamericano One Health & One Welfare (Honduras, August), and the III Congreso Nacional de Investigación Forestal (Honduras, November). Technical themes that they addressed covered silvopastoral systems, greenhouse gas emissions monitoring (MRV), agroforestry productivity, climate change mitigation, watershed management, and biodiversity conservation. These actions reflect CATIE's strong international engagement and its leading role in sustainable agriculture, climate resilience, and ecosystem services research across Latin America and beyond.

In 2024, CATIE expanded its regional impact by strengthening knowledge management, institutional collaboration, and policy engagement to support DVI. Through strategic alliances, CATIE facilitated the scaling of climate-smart agricultural innovations, agroforestry systems, and ecosystem-based adaptation (EbA) strategies. The Center played a key role in developing policy instruments, integrating agricultural innovations into territorial planning, and mobilizing financial mechanisms to promote sustainability. Actions and Outreach efforts included the dissemination of research findings, stakeholder engagement in decision-making processes, and regional capacity-building initiatives that contributed to climate resilience, food security, and sustainable rural development through effective multi-sector partnerships and institutional strengthening.

Education and Training: In the areas of education and training, CATIE played a significant role in training leaders, strengthening technical capacities, and promoting knowledge transfer to advance DVI across the LAC region. Globally, CATIE organized, lead and facilitated 322 capacity building actions, including short courses (face to face and virtual), workshops, diploma and webinars to increase the capabilities of leaders and professionals. The capacity building actions were conducted under different programs, including **Professional Development and Continuing Education,** ensuring a broad reach and accessibility. A variety of modalities was utilized, including in-person and virtual formats, allowing for greater flexibility and participation across different regions.

Through graduate education, technical training and field-based learning, CATIE empowered farmers, researchers, policymakers, and private sector actors with cutting-edge skills in agroforestry, climate-smart agriculture, sustainable livestock, watershed management, and financial resilience. The institution trained thousands of professionals through diplomas, field schools and online courses, emphasizing gender inclusion and youth participation. These results showcase CATIE's contribution to scaling sustainable practices, strengthening institutional governance, and equipping future leaders with the expertise needed to address climate challenges.

In 2024, a total of 90 students (53% women) successfully completed their Master's programs at CATIE in different specializations from across different learning modalities as follows: Presential Programs - 36 graduates; Virtual Programs - 49 graduates; and Bimodal (Hybrid) Programs - 5 graduates. The distribution among the modalities reflects the growing importance of virtual education while maintaining strong engagement in in-person and hybrid learning models.

Institutional Modernization: CATIE has advanced its institutional modernization process through digital transformation and administrative restructuring in order to optimize operational efficiency. The implementation of a centralized digital repository to improve project formulation and management processes, increased the system's efficiency to 80% in 2024. Integration of financial and operational tools within Softland has been prioritized to streamline administrative workflows, although full deployment remains pending. Institutional modernization actions also included strengthening the capacity of several national offices to improve their overall operations such as upgrading the leadership and managerial capability of its offices in Belize, Ecuador, El Salvador, Honduras and the Dominican Republic which are likely to have significant improvements in their operations. The offices' staff were exposed to capacity building actions to upgrade their capabilities in project preparation, implementation and monitoring, in negotiations and resource mobilization and expanding their strategic partnerships. Furthermore, these efforts have reinforced CATIE's presence and decentralized decision-making, ensuring more effective implementation and governance at the country level.

Strategic Alliances: CATIE maintains alliances with research, teaching, development institutions and banks from different parts of the world. Among the most prominent of these are institutions such as AECID, IDB, CIFOR-CIRAD, CRS, FAO, FIAES, GIZ, IICA, IUCN, NESTLE, UNDP, and various universities, among others. Its partnerships have expanded to include research and teaching institutions in Korea, China, and India in 2024. Overall, its partnerships have facilitated knowledge-sharing and institutional strengthening, with 150 alliances across academia, international cooperation, and the private sector. The work of CATIE's Office of Strategic Alliances in 2024 also included developing and managing 129 strategic partnerships as follows: 31 with international cooperation agencies; 67 with donors, enabling resource mobilization;

and 7 with private sector entities, expanding collaborative opportunities with that sector.

CATIE's Scientific-Technical strengths and its specialized knowledge and capabilities in specific themes have facilitated the institution to position itself for the mobilization of specific resources also, such as accessing environmental funds from the IKI, the NAMA Facility, the GEF, the GCF and the FA, among others. In addition, CATIE obtained applied research funding within the framework of the SERVIR-USAID-NASA Hub, a key program that seeks to integrate space technologies to improve climate resilience in the Central American region.

In 2024, CATIE identified 273 funding opportunities (FO), leading to 35 proposals submitted and 23 successfully awarded. The major projects and funds secured included: MAF-HN-MAF II (2024-2027) with US$ 10.30 million; PARES-UNEP (2024-2026) with US$ 2.86 million; and SERVIR-USAID (2024-2029) with US$ 8.29 million. Foundations also contributed US$ 0.58 million to CATIE's budget in 2024, supporting research chairs and postgraduate faculty positions. In addition, the interest of regional banks such as CAF and CABEI to invest in agribusinesses, as well as agricultural banks in the countries, open a new window of opportunities to mobilize resources. In this context, the experience with the Banca para el Desarrollo de Costa Rica (SBD), where CATIE was accredited as the Operating Agency of the SBD with the "ACTIVA-CATIE Program" has been invaluable.

In 2024, CATIE's total program budget was US$ 26.36 million distributed among its four funds - the Agreement Fund with 56%, the Core fund with 21%. The Commercial Fund with 14% and the Institutional Fund with 9%. Both the amount programmed for the Basic Fund and the Institutional Fund declined by 1.9% and 60% respectively while there were increases in the programmed amount for the Commercial and Agreement Funds respectively. The signing of new agreements in 2024 facilitated an increase in the program budget by 12.2% in 2024.

The institution's financial management team underwent a re-engineering during the year that was necessary to address the various challenges that included the stabilization of the institution's cash flow and mitigation of the effects derived from the appreciation of the colon against the dollar. Given these challenges, CATIE took a proactive approach, implementing a series of measures aimed at protecting financial stability without compromising the implementation of donor-funded projects or resorting to cuts in key personnel. Continuous monitoring of the institution's income and expenditures was established to prevent any impact on its operations. Despite the difficulties, CATIE's overall budget increased thanks to the signing of new agreements with important donors that have compensated for the departure of other donors, such as the Swiss Cooperation, which developed the Water Harvest project in Nicaragua.

Challenges: CATIE continues to face several challenges to execute the programs and projects of its Strategic Plan. A few of the major ones include: (i) the rapid changes in the geopolitical situation as a result of political changes in the U.S. and the likely effects these would have on other countries around the globe that together pose a major challenge for CATIE, particularly with respect to resource mobilization and funding opportunities in the medium term; (ii) CATIE needs to concentrate more on developing innovations and technologies that are solutions-oriented to addressing the problems and constraints of farmers at the production level; (iii) Postgraduate education needs some reengineering of its model in order to attract more students to the programs, reduce the cost of a Master's Program and access more student scholarships to facilitate the Masters and Doctoral education; and (iv) upgrading its postgraduate faculty to having professors with a doctoral degree which requires the availability of funding, either through scholarships and other forms of financial support.

1. Introduction

The Annual Report 2024 of the Tropical Agricultural Research and Higher Education Center (CATIE) is aligned within the framework of the Institutional Strategic Plan 2021-2030 (PEI), the Biennial Plan 2023-2024 (BP) and the Plan Operativo 2024 (POA). These plans serve as guiding strategies for the institution, aligning their actions with the overarching vision of achieving Inclusive Green Development (DVI) in Latin America and the Caribbean (LAC).

The PEI 2021-2030 emphasizes a long-term strategy that is focused on advancing scientific research, fostering educational excellence, strengthening institutional capacity and providing quality outreach services. The Biennial Plan 2023-2024 and the POA 2024 respectively translate the PEI into actionable medium-term and short-term priorities. They highlight CATIE's commitment to addressing the developmental problems and pressing challenges such as climate change, natural resource degradation and social inequities while promoting sustainable and inclusive agricultural practices and biodiversity conservation, and leveraging partnerships to mobilize resources effectively. These plans seek to deliver impactful results for the institution's beneficiaries across the key pillars of research, education and outreach services.

This Annual report serves as an accountability narrative that highlights CATIE's progress and advances in 2024. Its purpose is to inform member countries and other stakeholders on the institution's achievements and contributions towards the strategic objectives outlined in the PEI, the BP and the POA. It reflects CATIE's holistic approach to sustainable development and to deliver sustainable solutions to regional and national challenges. The institution's One Health approach, inclusive practices, and a focus on ecosystem services are pivotal in addressing climate change and promoting equitable growth in the region. This report also serves as a foundation for retrospective analysis, lessons learnt, and for future planning, ensuring that transparency, accountability and fostering stakeholder engagement as CATIE progresses toward achieving its ambitious objectives for the decade and beyond. The report also includes information of CATIE's achievement of some key goals that are presented in the Annex.

Specifically, the report presents information on:

Institutional Actions: A detailed account of the projects and actions implemented in alignment with CATIE's mission and purpose. Some of these actions are a continuation of projects being implemented and initiatives that started in recent years and will continue in the future. These actions are organized to achieve the four strategic objectives (SOs) that underpin CATIE's work:

- **Strategic Objective 1 -** Generation of scientific and technical knowledge through systemic research for Inclusive Green Development (DVI);
- **Strategic Objective 2 –** Training of leaders with professional competencies that drive Inclusive Green Development (DVI);
- **Strategic Objective 3 –** Outreach through knowledge management and institutional strengthening for DVI; and
- **Strategic Objective 4 -** Institutional development and modernization to enhance effectiveness and efficiency.

Key Results, Achievements and Strategic Contributions: Quantitative and qualitative metrics demonstrate CATIE's achievements and the results of its actions at the national, regional and hemispheric levels in the various thematic focus areas, including sustainable agriculture, biodiversity conservation, climate change and capacity building. The achievements also include CATIE's strategic actions of strengthening and expanding its strategic alliances and mobilizing external resources with key donors, including funding agencies, international and regional networks, governments and the private sector, as well as the institutional performance for 2024. Insights are also highlighted on how these results and achievements advance the implementation of CATIE's PEI and the long-term goals of DVI, addressing emerging challenges and leveraging new opportunities in the LAC region.

Knowledge generation and dissemination: The report also indicates the quantitative impacts of CATIE's leading role in scientific research, capacity building, and outreach across Latin America and the Caribbean where the institution actively contributed to 64 scientific events across 11 countries, and produced 195 scientific outputs, including many peer-reviewed journal articles, technical reports, and theses. These contributions - detailed in this report - highlight the institution's dedication to knowledge management as a tool for impact, strengthening collaborations, and scaling innovations that drive sustainable agricultural and rural development in the region.

2. Results and Achievements in 2024

2.1. **SO1:** Generation of Scientific and Technical Knowledge through Systemic Research for DVI

This section highlights CATIE's applied and basic research and their achievements in advancing implementation of the PEI, classified by countries and geographical regions, emphasizing data-driven solutions to enhance climate resilience, production transformation and sustainable rural development, as well as its actions to increase collaboration with the private sector. In 2024, CATIE continued to generate and apply scientific and technical knowledge to drive Inclusive Green Development (DVI) across the LAC region. Key achievements include the Commemoration of the Anniversaries of the International Coffee and Cocoa Collections and the organization of the International Coffee Congress in CATIE that highlighted its global leadership in these areas and the sharing of technical information, experiences and new developments. Through applied interdisciplinary research, the institution advanced climate-smart agricultural practices, biodiversity conservation, watershed management, food security, the development of low-emission livestock models, scaling of agroforestry innovations, and cutting-edge research in coffee and cacao breeding for climate resilience, among others. A summary of CATIE's key achievements and results based on the goals targeted for 2024 is presented in **Annex 1.**

(a) Mesoamerica

Costa Rica

- The TRANSFORMA INNOVA Program, funded by the International Climate Initiative (IKI) through GIZ Costa Rica, focuses on scaling up the Livestock NAMA (Nationally Appropriate Mitigation Action) by promoting low-carbon, climate-resilient livestock practices. CATIE leads efforts to implement practices that mitigate greenhouse gas emissions, enhance biodiversity conservation, and improve governance and standards for sustainable livestock production. Key results in 2024 included: the development of 13 technical guides on prioritized best practices supported by brochures for producers; the establishment of 20 model farms nationwide as training centers and the hosting of 14 field days, engaging 237 male and 80 female producers; two training sessions on sustainable livestock practices for technicians from three cooperatives; and information on program advancements disseminated at the

PCCMCA Regional Congress in San José, Costa Rica. TRANSFORMA-INNOVA developed technical guides and training materials also on best agricultural practices (BPAs) for coffee, livestock, and musaceae under NAMA frameworks. These outputs support extensionists and producers to adopt low-carbon, climate-resilient farming systems.

- Together with the World Resources Institute (WRI), CATIE advanced the Reventazón River watershed initiatives by designing a robust Project on Ecosystem-based Adaptation (EbA) for watershed management. Key actions included stakeholder coordination and developing proposals based on funding opportunities, participatory workshops, community consultations, and technical analyses to define the project's components, application of the theory of change and design of a results framework, and capacity building support to the work of the watershed sub-committees. In addition, these actions co-designed restoration practices like agroforestry, silvopastoral systems, and riparian management to improve water security, reduce sedimentation, and enhance climate resilience. A comprehensive concept note was also developed, incorporating local insights and socio-ecological considerations, securing a solid foundation for long-term funding and sustainable adaptation in the watershed to be presented to climate financial funds.

- CATIE developed the *National Guide for the Preparation of Watershed Management and Planning Plans* to standardize methodologies for integrated water resource management, enhancing planning tools for sustainable development.

- The Center prepared the *Development and Management Plan for the Sarapiquí River Basin,* emphasizing ecosystem-based adaptation (EbA) to address socio-environmental challenges. Among other aspects, this plan introduced a geodatabase and monitoring system for the Sarapiquí River Basin, enabling data-driven decision-making on water resources A participatory approach (several workshops and surveys in Costa Rica's Sarapiquí Basin executed previously in 2023) was used to incorporate local knowledge into environmental diagnostics

- A new network of permanent research plots in early regeneration areas within the Central Volcanic-Talamanca Biological Corridor was established, under the Latin American Chair of Ecology and Natural Forest Management.

Honduras

- The MAF-Ganadería HN Project in Honduras, funded by the Mitigation Action Facility (MAF), successfully completed its first planning phase and secured approval for implementation. Key achievements included the development of training materials for Farmer Field Schools (ECAs) soon to be hosted on the SAG-Virtual platform, and an MRV system to monitor GHG emissions in alignment with UNFCCC commitments. The project is integrated with Honduras' National Restoration Strategy and Zero Deforestation Plan, ensuring compliance with sustainability agreements. It promotes 17 low-emission livestock practices, such as natural regeneration and live fences, benefiting ecosystem health. In collaboration with 16 national and international partners, including SAG, SERNA and BANHPROVI, the project secured €6.2 million in concessional loans and an additional €4.5 million for scaling low-carbon technologies. Institutional strengthening through the National Sustainable Livestock Platform (PNGS) enhances the governance framework, while a comprehensive risk assessment framework and grievance mechanisms ensure long-term sustainability and replication.

Technical assistance workshop with MAF Project partners.

- The Sustainable Livestock Intensification and Tree Integration Project funded by the American Bird Conservancy (ABC) concluded in 2024 with notable achievements in promoting sustainable practices and biodiversity on farms. The project established and monitored validation and demonstration plots across 156 hectares on 10 farms in Catacamas and Santa María del Real, Olancho. Approximately 1,890 trees were planted, including 540 timber species and 1,350 live fence trees, using species such as *Tabebuia rosea, Gliricidia sepium,* and *Bursera simaruba.* Sustainable practices implemented included silvopastoral systems, rotational grazing with solar fences and water harvesting infrastructure, with two 750-cubic-meter lagoons constructed. Additionally, 32 plots were established with improved grasses, legumes, and forage banks, such as *Cratylia, Morera,* and *Gandul.* Local capacity-building efforts directly benefited 10 producer families, with broader impact through knowledge-sharing with nearby farmers adopting similar practices.

- CATIE's partnered with Innovaterra to implement the environmental and risk assessment components for the Municipal Land-Use Planning and Urban Development Master Plan in the Central District of Honduras. It demonstrated CATIE's expertise in environmental governance, disaster risk management, and climate change adaptation. CATIE conducted comprehensive environmental and hydrological risk assessments, integrated tools for informed decision-making, and supported participatory processes to strengthen municipal governance. Its contributions fostered cross-sector collaboration among local governments, civil society and international donors (e.g., KfW), ensuring the alignment of urban planning efforts with national and regional strategies for sustainable development and resilience in vulnerable areas.

- An innovative Monitoring, Reporting, and Verification (MRV) systems to measure emissions was developed by CATIE, aligning it with national climate commitments. It also implemented strategies for restoring degraded ecosystems and produced technical inputs to support the creation of sustainable policies in the agricultural sector, contributing to biodiversity conservation and climate resilience

Guatemala

- The PiNN project contributed to enhancing food and nutritional security in Guatemala through the development of three knowledge management platforms: a national nutrition information platform for decision-making at the municipal level; the VISAN Integrated Management System; and the SIVASA Water and Sanitation Surveillance System. These platforms generate actionable data for improving access to water, child nutrition and national food security, impacting all 340 municipalities in Guatemala. Additionally, CATIE provided support to update the municipal food and nutritional security policy in Momostenango, Totonicapán, establishing a multisectoral framework to enhance territorial food security, with long-term strategic actions planned until 2032. These efforts demonstrate CATIE's role in generating technical and scientific knowledge for informed decision-making and sustainable policy development.
- The "Strengthening the Transparency Framework through Capacity Building for the Paris Agreement Implementation in Guatemala (CBIT)" project focused on enhancing technical and scientific knowledge to support Guatemala's climate commitments. Key actions included developing a draft report addressing data gaps in the Greenhouse Gas Inventory (GHGI) for agriculture, energy and waste, and updating inventory data for 1990–2022. A gender-responsive analysis led to defining complementary indicators for Nationally Determined Contribution (NDC) targets, integrating gender perspectives into the 2025 NDC update. The project also supported the design of a Monitoring, Reporting, and Verification (MRV) system for agriculture, advancing evidence-based decision-making and fostering inclusive green development in Guatemala.

PiNN project team at the 6th Global Meeting of the PiNN Global Initiative.

Nicaragua

- The project "Strengthen the Resilience of Rural Families in Nicaragua to Climate Change" is being implemented in collaboration with the Spanish NGO ONGAWA. It achieved significant outcomes that focused on rights and gender equality, and strengthened the resilience of rural families to climate change in Nicaragua. Its other contributions include: execution of a study identifying and characterizing recharge areas for water sources in three micro-watersheds in Las Sabanas; installed 10 roof water harvesting systems (Zamorano tanks) for an equal number of families; and 10 model plots were established with a focus on gender, food security, and nature-based solutions (NbS).

- The Agricultural Adaptation to Climate Change through the Water Harvesting Project supported by COSUDE, which ended in 2023, continued with specific actions in 2024 that provided follow up on key actions and documented lessons learned from studies and the administrative and financial closure of the initiative after 10 years of implementation. These include benefits to 3,500 families, the construction of 2,443 runoff water harvesting systems, installation of 1,700 irrigation systems, and the promotion of agroecological practices across 6,700 hectares of crops and 4,000 hectares of water recharge zones. The impacts revealed that 85% of families improved food access, 80% increased monthly incomes by US$75.00, and women's quality of life was enhanced through reducing their labor inputs and having more diversified diets. Additionally, 50 water harvesting technologies were implemented, extending planting seasons from two to three annually and diversifying farm production to include an average of nine new crops. The project also trained 200 technical professionals, supported 30 private construction companies, and established four learning routes led by 20 farming families to showcase results and innovations.

María Acevedo and her family with their water reservoir in Nicaragua.

- The Challenges to Improve Productivity, Quality, Genetics, and Environmental Contributions of Modern Cacao Systems in Latin America and the Caribbean Project, funded by KoLFACI and led by INTA, entered its second phase to expand on the initial successes achieved. The first phase established 75 demonstration/research plots, increased productivity by over 50%, developed regional databases on production, pests, diseases and plant characteristics, and trained 44 technicians and 160 producers in modern cacao management and reactivated traditional plantations. In its second phase, the project focused on advancing research in improved cacao plots, emphasizing financial and agroforestry data, including carbon capture benefits. Additionally, it developed innovative models for community nurseries to test low-cost plant production, eco-physiological responses to water stress, and pest and disease management. Knowledge dissemination was prioritized, with plans to train more stakeholders and publish technical manuals, scientific articles, and guides to support decision-makers in the cacao sector (research and demonstration plots in Matagalpa and Jinotega, key cacao-producing regions).

- Partnered with Nicaragua Sugar Estates Limited, CATIE supported water resource management initiatives on Finca La Paciencia in Chichigalpa, aiming to promote sustainable water use and mitigate climate change impacts. Key actions included the development of a detailed biophysical study of the farm, providing data on morphometric, climatic, hydrological, and soil variables to inform sustainable management strategies. A sustainable management plan was also designed to guide the implementation of infiltration infrastructure, reforestation with native species, a monitoring system, and knowledge management practices for improved water and ecosystem conservation. Additionally, a protocol for measuring management indicators was prepared to assess the impacts of implemented actions on Finca La Paciencia and neighboring farms, facilitating informed decision-making and long-term sustainability.

El Salvador

- CATIE's National Office in El Salvador had a key role within the SERVIR Central America project by establishing the sixth SERVIR Global Node. The office facilitated organizational and logistical support to ensure successful dissemination of SERVIR's mission to leverage satellite and geospatial data for climate resilience and environmental governance

- In partnership with the World Coffee Research (WCR), CATIE is strengthening its role as a "Coffee Breeding Factory" through the INNOVEA Coffee Breeding Project. As part of this initiative, CATIE established an 8,425 m² experimental plot at its headquarters in Turrialba, Costa Rica, containing 1,348 coffee plants, including 156 promising F1 hybrids previously evaluated at Hacienda Alsacia and Aquiares Coffee Estate, as well as 984 new crosses developed at Finca Flor Amarilla in El Salvador. The trial is under optimal agronomic management, with initial evaluations focusing on vegetative growth and coffee rust resistance (*Hemileia vastatrix*). The most promising varieties identified in this plot will be distributed to coffee-producing countries across Latin America and the Caribbean, providing improved genetic resources to enhance productivity and resilience in the region.

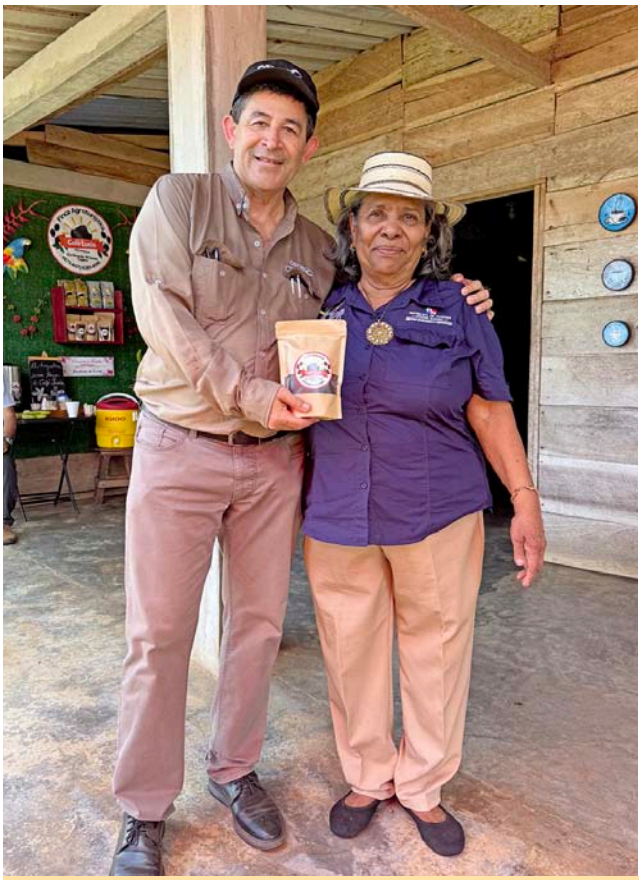
- CATIE executed a pilot study to assess the efficiency and impact of preventive actions to mitigate the effects of an adverse climate event on farming families in collaboration with Catholic Relief Services (CRS), as part of CRS Program "From Rust to Resilience (R2R)", indirectly contributing to 2,000 people from 400 smallholder coffeeproducing families which were supported by the R2R project to increase their resilience.

Panamá

- Key contributions in Panama included evaluating the performance of CATIE coffee hybrids (Casiopea, Excelencia, H3, and Milenio) in five out of eight experimental farms established in 2021 in Renacimiento, Chiriquí, Panama. The project also advanced food security and resilience in 24 coffee farms covering 50 hectares, where above-average productivity and diversification were achieved. Additionally, the agroforestry coffee model was successfully replicated in 17 more farms, demonstrating its scalability and effectiveness in improving production systems. Plans are underway to disseminate these results across Panama and Central America, promoting the integration of agroforestry practices in coffee landscapes beyond the initial project sites.

- CATIE coordinated research and technical services across multiple units, including the diagnostic study and management plan for the Santa Bárbara River basin, strengthening watershed management strategies. It implemented a pilot Monitoring, Reporting, and Verification (MRV) system for methane emissions, advancing climate monitoring efforts in the livestock sector. Additionally, CATIE supported cacao projects in collaboration with MIDA-KOLFACI, contributing to improved agroforestry systems and productivity. In Veraguas, Panama, it recommended technical services for small-scale producers, aiming to enhance their sustainable farming practices. Further, CATIE played a key role in developing proposals for adaptation measures under the SERVIR Centroamérica framework and Spanish cooperation, reinforcing its commitment to climate resilience and food security. These integrated actions demonstrate CATIE's capacity to link policy, research and field implementation, ensuring that innovative climate-smart solutions benefit diverse stakeholders across the region.

- In 2024, CATIE, in collaboration with KoLFACI and RDA launched a project to evaluate pruning technologies and identify climate-resilient coffee varieties across nine countries, including Panama. This initiative builds on a network of 46 coffee trials and over 100 tested technologies, showing positive impacts on coffee productivity. In January 2025, CATIE signed an agreement with MIDA to transfer Robusta coffee germplasm and evaluate hybrids for low-altitude areas in Panama. These efforts aim to enhance sustainable coffee production and green enterprises, supporting agricultural resilience.



Dr. Luis Ernesto Pocasangre, Director General of CATIE, with a Robusta coffee producer from Panama.

Belize

- Through the REFOREST project in Belize, CATIE focused on building institutional capacity through workshops in nine southern communities to assess Early Warning Systems (EWS) and climate vulnerability, conduct gender analyses, and established a national reforestation network. Additionally, regional workshops were held to analyze public policies relevant to the project's objectives, strengthening the framework for climate resilience and reforestation efforts nationwide.
- CATIE collaborated on the review of a project proposal for an agro-silvopastoral demonstration farm for the Ministry of Agriculture, Food Security and Enterprise. It also participated in a presentation and producer fair at the University of Belize, held meetings with university technicians to explore collaboration opportunities, and attended the launch of SERVIR Central America.

Workshop participants in Belize discuss forest restoration strategies and climate adaptation as part of the REFORES project.

Mexico

- Methodologies were developed for reducing greenhouse gas (GHG) emissions in livestock, including methane and nitrous oxide, through a USDA-funded project. The achievements include mapping research institutions, creating an indexed inventory of GHG emissions publications, and propose monitoring systems for livestock activity in Mexico. Furthermore, policy briefs were prepared on emission factors for livestock, addressing methane and nitrous oxide from enteric fermentation and manure management.

(b) Caribbean

Dominican Republic

- CATIE collaborated with CONIAF to initiate a project focused on improving protection strategies in the cacao sub-sector. Key achievements included artificial inoculation experiments on 8 clones, the creation of technical protocols, a master's thesis prepared, and dissemination of findings through national symposia and technical publications. Future activities include training workshops, vulnerability mapping, and socioeconomic assessments.

- CATIE, together with the Department of Cacao of the Ministry of Agriculture established 6 of 9 pilot plots for cacao plantation rehabilitation using the "Turrialba" method. Each plot averages 500 cacao plants, including clones like TSH-565 and ICS-39. A technical guide for rehabilitation and renewal (R&R) was prepared, validated by local technical teams, and complemented by training on harvest estimation for 10 local project partners. The full network of 9 plots is expected to be completed by September 2025, providing vital insights into labor and costs for regional cacao rehabilitation efforts.

- In October 2024, CATIE strengthened its cooperation with Plan Sierra, the largest forest conservation area in the Dominican Republic, focusing on research and capacity-building. Key actions included training on climate change, watershed biodiversity management, and coffee germplasm characterization, with interest in introducing CATIE's Esperanza hybrid. Efforts to diversify reforestation beyond pine species were discussed, along with green business promotion and regenerative agriculture practices. A general training plan was established, covering forest biodiversity, soil health, and sustainable enterprises.

- The Director General visited Plan Sierra, the largest forest conservation area in the Dominican Republic, to address research and training needs. This region plays a crucial role in protecting the Yaque River watershed, which supplies water to the Cibao Central, the country's main agricultural region. Discussions focused on key areas such as climate change training, the use of watershed and biodiversity data, and the characterization of existing coffee germplasm in the Sierra. There was also interest in importing CATIE hybrids, especially the Esperanza hybrid, which is well-suited for the country's altitudes between 300 and 700 meters above sea level. Additionally, the DD had discussions on issues related to forest restoration and diversifying reforestation efforts, green businesses and sustainable enterprises for producers in the lower watershed, as well as regenerative agriculture and soil health. The meetings were held with Plan Sierra's Vice-President and her technical team, followed by a tour of the nursery and reforested areas within the conservation zone. This collaboration reinforced the importance of sustainable watershed management and ecosystem restoration while exploring opportunities for training and innovation in the region.

Visit to the Plan Sierra nursery and reforestation area of the protected zone under the program.

Cuba

- The CIENPINOS project generated significant scientific contributions, including over 25 publications focused on sustainable agroforestry and livestock integration. It characterized grazing ecosystems to emphasize sustainable management and animal welfare. Additionally, it enhanced climate governance by hosting an international course in Costa Rica, training 19 Cuban officials in municipal climate governance practices.

Haiti

- CATIE contributed to agroforestry diagnostics for coffee and cacao and planning for a network of demonstration plots in Haiti. In implemented five virtual training workshops engaging 45 university students and technical team members from the PITAG project. A 10-topic research agenda on cacao agroforestry was formulated, and CATIE and CIRAD experts contributed to discussions on cacao genetic diversity and conservation. Despite socio-political challenges that affected field operations in September 2024, the project yielded significant outputs, including a published article in PLOS One.

- The Center executed the Kafe Makaya Project, funded by Global Affairs Canada – GAC, implementing climate-smart coffee agroforestry systems benefiting 13,000 people, with an emphasis on gender inclusion (60% women participation).

Kafe Makaya project technicians in Haiti receiving training in agroforestry management.

Jamaica

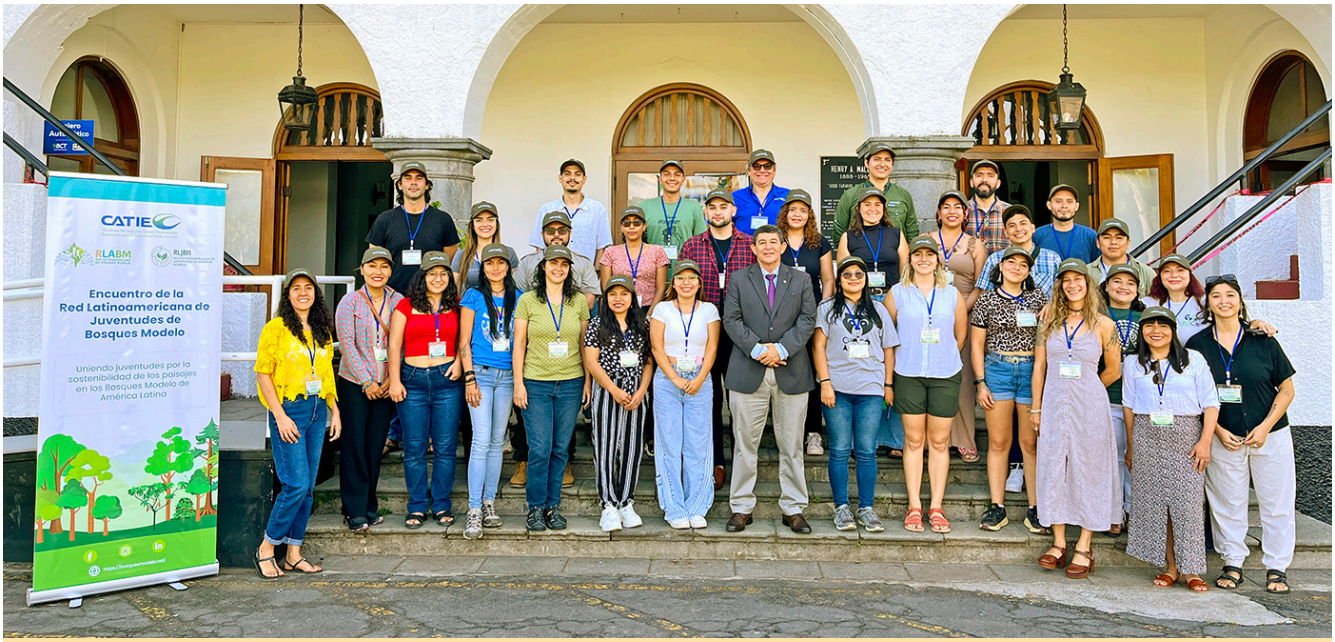
- Two technical visits by CATIE's staff to Jamaica contributed to the design and implementation of agroforestry systems for ginger, turmeric and allspice. A digital survey was created to guide future training, and field tools were developed for measuring carbon sequestration potential in allspice trees. Agroforestry interventions were done with the aim to boost yields and carbon capture while diversifying income sources for local producers.

(c) South America

Peru

- The project "Latin American Model Forest Network in Peru" strengthened community-driven forest management in the regions of Pichanaki, Villa Rica, Río Abiseo Huambisa, and Abancay. Achievements included formalizing the integration of EcoAgriculture Partners, representing the 1,000 Landscapes Initiative, as a technical partner on the Model Forest Network (RLABM) board, as well as establishing the RLABM Youth Network as an official board member. Additionally, experience-sharing platforms were developed, facilitating collaboration among representatives from 32 Model Forests, with specific actions to align territorial stakeholders in Abancay. These steps were crucial for advancing governance, enhancing technical partnerships, and promoting collaborative landscape-scale forest restoration efforts in Peru.

- The project "Evaluation of Pruning Technologies and Identification of Promising Coffee Varieties for Climate Change in Latin America", implemented by CATIE in collaboration with INIA and KoLFACI, achieved key advances in field research and genetic material management. Field trials evaluated pruning techniques (selective pruning, skeletal pruning, and topping), fertilization strategies (including diammonium phosphate, potassium chloride, ulexite, and guano), pest and disease prevention practices, and yield recording. Additionally, genetic material was identified on two collaborating farms, with technical assistance provided for establishing vegetative propagation infrastructure and characterizing coffee plants. These actions enhanced the understanding and application of climate-resilient coffee management practices across the region.



Meeting of the Latin American network of model forest youth.

- CATIE supported the production of organic spices (oregano, ginger, turmeric) by developing methodologies for improved organic certification and market access through PENS (organic species) project, in collaboration with local and international partners.

- In Amazonas & Andean Highlands, CATIE expanded agroforestry and bio-inputs initiatives, enhancing ecosystem restoration and sustainable agriculture supported by multiple donors and local partners.

Ecuador

- In collaboration with FAO and Expertise France, CATIE provided technical assistance for estimating emission factors and CO2 equivalent emissions for monitoring forest degradation for the Ministry of Environment of Ecuador.

- In the Ecuadorian Amazon, significant results were achieved by CATIE on sustainable production and green finance initiatives in the provinces of Zamora Chinchipe and Morona Santiago. Over 3,000 producers were engaged through 27 field days, while 2,277 producers participated in events promoting BanEcuador B.P.'s credit lines. CATIE identified and supported 845 potential beneficiaries in accessing green finance and provided technical assistance to at least 300 producers for implementing sustainable practices. The impact of investments including carbon footprint assessments was monitored for 457 producers, highlighting measurable progress towards climate resilience and sustainable development in the region.

- CATIE made important contributions in promoting sustainable practices and green finance in Zamora Chinchipe and Morona Santiago, in which the project reached 3,122 producers (40.3% women, 14.4% Indigenous and Afro-descendant people), exceeding its target of 3,000 producers through 13 field days and 9 promotional events. Technical assistance was provided to 463 producers (30.9% women, 17.8% Indigenous and Afro-descendant people), and 227 producers accessed financial products and services. Investment impact monitoring covered 457 producers, with 31.1% being women and 19.7% Indigenous and Afro-descendant people. Among 110 priority producers with green finance credits, 61% invested in productive systems (livestock, cacao, or coffee), while 15% diverted funds to non-productive uses. CATIE ensured that inter-institutional coordination with producer associations, BanEcuador, PNUD, GADs, and the Ministry of Agriculture to align field activities and maintain stakeholder commitment to project objectives were achieved.

Advances in the Collaboration with the Private Sector and Other Partners in Cropping Systems

In the area of sustainable coffee crop development, the following key results were achieved:

- Organization of the international coffee congress in 2024 that brought together more than 350 participants, including renowned scientists from three continents, Ministers of Agriculture, producer cooperatives, etc., to share information on new developments and experiences (see below).
- Prepared a new research protocol to evaluate the pruning strategies' impact on coffee quality. Successful pruning methods tripled coffee yields, enriching genetic diversity and knowledge of improved varieties, with the support of the second phase of **KoLFACI project.**
- Two study sites (Aquiares Farm in Turrialba Valley and El Alto Farm in the Central Valley) continued agroecological evaluations of pesticide-reduction strategies in coffee production. Activities included monitoring coffee rust and berry borer, planting cover crops, and analyzing coffee yield and quality as part of the **ECOFFEE Project.**
- In February 2024, 72 accessions from six *Coffea* species in CATIE's collection were sent for analysis to expand the reference library and develop species identification markers. Results are expected to generate two international publications in 2025.
- CATIE continued evaluations of 26 coffee hybrids established in 2020, focusing on yield, quality and disease tolerance. Preliminary results showed some hybrids achieving 60 quintals per hectare by year three under agroforestry conditions with 50% shade. These promising hybrids will undergo validation in multiple sites.
- Advanced significantly in relocating CATIE's coffee collection by installing an infrastructure that included drainage and access roads that was prepared on a new 5-hectare site. Temporary shade was also established, and 400 propagated accessions are being developed in a greenhouse for planting in early 2025, with support of **CROP TRUST.**
- CATIE's 24-year-old coffee agroforestry trial continues to provide valuable data on soil health, coffee quality and shade tree management innovations. This living laboratory benefits technical training and national programs like NAMA Café, supporting sustainable coffee production in Costa Rica.
- Recognition of the impact of CATIE's coffee hybrids in the Trifinio area, in which the ESCALAR project has strengthened the capacity of local producers in Guatemala, Honduras and El Salvador, improving their resilience to climate change.

CATIE continued to advance its contributions in sustainable cocao production by:

- Celebration of the 80th anniversary of its International Cocoa Collection, the second largest in the world, with more than 1,250 accessions available to farmers. The event recognized CATIE for its global leadership and innovative work in the development of new technologies for the sustainable production of cacao (see below).
- Focusing on characterizing promising cacao clones for disease resistance, productivity, and physiological traits. Informative sheets for 5–7 clones are under development to guide decision-making by producers and technicians.

- Maintaining cacao germplasm collections at its La Lola and La Montaña stations, characterizing accessions for resistance to diseases such as moniliasis and black pod. Collaborations with CIRAD identified three cacao viruses in 100 accessions, contributing to better disease management strategies.
- Strengthened its work with the private sector by collaborating with Nestlé to identify 96 cacao accessions for a "core collection," representing the 10 known genetic groups. Findings from molecular and phenotypic data will support future research and breeding initiatives.
- CATIE introduced 67 cacao clones from Brazil to evaluate their resistance to moniliasis and climate challenges. Trials are underway in agroforestry systems featuring *Cordia alliodora* and banana shade trees, aiming to develop robust cacao varieties.
- Established a one-hectare agroforestry trial at its La Montaña farm to assess the productivity and quality of 10 cacao clones. Initial results indicate the feasibility of integrating complementary crops, enhancing both system resilience and producer profitability.
- It partnered with Nortico Farm to propagate 15,000 grafted cacao plants, including CATIE's and international clones. So far, 3,500 high-quality plants have been delivered, supporting cacao production revitalization in Turrialba.

Other crops, protocols, and initiatives developed:

- CATIE regenerated 1,126 accessions of orthodox seeds (squash, chili, and tomato), and maintains an extensive collection of 6,201 accessions of vegetable and grain crops across 14 botanical families, 61 genera, and 125 species at the Banco de Germoplasma. This genetic repository supports biodiversity conservation and climate adaptation efforts. Duplicate samples will be sent to Norway's Svalbard Seed Vault and the World Vegetable Center in Taiwan, with support from **CROP TRUST.**
- CATIE developed new protocols for seed disinfection that enabled in vitro propagation of hybrids, with plants sent to India, Peru, Guatemala, and Costa Rica for validation in diverse environments. This is the first time these hybrids were propagated using somatic embryogenesis.
- The CATIE Demonstration Areas for Restoration, supported by the International Model Forest Network (IMFN), serves as a training hub showcasing diverse landscape restoration practices. These areas, visited by students and restoration enthusiasts, include more than 40,000 trees planted on 40 hectares in collaboration with NGOs like Reforest the Tropics for carbon capture. The site also features 32 hectares of 90-year-old secondary forest (La Florencia), 170 hectares of forest production, 130 hectares of pasture, 100 hectares of sugarcane, and 36 hectares of restoration models designed to connect the landscape. Additionally, over 80 hectares of protected forests to facilitate corridors that ensure connectivity, and the Core Collection of 300 genetically diverse coffee genotypes is preserved on the campus.
- CATIE`s Goat Module, supported by AGROINNOVA) provided training in sustainable goat production, milk processing, composting, and water harvesting systems, benefiting rural communities.

(d) Regional Actions and Results

Below is a summary of CATIE's regional actions and their results for SO1.

Table 1. Summary of Key Regional Actions and Achievements for SO1

Action	Region	Results
AGROINNOVA Project	Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama	Designed climate-resilient agroforestry systems and implemented 93 demonstration plots
Sustainable Livestock Intensification Project	Panama, Dominican Republic	Reduced methane emissions, strengthened regional sustainable livestock platform, developed Tier 2 methane estimation methodology
REFORES Project	Belize, Guatemala, Honduras	Established governance platforms, technical advisory groups, and local restoration committees to scale restoration efforts
Moniliasis Socioeconomic Impact Assessment	Dominican Republic, Puerto Rico	Evaluated the impact of moniliasis on cacao farms, conducted vulnerability and suitability mapping, and assessed disease resistance
Microbiological Studies in Banana Production	Peru, Brazil, Ecuador	Assessed beneficial microorganisms to reduce synthetic agrochemical use
Coffee Pruning Technology & Variety Identification	Latin America (multiple countries)	Established research plots, identified rust-resistant coffee varieties, and implemented sustainable agronomic practices
PARES Project	Mexico, Guatemala, El Salvador, Honduras, Colombia, Ecuador	Strengthened community resilience to climate, environmental, and security risks, fostering stability and peace
Nestlé Dairy Product Data Collection Program	Dominican Republic, Panama, Peru, Trinidad & Tobago, Venezuela	Collected climate impact data from 225 farms to support Nestlé's climate reporting
Applied Research on Coffee & Cacao (KoLFACI, ECOFFEE)	Costa Rica, El Salvador, Dominican Republic, and 13 other countries	Advanced sustainable practices and scientific knowledge through coffee pruning and cacao demonstration plots

Central American Integration System (SICA): Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and Dominican Republic (as associated member)

- The AGROINNOVA project funded by the European Union and implemented by IICA and CATIE, concluded with a characterization and designed climate-resilient agroforestry systems for smallholder farmers in Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama. The project promoted agroecological intensification and facilitated the implementation of 93 demonstration plots.

Training in the goat module of the AGROINNOVA project.

- CATIE successfully implemented the Sustainable Livestock Intensification Project in Panama and the Dominican Republic, funded by the Climate and Clean Air Coalition (CCAC). This initiative, part of a global platform to mitigate short-lived climate pollutants like methane and black carbon, demonstrated how livestock systems can enhance competitiveness while reducing methane emissions. In collaboration with SECAC and the World Meteorological Organization (WMO). The project strengthened the regional sustainable livestock platform within SICA countries and conducted a technical and economic feasibility study on using satellite technology to estimate greenhouse gas emissions. Key findings included the development of a Tier 2 methodology for methane estimation, integration into MRV systems, and validation through pilot farms. SECAC incorporated this information into a regional low-emission livestock strategy, supported by knowledge-sharing workshops. The results were presented at international conferences and are being published to inform policymakers and technical stakeholders, ensuring broader adoption of sustainable livestock practices.

- The REFOREST Project achieved important milestones in 2024, contributing to development and governance platforms in Belize, Guatemala, and Honduras to manage knowledge and scale restoration efforts. In October, the Technical Advisory Groups (GTA) and the Tri-National Policy Committee (CPT) were established, comprising representatives from government agencies in collaboration with the World Resources Institute (WRI). In November, participatory workshops consolidated or created local networks and restoration committees, bringing together stakeholders from government, NGOs, civil society, academia, and the private sector. These efforts reactivated Belize's national forest restoration committee and leveraged existing frameworks in Guatemala and Honduras to create targeted networks for the project's intervention landscapes.

- Through the research project on the Socioeconomic Impact Assessment of the Arrival of Moniliophthora (Monilia) in the Caribbean, CATIE assessed the socioeconomic impact of moniliasis in the Caribbean, engaging key stakeholders, like CONACADO in the Dominican Republic and the University of Puerto Rico. Socio-productive diagnostics covered 400 cacao farms in the Dominican Republic and 45 in Puerto Rico. Experiments on moniliasis and black pod disease resistance in cacao clones were completed, alongside vulnerability and suitability mapping for cacao cultivation in both countries.

- CATIE conducted microbiological studies on banana production systems to evaluate the impact of beneficial microorganisms and reduce the dependency on synthetic agrochemicals under the execution of One Health & AUSCAR projects with actions in Peru, Brazil, and Ecuador (in collaboration with CIRAD and local universities).

- The Coffee Pruning Technology Evaluation and Promising Varieties Identification Project in Latin America, funded by KoLFACI and led by INTA, advanced its second phase of research and development. Key achievements included establishing 6 research plots across collaborating farms, updating databases with phytosanitary information, productivity, harvest data (2023/2024 cycle), and production costs. Good practices implemented include weed control, shade management, pruning, soil and foliar fertilization, and pest and disease management. In the genetic component, promising coffee varieties tolerant to rust disease were identified, with morphological characterization, DNA extraction, and nursery establishment plans were initiated. These efforts support sustainable coffee production and climate change adaptation, focusing on increasing productivity, disease tolerance and resilience.

- By the end of 2024, the Peace, Action, Resilience, and Sustainability in Latin American Landscapes (PARES) Project was launched with a secured investment of US$ 2.9 million under the Climate Change, Environment, Peace, and Security Alliance, supported by the European Union (EU) and the United Nations Environment Programme (UNEP). The project seeks to strengthen community resilience to climate, environmental, and security risks in vulnerable rural landscapes, promoting stability and peace in regions affected by migration and displacement. PARES will collaborate with 12 local organizations to implement targeted activities across prioritized landscapes in Mexico, Guatemala, El Salvador, Honduras, Colombia, and Ecuador, fostering sustainable development and inclusive governance.

- **Contribution to Food Security:** CATIE completed its sixth and largest seed shipment to the Svalbard Global Seed Vault in Norway, securing 1,100 accessions of key crops. Of these, 620 belong to cucurbits (Cucurbita), 190 to chili peppers (Capsicum), and 290 to tomatoes (Lycopersicum). This initiative strengthens food security in Costa Rica and the region by preserving unique heirloom germplasm that could be crucial in times of crisis. Many of these accessions are not found in other global collections, making their conservation vital. With this shipment, CATIE now has 2,634 seed accessions stored in the vault, representing 42% of its total germplasm collection in Turrialba, Costa Rica. This effort is part of the Biodiversity for Opportunities, Livelihoods and Development (BOLD) program, led by the Global Crop Diversity Trust and funded by the Norwegian government. The Svalbard Vault, often called the "Doomsday Vault," acts as a global safeguard against biodiversity loss due to natural disasters or agricultural crises. Under a 2010 agreement with the Norwegian Ministry of Agriculture and Food, CATIE retains ownership of its deposited materials and can retrieve them when needed, ensuring long-term conservation and accessibility for future generations.

Shipment of 1,100 seed accessions, 620 of them cucurbits, to the Svalbard Global Seed Vault in Norway to preserve the region's food security.

(e) Other Hemispheric (LAC) Achievements

DAAD Recognizes CATIE's Director General as a Change Agent

Dr. Luis Ernesto Pocasangre, Director General of CATIE, has been recognized as a change agent in Latin America by the German Academic Exchange Service (DAAD) during its 100th anniversary celebrations. This honor highlights Dr. Pocasangre's extensive academic background, including a Ph.D. in Phytopathology from the University of Bonn, Germany, achieved in 2000 with DAAD support. His contributions encompass supervising over 100 theses across various universities worldwide, authoring more than 70 scientific publications, and delivering over 150 conference presentations across five continents. The DAAD's centennial recognitions honor global figures in fields such as sustainable agriculture, international cooperation, and social responsibility.

Dr. Luis Ernesto Pocasangre, Director General of CATIE, with F1 hybrid coffee plants from CATIE.

Commemoration of the Anniversaries of the International Coffee and Cocoa Collections

- **75th Anniversary of the International Coffee Collection.** CATIE commemorated the 75th anniversary of its International Coffee Collection, one of the most important in the world with more than 2,000 accessions available to coffee producers. The event recognized CATIE as a world leader in coffee research and for its pioneering work in sustainable coffee crop development. During the ceremony, Dr. Geoffrey Hawtin, 2024 World Food Prize Laureate (equivalent to the Nobel Prize in Agriculture), unveiled a commemorative plaque, highlighting the historical and future importance of this collection as a heritage for coffee farmers globally.

CATIE representatives with Dr. Geoffrey Hawtin, 2024 World Food Prize Laureate, after unveiling the plaque for the 75th anniversary of the International Coffee Collection.

- **80th Anniversary of the International Cocoa Collection.** CATIE also celebrated the 80th anniversary of its International Cocoa Collection, the second largest in the world, with more than 1,250 accessions available to farmers. This collection, considered a public good, was recognized by Dr. Hawtin as a legacy to humanity. The event also recognized CATIE for its global leadership and innovative work in the development of new technologies for the sustainable production of cacao.

Dr. Luis Ernesto Pocasangre, Director General of CATIE, with Dr. Geoffrey Hawtin, 2024 World Food Prize Laureate, and Dr. Gale Garnett, former Chair of CATIE's Board of Directors.

- **International Coffee Congress: A High Impact Meeting.** CATIE's International Coffee Congress in 2024 brought together more than 350 participants, including renowned scientists from three continents, Ministers of Agriculture, diplomatic representatives, producer cooperatives and international organizations. The event highlighted the importance of CATIE's research and innovations for the coffee sector, as well as efforts to strengthen sustainability and productivity in the region. Participation in this event included international leaders such as the 2024 World Food Prize winner, Dr. Geoffrey Hawtin; the Ambassador of the United Kingdom and representatives of PROMECAFE, ANACAFE, and other relevant organizations. Activities also included visits to the coffee and cocoa collections, and a coffee tasting competition organized by international experts.

Participants of the 75th Anniversary Congress of the International Coffee Collection

- **Participation in COP29 Global Conference:** The Director General participated in the global conference at COP29 in Azerbaijan in November 2024, emphasizing the institution's commitment to addressing climate change issues including climate resilience in the context of sustainable development. He engaged in high-level discussions with Ministers and leaders of various development and cooperation agencies and potential doors on CATIE's role in important projects being executed on climate change and sustainable development in the Americas. He also established important contacts and contributed to having strategic dialogues on watershed management and climate adaptation and strengthened alliances with other global leaders on future collaborations in these areas. In addition, the Director General officially launched the SERVIR Central America project at COP29, with the participation of high-level panelists, including USAID Dr. Luis Ramos and NASA's Kate Calvin. This project will provide innovative solutions to urgent environmental problems using satellite data and geospatial technology. The event marked a milestone for the region by consolidating a hub focused on satellite technology and climate resilience, and highlighted the interest of women's organizations to join the project, reflecting its inclusive and participatory approach.

Participation in COP29, strengthening alliances and launching the SERVIR Central America project.

- **Private sector alliance:** In 2024, CATIE increased its collaboration with the private sector in LAC. The Nestlé Dairy Product Data Collection Program, funded by Anthesis Lavola and executed in LAC supports Nestlé's commitment to reducing agricultural climate impacts. Nestlé aims to credibly report on the progress of climate action measures across its network of farmers in over 25 countries in the region. Anthesis as Nestlé's development and implementation partner, oversees data collection for the company's annual global report. Leveraging its regional expertise, CATIE conducted data collection including assessments of climate footprint, regenerative agriculture and animal welfare. A total of 225 surveys were conducted across the Dominican Republic, Panama, Peru, Trinidad & Tobago, and Venezuela.

- Applied research projects on coffee and cacao such as KoLFACI and ECOFFEE advanced sustainable practices and scientific understanding across 16 countries, including Costa Rica, El Salvador, and the Dominican Republic. These initiatives included studies on coffee pruning, the establishment of cacao demonstration plots, and agroecological evaluations

- CATIE developed important tools with global potential applications, which are:
  - **UncertCarb:** An application to estimate carbon emission balances from deforestation and degradation and propagate uncertainty across all processes using Monte Carlo simulation. Version 0. Developed entirely in R language. https://github.com/SVMendoza/BalanceEmsionesShiny

- **CBB-Detect:** A computer vision-based algorithm for detecting and counting coffee berry borers (Hypothenemus hampei) captured in traps. Developed with 95% Python-PyTorch and 5% R language. https://github.com/SVMendoza/Detection-and-count-CBB.
- **SC-R:** A supervised classification methodology based on various machine learning classification models. Developed entirely in R language.

(f) Global Contributions of CATIE's Work in Knowledge Management

CATIE's commitment to scientific research and knowledge dissemination is reflected in its 2024 annual publications report, which highlights significant contributions across multiple disciplines. The institution has produced a total of 58 theses, 60 technical reports, 1 book, 6 book sections, and 70 articles in international journals, amounting to an impressive 195 publications (**Figure 1**). This extensive body of work underscores CATIE's dedication to advancing sustainable development through science, strengthening its role as a leader in research and innovation, and knowledge management.

The diversity of publications reflects CATIE's multidisciplinary approach, linking scientific research and knowledge development with real-world applications. Studies on climate change impact on agriculture, innovative land management strategies and digital tools for sustainable farming are shaping policies and guiding new agricultural practices in several countries. Additionally, the emphasis on youth involvement in conservation efforts highlights the institution's role in fostering the next generation of environmental leaders.

By continuously expanding its research output, CATIE strengthens its influence at both the regional and global levels, ensuring that science-based solutions drive progress in sustainable agriculture and environmental conservation. A detailed summary of the publications produced by CATIE researchers in 2024 is presented in **Annex 2.**

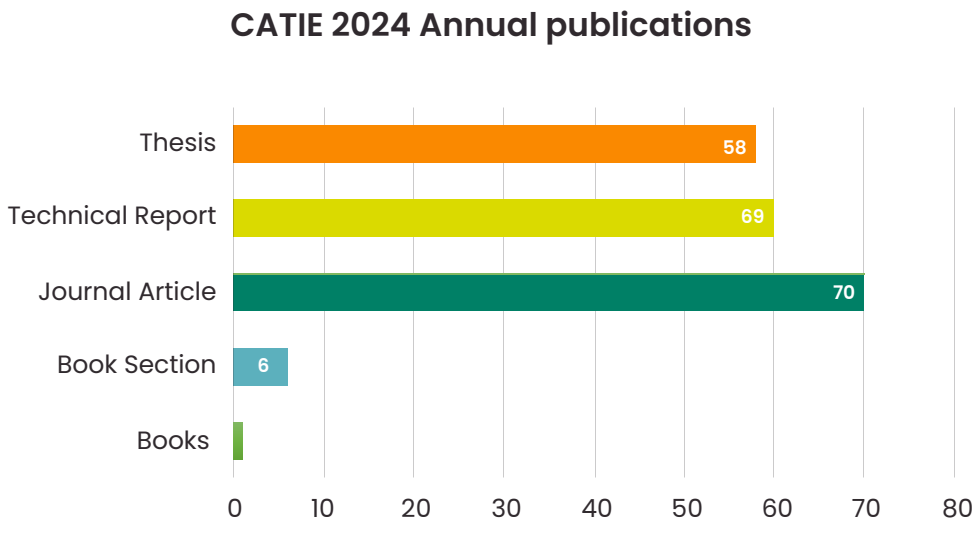


Figure 1 Publications by CATIE by Type in 2024

2.2. SO 2: Preparation of Leaders with Professional Competencies that drive DVI

In 2024, CATIE played a significant role in training leaders, strengthening technical capacities, and promoting knowledge transfer to advance Inclusive Green Development (DVI) across the LAC region. Globally, CATIE organized, lead and facilitated 322 capacity building actions, including short courses (face to face and virtual), workshops, diploma and webinars to increase the capabilities of leaders and professionals. More details are provided in the section below on "Achievements and Contributions of Education and Training".

Through graduate education, technical training and field-based learning, CATIE empowered farmers, researchers, policymakers, and private sector actors with cutting-edge skills in agroforestry, climate-smart agriculture, sustainable livestock, watershed management, and financial resilience. The institution trained thousands of professionals through diplomas, field schools and online courses, emphasizing gender inclusion and youth participation. Below is a summary of country-specific capacity-building efforts and the main achievements by countries and regions, showcasing CATIE's contribution to scaling sustainable practices, strengthening institutional governance, and equipping future leaders with the expertise needed to address climate challenges.

(a) Mesoamerica

Costa Rica

- Training was provided to over 451 participants from the livestock zones of Costa Rica, of which 70% corresponded to livestock farmers and the rest were technicians from MAG and CORFOGA. This capacity building efforts were organized under the NAMA Ganadería initiative on rational grazing, silvopastoral systems, forage banks and bio-inputs. The workshops addressed specific topics such as pasture management, genetics, animal welfare, traceability, and greenhouse systems for cattle. Fifty participants were trained in bio-inputs and purine management, and another 45 were sensitized on forage bank systems and cattle nutrition, showcasing a comprehensive approach to improving livestock systems.

- A three-day multisectoral workshop in Costa Rica engaged 39 participants from the coffee value chain, including producers, policymakers, researchers, and private sector representatives. This workshop facilitated intersectoral collaboration, identified actionable opportunities for sustainable transitions, and aligned actors to disseminate best practices and trials. Replications of these trials are underway in Brazil, with results expected in 2025.

- Under the TRANSFORMA-INNOVA project training was provided to over 500 producers and technicians in low-carbon farming practices.

Honduras

- In Honduras, 45 participants from the livestock sector contributed to designing the National Bovine Livestock Action Plan, while an additional 64 participants engaged in active discussions with BANHPROVI and workshops with the Ministry of Agriculture and Natural Resources (SAG and SERNA) on funding opportunities in the sector. Additionally, the activities focused on governance issues in the sector, financial mechanisms, water harvesting design, and validation of project sites.

Guatemala

- CATIE collaborated with the National Nutrition Information Platform - PiNN to build the capacity of 28 young people aged 15 to 29, including 6% of youth involvement in a knowledge management platform.

- Under the BLF Project, CATIE executed a hands-on workshop on oak germination for 58 technicians and key stakeholders (34% women) from the municipalities of Esquipulas, Concepción Las Minas, Asunción Mita, as well as national and regional organizations (INAB, CONAP, CTPR, USAC, URL, WCS).

Nicaragua

- CATIE partnered with FAO to improve the technical capacity of 97 INTA researchers through virtual and in-person workshops on economic valuation, experimental design and statistical analysis, which will facilitate them to improve innovation and their productivity in the agricultural sector.

Stakeholders from Honduras' livestock sector collaborate with the MAF project.

- The project Strengthen the Resilience of Rural Families in Nicaragua to climate change, in collaboration with the Spanish NGO ONGAWA, executed two field schools in which there was capacity building of 66 participants (27 women and 39 men) in NbS. A diploma course was also implemented on integrated water resource management in the context of climate change that engaged 28 local stakeholders, enhancing their capability to address water and sanitation challenges at the community level.

El Salvador

- In El Salvador, CATIE strengthened the technical capacities of the Ministry of Environment and Natural Resources (MARN) personnel by training them in methodologies for assessing forest ecosystems and coffee agroforestry systems.

- Under the BLF Project CATIE continued its commitment to local and regional capacity-building efforts by executing a basic wildfire training course for 35 persons (63% women) in El Salvador, with participation of national and local organizations (such as MAG, ISCOS, Belen Güijat, MARN, INAB).

- Over 100 coffee extensionists underwent training through virtual and in-person sessions on genetic improvement, agronomy, agroforestry, and coffee quality. These technicians will replicate the knowledge and practices in field schools, with the objective of reaching more than 6,000 individuals. This initiative highlights CATIE's capacity to amplify knowledge dissemination across communities.

- As a result of CATIE's participation in the presentation of the Lempa River Basin Management Program within the framework of COP29 in November 2024, the Center has begun its support to the Project Management Team in the start-up actions of the Program, leading to its first key milestone which is to prepare the Lempa River Basin Management Plan.

Participants in the Lempa River Basin Workshop, led by Dr. Laura Benegas, an expert in watershed management.

Panamá

- CATIE's organized three specialized workshops on agriculture and climate change in Darién, Veraguas, and Chiriquí. The training included a coffee workshop addressing climate change in Chiriquí, a session on coffee value chains, and another presenting the results of maintaining 25 coffee agroforestry farms. Additionally, CATIE disseminated information from a study on the coffee value chain in Río Sereno, Chiriquí, and facilitated 15 community and institutional consultation workshops for a diagnostic and environmental management plan for the Santa Bárbara River basin and surrounding areas.

- In the area of watershed management, 29 environmental technicians and specialists from the Panama Canal Authority (ACP) underwent training in a three-day course on integrated watershed management. The training emphasized sustainable water governance, nature-based solutions and result-based management, equipping participants with theoretical knowledge, case studies and practical tools. The training also incorporated gender equality and social inclusion, ensuring a holistic approach to leadership development in sustainable resource management.

Mexico

- CATIE implemented virtual courses on the importance of biodiversity in sustainable production systems in Oaxaca and Puebla, reaching an international audience. Additionally, a climate finance course was organized to enhance understanding of global funding opportunities.

- Two training evets were held for 111 participants (50% from Oaxaca and 50% from Puebla) focusing on agroforestry systems and agricultural trade.

- CATIE, in collaboration with the Universidad Autónoma de Yucatán (UADY), two virtual workshops with 100 participants (20% women) were executed, focusing on methane emissions in livestock systems and national emission factor methodologies. These sessions strengthened Mexico's MRV systems, engaging researchers, policymakers and technical experts to enhance greenhouse gas inventories. Discussions centered on best practices for estimating enteric fermentation and manure-related emissions, supporting Mexico's sustainable livestock agenda. The initiative provided key technical inputs for policy development and contributed to climate mitigation strategies, reinforcing research-based solutions for low-emission agriculture at the national level.

(b) Caribbean

Dominican Republic

- CATIE organized a five-day technical tour and training for 23 stakeholders from the Dominican Republic, including technicians, producers, and water committee members from the Jamao and Veragua sub-basins. Participants enhanced their capacities in watershed management, nature-based solutions (NbS), and co-management approaches, directly impacting water governance in the Espaillat and Mirabal provinces. The program included practical field visits to the Reventazón and Sarapiquí river basins in Costa Rica, where participants learned from the successful practices of local watershed commissions (COMCURE and CODESOSA), further strengthening their ability to implement sustainable management strategies.

Cuba

- The CIENPINOS project strengthened local capacities in Cuba through 113 capacity-building actions, benefiting 2,652 individuals, including government officials, local stakeholders, and students. The project promoted sustainable agricultural practices and enhanced communication between local actors, fostering eco-friendly initiatives and community resilience.

- In May 2024, CATIE hosted a Municipal Climate Governance course under the CIENPINOS project, training 20 Cuban officials in climate adaptation and territorial management. Participants included mayors, development directors, and CITMA officials, who engaged in theoretical sessions and field visits. The training covered risk management, community tourism, and municipal action plans, providing practical tools for integrating climate strategies into local governance. Held at CATIE's campus in Turrialba, Costa Rica, this six-day course aimed at strengthening climate resilience and sustainable development at the municipal level in Cuba, fostering knowledge exchange and regional cooperation.

Haiti

- Under Kafe Makaya project CATIE trained 40 agricultural technicians, who then transferred knowledge to 2,500 coffee farmers on agroforestry design, farm management, and climate adaptation.

(c) South America

Peru

- The "Strengthening Technical, Organizational, Business, and Commercial Capacities for Sustainable Enterprises" project, implemented by CATIE in collaboration with CEDIA, PNCBMCC, and MINAM, made significant strides in empowering over 2,500 members from 26 Indigenous communities in the Peruvian Amazon, representing six ethnic groups (*Asháninka, Ashéninka, Shipibo, Shipibo-Konibo, Yine, and Yine-Asháninka*). The initiative provided training in sustainable business development, supported 15 Native Amazonian Communities in

CIENPINOS Training Event at the Orton Memorial Library, Costa Rica.

updating statutes, renewing leadership boards, and addressing legal and financial processes, allowing them to access forest conservation incentive programs under PNCBMCC. Through participatory planning, the project facilitated 37 business plans, of which 24 were approved for implementation by PNCBMCC's Executive Unit in Atalaya, while six additional business ideas were submitted for evaluation. These actions laid the groundwork for providing inclusive economic opportunities, forest conservation, and climate change mitigation in Indigenous territories.

- A project in Junín in Peru, focused on developing digital tools to support climate and agroecological transitions. This initiative, part of the Transitions Agroecological Program for Building Resilient and Inclusive Food and Agricultural Systems (TRANSITIONS), aimed to train local farmers in sustainable practices through knowledge co-creation and digital resource utilization. A virtual workshop titled *"Using Digital Tools to Support Climate and Agroecological Transitions at Scale"* emphasized the importance of inclusivity and reciprocity in the development of digital solutions that promote agroecology. This approach ensures that technological innovations align with local needs and enhance climate resilience in agricultural communities.

Bolivia

- CATIE conducted a territorial diagnostic training course on agri-food systems, certifying 14 participants (43% women, 57% men). The course emphasized a territorial governance approach, addressing diverse environmental, social, political, cultural, and economic interests across local, regional, national, and international scales. Participants included local representatives from civil society, such as the Castañeros Union and youth environmental movements (JUPROA and Brigada SocioAmbiental), as well as municipal and departmental government organizations (e.g., the Municipal Council of Porvenir, the Agricultural Institute of Porvenir, and SEDEPRO in Pando). Additionally, community leaders and representatives from the fishing sector and Chiquitania, including the municipal government of Concepción and a community leader were involved. This initiative fostered leadership enhancement and cross-sector collaboration for transformative development.

Delegation from Junín, Peru, visits CATIE headquarters in Costa Rica.

(d) Regional Actions and Achievements

A summary of the actions executed and their achievements at the regional level for SO2 is presented in Table 2.

Table 2. Summary of Key Regional Actions and the Achievements for SO2

Action	Region	Results
ESCALAR Project	Trifinio Region (Honduras, Guatemala, El Salvador)	Implemented courses in socio-organizational and business management to strengthen ERAs' Boards of Directors and administrative staff
AGROINNOVA Project	Honduras, Costa Rica	Trained 208 young farmers in Honduras and 26 agricultural students in Costa Rica through Agroforestry Digital Schools
Germplasm Bank Workshops	Global	Conducted workshops on seed conservation and regeneration, promoting resilient crop varieties

(e) Trifinio Region (Honduras, Guatemala and El Salvador)

- The ESCALAR project has reinforced its impact on climate resilience and rural development in the Central American Dry Corridor. By scaling Agricultural Innovations for Climate Adaptation (IApA), it has benefited 2,632 people (48% women) from 1,316 farming families, strengthening 16 partner organizations and supporting 41 rural enterprises, 22 of which are operational. Additionally, five local and trinational planning frameworks now incorporate IApA strategies, enhancing project sustainability. With $1.35 million mobilized, ESCALAR is expanding to include 750 more families, covering an additional 1,314 hectares, and training 160 people in climate finance and rainwater harvesting. The mid-term external evaluation in August 2024 recognized the project's effectiveness in increasing productivity, improving resilience to climate change, and promoting gender equity and youth leadership in rural enterprise development.

- To ensure long-term impact, ESCALAR has strengthened the governance and financial sustainability of rural enterprises by training the Boards of Directors and administrative staff of Entrepreneurial Rural Associations (ERAs). A face-to-face course focused on socio-organizational, business, and financial management, while two specialized courses for eight ERAs covered Annual Operational Plan implementation and strategies for accessing new markets. These efforts have reinforced the structure of rural businesses, enabling them to support climate adaptation and economic resilience in the region.

- Under the AGROINNOVA project CATIE trained 208 young farmers in Honduras and 26 agricultural students in Costa Rica through specialized Agroforestry Digital Schools. In addition, through CATIE`s Banco de Germoplasma supported by Crop Trust, workshops on seed conservation and regeneration were conducted, promoting the use of resilient crop varieties.

2.3. SO3: Outreach Through Knowledge Management and Institutional Strengthening to support DVI

In 2024, CATIE expanded its regional impact by strengthening knowledge management, institutional collaboration, and policy engagement to support Inclusive Green Development (DVI). Through strategic alliances, CATIE facilitated the scaling of climate-smart agricultural innovations, agroforestry systems, and ecosystem-based adaptation (EbA) strategies. The Center played a key role in developing policy instruments, integrating agricultural innovations into territorial planning, and mobilizing financial mechanisms to promote sustainability. Outreach efforts included the dissemination of research findings, stakeholder engagement in decision-making processes, and regional capacity-building initiatives. This section highlights country-specific actions that contributed to climate resilience, food security, and sustainable rural development through effective multi-sector partnerships and institutional strengthening.

(a) Mesoamerica

Costa Rica

- In partnership with the Development Banking System (SBD), Adapt-Activa launched the second call to support rural businesses implementing Ecosystem-based Adaptation (EbA) measures with seed capital. As a result, 25 rural entrepreneurs were awarded seed capital for rural businesses implementing EbA measures. The expected investment from the SBD is approximately US$ 196,000. CATIE was accredited as the Operating Agency of the SBD with the "ACTIVA-CATIE Program" and its experiences on this has been invaluable. The objective is to create, launch and accelerate companies and startups, so that they have a validated, repeatable and scalable business model, through Operating Agencies.

- CATIE hosted the official presentation and handover event for the Sarapiquí Basin Plan and the National Watershed Guide, with key stakeholders including GIZ, UICN, and local water authorities, through the support of EbA-LAC project. In this activity, it partnered with Costa Rica's Ministry of Environment and Energy (MINAE) and local entities like CODESOSA to align watershed plans with the national law (Law 10152), and reinforce governance and policy implementation for resource protection. In this regard, CATIE is facilitating multi-stakeholder dialogues on national water challenges by enhancing collaborative strategies between CATIE's Watershed, Water Security and Soil Unit and Costa Rica's water authorities.

- Under execution of TRANSFORMA-INNOVA project, CATIE strengthened the coherence of national policies and the implementation of low-carbon pathways, particularly within the country's three Nationally Appropriate Mitigation Actions (NAMAs) for coffee, livestock, and Musaceae. Through a combination of technical support, knowledge dissemination, and capacity-building efforts, the project produced training materials and engaged over 500 producers and technical professionals in workshops aimed at facilitating the transition to sustainable agricultural production.

Honduras

- The ESCALAR project supported the design of a policy instrument to promote the scaling of Agricultural Innovations for Climate Adaptation (IApA), corresponding to a Territorial Strategic Plan with an emphasis on promoting IApA and strengthening entrepreneurship led by youth and women in Honduras.

- CATIE's support to Honduras was expanded by signing an Agreement (2024-2026) with FUNDER (Fundacion para el Desarrollo Empresarial Rural, Honduras) to contribute to financial inclusion, and facilitating climate resilience for producers and entrepreneurs by strengthening the sustainability of rural businesses, including rural enterprises. This initiative will implement a model of Rural Savings and Credit Associations that aims to enhance sustainability of the enterprises supported by the project, incorporating rural families in need of financial support to implement agricultural innovations for adaptation.

Guatemala

- The "Strengthening the Transparency Framework through Capacity Building for the Paris Agreement Implementation in Guatemala (CBIT)" project, executed by CATIE, prioritized institutional strengthening and governance improvements to enhance transparency and climate action monitoring. The achievements included executing workshops to review NDC targets, developing a roadmap to strengthen the National Climate Change Council's (CNCC) governance structure, and creating technical sheets with information about coastal and marine zones to incorporate into the Monitoring, Evaluation, and Reporting (MER) system. The project also assessed existing digital platforms to propose a system for tracking support provided and received under the NDC. These actions reinforce knowledge-sharing, facilitating partnerships, and validated scalable governance tools to advance sustainable development in Guatemala.

Nicaragua

- An Atlas of Water Harvesting and a mobile application to identify suitable water harvesting sites in Nicaragua's dry corridor was developed that positions the country as a global reference for water harvesting innovation.

- An online Water Harvesting Hub compiling ten years of project data and literature to support informed decision-making and knowledge-sharing based on Nicaraguan Water Harvest project was established with potential for regional use also in the tropics.

- CATIE's representative in Nicaragua participated in FAO-led dialogues in Chile on innovations for drought and water scarcity, promoting runoff water harvesting as a cost-effective and scalable solution.

- CATIE´s office in Nicaragua provided inputs to BID (Inter-American Development Bank) consultations on strategic opportunities for agri-food trade and investments in Central America, supporting the identification of impactful agricultural value chains.

El Salvador

- As part of the ESCALAR project, a policy instrument was developed to promote the scaling of Agricultural Innovations for Climate Adaptation (IApA) in El Salvador, aligned with an Institutional Economic Development Strategy to foster an inclusive local economy. This initiative supports the integration of IApA into territorial planning, particularly in strategies that enhance climate resilience and economic opportunities for rural communities. It contributes to strengthening Entrepreneurial Rural Associations (ERAs) led by youth and women, linking them with local markets and financial mechanisms. Additionally, the strategy ensures that key IApA practices, such as agroforestry systems, water harvesting, and climate-smart coffee production, are effectively integrated into municipal agro-food programs, reinforcing sustainability and long-term impact.

- Two agreements were signed with the El Salvador Investment Fund (FIAES) to scale Agricultural Innovations for Climate Adaptation (IApA), promotion of Agroforestry Systems (SAF) for staple grains and promotion of Silvopastoral Systems, covering a total area of 1,314 hectares with a budget of US$ 1.23 million.

Panama

- CATIE initiated outreach activities to integrate the Institute of Agricultural Innovation of Panama (IDIAP) into the Agroforesta platform, focusing on silvopastoral systems and coffee agroforestry projects.

Mexico

- As in Panama, CATIE implemented outreach activities to integrate the Institute of Ecology in Xalapa, Mexico into the Agroforesta platform, aligned with CATIE's focus on silvopastoral systems and coffee agroforestry projects.

- CATIE promoted collaborative governance and research in Mexico through its contributions to the Red-SAM agroforestry network.

- The Center expanded its contributions in the areas of knowledge sharing and information dissemination and institutional visibility by promoting its technical publications and research outputs among key stakeholders.

(b) Caribbean

Organization of Eastern Caribbean States

The Organization of Eastern Caribbean States (OECS) and CATIE signed a Memorandum of Understanding (MoU), to promote sustainable agriculture and enhance food security in the Eastern Caribbean. The agreement was signed by OECS Director General Didacus Jules, CATIE Director General, and Dominica's Minister of Agriculture, Fisheries, Blue and Green Economy, Roland Royer. This partnership aims to strengthen agricultural research, education and extension services in the region. During a two-day visit to CATIE's campus in Turrialba, Costa Rica, the OECS delegation participated in various activities, including presentations on CATIE's work, a symbolic tree planting in the Botanical Garden, and visits to the International Cocoa and Coffee Collection, reinforcing their commitment to sustainable development in Latin America and the Caribbean.

Cuba

- The CIENPINOS project established strategic partnerships with key Cuban institutions to advance agroforestry and climate adaptation efforts. These included the Indio Hatuey Experimental Pastures and Forages Station (EEPFIH) and various local and governmental entities to promote sustainable practices. Additionally, cooperation agreements were signed with CATIE to enhance

OECS and CATIE signed an MoU to promote sustainable agriculture and food security.

agroecological initiatives and strengthen institutional collaboration within the country. These alliances aimed to integrate agroforestry with livestock production, contributing to food security and resilience in municipalities such as Viñales, La Palma, Cumanayagua, and Abreus.

Haiti

- In Haiti, Kafe Makaya, funded by Global Affairs Canada, has reinforced CATIE's leadership in agroforestry-based climate adaptation through its extensive outreach and capacity-building efforts. By working closely with local organizations such as FNGA and Ayitika, the project facilitated knowledge exchange among smallholder coffee producers in the Grand'Anse and Sud regions. Despite the country's challenging socio-political landscape, Kafe Makaya successfully established six model farms and trained 40 local technicians, ensuring the continued diffusion of agroecological best practices. The project also placed a strong emphasis on women's leadership in knowledge transfer, with 60% of its beneficiary farms being led by women. Through targeted institutional strengthening, the initiative has contributed to the long-term sustainability of Haiti's coffee sector while enhancing regional expertise in agroforestry management.

(c) Regional Actions and Results

The table below provides a summary of the main regional actions executed and the achievements for SO3.

Table 3. Summary of Key Regional Actions and their Results for SO3

Action	Region	Results
Integration Plan for IApA	Trifinio Region (Honduras, Guatemala, El Salvador)	Developed a plan integrating IApA for coffee, staple grains, and rainwater harvesting.
Tri-National Information System for HOSAGUA	Trifinio Region (Honduras, Guatemala, El Salvador)	Implemented a tri-national management system to enhance cross-border water governance.
Institutional Regulation for Agri-Food Program	Trifinio Region (Honduras, Guatemala, El Salvador)	Created regulations to promote IApA in coffee, staple grains, rainwater harvesting, and bio-inputs.
Expansion of Rural Associative Enterprises (ERAs)	Trifinio Region (Honduras, Guatemala, El Salvador)	Increased the number of ERAs from four to eight under the ESCALAR project.
AGROINNOVA Institutional Network	Trifinio Region (Honduras, Guatemala, El Salvador)	Established a network of 20 institutional partners, fostering agroforestry solutions and policy integration.
NAR Project - Regenerative Agriculture	Central America and Amazon	Mapped 181 businesses and 466 actors in regenerative agriculture, incubated 15 enterprises, and facilitated public-private dialogues.
One Health & AUSCAR Initiative	Peru, Ecuador, Brazil	Transferred nature-based solutions for crop health management to agricultural extension agencies and universities.
Regional Exchange on Wetland Ecosystem Services	Amazon Region (Colombia, Ecuador, Peru, Suriname, Brazil, Guyana)	Established partnerships and collaborations for the conservation of Amazonian wetlands.

(d) Trifinio region (Honduras, Guatemala and El Salvador)

CATIE's achievements in the Trifinio region include:

- Preparation of a plan for the integration of IApA related to coffee, staple grains, and rainwater harvesting.
- Implementation of a Tri-National Information System for the HOSAGUA network to improve its tri-national management.
- Preparation of an Institutional regulation for the Implementation of the Municipal Agri-Food Program, aimed at promoting the use of IApA in coffee, staple grains, rainwater harvesting, and bio-inputs.
- The ESCALAR project supported four Rural Associative Enterprises bringing the total to eight Rural Associative Enterprises (ERAs) by the end of 2024.
- Through the AGROINNOVA project over its four-year implementation period, the project established a robust network of 20 institutional partners, facilitating the exchange of technical expertise and the co-creation of agroforestry solutions adapted to the region's climatic challenges. Key institutions engaged in the project included government agencies such as the *Ministry of Agriculture and Livestock (MAG) in Costa Rica,* which played a critical role in integrating agroforestry practices into national agricultural policies; academic institutions like *Universidad Zamorano in Honduras,* which contributed research and training to build the capacity of young professionals in agroforestry systems; and farmer-led organizations such as *Cooperativa COMSA in Honduras,* which supported the practical implementation of agroecological coffee production models. Additionally, the project benefited from the technical expertise of international research institutions like the *World Agroforestry Centre (ICRAF),* which provided scientific knowledge to enhance agroforestry system resilience, and financial mechanisms such as *Fondo Nacional de Desarrollo Forestal (FONADEFO) in Costa Rica,* which facilitated investment in sustainable land-use practices.
- As part of its mission to scale regenerative agriculture models in the LAC region, the NAR (Regenerative Agri-Food Businesses) project, led by Avina and funded by IDRC, strengthened institutional and entrepreneurial ecosystems by fostering collaboration between businesses, investors, and policy-makers. Through extensive mapping efforts, the project identified 181 businesses and 466 actors engaged in regenerative agricultural practices across Central America and the Amazon, providing a foundation for regional scaling. By facilitating dialogues among public and private stakeholders, NAR promoted a shared vision for sustainable food systems and incubated 15 regenerative enterprises that serve as case studies for future investments.
- The One Health and AUSCAR initiative, developed in collaboration with CIRAD and research institutions in Peru, Ecuador, and Brazil, CATIE facilitated the transfer of this knowledge to agricultural extension agencies and universities, strengthening regional research capacity and promoting the adoption of nature-based solutions for crop health management. By fostering cross-institutional collaboration and knowledge-sharing.

(e) Amazonia

In the Amazonia region, CATIE's actions contributed to:

- The setting up of a regional exchange to evaluate the ecosystem services of selected wetlands in the Amazon and identify best practices for their conservation (CSF), ending with:
  - A partnership with Conservation Strategy Fund (CSF) to expand CATIE's area of action in Amazonian territories; and
  - Collaboration with staff from Ministries of the Environment, NGOs, and research organizations in six South American countries (Colombia, Ecuador, Peru, Suriname, Brazil, and Guyana) to jointly work on the conservation of Amazonian wetlands.

2.3.1 CATIE's Contribution to Knowledge Management and Information Sharing

In 2024, CATIE researchers participated in 64 scientific events across 11 countries, presenting 41 oral presentations, 18 posters, and 5 panel discussions. These contributions spanned across from Costa Rica, Panama, Honduras, Mexico, Colombia, Peru, El Salvador, Belgium, Germany, France to the Netherlands. Key events included the 18th North American Agroforestry Conference (Costa Rica, February), PCCMCA (Costa Rica, June), Congreso Científico Agropecuario Internacional FCA-PROMEGA (Panama, April), I Precongreso Latinoamericano One Health & One Welfare (Honduras, August), and the III Congreso Nacional de Investigación Forestal (Honduras, November). Research themes covered silvopastoral systems, greenhouse gas emissions monitoring (MRV), agroforestry productivity, climate change mitigation, watershed management, and biodiversity conservation. Presentations were delivered in Spanish and English, reflecting CATIE's strong international engagement and its leading role in sustainable agriculture, climate resilience, and ecosystem services research across Latin America and beyond. A list of these events is summarized in **Annex 4.**

2.4. SO4: Institutional Development and Modernization to enhance Effectiveness and Efficiency

CATIE has advanced its institutional modernization through digital transformation and administrative restructuring in order to optimize operational efficiency. The implementation of a centralized digital repository to improve project formulation and management processes, increased the system's efficiency to 80% in 2024. Integration of financial and operational tools within Softland has been prioritized to streamline administrative workflows, although full deployment remains pending.

Strategic partnerships have facilitated knowledge-sharing and institutional strengthening, with 150 alliances across academia, international cooperation, and the private sector. Institutional process simplification is a priority, aiming to reduce transaction costs and administrative burdens. While financial sustainability measures continue to be refined, the focus remains on enhancing internal capabilities and digital systems to support long-term institutional efficiency and resilience.

As part of the process of institutional modernization of CATIE, the organization embarked in 2025 to strengthen the capacity of several national offices to improve their overall operations and provide services more effectively to its clients at the country level. Its actions include upgrading the leadership and managerial capability of its offices in Belize, Ecuador, El Salvador, Honduras and the Dominican Republic which are likely to have significant improvements in their operations. The offices' staff were exposed to capacity building actions to upgrade their capabilities in project preparation, implementation and monitoring, in negotiations and resource mobilization and expanding their strategic partnerships. Furthermore, these efforts to strengthen the national offices have reinforced CATIE's presence and decentralized decision-making, ensuring more effective implementation and governance at the country level.

2.5. Achievements and Contributions of Education and Training

2.5.1 Postgraduate School

In 2024, a total of **90 students** (see **Annex 7**) successfully completed their academic programs at CATIE. These graduates were distributed across different learning modalities as follows:

- Presential Programs: 36 graduates (12 men, 24 women);
- Virtual Programs: 49 graduates (28 men, 21 women);
- Bimodal (Hybrid) Programs: 5 graduates (2 men, 3 women).

The distribution among the modalities reflects the growing importance of virtual education while maintaining strong engagement in in-person and hybrid learning models. Table 4 below shows the number of graduates by various academic programs at the Masters degree level.

Graduation of CATIE's 2023-2024 class.

Table 4. Graduates by Academic Program (Master's degree)

Program	Men	Women	Total
Agroforestry and Sustainable Agriculture (AAS)	3	6	9
Economics, Development, and Climate Change (EDCC)	3	5	8
Management and Conservation of Tropical Forests and Biodiversity (MCBTB)	6	11	17
Watershed Management and Integrated Management (Bimodal) (MCHB)	2	3	5
International Sustainable Tourism (MIST)	0	2	2
Agribusiness and Sustainable Markets Management (GANEMOS - Virtual)	17	13	30
Watershed Management (Virtual) (MCHV)	11	8	19
Total	42	48	90

Additionally, the institution strengthened its partnerships with other universities, such as the University of Idaho for a doctoral program. CATIE continues to rank as one of Costa Rica's leading universities in specific themes related to agriculture, agroforestry, natural resources and the environment, and makes a significant contribution to applied research and achieve excellence in academic and research contributions.

Appointment of a CATIE Student as Costa Rica's Deputy Minister of Youth

In October 2024, Miguel Arrieta Berrocal, a student in CATIE's International Master's Program in Economics, Development, and Climate Change, was appointed Deputy Minister of Youth by the President of Costa Rica. Arrieta, who graduate with the 2023-2024 cohort, has demonstrated a strong commitment to sustainable development and youth engagement. His appointment reflects the high academic and professional standards fostered at CATIE. As Deputy Minister, he will work on inclusive public policies and initiatives to expand opportunities for young people in Costa Rica, reinforcing CATIE's contribution to leadership development in the region.

Dr. Luis Ernesto Pocasangre, Director General of CATIE, with Miguel Arrieta Berrocal, now Deputy Minister of Youth in Costa Rica.

2.5.2 CATIE's Capacity Building Program

Throughout 2024, CATIE reinforced its commitment to knowledge transfer and capacity building by delivering a diverse range of training programs. These initiatives focused on professional development, continuing education and technical training, addressing key topics in biodiversity, sustainable agriculture and resource management, agroforestry, low-carbon livestock systems, water harvesting, and ecosystem-based adaptation.

The capacity building actions (see Annex 5) were conducted under different programs, including Professional Development and Continuing Education, ensuring a broad reach and accessibility. A variety of modalities was utilized, including in-person and virtual formats, allowing for greater flexibility and participation across different regions. Among the highlighted activities were:

- Water Harvesting Infrastructure Construction – a hands-on training session that focused on improving water conservation techniques.
- A course on Planning, Design and Data Analysis that targeted professionals seeking to enhance their research and data management skills.
- Training 270 youths through workshops in the Central American Dry Corridor and 52 rural entrepreneurs in Costa Rica, with 45% led by women, supported by Costa Rica's Development Banking System.

The training attracted a diverse group of participants from multiple countries, totaling more than 900 persons. The programs recorded active participation from both male and female attendees, with a conscious effort to ensure inclusivity in professional development opportunities. These efforts underline CATIE's pivotal role in developing regional leadership, sustainable practices, and transformative impacts on food systems, climate resilience, and rural development.

Table 5. Number of Participants in Training Programs 2024

Category	Total Participants
Male Participants	510
Female Participants	435
Total Participants	945

3. Resource Mobilization and Finances

3.1 Resource Mobilization and Strategic Alliances

The Office of Strategic Alliances (OAE) has the critical role of identifying Financing Opportunities (FOs) and provide support so that the technical units from different areas of the institution including the National Offices (Nos) can optimize on their efforts to achieve sustained growth in fundraising. In Latin America, the closest sources for funding correspond to multilateral and bilateral organizations, and more recently international foundations. Most of the funds are accessed through international public calls (calls requested). CATIE has benefited from these sources of funding as an institution widely recognized for its specialized work on developing adequate technology for the sustainability of agriculture, transformation of production, recovery of tropical landscapes, agroforestry development, preservation of germplasm and biodiversity, among others.

CATIE maintains alliances with research, teaching, development institutions and banks from different parts of the world. Among the most prominent of these are institutions such as AECID, IDB, ECLAC, CI, CIFOR-CIRAD, CTPT, CRS, FAO, FIAES, GIZ, IICA, IUCN, NESTLE, NRC, UNDP, WINROCK, WRI, UNEP, Bangor University, University of Idaho, Regional Institute for Research and Education Foundation of Sustainability and Resilience Sciences (SARAS), the University of Gothenburg, University of Oxford, Federal University of Mato Grosso do Sul Foundation, University of British Columbia, Colorado State University System and more recently with the 1890 Universities Foundation that brings together 19 land grant universities. Our partnerships have expanded also to include research and teaching institutions in Korea and China, and it entered into a partnership agreement with the University of Agricultural Sciences, Dharwad, India in 2024.

CATIE's Scientific-Technical strengths and its specialized knowledge and capabilities in specific themes have facilitated the institution to position itself for the mobilization of specific resources also such as accessing environmental funds from the IKI, the NAMA Facility, the GEF, the GCF and the FA, among others. In addition, through various alliances with institutions in developed countries, CATIE has obtained applied research funding within the framework of the SERVIR-USAID-NASA Hub, a key program that seeks to integrate space technologies to improve climate resilience in the Central American region.

The interest of regional banks such as CAF and CABEI to invest in agrobusinesses, as well as agricultural banks in the countries, open a new window of opportunities to mobilize resources. In this context, the experience with the Banca para el Desarrollo de Costa Rica (SBD), where CATIE was accredited as the Operating Agency of the SBD with the "ACTIVA-CATIE Program" has been invaluable. The objective is to create, launch and accelerate companies and startups, so that they have a validated, repeatable and scalable business model, through Operating Agencies. This program facilitates the creation of bridges with private sector investors. Along the same lines, the ESCALADA project is implementing business incubation calls for young people (18-29 years of age) in the Trifinio, has incubation partners PROMIPYME-CUNORI in Guatemala, FUNDER in Honduras, and CDMYPE-UNICAES in El Salvador.

In 2024, CATIE identified 273 funding opportunities (OF), leading to 35 proposals submitted and 23 successfully awarded (**see Annex 6**). The major projects and funds secured included:

- MAF-HN-MAF II (2024-2027): US$ 10.30 million;
- PARES-UNEP (2024-2026): US$ 2,86 million;
- SERVIR-USAID (2024-2029): US$ 8,29 million.

Foundations contributed US$ 0.58 million to CATIE's budget in 2024, supporting research chairs and postgraduate faculty positions. The key contributors included:

- Wallace Genetic Foundation: US $25,000;
- Southwest Airlines (Repurpose with Purpose Program): US$146,000;
- Luke Henry Terhaar Fund: US$ 10,000 annually for agroforestry students from the University of Minnesota; and
- The Miley González Scholarship Fund: US$ 5,587.88.

The work of the OAE in 2024 also included developing and managing 129 strategic partnerships, including:

- 31 with international cooperation agencies;
- 67 with donors, enabling resource mobilization;
- 7 with private sector entities, expanding collaborative opportunities with that sector.

Based on information provided in **Annex 8** and other actions executed, the OAE has contributed directly to the objectives of **SO4 - Institutional Development and Modernization.** The emphasis has been on improving resource mobilization and strengthening the institution's financial base through the following:

- Strengthening four national offices (Belize, Ecuador, El Salvador, Honduras) by enhancing the capacity of the Office's staff, particularly the Representatives to negotiate and mobilize resources through capacity building and equipping them with technical-financial support to prepare proposals.

- Technological modernization of its information system that facilitated improvement of its data bank and the use of digital tools (e.g. OneDrive) that allow optimizing project formulation and the management processes and updating of monitoring capabilities of the OAE. As a result, the OAE achieved 80% efficiency in project formulation on funding opportunities and management of its information base. These have been possible through initiatives to prepare new models of the information base for incorporation in the SOFTLAND system.

- A rationalization of the resource inflow process. Since mid-2024, the OAE has adopted a new classification of projects (small, medium and large) in which they were reorganized and prioritized to maximize resources and ensure strategic impact. Small projects were considered to have a budget of less than US $0.4 million, medium projects with budgets between US$ 0.4 million to US$ 2.0 million and large projects with a budget greater than US$ 2.0 million.

- The OAE advanced restructuring of CATIE's trust funds and integrated management systems to optimize resource use and reduce operational costs.

Financial sustainability remains a key challenge for CATIE over the medium and long-term. Based on information in previous years, the agreements are a minimum of one year and a maximum of 8 years, covering the short, medium and long-term period. In CATIE's history, agreements always contribute close to about 50% of the institution's financing turnover. A major factor affecting financing is the high reliance on small, often subsidized projects that has fostered the compartmentalization of research activities and technology scaling and reduced the Center's capacity to respond when opportunities arise to submit larger proposals.

The data in **Table 6** below gives a good overview of the current situation of external financial inflows. In the last seven years, total inflows amounted to US$165.41 million or an average of US$23.63 million per year. A total of 897 active Agreements were made in the period with the income from these of about was 49%. The average annual income from cooperation agreements was US$ 11.63 million, which corresponds to an average of 128 agreements, yielding an average of US$ 90,793.00 per agreement. The longer-term financial sustainability requires that CATIE pursues larger funding opportunities (large projects) as much as possible given that the transactions costs are lower and the efficiency level is higher for such projects compared to smaller ones.

Table 6. External Resource Inflows, Inflows from Agreements and Number of Agreements for the period 2018-2024

Year	Total Resource Inflows (US$ M)	From Agreements (US$M)	Number of Active Agreements
2018	24.07	12.15	125
2019	21.56	9.71	109
2020	18.71	9.23	111
2021	24.92	12.34	121
2022	25.09	12.46	126
2023	24.70	10.81	176
2024	26.36	14.74	129
Total	165.41	81.44	897
Average	23.63	11.63	128
Average Revenue Per Agreement			**US$ 90,793**

3.2. Finances

In 2024, the institution's financial management team underwent a renewal, with changes in key positions such as finance management, general services and other service units. These changes were necessary to address the various challenges presented during the year, including the stabilization of the institution's cash flow and mitigation of the effects derived from the appreciation of the colon against the dollar. This phenomenon, which reached approximately 20%, had a direct negative impact on CATIE, given that most of its income comes from dollars, while many of its expenses are made in colones (inputs, suppliers, workers' salaries and social charges).

Given these challenges, CATIE took a proactive approach, implementing a series of measures aimed at protecting financial stability without compromising the implementation of donor-funded projects or resorting to cuts in key personnel. Continuous monitoring of the institution's income and expenditures was established to prevent any impact on its operations. This also made it possible to invest some resources to improve the image of the CATIE campus, carrying out some infrastructure restorations that required immediate intervention.

Figure 2 shows the disaggregation of the total program budget of US$ 26.36 million among the four funds of CATIE. The largest was the Agreement Fund with 56%, followed by the core fund of 21%. The signing of new agreements in 2024 as indicated above, facilitated an increase in the program budget by 12.2% in 2024 (see Table 7). Both the amount programmed for the Basic Fund and the Institutional Fund declined by 1.9% and 60% respectively while there were increases in the programmed amount for the Commercial and Agreement Funds respectively.

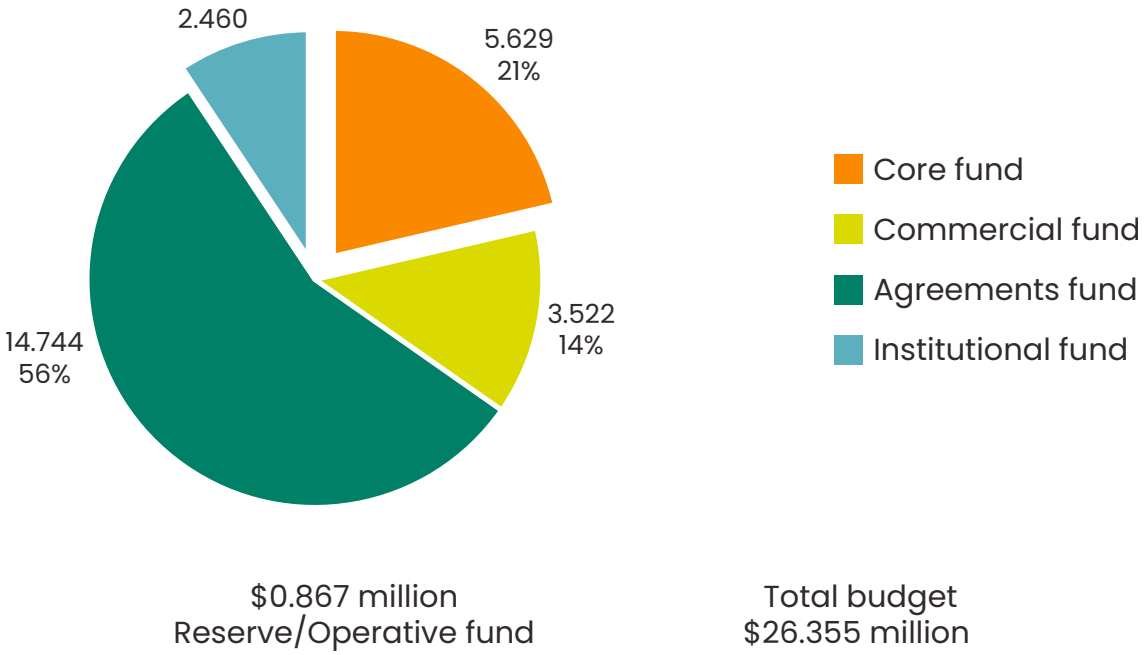


Figure 2 Program Budget 2024 (US$ million)

Despite the difficulties, CATIE's overall budget increased thanks to the signing of new agreements with important donors that have compensated for the departure of other donors, such as the Swiss Cooperation, which developed the Water Harvest project in Nicaragua.

Table 7. Comparison of the Budget Programmed for 2023 and 2024

Fund	2023	2024	Variation (%)
Basic	5,734	5,629	-1.87%
Commercial	2,428	3,522	31.06%
Covenants	11,051	14,744	25.05%
Institutional	3,940	2,460	-60.16%
Total	**23,153**	**26,355**	**12.15%**

The 2024 budget indicated an increase of 12% largely due to the Research and External Projection units, which represents $3.7 million in project funding from important partners such as USAID, GIZ, CABEI, UNDP, KOLFACI; likewise, commercial activities increased their revenues by $1 million due to greater demand for hospitality and food services to cater for visitors who participated in Congresses and face-to-face courses at the CATIE's headquarters. As for the overall financial results for 2024, they are expected to be positive, amounting to between $50,000 and $100,000 which will permit CATIE to maintain a favorable historical record.

It is important to mention the work on the new Financial Information System. In 2023, the transition from the old system to the new Softland system began, a process that continued through 2024. Full implementation and stabilization of the system is expected to be achieved by 2025. Despite this process of change, CATIE's financial management has maintained a priority focus on providing accountability to donors and the use of project resources.

4. Key Challenges for CATIE

CATIE continues to face several challenges to execute the programs and projects of its Strategic Plan. A few of these challenges are highlighted below.

- The rapid changes in the geopolitical situation as a result of political changes in the U.S. and the likely effects these would have on other countries around the globe poses a major challenge for CATIE, particularly with respect to resource mobilization and funding opportunities in the medium term. At a time when CATIE is adopting strategies to stabilize its financial base and support more financial sustainability, this challenge is likely to jeopardize these efforts. An urgent rethinking of the strategy for mobilizing resources need to be done, involving member countries, current donors and the exploring opportunities to develop alliances with more non-traditional donors.

- CATIE needs to concentrate more on developing innovations and technologies that are solutions-oriented to addressing problems and constraints of farmers at the production level. More applied research is needed that can provide impactful benefits to producers and communities, and contribute to enhancing the sustainability of livelihoods in the rural economy.

- Postgraduate education needs some reengineering of the model in order to attract more students to the programs. The cost of a Master's Program is relatively high and this affects the quantum of students entering the institution. Despite CATIE's good credibility in providing training in key themes in the sector and the environment, the high cost of the program is a disincentive to many governments and students. More student scholarships and addressing the cost of the Masters and Doctoral education to a more acceptable level are needed in order to increase the student intake and improve the economic and financial viability of postgraduate education.

- One of CATIE's objective is to upgrade its postgraduate faculty to professors having a doctoral degree. Its faculty needs to be on the cutting edge in the themes that CATIE works and this requires an upgrade in the training of its faculty. However, this would only be achieved if funding is available, either through scholarships and other forms of financial support to achieve a doctoral degree. Collaborating with other universities abroad for its faculty to pursue a doctoral agree is one option that CATIE needs to pursue more vigorously.

ANNEXES

Annex 1. Summary of Key Achievements and Results in 2024

No.	SO Contributed To:	Indicators	Target 2024	**Verification** Achieved by 2024
1	Transformations for Impact in Inclusive Green Development (IGD) through the implementation of Knowledge Management Platforms for scaling innovations and best practices, following the Theory of Change of the PEI 2021-2030: General Directorate, Executive Committee, National Offices (SO1)	Number of thematic Knowledge Management Platforms (KMPs) developed and operating at the regional or national level	6	A
2		Number of thematic Communities of Practice organized and operating at the regional or national level	5	B
3		Percentage (%) of participation of youth, women*, and men in scaling innovation projects implemented by CATIE and its partners *Percentage is based on women.	50	C
4		Value of resources mobilized from banking institutions or other financing sources for scaling innovations	3	C
5		Number of countries implementing innovations with a “One Health” approach, disaggregated by: i) Emission reduction, ii) Increased resilience to climate change, iii) Biodiversity conservation improvements, and iv) Food and nutrition security improvements	4	A
6	Knowledge generation for inclusive green development: DIDVI	Number of publications disaggregated by indexed scientific journals, technical articles, and theses	115	A
7		Number of water harvesting structures established in different territories in the Central American Dry Corridor	3215	B
8		Number of producers implementing good agricultural practices for efficient water use	3060	A
9		Number of producer organizations strengthened in the Dry Corridor, Amazon, and other strategic areas.	70	B
10		Number of extensionists trained in best practices for water resource management, soil conservation, or water harvesting in the region.	200	A
11		Number of banking institutions financing nature-based solutions proposed by CATIE	3	D
12		Number of regional or national partner institutions validating best practices proposed by CATIE	8	A

No.	SO Contributed To:	Indicators	Target 2024	**Verification** Achieved by 2024
13	Training of leaders for IGD: Directorate of Education (DivEdu): Graduate School and Training Unit (SO2)	Number of graduates from the Graduate School, disaggregated by Gender, Ethnicity, Nationality, and Study Program	52	A
14		Number of people trained, disaggregated by Gender, Ethnicity, Nationality, and Training Program	17,111	C
15		Number of master's programs incorporating the blended learning model (in-person and distance learning), disaggregated by synchronous and asynchronous processes	4	D
16		Number of diploma programs that, in a modular format, progress towards professional and eventually scientific master's degrees	2	C
17		Number of countries/institutions with formal agreements providing scholarships for postgraduate studies at CATIE	4	B
18		Implementation level and effectiveness of the Education Division Information System (SIDE), including the application for training registration and trained individuals	100	D
19	Global partnerships and resource mobilization for impact in IGD (Directorate of Global Partnerships, Foundations, and Green Businesses) - SO3 Institutional development and strengthening for IGD: Directorate of Finance and Corporate Services	Number of regional or national development and scaling projects in CATIE's project portfolio, disaggregated by: in management, under execution, and completed	25	A
20		Number of CATIE strategic alliances, disaggregated by type of alliance: international cooperation, academia, donors, private sector	150	B
21		Amount in US$ and percentage contribution of CATIE's Foundations to the general budget of the Center	600,000	B
22		Amount in US$ of contributions from CATIE's Green Businesses to the general budget of the Center	2.54 mil.	F
23		Efficiency level in percentage (%) of the support repository for project formulation and management	80	A
24		Percentage (%) of the new ERP system (SoftLand) effectively functioning	100	B
25		Number of National Offices implementing and operating the new ERP (SoftLand) effectively	5	C
26		Number of male and female staff trained in social inclusion and gender topics	1,765	F

Explanation of the grades used in Column 4:

- **A** = Achieved (implies that the action was fully implemented and the goal(s) fully achieved.
- **B** = 75% to 99% of the goal was achieved with the action fully implemented.
- **C** = 50% to 74% of the goal achieved with execution of the action delayed.
- **D** = less than 50% of the goal achieved due to various reasons (delay in execution, etc.).
- **E** = Action that was programmed in POA to be executed was cancelled.
- **F** = Information on the result of the action not provided

Annex 2. Summary of CATIE Researchers and Their Publications 2024

Author	Title	Publication Type	URL
Benegas, L	Evolution of Approaches on Water Resources Management and Integrated Watershed Management Planning: Complement, Synergies, and the Way Forward, In: Aqua Vitae	Book Chapter	DOI : 10.1007/978-3-031-57731-4
Carlier J., De Lapeyre de Bellaire L., Abadie C., Chillet M., Carval D., Miller R., Thangavelu R., Ngando Essoh J	The Sigatoka leaf disease complex in banana. In : Achieving sustainable cultivation of bananas	Book Chapter	https://doi.org/10.19103/AS.2022.0108.01
Rios, N	Rural technologies and practices in Ancient Peru	Book Chapter	nan
Abadie C, Corrales BE, Decouture B, Zaffaroni M, Rey JF, Guzmán J, Valverde E, Chaves N and Rimbaud L.	Designing innovative spatial strategies to control black leaf streak disease of banana through modelling approach	journalArticle	https://doi.org/10.62498.ARTC.2425
Andrade HJ, Vega A, Martínez-Salinas A, Villanueva C, Jiménez-Trujillo JA, Betanzos-Simon JE, Pérez E, Ibrahim M and Sepúlveda L CJ	The carbon footprint of livestock farms under conventional management and silvopastoral systems in Jalisco, Chiapas, and Campeche (Mexico)	journalArticle	https://doi.org/10.3389/fsufs.2024.1363994
Anggy Lusanna Gutiérrez Ortiza, Federico Bertia, William Solano Sánchezb, Luciano Navarinic,,	Distribution of p-coumaroylquinic acids in commercial Coffea spp. Of different geographical origin and in other wild coffee species	journalArticle	https://doi.org/10.1016/j.foodchem.2019.02.039
Argueta, Bertha; Mason, Nathaniel; Steadman, Shandelle; Robertson, Michai; Watson, Charlene; Imbach, Pablo; Zamora, Andrea; Bouroncle, Claudia; Skrinjaric, Tea	Making finance flow to adaptation in small-scale agrifood systems. The role of the third long-term goal of the Paris Agreement	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12643
Arriola-Valverde, Sergio; Rimolo-Donadio, Renato; Villagra-Mendoza, Karolina; Chacón-Rodriguez, Alfonso; García-Ramirez, Ronny; Somarriba, Eduardo	A Comparative Study of Deep Learning Frameworks Applied to Coffee Plant Detection from Close-Range UAS-RGB Imagery in Costa Rica	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12711
Avalos, Ileana; Sepúlveda, Claudia; Betanzos, Juan Edduardo; Jiménez-Trujillo, José Antonio; Pérez, Edwin; Escobedo, Adriana	Institutional arrangements in the promotion of sustainable livestock: an approach from the case of beef and dairy cattle production chains in Jalisco, Chiapas, and Campeche	journalArticle	https://doi.org/10.3389/fsufs.2024.1310507
Bindi, Greta; Smith, Andrew; Crisafulli, Paola; Solano Sánchez, William; y otros más	Mapping the distribution of bioactive compounds and aroma/ flavour precursors in green coffee beans with an integrated mass spectrometry-based approach	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12659

Author	Title	Publication Type	URL
Boran, Idil; Pettorelli, Nathalie; Köberle, Alexandre C.; Imbach Bartol, Pablo Andrés	Making Global Climate Action work for nature and people: Priorities for Race to Zero and Race to Resilience	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12658
Casanoves, Fernando; Hernández-Nuñez, Héctor Eduardo; Suárez, Juan Carlos; Andrade, Hernán J.; Sánchez Acosta, José Ramiro; Duarte Núñez, Ramiro; Gutiérrez, David Ricardo; Gutiérrez, Gustavo Adolfo; Gutiérrez-Montes, Isabel	Interactions between climate, shade canopy characteristics and cocoa production in Colombia	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12628
Casanoves, Fernando; Villalaz-Pérez1, Jhon A.; Villarreal-Núñez, José E.; Santo-Pineda, Adolfo; Gutiérrez-Lezcano, Abiel; Merino, Agustín	Cadmium concentration in cocoa beans produced in agroforestry systems of small producers in Panama	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12627
Cassio Pinheiro Edelstein 1*, Marney E. Isaac 2,3, Luis Orozco-Aguilar 1, Felipe Peguero 4,5, Diego Delgado-Rodríguez 6 and Rolando H. Cerda 1	Effects of functional diversity on ecosystem services in cocoa agroforestry systems in Costa Rica	journalArticle	doi: 10.3389/fsufs.2024.1507555
Dinorah Lima-Rivera, Ma. Betsaida Anell-Mendoza, Andrés Rivera-Fernández, Alejandro Salinas-Castro, Carlos Cerdán, Daniel López-Lima, Luc Villain	Host status of plants associated to coffee shady agroecosystems to Meloidogyne paranaensis.	journalArticle	https://link.springer.com/article/10.1007/s41348-024-00882-5
Fariña, Santiago, F; Vigil, O; Candioti, F; Villanueva, C; Sánchez, W; Moscoso, C; Cajarville, C; Charlón, V; Urbina, L; Guacapiña, A; Chirife, S; Herrera, D; Stirling, S.	Milk production systems in Latin America and the Caribbean: Biophysical, socio-economic, and environmental performance.	journalArticle	https://doi.org/10.1016/j.agsy.2024.103987
Fariña, Santiago; Vigil Moreno, Osiris; Candioti, Francisco; Villanueva, Cristóbal; Sánchez Ledezma, William; Moscoso, Cristian J.; Cajarville, Cecilia; Charlón, Verónica; Urbina Abaunza, Luis; Guacapiña Viteri, Antonio; Chirife, Silvia; Herrera, Domiciano; Stirling, Sofía	Milk production systems in Latin America and the Caribbean: Biophysical, socio-economic, and environmental performance.	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12642
Finegan, Bryan; Delgado, Diego; Hernández Gordillo, Alba Lorena; Zamora Villalobos, Nelson; Nuñez Flórez, Rafael; Díaz Santos, Fabio G.; Vílchez-Mendoza, Sergio	Multi-dimensional temperature sensitivity of protected tropical mountain rain forests	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12610
Gutiérrez Garcia, Gustavo Adolfo; Gutiérrez Montes, Isabel A.; Suárez Salazar, Juan Carlos; Casanoves, Fernando; Gutiérrez Suárez, David Ricardo; Hernández-Núñez, Héctor Eduardo; Butler Flora, Cornelia; Sibelet, Nicole	Contribution of local knowledge in cocoa (Theobroma cacao L.) to the well-being of cocoa families in Colombia: a response from the relationship	journalArticle	https://repositorio.catie.ac.cr/handle/11554/12703
Hearne, B; Madrigal-Ballestero, R	Surface water quality in Costa Rica: new initiatives and challenges	journalArticle	http://dx.doi.org/10.2166/washdev.2024.144

Annex 3. Summary of Theses by CATIE's Students 2024

Author	Title	URL
Arrieta Berrocal, Miguel	Arreglos institucionales para la promoción de ganadería sostenible desde una perspectiva de economía circular en Costa Rica.	https://repositorio.catie.ac.cr/handle/11554/12721
Ávila Aragón, Arnoldo	Plantas silvestres subutilizadas para la seguridad alimentaria y nutricional de la zona de vida bosque tropical seco de Costa Rica	https://repositorio.catie.ac.cr/handle/11554/12630
Camejo Rodríguez, Dianet	Caracterización socio-productiva de la crianza caprina en dos municipios de Cienfuegos	https://cienpinos.catie.ac.cr/wp-content/uploads/2024/11/Dianet-Camejo-Rodriguez.pdf
Carpio-Quintana, Diadelys	Acciones de innovación en la transición agroecológica, el enfrentamiento a la degradación de los suelos y la seguridad alimentaria en la finca La Lima	https://cienpinos.catie.ac.cr/wp-content/uploads/ 2024/11/Diadelys-Carpio-Quintana.pdf
Castro Molina, Fiorela Alejandra	Análisis del potencial de las alianzas público – privadas para fortalecer la gestión de las Asociaciones Administradoras de Acueductos Comunales (ASADAS) vinculadas a la Liga Comunal del Agua de Guanacaste, Costa Rica	https://repositorio.catie.ac.cr/handle/11554/12702
Charles Philippe, Edes	Análisis comparativo de las políticas de gestión de los recursos naturales en las dos partes haitiana y dominicana de la Cuenca del Río Pedernales	https://repositorio.catie.ac.cr/handle/11554/12651
Civeira-González, Elianet	El perfeccionamiento agroecológico del escenario agroproductivo de la finca Casablanca.	https://cienpinos.catie.ac.cr/wp-content/uploads/2024/12/Elianet-Civeira-Gonzalez.pdf
Collado-Ferrera, Felipe Ernesto	Caracterización de las fincas dedicadas a la producción caprina en el Circuito Sur de Cumanayagua.	. https://cienpinos.catie.ac.cr/wp-content/uploads/2024/12/Felipe-Ernesto-Collado-Ferrera.pdf
Dias da Silva, Emerson; Escobedo Aguilar, Adriana	Análisis de la cadena de producción de cacao en el Municipio de Jaru, Provincia de Rondônia, Brasil	https://repositorio.catie.ac.cr/handle/11554/12667
González Aguirre, Lipsa Yuniet	Cosecha de agua, una innovación para la adaptación de la agricultura ante el cambio climático en el corredor seco nicaragüense: análisis de su aptitud para el escalamiento	https://repositorio.catie.ac.cr/handle/11554/12636
Guerrero, Harold Isaías; Peguero, Felipe	Eficiencia económica-ambiental de fincas ganaderas bovinas en Mesoamérica	https://repositorio.catie.ac.cr/handle/11554/12686
Guzmán Pérez, Rosanna	Comunidad de aves y patrones de furgivoría en Stenocereus heptagonus (L.) Mottram en el bosque seco tropical del Parque Nacional Jaragua	https://repositorio.catie.ac.cr/handle/11554/12620

Author	Title	URL
Horta-Aguilar, Jessica	La conservación de la biodiversidad natural: una propuesta de soluciones basadas en la naturaleza y adaptación al cambio climático en la finca Paso del Toro.	https://cienpinos.catie.ac.cr/wp-content/uploads/2024/12/Jessica-Horta-Aguilar.pdf
Jarquín Díaz, José René	Análisis de riesgo climático basado en cadena de impacto: Estudio de caso de un paisaje ganadero del Corredor Seco de Nicaragua	https://repositorio.catie.ac.cr/handle/11554/12676
Lara Damken, Ireana	Fortalecimiento de la gobernanza del fuego en el Área de Conservación Tempisque, Costa Rica, como estrategia de prevención de incendios	https://repositorio.catie.ac.cr/handle/11554/12705
Leguizamo Orjuel, Martha Patricia	Análisis del modelo organizacional de ASOCHIP para la conservación del bosque en el territorio del Bajo Calima en Buenaventura, Valle del Cauca, Colombia	https://repositorio.catie.ac.cr/handle/11554/12648
Lopez Monserrate, Enrique A.	Productive and Financial Analysis and cost evaluation of the technological practices promoted by PROMEGAN in the Dominican Republic: Three case studies	https://repositorio.catie.ac.cr/handle/11554/12699
Márquez Salazar, Boris Fernando	Propuesta de optimización de insumos en la producción de pollos de engorde para pequeños productores del departamento de la libertad, en el Salvador, C.A.	https://repositorio.catie.ac.cr/handle/11554/12645
Moreira-Varela, Aliuska	El aprovechamiento de residuos de la mini-industria La Guajira, una alternativa en la producción de alimentos en la CPA 26 de julio	https://cienpinos.catie.ac.cr/wp-content/uploads/2024/12/Aliuska-Moreira-Varela.pdf
Navarro Garzon, Jairo Andres	Propuesta de plan de fortalecimiento para los eslabones productivos de la cadena de piña en Cocoillo en Lloró – Chocó	https://repositorio.catie.ac.cr/handle/11554/12675

Annex 4. List of Congresses, Seminars and Other Knowledge Sharing and Networking Activities In which CATIE's Researchers Participated in 2024

Authors	Title	Event	Modality	Place
Yefrin Valladares; Laura Benegas; Claudia Sepúlveda y William Watler	Analysis of the physical environment (water and soil) based on land uses associated with riparian zones under the One Health approach in La Mula stream sub-basin, Arenal-Tempisque Irrigation District (DRAT), Costa Rica.	18th Nort American Agroforestry Conference	Póster	Costa Rica
Andrade, H; Vega, A; Martínez-Salinas, A; Villanueva, C; Jiménez-Trujillo, JA; Betanzos-Simon, JE; Pérez, E; Ibrahim, M; Sepúlveda, C.	Carbon footprint in livestock farms with conventional management and silvopastoral systems in Jalisco, Chiapas and Campeche (México).	18th Nort American Agroforestry Conference	Póster	Costa Rica
Casasola, F, Garzón, S, Merino, J; Bermeo, J, Sepúlveda, C; López, O, Pasaca, C, Salvador, J, Álvarez, C, Guevara, T y Moyano, A.	Promoting the adoption of technologies in livestock farms and generating lessons through the methodological approach of field schools for the scaling of similar experiences in territories dominated by livestock.	18th Nort American Agroforestry Conference	Póster	Costa Rica
Yusseff Dominguez, Cristobal Villanueva, Andres Vega, Claudia Sepulveda	Propuesta de zonas pilotos y sistemas de monitoreo, reporte y verificacion para la ganadería en Panamá	18th Nort American Agroforestry Conference	Póster	Costa Rica
Carolina Guatusmal, Cristobal Villanueva, Andres Vega, Claudia Sepulveda	Efecto de la intensificación productiva en las emisiones de gases efecto invernadero de los sistemas ganaderos en República Dominicana	18th Nort American Agroforestry Conference	Póster	Costa Rica
Yusseff Dominguez, Cristobal Villanueva, Andres Vega	Intensificación sostenible en fincas ganaderas de Panamá: Reducción de emisiones de GEI	Congreso cientifico Agropecuario Internacional FCA-PROMEGA (Universidad de Panamá)	Póster	Panamá
Yusseff Dominguez, Cristobal Villanueva	Sistema de monitoreo, reporte y verificación para la ganaderia en Panamá	Congreso cientifico Agropecuario Internacional FCA-PROMEGA (Universidad de Panamá)	Póster	Panamá
Carolia Guatusmal, Cristobal Villanueva, Andres Vega	Estado productivo y de emisiones gases efecto invernadero en sistemas ganaderos en República Dominicana	Congreso cientifico Agropecuario Internacional FCA-PROMEGA (Universidad de Panamá)	Póster	Panamá
Villanueva, C; Vega, Andrés; Zamora, L; Valenciano, E; Muschler, R; Vega, Alberto.	ESCALAMIENTO DE TECNOLOGÍAS NAMA EN FINCAS GANADERAS DE COSTA RICA	PCCMCA	Póster	Costa Rica

Authors	Title	Event	Modality	Place
David, K; Villanueva, C; Ibrahim, M; Pezo, D; Quiróz, R.	EVALUACIÓN PRODUCTIVA DEL PASTO CAYMAN (UROCHLOA HÍBRIDO) EN SISTEMAS SILVOPASTORILES EN COSTA RICA	PCCMCA	Póster	Costa Rica
Carolina Guatusmal, Marc Chiappero, Lucas Domínguez, Omar Rodriguez, Cristóbal Villanueva, Claudia Sepúlveda	DISEÑO DE SISTEMA ESTIMACIÓN DE EMISIONES EN FINCAS GANADERAS DE REPÚBLICA DOMINICANA Y PANAMÁ	PCCMCA	Póster	Costa Rica
Cristobal Villanueva	APORTE DE LOS SISTEMAS SILVOPASTORILES MEJORADOS EN LA GENERACIÓN DE SERVICIOS ECOSISTÉMICOS	PCCMCA	Póster	Costa Rica
Claudia Sepúlveda	Transformando el sector ganadero Hondureño en una economía baja en carbono	PCCMCA	Ponencia	Costa Rica
Cristobal Villanueva	Relación del nivel tecnológico y emisiones de GEI en fincas ganaderas de Panamá y República	PCCMCA	Ponencia	Costa Rica
Ávalos, I, García, E; Guevara, T.	Plataforma Nacional de Ganadería Sostenible de Honduras: Gobernanza y Articulación	I Precongreso Latinoamericano One Health & One Welfare Honduras 2024	Ponencia	Honduras
Juan Carlos Flores, J.C. Jut Solórzano, B. Trejos, M. Granadino	Resiliencia del Ecosistema de Pino ante la Infestación del Gorgojo Descortezador en Honduras: Influencia de Variables Biofisiográficas en la Recuperación	III Congreso Nacional de Investigación Forestal, Áreas Protegidas y Vida Silvestre	Ponencia	Honduras
Juan Carlos Flores, Bernardo Trejos, Marco Granadino, Alexandra Manueles	Sistematización de la Forestería Comunitaria en La Muskitia Hondureña: Fortalecimiento de Capacidades Técnicas y Administrativas en Grupos Agroforestales	III Congreso Nacional de Investigación Forestal, Áreas Protegidas y Vida Silvestre	Ponencia	Honduras
Cristobal Villanueva	Contribución de los sistemas silvopastoriles en la reducción de emisiones de gases de efecto invernadero.	Congreso internacional de sistemas silvopastoriles (SSP) y biotecnologías reproductivas.	Ponencia	Perú
Cristobal Villanueva	Feasibility study of a MRV methane-oriented pilot project in Panamá and Dominican Republic	IG3IS Webinar Series (Q3-Q4, 2024)	Ponencia	LAC
Edwin García, Arlene LópezSampson, Norvin Sepúlveda, Eduardo Somarriba	The contribution of live fences to livelihoods, carbon storage and biodiversity conservation in cattle ranches in Honduras	18th Nort American Agroforestry Conference	Ponencia	Costa Rica

Authors	Title	Event	Modality	Place
Ngo Bieng, M.A., DelgadoRodríguez, D., VilchezMendoza, S., LópezSampson, A., García, E., Sepúlveda, N. y Somarriba, E.	DIVERSIDAD ARBÓREA EN UN PAISAJE AGROPECUARIO TÍPICO DE HONDURAS	III Congreso Nacional de Investigación Forestal, Áreas Protegidas y Vida Silvestre	Póster	Honduras
Martínez-Salinas, A., Harrison, R.D., Casanoves, F.; García, E., Zúniga, I., Ordóñez. O., Somarriba, E.	VARIACIÓN DE COMUNIDADES DE AVES EN PAISAJES DOMINADOS POR LA GANADERÍA EN HONDURAS	III Congreso Nacional de Investigación Forestal, Áreas Protegidas y Vida Silvestre	Póster	Honduras
Edwin García	Valoración económica y ambiental de las cercas vivas en un paisaje agropecuario típico de Honduras	I Precongreso Latinoamericano One Health & One Welfare Honduras 2024	Ponencia	Honduras
Roger Madrigal-Ballestero	Volumetric pricing in rural water systems	EAERE. European Association of Environmental and Resource Economics	Ponencia	Belgica
Roger Madrigal-Ballestero	Community-based approaches for drinking water provision in Central America	Ostrom Workshop Conference, Indiana University	Ponencia	Estados Unidos
Roger Madrigal-Ballestero	Ecosystem services in urban settings	International Real Estate Conference-Paris	Ponencia	Francia
de Melo E, Cervantes MJ, Muschler RG	Insumos para una Caficultura Regenerativa	Congreso Científico Café CATIE - 75 Años	Poster	Costa Rica
Benegas, L	Los desafíos de la sostenibilidad en la gestión de cuencas bajo la perspectiva regional en manejo de cuencas	1er Congreso Nacional de Cuencas Hidrográficas de Panamá	Ponencia	Panamá
Eduardo Pacay	Impulsando seguros y finanzas resilientes ante el Cambio Climático- Accesibles para todas las personas	Foro Latinoamericano de Inversión de Impacto Centroamérica y el Caribe (FLIICAC)	Panel	Costa Rica
Corrales, Eduardo; Di Rienzo, Julio; Casanoves, Fernando	Use of mixed non-linear models in the estimation of leaf litter decomposition rates	18th Nort American Agroforestry Conference	Póster	Costa Rica
Vargas-Rojas, Jorge Claudio; Vargas-Martínez, Alejandro; Corrales-Brenes, Eduardo	Modelación de datos correlacionados en el tiempo: un ejemplo aplicado en el campo de la agronomía	XVI Jornadas de Análisis Estadístico	Ponencia	Costa Rica
Rolando Cerda	Cacao genetic resources and agroforestry experience of CATIE for productivity, pest management, and adaptation/mitigation	Cocoa roundtable, Germany	Panel	Germany
Rolando Cerda, CATIE; Adriana Arciniegas, CATIE; Mariela Leandro, CATIE; Bénédicte Rhoné, CIRAD/ CATIE; Luis Orozco, CATIE	The Cacao International Collection of CATIE: Conservation, Breeding and Opportunities for Joint Research	Cocoa roundtable, Germany	Poster	Germany

Authors	Title	Event	Modality	Place
Luis Orozco Aguilar, Arlene Lopez Sampson, Rolando H. Cerda, Oscar Ramirez Argueta, Javier Diaz Matute, Juan Carlos Suarez, Johanna Rüegg, Stephane Saj, Argenis Mora Garces, Eliana Baez Daza, Jairo Rojas Molina, Yeirme Jaimes Suarez, Genaro Andres Agudelo, Olivier Deheuvels + 20 Authors from across LAC	CacaoFIT: The Network of Cacao Field Trials in Latin America and The Caribbean	Cocoa roundtable, Germany	Poster	Germany
Rolando Cerda, Adriana Arciniegas, Benedicte Rhone, Mariela Leandro, Luis Orozco	Cacao collection and multilocal essays for cacao breeding	Minisimposium on cacao between Wageningen University y CATIE	Ponencia	Netherlands
Rolando Cerda	Productivity in a network of agroforestry systems in Latin America and The Caribbean	Minisimposium on cacao between Wageningen University y CATIE	Ponencia	Netherlands
Luis Orozco Aguilar, Arlene López Sampson, Rolando H. Cerda, Eduardo Somarriba, + 25 researchers from 10 countries	CacaoFIT: the network of Cacao Field Trials in Latin America and the Caribbean	Minisimposium on cacao between Wageningen University y CATIE	Ponencia	Netherlands
Rolando Cerda	Retos de la caficultura regional y salvadoreña para incrementar productividad y sostenibilidad	Primer Encuentro Cientifico de Caficultura en El Salvador, Octubre, 2024	Ponencia	El Salvador
Rolando Cerda, William Solano	Evaluación de Híbridos de Café en la región: retos y perspectivas	Congreso Científico. 75 aniversario de la colección de café. CATIE	Ponencia	Costa Rica
Elias de Melo	Investigaciones y Resultados de la Investigación de Café en CATIE: Lecciones Aprendidas sobre Salud de Suelos y Producción Sostenible de Café.	Congreso Científico. 75 aniversario de la colección de café. CATIE	Ponencia	Costa Rica
Luc Villain	Estudios sobre la Reducción de Pesticidas en la Producción de Café en Centroamérica: Retos y Oportunidades	Congreso Científico. 75 aniversario de la colección de café. CATIE	Ponencia	Costa Rica
Adriana Arciniegas	¿Pertenecer o no a la lista del anexo C de la Organización Internacional del Cacao (ICCO)?	Serie veraniega de seminarios Cacaoteros para Latinoamérica y El Caribe	Ponencia	Costa Rica
Elias de Melo	Interacciones agroecológicas, rendimiento y calidad en cafetales en pleno sol y sombra	Coffee World Summit 2024	Ponencia	Costa Rica
Luc Villain	Avances del proyecto ECOFFEE	Coffee World Summit 2025	Ponencia	Costa Rica
Luis Orozco et al	CACAOFIT, la red de ensayos agroforestales de cacao de Latinoamérica y su contribución a la sostenibilidad en la región	Tercer Congreso Internacional Theobroma para la Paz	Ponencia	Colombia

Authors	Title	Event	Modality	Place
Benedicte Rhone	Breeding for agroforestry systems: a long-term program at CATIE to improve sustainable cocoa production in Central America	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	poster	Costa Rica
Eduardo Somarriba and Hannah Hemmelgram	Overview of tropical and temperate Agroforestry in the Americas.	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Cassio Edelstein	Effect of functional diversity on ecosystem services in cocoa agroforestry systems.	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Luis Orozco	CacaoFIT: the Network of Cacao Field Trials in Latin America and its contribution to sustainable cacao farming in the region	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Rolando Cerda	Cacao productivity in modern agroforestry systems: results from their establishment to their plenty production stage	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Eduardo Somarriba	ShadeMotion software: tree shade patterns in agroforestry systems	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Arlene Lopez	Local arrangements in rural landscapes in the Nicaragua-Honduras sentinel landscape: the cases of a local farmer organization and a multi-actor platform	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Luc Villain and Arlene Lopez	Side event: AGROFORESTA platform	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
William Solano	Ensayos de mejoramiento genético en Centroamérica	Primer Encuentro Cientifico de Caficultura en El Salvador, Octubre, 2024	Ponencia	El Salvador
William Solano	El estado y avances de conservación de la colección de café del CATIE	Running and Funding an Article 15 Genebank: Challenges & Opportunities	Panel	Dubai

Authors	Title	Event	Modality	Place
Rolando Cerda	CLONES MEJORADOS DE CACAO: DESEMPEÑO AGRONÓMICO-AGROFOREST-FINANCIERO Y PERSPECTIVAS DE INVESTIGACIÓN EN CENTROAMÉRICA	LXVI Reunión Anual del PCCMCA	Ponencia	Costa Rica
William Solano	Avances del CATIE en mejoramiento genético de café	LXVI Reunión Anual del PCCMCA	Ponencia	Costa Rica
Tania Sanchez, Ismael Hernandez	Potencialidades de los sistemas silvopastoriles para la producción bovina en Cuba.	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	Ponencia	Costa Rica
Ismael Hernandez	Pastoreo de cabras y cerdos criollos en bosques naturales en Cuba.	North American Agroforestry Conference: Sharing research and best practices between temperate and tropical agroforestry	poster	Costa Rica
Abadie C, Corrales BE, Decouture B, Zaffaroni M, Rey JF, Guzmán J, Valverde E, Chaves N and Rimbaud L.	Designing innovative spatial strategies to control black leaf streak disease of banana through modelling approach	ACORBAT	poster	Mexico
de Melo, Elias; Cervantes MJ, Muschler RG	Insumos para una Caficultura Regenerativa	Congreso Científico de Café - 75 Aniversario de la Colección de Café del CATIE	Poster	Costa Rica
Muschler RG	Inputs by CATIE: Agrobiodiversity for Food System Transformation	Workshop on Agroecological Crop Protection Initiative ACPI-ACROPICS (INRAE et al), Zagreb Croatia	Ponencia	Croatia
Muschler RG	Agrobiodiversity for Food System Transformation in Latin America & the Caribbean	Global Webinar Series organized by ACPI-ACROPICS	Webinario	Global
Muschler RG	Contribuciones del Programa TRANSFORMA-INNOVA para la mitigación, adaptación y biodiversidad	4to Encuentro Regional de Proyectos IKI	Panelista	Costa Rica

Annex 5. Example of Training Events Executed by CATIE in 2024

Activity Name	Country	Number of participants	Modality
Capacitación institucional de lenguaje inclusivo y construcción de indicadores con enfoque de Género	Honduras	12	Presencial
Modelos de estadística avanzada y análisis multivariado de experimentos	Guatemala	34	Presencial
Invertir en regeneración mientras regeneramos las inversiones en América Latina	Latinoamérica	135	Virtual
Reunión con el equipo de MAF-Ganadería-Hn para exponer los avances del Proyecto y con las autoridades de BANHPROVI, que manejaran el componente financiero del proyecto	Honduras	15	Presencial
Taller: Manejo de un SAF bajo un modelo de producción agrosilvopastoril caprina con enfoque en economía circular con estudiantes de La Organización Amigos para Las Américas	Estados Unidos y Latinoamérica	26	Presencial
Taller: Manejo de un SAF bajo un modelo de producción agrosilvopastoril caprina con enfoque en economía circular con Colegio CTP Nataniel Arias Murillo (Aguas Zarcas de San Carlos)	Costa Rica	29	Presencial
Taller sobre políticas para la restauración como medida de adaptación: Un espacio de discusión e intercambio sobre retos del marco político que facilita la restauración y la atención del riesgo como medidas de adaptación	Belice; Guatemala; Honduras	35	Presencial
Mediación pedagógica: Proyecto Pertinencia de la Educación Secundaria de Ciencias y Medio Ambiente en las Comunidades Agrícolas Rurales de Costa Rica	Costa Rica	150	Presencial

Annex 6. Summary of Approved Agreements 2024

Project Name	Donor	Project amount **in US$**	Country of implementation
Nestlé- CATIE	Societe des Produits Nestle S.A.	451.853,00	Costa Rica
Servicios profesionales para la implementación de la métrica de la condición ecológica de los ecosistemas y agroecosistemas en El Salvador	Ministerio de Economia, Gobierno de El Salvador (MINEC)	150.000,00	El Salvador
Concesión de subvención dineraria de cooperación Internacional	Agencia Española de Cooperación Internacional para el Desarrollo (AECID)	673.239,68	Panama
Convenio de colaboración entre el instituto de investigaciones agroforestales (INIAF) y el CATIE	Instituto de Investigaciones Agro- Forestales (INIAF)- Ministerio Agricultura Cuba	34.821,00	Cuba
Fortalecimiento de Capacidades para Municipios y Organizaciones Locales Cuenta Alta del Lempa	Winrock International Institute for Agricultural Development (WINROCK)	65.000,00	Trifinio: Guatemala, Honduras y El Salvador
Programa de recolección de datos sobre productos lácteos	ANTHESIS LAVOLA (LAVOLA)	12.180,00	Panamá, Trinidad y Tobago, Republica Dominicana, Venezuela y Perú.
Consultoría: Elaboración del Plan Estratégico de ríos, quebradas y del plan de manejo de microcuencas, alcaldía metropolitana de Quito	COMPAÑÍA PRODEL CÍA. LTDA (PRODEL)	125.000,00	Ecuador
Acuerdo de cooperación de proyecto entre el Programa de las naciones unidas para el medio ambiente (UNEP) y CATIE: Facilitación de enfoques específicos por región para abordar los riesgos climáticos y ambientales relacionados con la paz y la seguridad	United Nations Enviroment Programme (UNEP)	2.856.100,00	Mexico, Guatemala, Honduras, El Salvador, Ecuador, y Colombia
Small-Scale Funding Agreement (SSFA) between United Nations Environment Programme (UNEP) and CATIE with respect to the project/programme entitled “CTCN EC Climate Change and Security Programme”	United Nations Enviroment Programmed (UNEP)	200.000,00	Costa Rica, Colombia
Landscape Monitoring Accelerator Latin America: Strengthening Restoration Policies II	World Resources Institute (WRI)	68.586,00	Costa Rica, Brasil
Contrato de prestación de servicios con IICA “Evaluación de los impactos en tecnologías y fortalecimiento de capacidades en Cambio Climático” IICA-CRIA-035-024	INSTITUTO INTERAMERICANO DE COOPERACION PARA LA AGRICULTURA (IICA)	255.000,00	Guatemala

Project Name	Donor	Project amount in US$	Country of implementation
Exploring the Potential and Challenges of Voluntary Carbon Markets in the Global South	UNIVERSITY OF GOTHENBURG (UGOT)	157.999,00	Costa Rica, Suecia
USDA Food For Progress - Jamaica Spice	ACDI/VOCA	417.183,00	Jamaica
Contrato entre Ministerio de Agricultura (RP), Consejo Nacional de Investigaciones Agropecuarias y Forestales (CONIAF) y CATIE	Ministerio de Agricultura (RP), Consejo Nacional de Investigaciones Agropecuarias y Forestales (CONIAF)	190.479,00	Republica Dominicana
Contrato de Locación de servicios - Central d Organizaciones productoras de café y cacao del Perú	CENTRAL DE ORGANIZACIONES PRODUCTORAS DE CAFÉ Y CACAO DEL PERU (Café Perú)	5.400,00	Peru
Curso de capacitación en Diagnóstico Territorial de Sistemas Alimentarios	ORGANIZACION DE LAS NACIONES UNIDAS PARA LA ALIMENTACION Y LA AGRICULTURA (FAO)	47.253,34	Bolivia
Asistencia Técnica para la Medición de los impactos positivos en la implementación de estrategias productivas sustentables y finanzas verdes en las provincias de Zamora Chinchipe y Morona Santiago a través de un sistema MRV y días de campo	PROGRAMA DE LAS NACIONES UNIDAS PARA EL DESARROLLO (PNUD)	168.170,75	Ecuador
GERMPLASM: COFFEE AND COCOA	AGRICULTURE SECTOR DEVELOPMENT UNID, MINISTRY OF AGRICULTURE OF GUYANA (ASDU)	61.175,00	Guyana
Consorcio Agronegocios Regenerativos: plan de trabajo de CATIE Ref I-2022-04842	Fundacion AVINA	21.218,00	Amazonia, Corredor Seco Latinoamericano
Cinco bosques	ASDI	458.000,00	Regional

Annex 7. CATIE's Postgraduate Students by Country of Origin, 2024

Country	Total Graduates	Men	Women
Argentina	1	0	1
Belize	3	2	1
Bolivia	3	2	1
Chile	1	1	0
Colombia	8	4	4
Costa Rica	17	7	10
Ecuador	3	2	1
El Salvador	2	1	1
Spain	1	0	1
United States	3	1	2
Guatemala	8	3	5
Honduras	8	5	3
Mexico	2	0	2
Nicaragua	6	3	3
Panama	4	2	2
Paraguay	1	0	1
Peru	11	4	7
Puerto Rico	1	1	0
Dominican Republic	6	4	2
Uruguay	1	0	1
Total	90	42	48

Annex 8. Comparison of Students by Country in 2023 and 2024

Country	Men 2023	Women 2023	Total Students 2023	Men 2024	Women 2024	Total Students 2024
Angola	1	0	1	0	1	1
Belize	1	2	3	2	1	3
Bolivia	1	0	1	2	1	3
Chile	1	0	1	1	0	1
Brazil	0	3	3	0	0	0
Colombia	5	3	8	4	4	8
Costa Rica	7	5	12	7	10	17
Cuba	0	1	1	0	0	0
Ecuador	2	4	6	2	1	3
El Salvador	2	1	3	1	1	2
Spain	0	0	0	0	1	1
United States	1	0	1	1	2	3
Guatemala	3	2	5	3	5	8
Honduras	2	4	6	5	3	8
South Korea	0	1	1	0	0	0
Mexico	0	2	2	0	2	2
Nicaragua	1	2	3	3	3	6
Panama	0	2	2	2	2	4
Paraguay	1	0	1	0	1	1
Peru	1	4	5	4	7	11
Puerto Rico	1	0	1	1	0	1
Dominican Republic	2	1	3	4	2	6
Uruguay	0	0	0	0	1	1
Venezuela	2	0	2	0	0	0
Total	34	37	71	42	48	90

Annex 9. Main Actions of the OAE and Key Achievements in 2024

Main Actions Programmed in 2024	Key Achievements
1. La OAE operates under efficient structures that allow it to maximize its human resources and those of DIVDI and gives strategic priority to large funding opportunities (more than USD 5M). The target of at least 4 national and/or regional projects for the planned biennium is maintained.	1.1 A technical committee defines, based on technical sheets of the financing opportunities (FO), which proposals are of interest to CATIE and whether it will be a leader or part of a consortium (DIDVI, DG and OAE). 1.2 Three large regional projects were won: • MAF-HN-MAF II etapa 2024-2027: USD 10,301,427.68 • PARES-UNEP 2024-2026: USD 2,856,100.00 • SERVIR-USAID 2024-2029: USD 8,285,000.00
2. Modernize the support system, through a repository, to facilitate the formulation and management of projects with due diligence according to donors and international cooperation.	2.1 ONEDRIVE updated with all the information of the OAE. 2.2 Request made to build a OF module within the Softland system. 2.3 Technical sheets developed for medium-sized projects (new categorization based on greater than US$ 0.40 million).
3. Number of regional or national development and scaling projects in CATIE's portfolio of projects broken down by: under management, in execution and completed - 2024:25	3.1 Projects under management: 38 registered and under monitoring by the OAE. 3.2 Projects in execution: 67 registered in the conventions office. 3.3 Completed projects: 33 registered with the convention office
4. Level of efficiency in % of the support repository for the formulation and management of projects.	4.1 80% efficiency achieved in 2024. **Total OFs identified in 2024: 273** 4.2 0 large OFs were identified (plus US $1.0m) that were reviewed by the technical committee of OF. 4.3 18 medium OF were identified (between US$ 0.2m - $1.0 m.) OAE shares with technicians and ONs. 4.4 245 small OF (< US$ 0.20m) were identified. OAE shares directly with technicians and ONs. 4.5 **Total OF portfolio for 2024: 121, comprising:** - Proposals in preparation: 3. - Proposals submitted:35. - Proposals won: 23. - Proposals prepared, submitted but not accepted: 25. - Concept Note prepared, submitted but not accepted: 12. - Proposals prepared but not submitted: 23
5. Four national offices (NOs) strengthened for the implementation of projects.	NO of Belize, Ecuador, El Salvador and Honduras strengthened with personnel, OF, information to present EoI and technical-financial proposals.
6. Number of CATIE strategic alliances disaggregated by type of alliance: international cooperation, academic agreements, donors, private sector in 2024:150.	6.1 International cooperation agreements: 31 6.2 Academic Agreements: 24 6.3 Agreements with donors: 67 6.4 Agreements with the private sector: 7 Total: 129
7. CATIE is committed to simplifying administrative processes to reduce transaction costs in its regular operations.	This will not be achieved until Softland is fully operational and in accordance with the needs of CATIE
8. Solid financial base with a medium and long-term perspective in terms of sources of resources.	The agreements contributed a total of 56% to CATIE's income in 2024. The average of the last seven years of the contribution by agreements is 49%

The Tropical Agricultural Research and Higher Education Center (CATIE) is a regional center dedicated to research and graduate education in agriculture, and the management, conservation and sustainable use of natural resources. Its members include Belize, Bolivia, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Venezuela and the Inter-American Institute for Cooperation on Agriculture (IICA).

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