

2017 2018

BIENNIAL
REPORT



Solutions for environment and development
Soluciones para el ambiente y desarrollo

Governing Bodies of CATIE

The Inter-American Board of Agriculture (JIA): is the supreme body of CATIE. It is made up of 34 member countries which meet on a regular basis every two years.

The Governing Council: is composed of countries of Latin America and the Caribbean which are regular or adherent member countries of CATIE. The Inter-American Institute for Cooperation on Agriculture (IICA) has a permanent position in the Governing Council, as does the Inter-American Board of Agriculture.

Costa Rica

Renato Alvarado
Ministry of Agriculture and Livestock

Belize

Godwin Hulse
Deputy Prime Minister and Minister of Natural Resources and Agriculture

Bolivia

César Hugo Cocarico
Ministry of Rural Development and Lands

CATIE

Muhammad Ibrahim
Director General CATIE

Colombia

Andrés Valencia Pinzón
Ministry of Agriculture and Rural Development

Ecuador

Xavier Lazo Guerrero
Ministry of Agriculture and Livestock

El Salvador

Pablo Anliker Infante
Ministry of Agriculture and Livestock

Guatemala

Mario Méndez Montenegro
Ministry of Agriculture, Livestock and Food

Honduras

Mauricio Guevara
Secretary of State of the Agriculture and Livestock Offices

IICA

Manuel Otero
Director General IICA

Mexico

Víctor Manuel Villalobos Arámbula
Secretary of Agriculture, Livestock, Rural Development, Fisheries and Food

Nicaragua

Edward Centeno
Ministry of Agriculture and Forestry

Panama

Eduardo Enrique Carles
Ministry of Agricultural Development

Paraguay

Rolando de Barros Barreto
Secretary of the Environment

Dominican Republic

Osmar Benitez
Ministry of Agriculture

Venezuela

Wilmar Castro Soteldo
Ministry of People's Power for Agriculture and Land

The Board of Directors: consists of several members who provide their services ad honorem and meet at least twice a year.

Renato Alvarado
Minister, Ministry of Agriculture and Livestock of Costa Rica

Manuel Otero
Director General, Inter-American Institute for Cooperation on Agriculture (IICA)

Muhammad Ibrahim
Director General of CATIE

Representative Inter-American Board of Agriculture (JIA)

Nigel Poole
President of the Board of Directors, International Community

Gale Garnett
Member country

Ivonne García
Member country

Esteban Girón
Panama, representative of the Governing Council

Daniel Barthelemy
International Community

Juventino Gálvez
Member country

Laura Scandurra
International Community

Carlos Casamiquela
International Community

Inocencio Higuera
Member country

Helmut Eger
Comunidad internacional

CATIE: mission, vision and values



Mission

To achieve sustainable and inclusive human well-being in Latin America and the Caribbean, promoting education, research and outreach for the sustainable management of agriculture and natural resource conservation.



Vision

To be the international land grant university specializing in agriculture and natural resources that effectively integrates education, research and outreach in partnership with multiple partners and countries through a solid regional scientific platform.



Values

- Appreciation for diversity
- Entrepreneurial spirit
- Excellence
- Innovation
- Integration
- Service
- Accountability

The three pillars that support our philosophy



Education

CATIE is a graduate level university with wide prestige and international recognition, which is evidenced, among other reasons, by the following:

▶ It has the oldest International Graduate Program in Agriculture and Natural Resources of Latin America (since 1946) with more than **2500 graduates**.

▶ Its academic offer includes options for strategic courses, diploma courses, specializations, academic masters, professional masters and international doctorates in different thematic fields.

▶ Its students and graduates come from more than 40 countries of different continents, mainly America.

▶ The faculty consists of teachers and scientists from more than 25 countries in different regions of the world.

▶ It has joint master's and doctoral programs with prestigious international universities (eg, Bangor University, University of Idaho, University of North Texas).

▶ Its graduate programs are international in their approaches, modalities and contents.

▶ It has agreements with more than 50 universities and 400 partners in different parts of the world.



Research

The research carried out by CATIE has a systemic approach, for example, the climate-smart landscapes approach. Its starting point is a holistic evaluation of the problems and opportunities of rural areas with an emphasis on inclusion and gender. We maintain some specialized lines of research whose implementation and transfer of results is framed in projects with systemic approaches that contribute in an integral way to achieving sustainable and inclusive human well-being.

The main research and development actions are carried out by three scientific programs: the Agriculture, Livestock and Agroforestry Program (PRAGA), the Research Program on Development, Economy and Environment (PIDEA), and the Forests, Biodiversity and Climate Change Program (PBBCC). These programs address broad thematic areas (coffee, cocoa, climate change, sustainable livestock, policy formulation, forests, watershed management, biological corridors and protected areas, among others) and the lines of work pursue scientific contributions in accordance with the demands of our member countries and Latin America in general, the Sustainable Development Goals and international conventions.



Projection

We have 13 member countries in Latin America and the Caribbean and our actions reflect different levels of impact.

Our work includes the transfer of technology and knowledge and influence on policies at different scales, which contributes to poverty reduction and the economic, social and environmental development of the region.



Lines of research



Member countries

CATIE responds to the Sustainable Development Goals (SDG)

The research and development lines of CATIE's work are articulated with the Sustainable Development Goals (SDG). During 2017-2018, the institution has generated important results for several of the goals.

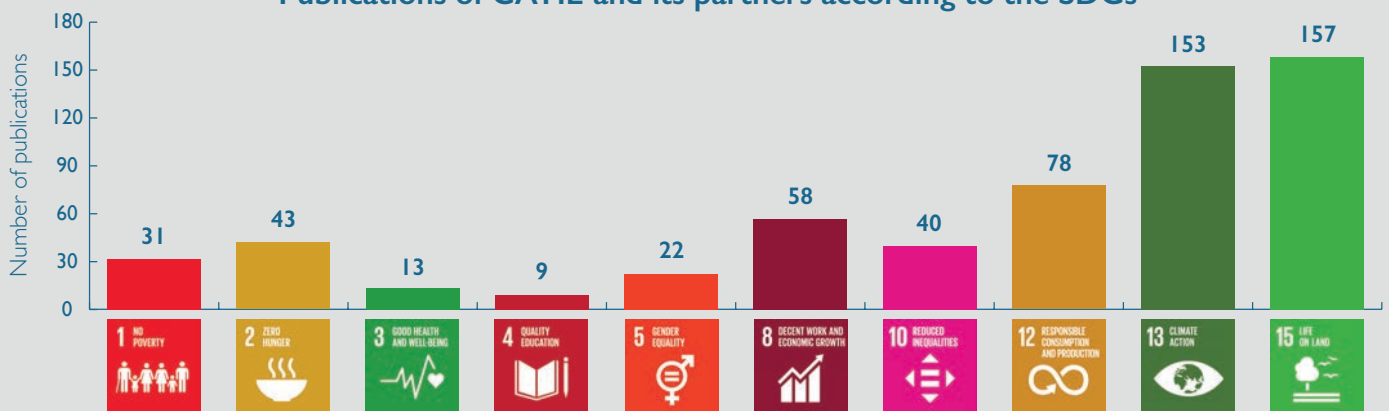
For example, the relationship that exists between the number of CATIE publications and the SDGs.

A high percentage of the publications have generated knowledge about life in terrestrial ecosystems (SDG 15), climate actions (SDG 13), responsible production and consumption (SDG 12), decent work and economic growth (SDG 4), poverty (SDG 1) and zero hunger (SDG 2). Apart from the publications, CATIE has worked with different international, regional and national institutions to develop plans and strategies, as well as policies that are important for countries in their efforts to comply with the SDGs. For example, CATIE has worked with the World Bank on the analysis of supply chains in the production of coffee, cocoa, meat, soybeans and African palm which put high pressure on forests and exacerbate deforestation.

This has allowed us to study and propose policy and market instruments that contribute to the reduction of deforestation and encourage responsible production and consumption.

On the other hand, CATIE is a member of the H20x20 program managed by the World Resources Institute (WRI) which has achieved increases in obtaining financial resources from the private sector and an increase in the restoration of degraded areas in Latin America (SDG 15). In Jamaica, with a project of the Inter-American Development Bank (IDB), progress has been made on the formulation of a proposal for payments for environmental services (PES) associated with the conservation of ecosystem services (SDG 15). In addition, CATIE has supported several countries in the region in the implementation of their strategies to intensify sustainable livestock and the coffee and cocoa production chains (SDG 12), as well as in the management of watersheds (SDG 15). Improvements in family farming that increase the productivity of food systems (SDG 2) and improve the quality of the human diet are also encouraged, contributing to the requirements for healthy food and nutrition (SDG 3).

Publications of CATIE and its partners according to the SDGs



CATIE lines of research and the SDGs



Line 1: Ecological intensification of agricultural, agroforestry and livestock systems to increase their productive efficiency and their resilience



Line 2: Ecosystem services for human well-being



Line 3: Restoration of ecosystem functions and services: water, soil, carbon sequestration



Line 4: Architecture of financial and nonfinancial instruments for the sustainable management of ecosystems and productive sectors



Line 5: Public policies and instruments of governance for human well-being and sustainable management of ecosystems



Line 6: Green, inclusive and sustainable value chains



Line 7: Vulnerability assessment and planning for climate action at national, regional and global levels



Line 8: Ecosystem and hydrological modeling and quantification of flows of carbon and greenhouse gases



Line 9: Analysis of decision making about production and consumption at the household level



The most outstanding in 2017-2018



Systemic and transdisciplinary research


406
Publications

102 Articles in scientific journals	83 Reports and other publications
13 Articles in technical journals	11 Chapters in books
69 Presentations at congresses	26 Technical series
	102 Theses

Proposals for
new projects in 2018

Developed 61 proposals and 37 are in process	USD 14 702 463 Signed or verbally approved proposals
Two project agreements were signed and 6 projects were approved verbally	USD 18 054 338 Proposals in process

Promotion of sustainable livestock production



Establishment of a climate-smart tropical dairy model that also functions as a training center.

With this model of sustainable intensification, the following changes have been achieved:

- ▶ The land area dedicated to the activity has been reduced by almost 45% and the area liberated has contributed to an increase in forest area.
- ▶ The pastures have living fences to provide shade and thereby reduce the caloric stress of livestock.
- ▶ Jersey cattle have been crossed with other Zebu breeds to improve adaptation to climate change and variability.

- ▶ Efficiency in the use of water and fertilizers has been improved, the use of both has been reduced by more than 50%.
- ▶ Integrated manure management generates 50% of the electricity demand for the milking operation. Biofertilizer is also produced for the pastures and other agricultural crops of the farm.
- ▶ Milk productivity has increased by 500% and income by almost 200%.

Genetic material for the region

Cacao deliveries in 2018

2000 grafted plants to cocoa producers in Costa Rica
8300 seeds to three trading partners from two countries
5000 cuttings to a business partner
Clones of the CATIE-Rx series and genotypes from the International Cacao Collection to producers, private companies and research institutions of Costa Rica, Panama and the United States
In partnership with the ECOM company, we started the production and large-scale sale of **CATIE-Rx clones in Nicaragua**

Distribution of forest seeds (2017-2018)

12 tons of forest seeds from **40** species to more than **20** countries
16 accessions of horticultural seeds to eight clients in Costa Rica

Production and sale of coffee genetic material in 2018

22,000 plants for somatic embryogenesis
148,000 plants from rooting coffee cuttings
In partnership with Gaia Artisan Coffee, close to **1 million** plants were distributed to the Central American coffee sector

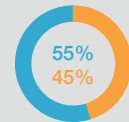


Scientific and professional training



First year students in 2018

66 students from 20 countries



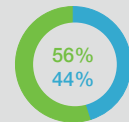
36 men



30 women

2017-2018 Graduates

116 students from 15 countries



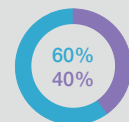
65 women



51 men

Professionals trained in special and strategic courses

5040 professionals from 22 countries



3024 men



2016 women



Scholarships and USD obtained through scholarships in 2017-2018

92 scholarship recipients from 19 more countries

USD 1 206 937 Amount of contribution in scholarships

Donors: Fundátropicos, CATIE's own funds, external scholarships (e.g. German academic exchange service DAAD, USAID, CONACYT of Mexico, IFARHU of Panama, Guatefuturo, AGROSAVIA and Colfuturo de Colombia, etc.) and CATIE project grants.



CATIE a strategic partner

Data 2018 →	Belize	Bolivia	Brazil	Chile	China	Colombia	Costa Rica	El Salvador	United States	Guatemala	Haiti	Honduras	Jamaica	England	Mexico	Nicaragua	Panama	Paraguay	Peru	Dominican Republic	Uruguay	Totals	Amount in USD
Agreements/Contracts	1	1	-	-	-	3	33	1	1	7	1	2	1	-	-	3	7	1	1	1	1	65	USD 11 774 265,22
Cooperation agreements	-	-	-	-	-	-	6	-	-	3	-	1	2	-	-	2	1	-	-	2	-	17	USD 1 341 872,91
Commercial contract	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	USD 647 500
Letters of understanding	-	-	1	3	1	4	7	3	-	3	-	3	-	1	8	-	2	-	2	5	-	43	

In 2017, 73 projects developed involving USD 11 469 408.91 and more than 50 partners



Dissemination and positioning in 2017-2018

5 916 600

public reached on social networks

(Twitter, LinkedIn, Instagram, Facebook)



Webpage 2017-2018

1 021 341

Users visited the website

More than

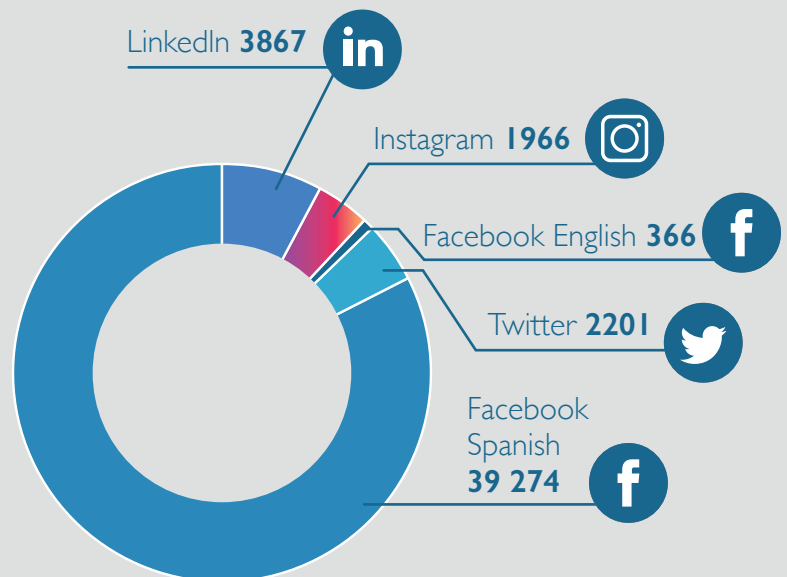
200

countries

428

Web News

Number of followers on social networks as of December 2018



Financial sustainability

A positive balance of **USD 9036** was achieved in 2017 and a positive balance of **USD 15 030** was achieved in 2018.

In 2017 there was a 13% reduction in the amount of Custody Funds and in 2018 a recovery of country quotas of **USD 1.2 million** was achieved.



Personnel

Number of personnel:
270 employees

Employees with doctorate degrees: **21**

Employees with master's degrees: **59**



Promoting quality education

In 2017, Dr. Isabel Gutiérrez became the first woman to assume the post of dean of the Graduate School, evidence of the institution's substantive progress in the application of the Gender Policy and with it, a commitment to the empowerment of women in strategic positions.

In 2018, we promoted a dynamic teaching system adapted to the social and labor demands of today's world.

The CATIE Graduate Program is characterized by a clear commitment to service to the communities of Latin America and the Caribbean and to encouraging excellence, leadership and cooperation among the student community.

Strategic alliances

In 2018, the consolidation of alliances with strategic partners continued with the signing of 10 agreements:

- ▶ Two joint doctoral agreements (University of Bangor and University of Idaho) were renewed to continue offering the joint programs.
- ▶ Three agreements with institutions of the Dominican Republic committed to higher education: Ministry of Higher Education Science and Technology (MESCyT), the Fundapec educational credit foundation and the General Directorate of Multilateral Cooperation (DIGECOOM) to finance full scholarships to Dominican students.
- ▶ Two agreements with mixed institutions that support higher education (Guatefuturo and Hondufuturo) for joint financing of students who wish to pursue graduate studies at CATIE.
- ▶ Two agreements with Colombian institutions (Agrosavia-formerly Corpoica and Fundación Natura) for scholarships and joint research.
- ▶ Agreement with the National University of Forestry Sciences (UNACIFOR) to support study at CATIE for the teaching staff.

All these agreements allow the Graduate School to ensure a significant influx of human and financial resources.



More opportunities for growth

In 2017, about USD 2.7 million were managed. Some concrete examples include:

Improvements to infrastructure and Internet access carried out in student residences (proposal to USAID-ASHA for USD 720 000).

Two new sources of scholarships explored: 1. PRONABEC Peru, with 15 scholarships (minimum) per year for five years (USD 1 800 000) and 2. Belgian Technical Cooperation in Bolivia, with three scholarships (minimum) per year for three years (approximately USD 216 000)

Advances made in the consolidation of an agreement with the Ministry of Science, Technology and Telecommunications (MICITT) of Costa Rica to hold a call for CATIE-specific scholarships (at least five annual scholarships: about USD 170 000).



Towards virtuality

In 2018, a digital marketing plan was implemented for these master's degrees, in order to ensure the enrollment of students in each one.

In a globalized world increasingly immersed in the continuous advancement of new technologies, it is necessary to have master's degrees that offer countries a study opportunity through excellent online education. Apart from the virtual mastery of Integrated Watershed Management, in 2018 progress was made on the definition and design of two new virtual masters:

Management of Agribusiness and Sustainable Markets

Agroecological Intensification and Nutritional Food Security (with support from IICA)





Orton Memorial Library in numbers

Updating of the databases

1051 digital or print documents processed and entered in the Orton Catalogue and the Institutional Repository

Orton Catalogue-SIDALC

564 403 visits
(Google analytics)

CATIE Repository

71 179 visits
(Google analytics)

Journal articles downloaded through the Consortium of CGIAR Libraries

2434



Success stories



Photo: Le Nouvelliste.com

Jobert C. Angrand
(Haiti, class of 2000-2001)
Ministry of Agriculture, Natural Resources and Rural Development of Haiti

He was appointed in April 2018 and is recognized as having served for several years as executive coordinator of the National Coffee Institute of Haiti. He is an agricultural engineer and has an academic master from CATIE in the area of agroforestry.

"It is gratifying to see how many of CATIE's Haitian graduates occupy or have held leadership positions in academic, research, public sector and private sector institutions, which demonstrates the quality of the education they received at CATIE, where they obtained the tools and capabilities necessary to perform with excellence and face the challenges of the world," Isabel Gutiérrez-Montes, Dean of the Graduate School.



Elba Tatiana Espinosa Quiñones
(Peru, class of 2007-2008) Jane Goodall Hope Recognition and Inspiration Ranger Award

She received this award for the conservation work she has carried out as founder/director of ARBIO for more than 15 years in the department of Madre Dios in the Peruvian Amazon, protecting forests from the threat of deforestation. It is the first time that this award has been won by a person from Latin America.

Quiñones is an engineer in Forestry Sciences with experience in forest administration and management in the Peruvian Amazon: permanent production forests, management of non-timber forest products, ecotourism and conservation. She has a master's degree in Management and Conservation of Tropical Forests and Biodiversity from CATIE with an emphasis in Environmental Socioeconomics and Climate Change.



Strategic research areas

Research on Development, Economics and Environment

In 2017, several research projects produced evidence that is being used by institutions in the region to improve the science of their policies, programs and actions.

For example, the results of a study carried out by CATIE for the Office of Climate Change of the Costa Rican Ministry of Environment and Energy, with funds from the Euroclima project of the Economic Commission for Latin America and the Caribbean (CEPAL), identified the economic impact of air pollution and how much the country would be able to save by implementation of policies that contribute to decontamination of the air. The results indicate that the country would be able to save:

- ▶ USD 17 million a year in medical care for bronchitis (and its impact on disabilities and quality of life)
- ▶ USD 55 000 for asthma
- ▶ USD 233 000 in hospitalizations

These results are being used as potential benefits to be generated by projects under development, for example, electric transportation.

In 2018, the staff of the Research Program in Development, Economics and Environment (PIDEA) was strengthened with the promotion of an official as director of the Latin American Chair in Environmental Decisions for Global Change (CLADA) and the creation of a postdoctoral position to work on matters related to public policies and economic incentives, as well as to strengthen the staff of professors of the Master's Degree in Economics, Development and Climate Change. This last position is financed with funds from the Environment for Development initiative (Efd).

In addition, the program participated in the execution of 31 projects/consultancies in the fields of water management, environmental services, improvement of livelihood resilience, green and inclusive value chains and green economics.



Strategic actions

Water management

A pre-feasibility study was carried out to stimulate socioeconomic development and adaptation to climate change in the dry corridor region of Costa Rica as part of the Water Supply Project for the Tempisque River Watershed and Coastal Communities (PAACUME).

In addition, through CLADA and under the framework of the ChorotAgua project (a project developed in Costa Rica to address the effects of climate change on water resources), agroforestry practices were studied that contribute to climate change adaptation in several cantons of Guanacaste province in Costa Rica.

On the other hand, within the Community Water Monitoring Project (EGAP), the use of information technology tools was implemented to facilitate adaptation to climate change by local institutions in Central American regions with water shortages.

Finally, community water management in rural aqueducts was strengthened in the flow and connectivity areas of the Guácimo-Pococí Aquifers of the Tortuguero Priority Geographic Area in Costa Rica to influence the conservation, maintenance and restoration of tropical forests.

Environmental services

In 2018, the design of a payment program for environmental services for the protection of water resources in the Yallahs and Hope basins in Jamaica began, which aims to technically support the development and implementation of a payments for environmental services program for the protection of the main river basins of the cities of Kingston and St. Andrew in Jamaica.

The Ecosystem Services Accounting for Development project (ESAforD) continues to contribute to the development of accounting for ecosystem services in Costa Rica and other countries worldwide, by improving knowledge and empirical experience in the appraisal of such services in line with national accounting principles.



Resilient livelihoods

Work was done on the formulation of a manual and a Field School curriculum on Climate Smart Agriculture (CSA) in Belize, to support the capacity-building activities developed by the extension service of Belize to help farmers improve their capacity to adapt to climate change.

Other technical advising consisted of the identification and selection of measures to adapt to climate change, in order to improve the resilience of vulnerable people in Guatemala. Within the framework of this study, the technical, environmental and social feasibility of the most appropriate adaptation measures to be implemented in the project “Increase in the climate resilience of rural families through the restoration of landscapes and degraded lands in Guatemala” were defined, to be submitted by FAO to the Green Climate Fund.

After six years (2012-2018), the CASCADA project evaluated the vulnerability of subsistence smallholders and coffee producers to climate change and developed strategies for Ecosystem-based Adaptation (EbA).



Green and inclusive value chains

In the framework of the value chain initiative for non-timber forest products, research, technical assistance and education activities were carried out with 60 producers in cocoa, medicinal plants and pepper value chains. Market opportunities were identified through specific studies and in a business roundtable.

The project for the Evaluation of Five Value Chains in Central America (consortium ProFound-CATIE) evaluated cocoa, coffee, fresh and processed fruits and vegetable value chains, as well as aquaculture in six countries: Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama. The aim is to provide the necessary inputs to the Center for the Promotion of Imports from developing countries (CBI) for the selection of the chains where the regional project on Strengthening Central American capacity to trade in goods and services will be developed in order to take advantage of the EU/CA Association Agreement (2018-2022).

The evaluation of the social, economic and commercial impacts of single-use plastic and compostable and renewable alternatives was also carried out as a basis for the National Single-Use Plastic Substitution Strategy, led by the United Nations Program for Development (UNDP).

Under the framework of the Indigenous Training project and special projects in the Brunca area of Costa Rica, research, technical assistance and training activities were developed with the objective of preparing 195 indigenous people to formulate sustainable production projects.

Green economy

The EfD Collaborative Project: Oceans and Marine Resources focused on reducing marine (plastic) pollution, developing effective regulation to control non-sustainable fisheries, and determine the economic benefits of sustainable aquaculture for developing countries.

Similarly, the project “LatinoAdapta: Strengthening Links between Science and Politics in Latin America”, which was carried out under the CLADA framework, also prepared and published the National Report of Costa Rica: “Knowledge gaps for the implementation of plans and actions for adaptation to climate change”.

On the other hand, through technical advising, investment plans were prioritized and prepared for the 28 priority actions identified in the Nationally Determined Contributions (NDCs) of Costa Rica. This work served as an input for the decisions of the Directorate of Climate Change of the Ministry of Environment and Energy of Costa Rica.

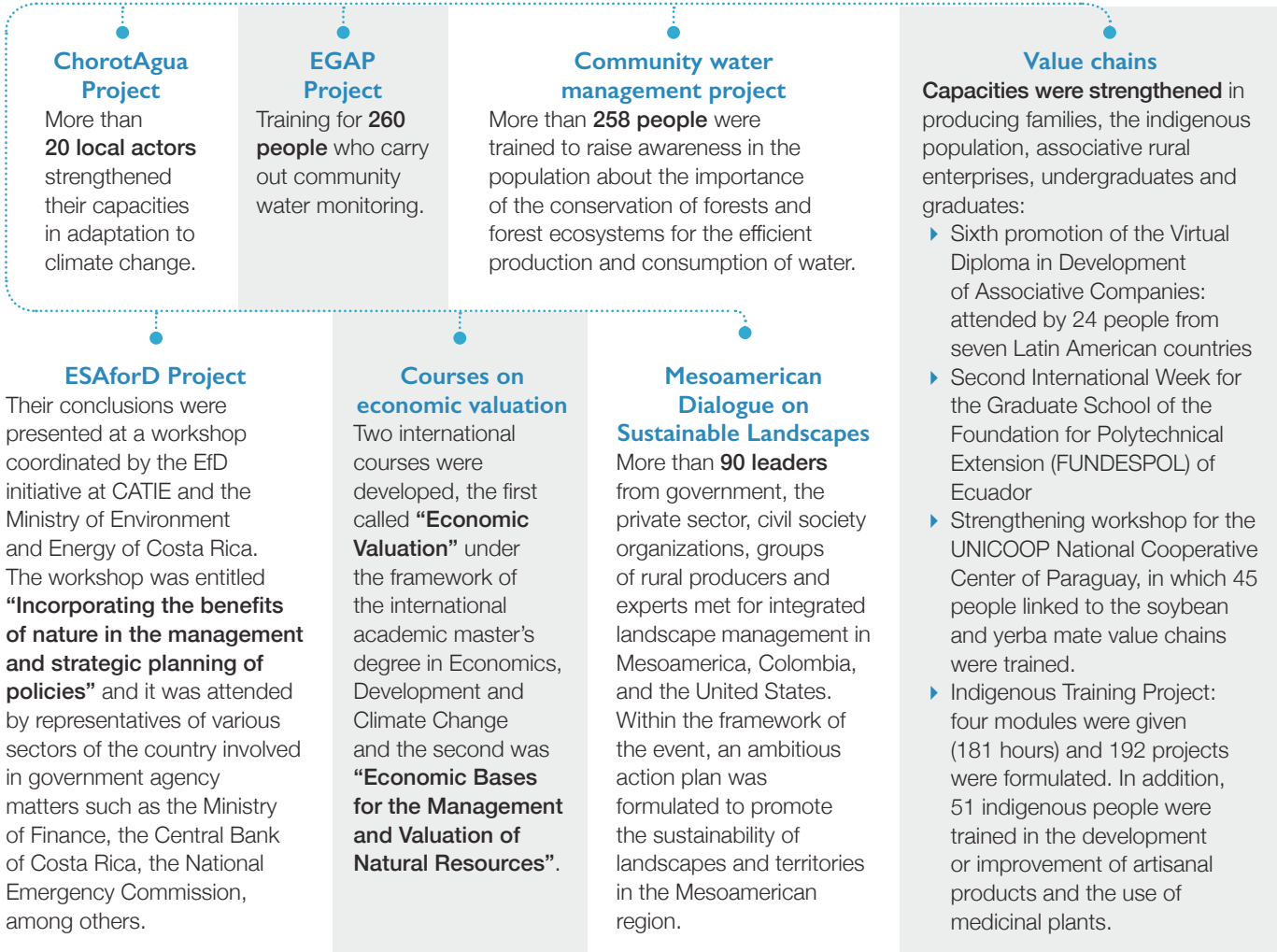
Since the beginning of 2018, the IDEA program has coordinated the implementation of cooperation activities between CATIE and the Climate Technology Centre & Network (CTCN). CATIE is one of the 16 “consortium partners” that were selected based on their extensive experience in adaptation and mitigation matters, the technology cycle, and the use and development of climate technologies.





Capacity-building

Actions 2018



Innovative tools and methodologies

The ChorotAgua project implemented an innovative leisure/recreational methodology called ChorotAgua Festivals that aimed to educate and raise awareness about the stewardship of water resources and the environment.

Similarly, under the ESAforD framework, a methodology was developed to identify the value of ecosystem services provided by ecosystems at different distances, for example, from an agricultural field. The use of spatial and geographically representative data allowed the derivation of unit values for the ecosystem service benefits studied. This methodology was implemented simultaneously by CATIE (EfD centers for Central America) and other EfD centers in China, Ethiopia, Kenya, Tanzania, South Africa and Sweden.

The collaborative EfD program: Oceans and Marine Resources provides comprehensive knowledge-based advice to national policy processes to achieve Sustainable Development Goal 14. The program involves researchers from 10 different countries: Chile, China, Colombia, Costa Rica, Ghana, India, Nigeria, South Africa, Tanzania and Vietnam.



Outreach

The ESAforD results will support current efforts in the statistical division of the UN, the World Bank (WAVES) and several countries for the accounting of ecosystem services that aim to more comprehensively incorporate the economic contributions of nature to the gross domestic product (GDP).



Success story

“We see CATIE as the strategic partner we have very much needed,” Xinia Espinoza, director of the Brunca Regional Mixed Assistance Institute (IMAS), recognizing the good results of CATIE’s Agribusiness Unit in the Indigenous Training project. This project highlights innovative elements such as tools adjusted to the indigenous reality, an integral process that respects their cosmivision and promotes the empowerment of a historically invisible population with high participation (91%) during a 181-hour training process and personalized advising. In addition, it has been one of the most interesting interventions in terms of results and alliances between government entities, private companies and academia.



Partners

Environment for Development (EfD) • Climate Technology Center and Network (CTCN) • National Underground Water, Irrigation and Drainage Service (SENARA) • Fundecooperation for Sustainable Development • Johns Hopkins University • Costa Rica Forever Association • National Environmental Protection Agency (NEPA) of Jamaica • Inter-American Development Bank (IDB) • Foundation for the Development of the Central Volcanic Mountain Range (FUNDECOR) • Ministry of Agriculture, Fisheries, Forestry, the Environment, Sustainable Development and Immigration of the Government of Belize (MAFFESD) • United Nations Development Program (UNDP) • Organization of the United Nations for Food and Agriculture (FAO) • CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) • Bioersity International • EcoAgriculture Partners



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Agriculture, Livestock and Agroforestry

In 2017, 17 years of continuous studies in a long-term experiment on agroforestry systems in coffee planted on the CATIE farm in Turrialba ended. In the experiment at CATIE, more than 30 master's, doctoral and postdoctoral theses have been conducted, generating key information for researchers, technicians, producers and decision makers in the region.

The contributions have been many and, in particular, have generated knowledge that has been used as input for public policies, technical assistance and training programs, among others. A replica of this experiment is found in Masatepe, Nicaragua.

In 2018, the Agriculture, Livestock and Agroforestry Program (PRAGA) achieved substantial progress in its four lines of action: agrobiodiversity, livestock production, cocoa-coffee and agroforestry.

Strategic actions

Agroforestry

In 2017, the second phase of the global initiative Forests, Trees and Agroforestry (FTA) began, in which CATIE participates as a member of a global research consortium made up of the Center for International Forestry Research (CIFOR), World Agroforestry Center (ICRAF), CATIE, Bioversity International, the French Agricultural Research Center for International Development (CIRAD), International Network for Bamboo and Rattan (INBAR) and Tropenbos International (TBI). As part of this initiative, CATIE carries out research and development on the management and restoration of agricultural landscapes, climate change, and agroforestry systems with coffee and cacao and in silvopastoral systems.

The Shademotion 4.0 (www.shademotion.net) software was launched, a modeling and design instrument for improved agroforestry systems, with users from more than 25 countries around the world.

In 2017, in coordination with World Coffee Research (WCR), a manual on coffee rust was published for technicians, which has been downloaded on the CATIE website by more than 20 000 users.

In coordination with IICA-PROCAGICA, the Regional Climate Change Program and its partners and coffee associations of Guatemala, Honduras, Nicaragua and Costa Rica have developed a manual for each country on coffee and climate that has enabled each country to initiate generation of knowledge and data in that country on analysis of vulnerability and adaptive capacity of coffee farms to climate change.

Quality coffee

International Coffee Collection: thanks to financial support from the Coffee Institute of Costa Rica (ICAFE), agronomic management work was carried out in the collection, which included shade adjustment, weed management, fertilization and pruning. In addition, 103 accessions of coffee seeds were distributed to four countries: Guatemala, Panama, Costa Rica and El Salvador.

Genetic improvement: to meet the demand for new genetic materials in the Central American region, 52 new coffee hybrids were created using seven accessions with rust tolerance and five varieties with excellent cup quality. Among the progenitors used, four rust-tolerant accessions were used for genetic improvement processes for the first time.

Core Collection: in alliance with World Coffee Research (WCR), all the accessions conserved at CATIE were morphologically characterized. The information is available on the Genesys platform. The fruits of all the accessions were tasted by the Fine Coffee Association of Costa Rica and the Orígenes Coffee Grower, Costa Rica, selecting 25 accessions, which were later tasted by Q-Grader tasters, with six of them achieving an excellent quality grade.

Central American Program for Integrated Coffee Rust Management, PROCAGICA (developed in cooperation with IICA and Cirad): in both Central America and the Dominican Republic, coffee rust management technologies are being validated on farms. In addition, an agreement was reached between regional PROCAGICA and PROCAGICA-Dominican Republic for CATIE to orient interventions that improve the redesign of the coffee plantations to be renovated with the implementation of the best agronomic and agroforestry practices.



Dominican Coffee Institute (INDOCAFE): within the framework of this project, expert opinions on the types of coffee plantations in the Dominican Republic were systematized and biophysical and structure data were collected in 400 coffee plantations. The project aims to generate the information necessary to guide interventions for renovation and/or rehabilitation of Dominican coffee plantations.

Ecuadorian coffee and cocoa program: this program established a long-term agroforestry coffee trial in Ecuador. CATIE guided the process and left a plan for ecosystem services assessments over time.

GAIA Artisan Coffee: work continued on the provision of quality genetic material and evaluation of new materials to make them available to the coffee sector in partnership with the private sector. A new agreement was signed for the production of 30,000 hybrid coffee plants.

Project: Conserving neotropical migratory birds through the management of ecosystem services on coffee farms: funded by the US Fish and Wildlife Service (USFWS) to work with coffee farms distributed within the area of influence of the Volcanic Biological Corridor Central Talamanca (CBVCT). To date, the project has achieved participation commitments from at least 30 coffee producers, and it has begun to establish experiments (bird and bee exclusions) for the simultaneous evaluation of the ecosystem services of pest control by birds and pollination by bees.

New projects: an agreement was signed with the GAIA Artisan Coffee and Cafetalera Orígenes companies, with the aim of investigating new genetic materials from CATIE's International Coffee Collection that have promising characteristics and potential to be marketed for their cup quality.



Superior cacao clones

The CATIE improved clones (known as the CATIE_Rx series, with R indicating tolerance to moniliasis) continue to show a high potential in yield and quality at the sites where they have been distributed (Central America, Mexico, Brazil). In 2017, these clones were recognized in the quality competition held in Managua, Nicaragua, where the Panamanian company KOTOWA won the silver medal in the 85% chocolate bar category.

Research on the genetic improvement of cacao has allowed identification of the best clones with tolerance to the main diseases that affect this crop, in partnership with renowned organizations in the region. In 2018, methodologies were also developed for the ideal spatial arrangement of cacao clones in order to maximize their productivity.

In 2018, we continued the implementation of four projects related to genetic improvement funded by the United States Department of Agriculture (USDA) -Mars, USDA-Puerto Rico, World Cocoa Foundation and Nestlé-Switzerland, respectively. These projects generated data that will help identify the best clones with tolerance to diseases such as monilia and black pod in the next two and three years. With the USDA-Puerto Rico project, data related to the capacity of cacao clones to absorb cadmium metal was generated. Progress was also made in the generation of data to identify

high quality cocoa bean clones, under three projects funded by the chocolate factories Lindt in Switzerland, Guittard Chocolate Company in the United States and Max Felchlin in Switzerland.

On the other hand, in conjunction with the Maya Kakaw cooperative in Guatemala, the methodology for the construction of compatibility and incompatibility matrices was adjusted, so that the degree of compatibility of 10 clones of interest for Guatemala is already known. The germplasm conservation project with the Franceschi Chocolate company in Venezuela allowed us to have important materials in custody that in the future could be used for genetic improvement.

Finally, in the framework of the actions of the cocoa project KOLFACI, funded by the government of Korea, in 2018 it was possible to establish a network of 32 plots for participatory cacao research, where the performance of promising clones will be evaluated in eight countries (Peru, Colombia, Panama, Costa Rica, Nicaragua, Honduras, Guatemala and the Dominican Republic), with the application of modern agronomic-agroforestry techniques. Thanks to the positive evaluation of the project's progress, the disbursement was made to finance the second year of the initiative in 2019.



Sustainable and climate-smart livestock production

In 2017, we co-organized the 14th Meeting of the Commission on Livestock Development for Latin America and the Caribbean (CODEGALAC), the Mesoamerican chapter, held in Costa Rica. An official declaration came out of the meeting on the need to begin a development path toward sustainable agriculture, ecocompetitiveness that reduces greenhouse gas emissions and improves adaptation to climate change in the Mesoamerican region and in which CATIE participates, supporting knowledge management, education and research.

In the same year, the following were carried out important studies were done in Guatemala, Honduras, Nicaragua, Costa Rica and Panama to increase efforts to determine the emissions by livestock in the region of methane, N_2O and soil and water contaminants (nitrates and phosphates).

In this period, in livestock production, CATIE continued to consolidate its position as a leader in the promotion of sustainable, low carbon, and biodiversity-friendly intensive livestock systems. In this area the program executed several projects in Latin America. Moreover, various processes for formulating national policies and strategies linked to the livestock sector for Central American and Caribbean countries, were accompanied; in addition, technical support was provided for the formulation of Nationally Appropriate Mitigation Actions (NAMA) for livestock.

During 2018, there was participation in seven projects framed under sustainable livestock management and intensification in five countries: Costa Rica, Mexico, Belize, Honduras and Uruguay, as well as a project at the Latin American level with the Regional Agricultural Technology Fund (FONTAGRO) and the government of New Zealand.

In three states of Mexico, progress was made on the implementation of the Biodiversity and Sustainable Agrosilvopastoral Livestock Landscapes project known as BioPaSOS, of the International Climate Initiative (IKI), which is executed by CATIE and the Inter-American Institute

for Cooperation on Agriculture (IICA), in coordination with the National Commission for the Knowledge and Use of Biodiversity (CONABIO) and the Secretariat of Agriculture and Rural Development (SADER). In this project, six investigations focused on evaluating different ecological and productive aspects, livestock management, biodiversity and ecosystem services. Outstanding studies include:

1. Analysis of the perception of livestock producers about the factors that exist and that continue to contribute to the loss of biodiversity in landscapes dominated by livestock.
2. The evaluation of the contribution of cattle ranches to biodiversity conservation, by studying floristic composition, richness, abundance and diversity of arboreal species in cattle ranches.
3. The impact of forest fires on ecosystem services in livestock landscapes, among others.

At the institutional strengthening level, more than 10 agreements for the establishment of strategic alliances with partners of the governmental and private sectors, and academic institutions have been signed.

Within the framework of the project “Delivering multiple global environmental benefits through the sustainable management of productive landscapes” and in conjunction with the Ministry of Environment of Honduras and the GEF-UNDP Global Environment Facility, CATIE developed a strategic plan for the establishment of a National Sustainable Livestock Platform, which will be launched in 2019. In addition, a differentiated credit proposal was designed to promote sustainable livestock production and at least 14 successful experiences of sustainable livestock production were documented in Honduras. In addition to this, two strategic investigations were carried out on 1) carbon balances in livestock farms, and 2) the prioritization of adaptation and mitigation practices. Both studies will be part of the livestock NAMA for the country as instruments for the achievement of their Nationally Determined Contributions (NDC).

As part of the actions for the new project of the Inter-American Development Bank (IDB) called *Developing a climate-smart and green cattle sector through technological innovations and strengthening local institutions, which is carried out with the Belize Livestock Producers Association (BLPA)*, a pilot project was negotiated to promote bovine production chains that are climate-smart and where CATIE will support farm plan designs based on silvopastoral systems, as well as the design of production chains and project monitoring and evaluation.

In 2018 the Environmental Livestock Production Unit made progress on strengthening regional and national platforms

and provided support to the countries to develop their strategies for the sustainable intensification of livestock. For example, CATIE continued with the coordination of the regional platform in Latin America called "Platform for the Sustainable Intensification of Livestock Production", which is financed by New Zealand, FONTAGRO and CATIE. In 2018, it was possible to develop a regional agenda for research related to sustainable livestock intensification in Latin America. Four webinars were also developed for the dissemination of knowledge about greenhouse gas estimation methodologies, the management of silvopastoral systems, and best manure management practices on livestock farms.

Agrobiodiversity

In 2017, a working group called Safeguarding the CATIE Article 15 Collections was established with the participation of researchers from Costa Rica and consultants from the Global Crop Diversity Trust and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) to ensure financing for cryoconservation of genetically diverse seeds of tomatoes, peppers, squash and other important food crops in the CATIE seed chamber.

In the same year the Forest Seed Bank (BSF, Spanish acronym) distributed 7.5 tons of forest seeds to 18 countries in America, Asia and Africa and generated income of almost half a million dollars and in 2018, 4800 kg of forest seeds of 40 species were distributed to 220 customers in 11 countries (Belize, Costa Rica, Ecuador, Colombia, Ghana, Mexico, Nigeria, Peru, Sierra Leone, Thailand and the United States) along with 16 accessions of horticultural seeds to eight clients in Costa Rica.

The quality of the seeds is increasingly recognized worldwide, which was reflected in a significant increase in exports of forest seeds to companies in Asia and Africa, in addition to the traditional market in the American tropics.

GAIA received over 22,000 mother plants of five different hybrids (Centroamericano, Milenio, Casiopea, Excelencia and Esperanza). Due to growing demand from coffee producers, CATIE and GAIA signed a new agreement at the end of 2018 to increase the number of plants that the Center's Biotechnology Laboratory distributes to GAIA from 21,000 to 30,000, thereby consolidating the commercial relationship between CATIE and this private company.

In addition, the Biotechnology Laboratory initiated the *in vitro* establishment of selected coffee and cacao materials, in order to diversify the offering of promising varieties.

In the collections in long-term storage, regeneration was achieved for 100 squash (*Cucurbita moschata*), bean (*Phaseolus* spp.), jicama (*Pachyrhizus erosus*) and corn (*Zea mays*) accessions, and 10,886 seeds were collected from 13 coffee accessions which will be used in cloning programs and for distribution to coffee growers.

As part of the celebration of the tenth anniversary of the Svalbard World Seed Vault in Norway, CATIE sent duplicates to this vault of 591 accessions of 29 crops, this being the largest number of seeds that CATIE has ever sent to the vault. With this, a total of 1,534 duplicate accessions has been reached, representing 24.7% of the total germplasm preserved by CATIE in its cold chamber.

In 2018 the Botanical Garden was visited by 4,453 people and it received an award from the Ecological Blue Flag Program and the Sustainable Tourism Certificate and Code of Conduct. A botanical revision of 165 species was also carried out and a new garden with 40 Bromeliad species was established.





Capacity building

Actions 2018

PROCAGICA

CATIE provides **technical assistance and training** to technicians and coffee producers from six different countries.

Multiplication gardens

Following the successful propagation of **coffee F1 hybrids** through rooted cuttings, several companies became interested in using this propagation method for the multiplication of other select varieties of CATIE's International Coffee Collection. Toward this end, the establishment of multiplication gardens began with five select varieties and a first delivery of 8500 plants was made, some of which had not been propagated previously using clonal methods.

Cacao agroforestry systems

At least **20 technicians working with cacao** in eight Latin American countries (Peru, Colombia, Panama, Costa Rica, Nicaragua, Honduras, Guatemala and the Dominican Republic) were trained in the management of cacao agroforestry systems.

BioPaSOS Project

The project has achieved the establishment of learning communities in its three intervention territories, through which it has achieved the implementation of more than **60 Field Schools (ECA)**, strengthening the capacities of more than 900 livestock families, approximately 30% of which are women, on issues related to the adoption of good livestock practices, as well as the importance of biodiversity conservation to promote climate-smart livestock production.

International workshop

CATIE, FONTAGRO, Global Research Alliance, New Zealand and FAO organized the international workshop **"Climate change and livestock development in Latin America and the Caribbean: requirements for the formulation of knowledge, policies and projects for investment"** with 65 representatives of national, regional and international organizations from 20 countries attending. Under the workshop framework it was agreed to establish a plan for the standardization of methodologies for the estimation of greenhouse gas emissions, as well as the lines of research and financial mechanisms to promote the adoption of technologies for sustainable livestock production intensification.



Innovative tools and methodologies

Through the PROCAGICA regional and PROCAGICA-Dominican Republic projects, the Zig-Zag methodology is implemented for training and extension work on innovative practices and approaches. This methodology is based on training workshops given every two or three months to the technicians, which facilitates feedback on the learning and monitoring throughout the productive cycle among technicians and producers.

The propagation of CATIE's cacao clones has traditionally been done by grafting, which requires the production of scions in large bags for subsequent grafting. During 2018, four trials were run to determine the effects of auxins, stake type and length, foliar area, shade types and substrate types on the rooting capacity of cuttings, achieving important progress. In 2019 we expect to consolidate the technique and start commercial production of cacao clones via the rooting of young tissue cuttings.



Outreach

CATIE joined the Cacao Committee of Central America and the Dominican Republic (SICACAO), a regional platform created in 2018, in order to promote initiatives that affect the policies of the Central American countries.

At the same time, in countries such as Honduras, Costa Rica, Nicaragua, Panama and Cuba, CATIE supported governments and the livestock sector in designing public policies and participating in governance spaces for the development of sustainable, low-carbon livestock production. In Costa Rica, CATIE supported the implementation of the livestock production NAMA. In Honduras and Nicaragua, the institution focused on designing a document for the national sustainable livestock strategy; while in Panama the ANAGAN breeders' association was supported in designing the technical sheet for the NAMA technical team. Finally, in Cuba, an inter-institutional group was supported in the development of a low carbon strategy document for the livestock production sector.

The Government of Costa Rica declared the conservation of genetic resources in the long-term public interest through executive decree number 002-2018-MAG. In the context of this declaration, the Ministry of Agriculture and Livestock (MAG) made a transfer of money to CATIE for the conservation of orthodox seeds in the cold chamber that the institution maintains.



Success story

The family of Karen Ledezma and Freddy Ruiz lives in Upala, Alajuela, Costa Rica and they have been growing cacao for eight years. They did not have experience, however, when seeing the plantations of their neighbors, they were interested in starting, so they approached the Association of Cocoa Producers where both, especially Karen, began training at the Field Schools in plantation management and grafting processes. After training, they planted a small plot with the clones selected by CATIE and thanks to their good performance and enthusiasm, they expanded the planting to other areas of their farm using grafts with material available on their farm. Due to the good management of their plantations, in 2015 their cooperative selected them to establish a clonal garden, as part of the project supported by the National Institute for Cooperative Development (INFOCOOP) and CATIE, which is already in production and is a source of buds for the distribution of improved genotypes.



Freddy Ruiz and Karen Ledezma are very satisfied with the production on their farm, mainly clones such as CATIE-R6, and they thanked CATIE for all the support they have received through different projects.



Partners

PROFAFOR Latin America (Face Program of Forestation of Ecuador SA) • United States Department of Agriculture (USDA), USA • MARS Inc, USA • LINDT, Switzerland • Heifer International, United States • Penn State University, United States • Cirad, Mesoamerican Scientific Platform of Perennial Crops (PCP) • Rural Development Agency, South Korea • GAIA Artisan Coffee, Costa Rica • Colombian Agricultural Research Corporation (AGROSAVIA), Colombia • National Institute of Agricultural Research (INIA), Uruguay • National Institute of Agricultural Innovation (INIA), Peru • Autonomous University of Chiapas (UNACH), Mexico • Regional University Center of the Atlantic Coast (CURLA), Honduras • National Agricultural University (UNA), Nicaragua



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Forests, Biodiversity and Climate Change

The work of the Forests, Biodiversity and Climate Change Program (PBBCC) encompasses five main lines: climate change mitigation and adaptation in the forestry sector; forest and landscape restoration; biodiversity conservation strategies; forest ecology applied to multiscale forest management, and policies and governance for multi-scale forests, biodiversity and water management, with an emphasis on the consolidation of participatory platforms. The program ensures the key contribution that CATIE makes to regional efforts to restore degraded lands, innovating in the construction of effective relationships between forest producers and the private financial sector. It hosts a new Watershed and Water Security Unit that consolidates CATIE's leadership in this issue of paramount importance for the vulnerable populations of Central America and the Caribbean, as well as a unique long-term research program in the region on the effects of drivers of global change in tropical forests.

All the above is developed in the context of an enviable scientific and technical interdisciplinary capacity to meet the demands of countries faced with the serious threat of climate change. The PBBCC contributes new tools to combat this threat, with support to the countries in complying with their obligations to international agreements on climate and with innovative research on the degradation and restoration of ecosystem services in this context. The program was strengthened during 2018 through the consolidation of the Chair for Ecosystem Management under the leadership of Dr. Miguel Cifuentes and it interacts with multiple partners from the international centers of CGIAR to the rural and urban municipalities of Central American countries. His collaboration with the Center for International Cooperation in Agronomic Research for Development (Cirad) of France has been consolidated with the incorporation of two researchers from the Center into his professional team. Finally, the geographical scope of his work is, truly, the subcontinent of Latin America and the Caribbean.



Strategic actions

● Policies and participatory governance of territories: the Ibero-American Model Forest Network (RIABM)

In 2017, IAMFN incorporated two Amazonian model forests: the Amazonas Tapajós Model Forest (state of Pará, Brazil) and the Villa Rica Model Forest (province of Oxapampa, Peru). IAMFN now has 34 model forests in 15 countries of Central America, South America, the Caribbean and Spain.

By having the presidency and management of the RIABM, in 2018 CATIE evaluated a proposal for Model Forests in Brazil, an affiliate of the RIABM. The final approval of the proposal is expected to occur in May 2019.

The proposed model forest area of action has 2.5 million hectares. The model forest covers part of the states of Bahia and Espírito Santo and its focus is on the conservation and restoration of natural forests of the Atlantic Forest, a biome of global importance for the conservation of biodiversity and the ecosystem services it provides, in that only 11% of the original forest cover remains.



Forest restoration of degraded lands

The agreement with the *National Institute of Forest Sciences* (NIFOS) of the Republic of Korea was renewed, in order to continue the comparative research between the landscapes of Costa Rica and those of the Republic of Korea.

Through the Climate Technology Centre & Network (CTCN), CATIE provided technical assistance to Chile's Ministry of Environment on governance platforms for the restoration of forests and landscapes in areas affected by fires, based on participatory analysis of the governance context for the regions of Maule and O Higgins.

Support was also given to GIZ, an agency of the German Federal Government, to hold the National Course on Ecosystem and Landscape Restoration given in the Dominican Republic by the REDD+ Landscape program.

The execution of the project Development of Sustainable Management Models in Secondary Forests and its Nexus with the Private Financial Sector was continued, establishing demonstration areas in El Salvador, Guatemala, Honduras and Costa Rica. The project is financed by the IKI program of the German government and its aim is to develop sustainable models to promote the management of secondary forests as productive, relevant and habitual ecosystems present throughout Latin America. For this, the project promotes training in the topic of business models and in 2018 it promoted a forestry business roundtable in Costa Rica, as well as a call for business ideas. In addition, the project sponsored the publication of a guide for ecological monitoring in secondary forest management.

Also, in the context of this project, the structuring of a business model was achieved, financed by the impact fund Forestry and Climate Change Fund (FCCF), which brings together 19 forest owners from the Petén department in Guatemala, and a grassroots non-governmental organization (NGO) to develop a forestry business. This consists of a sustainable forest management project that aims to develop a value chain with various actors in the sector, based on a partnership management business model.

On the other hand, CATIE's leadership in the region in initiatives to restore degraded lands was underscored by the scientific publications for the year. A student of CATIE's Masters in Management and Conservation of Tropical Forests and Biodiversity published two articles in international journals on his research on ecosystem processes under different technical approaches to forest restoration, in collaboration with researchers from the Organization of Tropical Studies. In addition, researchers from the PBBCC and the aforementioned master's program participated in an important article on forest restoration through secondary natural succession, published in *Nature Ecology and Evolution*.

Within the framework of the global processes for degraded land restoration that responds to international initiatives such as the Bonn Challenge and the New York Declaration on Forests, CATIE has prominent participation in the project, which is also financed by IKI to support the 20x20 Initiative. This project is led by the World Resources Institute (WRI) and it also participates in the International Center for Tropical Agriculture (CIAT).

Likewise, it has been possible to support policies and institutions for the restoration of landscapes in Mexico, Guatemala, Costa Rica, Colombia, Peru and Chile. CATIE participated in various workshops, training and processes to analyze and define policy instruments in these countries.

Mitigation and adaptation to climate change and other drivers of global change

In 2017, the focus on mitigation and adaptation to climate change was reflected in a CATIE collaboration with the El Salvadoran Ministry of Environment and Natural Resources (MARN, Spanish acronym) through the Ecosystem and Hydrology Modeling Unit (UMEH, Spanish acronym) and the Forest Management and Global Change Unit (UMFCG, Spanish acronym), to complete the new forest map of the country, give technical assistance for development of its REDD+ MbA (mitigation based on adaptation) National Strategy and design a system to monitor the cobene ts generated by that strategy.

CATIE's work on climate change is carried out at global, regional and national levels, focusing on strengthening work with ecosystem services, blue carbon, cities, wetlands, technology transfer and adaptation-mitigation synergies (AMS), among others.

Global scope: the institution is part of the International Blue Carbon Science Working Group. In addition, one of the CATIE researchers is the lead author of the Special Report

on the Ocean and the Cryosphere of the IPCC and other researchers are reviewers of special IPCC reports. Top notch scientific work has allowed the institution to publish the results of the work done with blue carbon in the prestigious international journal *Nature Climate Change*. In addition, a PBBCC specialist is a member of the Scientific Council on Climate Change of Costa Rica.

Regional and national scope: the technical phase of the sustainable landscapes component of the USAID Regional Climate Change Program (PRCC) has been concluded. Through it, technical assistance was provided for the development of national REDD+ strategies and monitoring, reporting and valuation (MRV) systems for REDD+ throughout the region, training government staff and local partners, producing technical manuals and strengthening political processes. The PBBCC maintains a technical relationship with the Inter-American Development Bank (IDB) to promote the transfer of monitoring technologies for the forestry sector throughout Latin America, with work especially in Brazil, Costa Rica and the Dominican Republic.

In El Salvador, technical assistance with the World Bank for the construction of important inputs for the country's national REDD+ strategy and its National Inventory of Greenhouse Gases (INGE) was concluded. In Costa Rica, cutting-edge issues are explored in “non-traditional” ecosystems –cities, paramos, coasts and wetlands– focusing on synergies between mitigation and adaptation to climate change, vulnerable populations, loss of ecosystem functionality and services and fire management; issues that will all be critical in the conservation and economic development of society in the coming decades.

Finally, a strong investment was made in technological infrastructure that will allow the exploration of new topics and keep the institution at the forefront of processes related to climate change mitigation and adaptation. For example, the cluster of processing servers was reconfigured and put online, the most modern geospatial infrastructure available for research and teaching institutions was installed, a new geospatial visualization platform was launched (<https://storymaps.catie.ac.cr/>) and several last generation drones were purchased.

Conservation strategies for forests, biodiversity and ecosystem services

The work on conservation strategies focuses on the management of protected areas and biological corridors and it has a strong emphasis on combating the drivers of global change. In Costa Rica, the process to develop ecological integrity indicators and their respective monitoring protocols at the local level for terrestrial and inland waters in 32 protected wild areas of the country was initiated. In addition, a project was finalized that developed participatory proposals for the creation and/or expansion of three protected wild areas with more than 50,000 ha, of which 78% corresponds to forests of national importance. Both projects were financed by the II United States-Costa Rica Debt Swap for Nature.

In Honduras, participation in the Project for the Consolidation of the Subsystem of Marine Protected Areas on the north coast was concluded. Funded by the Global Environment Facility (GEF), this project consisted of 43 technical products to consolidate the subsystem, improve the management effectiveness of individual protected areas and generate financial mechanisms that will contribute to the sustainability of protected areas over the long term.

Together with GIZ, the Punta Cana Group Foundation, Counterpart International and the Global Nature Fund, CATIE is participating in the Biodiversity and Business project, which aims to support the tourism sector with the restoration and protection of marine and coastal biodiversity in the Caribbean Sea. With funds from the European Union, this project focuses its actions on the Dominican Republic, Haiti and Honduras. Among the actions implemented by CATIE, the Cayos Cochinos Protected Area was identified as a

priority area for the restoration of marine ecosystems. Together with the Punta Cana Group Foundation, local communities were trained and coral gardens were established that will conserve marine diversity and serve as areas for specialized recreational diving.

CATIE is a leading institution in the region in efforts to ensure the resilience of priority landscapes through biological corridors. The Biological Corridor Network for Latin America and the Caribbean (CoBioRed) is a learning and knowledge management community that is coordinated by CATIE, consisting of a wide variety of actors. The network has the support of different organizations that jointly direct efforts to articulate biological corridor initiatives from the local to the national and throughout the Latin America and Caribbean region.

Once again, CATIE's leadership is reflected in its scientific and technical publications. Two examples stand out; the first of them, a CATIE researcher who edited a special issue of the international journal *Biotropica*, which was published in 2018 and consists of eleven articles that report on long-term research linking the phenology of forests to plant-animal interactions that contribute to forest resilience, within the framework of climate variation and change. The second is a publication that CATIE prepared through the Regional Climate Change Program of USAID, about an innovative tool to prioritize and implement measures that generate synergies between climate change adaptation and mitigation.



Watershed management and water security

In this line of work of vital importance for the countries of the region, CATIE targeted its actions on Haiti, one of the world's most vulnerable nations to global climate change. During 2018, the project Sustainable Reduction of Food Insecurity in the Communes of Haut Artibonite was implemented, which addresses the structural causes and problems of vulnerability by improving the capacity for resilience of vulnerable populations. The project generated baseline biophysical and socioeconomic information and implemented participatory processes that contributed to identify aspects of resilience to climate change in these territories.

In terms of innovation, CATIE expanded its use of the Resource Investments Optimization System (RIOS) software tool. Based on experience in 2017 with the Project WaterClima-LAC (coastal zone management), it was possible to incorporate this learning into the degree course theses and postgraduate courses during 2018. CATIE also worked with isotope hydrology, a system used to analyze aquifer recharge and groundwater renewal processes. This innovative tool was applied in El Salvador, in the Bajo Lempa watershed.

New projects

Water Harvesting II: Financed by the Swiss Agency for Development and Cooperation (COSUDE), the project will support the management and administration of water harvesting and capture infrastructure in 10 municipalities of Nicaragua's Dry Corridor.

Investment Program for the Restoration of Priority Watersheds -Procuencas in Panama: Financed by MiAmbiente, the project involves the Watersheds and Water Security Unit in the design of the project's monitoring and evaluation system.

Management Plan for the Lake Atitlán Basin: Financed by the Authority for the Sustainable Management of Lake Atitlán and its environs, the project will facilitate planning in the Atitlán basin with an emphasis on climate change and sustainability.



Capacity building

Actions 2018

CoBioRed

In 2018, this network held its **XII Latin American Symposium on Biological Corridors** within the framework of the Annual Congress of the Mesoamerican Society for Biology and Conservation. The symposium provided an opportunity for the national coordinators of the Mesoamerican and Caribbean Biological Corridors to hold their annual meeting to monitor the 2020 Master Plan.

Water resources

CATIE organized and implemented the **"Tri-national Forum on Integrated Water Resource Management - Colombia, Costa Rica and Panama: progress, scope, challenges, policies and innovative practices."** A total of 44 women and 37 men participated in this forum, in which participants were able to update their knowledge and establish networks and opportunities for collaboration between academics, state institutions, civil society, students, the private sector, etc.

IAMFN

The network organized a seminar in Guatemala to discuss guidelines for planning and monitoring restoration processes at territorial level. The purpose of the seminar was to contribute to territorial management processes and support the governments associated with the Ibero-American Model Forest Network (IAMFN). In addition, participants prepared a **2018-2022 Strategic Plan** that will primarily assist the network's members, i.e. the 15 member countries, the 34 model forests of Ibero-America and their partner organizations.

Initiative 20x20

In the context of this Initiative, the **Third International Course on Restoration of Forest Landscapes** was held with support from the Regional Forest Landscape Restoration Program in Central America and the Dominican Republic (REDD+ Landscape) supported by GIZ. More than 30 people from different countries and institutions of the continent participated in the event. The course not only served to build capacity to guide restoration efforts in the region (policies, standards, projects, allocation of resources), but also to forge closer ties and create opportunities for interinstitutional interaction on these topics.





Innovative tools and methodologies

Standards for planning and monitoring restoration at the landscape level were developed through a thesis research project carried out by a student of CATIE's Master's program. The standards were implemented in four impact territories within Model Forests in which restoration efforts are underway in Costa Rica (Chorotega Model Forest), Colombia (Risaralda Model Forest) and Peru (Pichanaki and Villa Rica Model Forests).

The issue of Blue Carbon is becoming increasingly important in the region and related actions are being consolidated. CATIE produced a regional manual on methods for quantifying blue carbon in mangroves and a policy brief for the government of El Salvador. Together with Conservation International (CI), CATIE prepared a study for the Costa Rican Ministry of Environment and Energy (MINAEC) for the appraisal of ecosystem services provided by mangroves in the Gulf of Nicoya, in Costa Rica. This was the first study of its type in the world, given the innovative combination of methods used. The Blue Carbon actions with the government of Costa Rica will continue in 2019 with the construction of the National Blue Carbon Strategy. Another important contribution related to mangroves has been the formulation of a mangrove conservation strategy for the Gulf of Nicoya of Costa Rica.

CATIE also supported the Dominican Republic's Ministry of the Environment and Natural Resources in completing a National Forest Inventory, through a forest cover inventory in non-forest land (cocoa, coco and mango plantations, scrubland, pastures, etc.). The work involved the design and implementation of a field inventory and calculations of the biomass and carbon accumulated in these systems.



Outreach

Through its participation in Costa Rica's National Commission of Forest Sustainability (CNSF), CATIE helped to promote a decree setting official standards for the management of the country's secondary forests. This is expected to provide a valuable tool for promoting restoration activities and the Center will continue to promote the use of this tool.

In Guatemala, CATIE has made a significant contribution to the definition of priorities and criteria for allocating resources for landscape restoration. In this country, it has provided extensive support in training human resources together with the United Nations Food and Agriculture Organization (FAO), the GIZ agency, the United States Forest Service (USFS), the International Union for the Conservation of Nature (IUCN) and IKI.

In Mexico, CATIE has supported identification of restoration initiatives throughout the country and has promoted interinstitutional discussions on the possibility of defining a national strategy.

In Costa Rica, the participation of CATIE specialists was key in defining a national landscape restoration strategy. That process is continuing in the context of our participation in the National Commission of Forest Sustainability (CNSF).

In Chile and Peru, CATIE contributed to an analysis of opportunities for landscape restoration at the national level and, after a lengthy negotiation process, managed to integrate efforts by the Ministry of Environment, the Ministry of Agriculture, the National Forest Corporation (CONAF) and the Forestry Institute (INFOR) to organize the first National Workshop on Restoration Opportunities and Challenges at Landscape Level. Finally, CATIE is a member of Colombia's National Landscape Restoration Group and has participated in discussions to develop a national plan.



Success story

The International Course on Diversified Management of Natural Tropical Forests: the most established course of its kind in the world.

In 2018, CATIE organized the thirtieth edition of this course, making it the longest- running forest management course at the global level. Since the first course was held in 1987, and to the present day, it has trained 581 people from several regions of the world (309 from Central America and the Caribbean, 212 from South America, 24 from North America, 21 from Europe and five from Africa).

However, the course has evolved in terms of its content, since the initial version focused more on the silvicultural aspects of forest management, while the current course covers the topics related to the diversified management of goods and services provided by forests, taking into consideration the change of paradigms linked to climate change, landscape restoration and governance for territorial management.



Partners

CIRAD • World Resources Institute (WRI) • Ibero-American Network of Model Forests (RIABM) • National Institute of Forest Research (NIFOS), Republic of Korea • University of Idaho • Inter-American Development Bank • Swiss Agency for Development and Cooperation (COSUDE) • International Union of Forest Research Organizations (IUFRO) • the German government's International Climate Initiative (IKI) • Ministry of Environment and Natural Resources (MARN) of El Salvador • Wetlands Program - National System of Conservation Areas-Costa Rica • Institute of Forest Conservation and Protected Areas of Honduras (ICF) • Municipality of Curridabat-Costa Rica • International Center for Tropical Agriculture (CIAT) • United Nations Food and Agriculture Organization (FAO) • Center for International Forestry Research (CIFOR).



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Addressing regional demands

CATIE's mandate focuses on supporting the sustainable management of agriculture and natural resources in Latin America and the Caribbean. We work in 13 member countries and our Country Offices and institutional links focus on meeting the demands of each country with different levels of impact. Our work includes training, project implementation and consultancy services, and technical assistance, among other actions.



GUATEMALA



In 2017, CATIE initiatives in Guatemala were aimed at having a more direct impact on national policy and its instruments, as well as with international agreements, working more directly and in response to the country's strategic topics. The contributions this year in Guatemala were part of three major projects:

- ▶ National Nutrition Information Platform (PiNN, Spanish acronym), executed in coordination with the Secretariat of Food and Nutritional Security (SESAN). Funding from the European Union in Guatemala.
- ▶ Territorial Co-Management for Conservation and Sustainable Management of the Acatenango Volcanic Complex, with funding from the Tropical Forest Conservation Fund (FCA).
- ▶ Climate-Smart Production Systems Based on Silvopastoral Systems in 15 Municipalities in Southeastern Guatemala.

Major projects and consultancies in 2018

Territorial co-management for the conservation and sustainable management of the Acatenango volcanic complex:

strengthening the Municipal Environmental Management Unit (UGAM) for conservation and restoration actions; ecotourism management; and community tourism; knowledge management; biodiversity conservation and ecotourism; strengthening governance and conflict resolution.

Climate-smart production systems based on silvopastoral systems in 15 municipalities of southeast Guatemala:

implemented in 30 model farms to generate information demonstrating the contribution of silvopastoral systems and best livestock practices to climate change adaptation and mitigation. A report was prepared on the farms' carbon balance to identify farm designs that present a positive carbon balance (carbon removal greater than emissions) and a guide to the participatory design of farm plans with silvopastoral systems and prioritization of good livestock practices.

National Information Platform for Nutrition (PiNN):

The Secretariat for Food Security and Nutrition (SESAN) and the relevant sectors have improved their capacity to operate and maintain the platform. In addition, they are being strengthened in order to monitor the progress made in achieving the national goals of reducing chronic malnutrition and monitoring multisector investments in nutrition. They are also improving capacity to use information and evidence for the design and improvement of multisector nutrition policies and programs.

Sixth National Report: Compliance with the Agreements of the Convention on Biological Diversity: CATIE provided technical support in the preparation of this report to the National Council for Protected Areas (CONAP) and the United Nations Development Program (UNDP).

Project- Adapting to Climate Change in Guatemala's Dry Corridor:

The baseline for this project was prepared in eight municipalities.

Platforms in which CATIE participates

- ▶ The Guatemalan Climate Change Sciences System (SGCCC)
- ▶ Technical Committee of the Community Forests Development Fund
- ▶ National Forest and Landscape Restoration Roundtable
- ▶ Technical Group for Research and Rural Extension; Group for Promotion of Sustainable Cattle Ranching
- ▶ National Food and Nutrition Security Information System (SIINSAN)
- ▶ Organizing Committee of the Eleventh National Forestry Congress
- ▶ Agro-climatic Technical Roundtable of Chiquimula.

EL SALVADOR



One of the most important CATIE initiatives in El Salvador during 2017 was the WaterClima LAC project, financed by the European Union. Actions were undertaken to provide sustainable management of coastal zones, focusing mainly on strengthening the human capital of the Association of Municipalities of Los Nonualcos to prepare them to manage a plan for local sustainable development.

Other relevant achievements in El Salvador were forged through the alliance between CATIE and the Ministry of Environment and Natural Resources (MARN), such as, for example, technical assistance that the center provided in development of the National REDD+ Mba Strategy.

Major projects and consultancies in 2018

Regional Climate Change Program (RCCP):

This initiative is coordinated from El Salvador and financed by the United States Agency for International Development (USAID). CATIE built capacity in climate information for adaptation and the environment in coordination with the Ministry of the Environment and Natural Resources (MARN).

Development project for sustainable forest models and links to private funding for secondary forests:

Financed by the International Climate Initiative (IKI), the project is being implemented in coordination with the General Directorate of Forest Management, Watersheds and Irrigation of

the Ministry of Agriculture, Livestock and Food. Its objective is to strengthen the capacity of institutions and producers to manage secondary forests in the Department of Morazán.

WaterClima Project: This initiative was financed by the European Union. Its results focused on strengthening public-private sector dialogue and cooperation for the management of coastal areas and the design of technical and financial mechanisms for managing coastal areas, local development, capacity building, dissemination and networking. CATIE worked with public and private sector institutions in the departments of La Paz, San Vicente and Usulután.

Central American Program for Integrated Coffee Rust Management (PROCAGICA):

An initiative financed by the European Union and implemented by the Inter-American Institute for Cooperation on Agriculture (IICA). CATIE established 50 research parcels with coffee agroforestry systems in the departments of La Paz, San Miguel and Usulután, in coordination with IICA and the National Center for Agricultural and Forestry Technology “Enrique Álvarez Córdova” (CENTA).

Diploma program in Climate Financing:

28 professionals from the public sector and non-governmental organizations received training to gain access to climate funding. This is an initiative of the Vice-Ministry for Development Cooperation (VMCD) and MARN, implemented with support from the United Nations Development Program (UNDP).

Platforms in which CATIE participates

- ▶ CATIE participates in the Roundtable for International Cooperation on Agriculture, a group of 21 institutions (donors and international organizations) working to coordinate and support the national agricultural development agenda.

PANAMA



The main protagonist for CATIE's impact in Panama during 2017 was the Regional Climate Change Program of the United States Agency for International Development, which ended that year. There were also four local projects and administration and beginning of a consultancy on watershed restoration.

The institution also carried out work on forest policy, contributing knowledge and experiences on topics such as management of natural forests, community participation on REDD+ topics, rural development policy, and planning to address climate change in the agricultural sector.

Major projects and consultancies in 2018

Strategic Plan for the Altitudinal Corridor of Gualaca: This plan aims to mobilize resources and organize investments in the area with the participation of diverse stakeholders.

Strengthening partners of the Small Donations Program: The aim was to promote the implementation of new projects and forge collaborative links with organizations involved in similar work.

Strengthening PROCUENCAS: CATIE organized 120 workshops on topics such as farm planning, silvopastoral systems, plantation management and others; 95% of these workshops took place with producers in five priority watersheds in Panama. In addition, a monitoring and evaluation system was developed for topics related to the Alianza por el Millón (Million Hectare Reforestation Alliance) The aim of this public-private partnership is to reforest one million hectares over the next 20 years, in order to reduce deforestation rates in natural forests and contribute to carbon capture.

Platforms in which CATIE participates

- ▶ Technical Committee of the National Climate Change Plan for the Agricultural Sector
- ▶ Global Water Partnership- Panama (GWP)
- ▶ International Center for Sustainable Development (CIDES)
- ▶ National Commission for the Area-based Rural Development (technical assistance platform)

HONDURAS



In 2017, CATIE contributed significantly to meeting this country's demand through the implementation of three projects:

- ▶ Productive Landscapes: Substantial progress was made in defining a strategic plan to work on sustainable livestock in the country.
- ▶ CLIFOR Project: key to strengthening the capacities of forest communities to make decisions on climate change.
- ▶ Project to Strengthen the Subsystem of Protected Areas of the North Coast of Honduras: addressed the issue of adoption and mitigation of climate change in the most important coastal areas of the country, particularly the Atlantic coast, where we worked with communities, government and non-governmental entities to find alternatives to stop degradation and promote adaptation.

Major projects and consultancies in 2018

In Honduras, seven proposals were presented of which five were approved for the sum of USD 9.43 million at the consortium level. CATIE completed five consultancies with the Ministry of Environment and three agreements were signed with two private institutions and one with the Ministry of Education.

Platforms in which CATIE participates

- ▶ CATIE has signed an agreement with the Honduran National Federation of Farmers and Ranchers (FENAG), an organization with nearly one million members. It is also a board member of the Global Water Partnership (GWP) and works very closely with the ministries of Agriculture and Livestock, Environment, Education and with the Institute of Forest Conservation, the Directorate of Science and Technology (DICTA) and the Honduran Coffee Institute (IHCAFE). With its innovative educational approaches, CATIE leads the country's network of 23 universities in the Interinstitutional Committee of Environment Sciences (CICA).

NICARAGUA

For CATIE in Nicaragua during 2017, the alliance with partners was key, such as the Ministry of Environment and Natural Resources (MARENA, Spanish acronym), Nicaraguan Institute of Agriculture (INTA) and the Ministry of Family, Community, Cooperative and Associative Economy (MEFFCA).

Working together with these institutions, CATIE helped with management of protected areas, providing technical assistance and financial support to the Peñas Blancas Collaborative Management Committee; shared strategies and lessons learned from the projects and CATIE actions in international congresses on sustainable coffee, agroecology and livestock; and trained 25 technicians on climate change and adaptation tools, as well as training diploma students on adaptation of coffee to climate change.

Major projects and consultancies in 2018

Water Harvesting Project: Successfully completed this project through technical assistance to the Ministry of Family, Community, Cooperative and Associative Economy (MEFFCA). Around 1700 families adopted water harvesting technology and increased their food availability by 50% and production by 10%.

New project: A new project for USD 6.4 million was implemented with support from the Swiss Agency for Development and Cooperation (COSUDE), the CGIAR research program on Climate Change, Agriculture and Food Security (CAAFS) and Bioversity International..

Platforms in which CATIE participates

- ▶ Collaborative Management Committee for Macizo de Peñas Blancas
- ▶ National Agricultural Research and Innovation System
- ▶ Articulating Science, Rural Development and Education in Nicaragua
- ▶ National Coffee Roundtable
- ▶ National Cacao Roundtable
- ▶ World Soil Association
- ▶ National Watersheds and Water Network
- ▶ GESCON knowledge management Network
- ▶ The Latin American Network of Rural Extension Services

DOMINICAN REPUBLIC

Major projects and consultancies in 2018

Agreements: CATIE signed nine cooperation agreements (five with the public sector and four with the private sector).

Consultancies: Three consultancies were implemented.

New proposals: CATIE negotiated eleven project and training proposals with the Ministries of Agriculture and the Environment.

Capacity building: 99 technicians received training on different topics.

Platforms in which CATIE participates

CATIE coordinates actions and is closely associated with four ministries and nine decentralized institutions of the agrofood and forestry sector, nine private sector institutions and 10 universities. It also forms part of six discussion groups: The Water Roundtable coordinated by the Ministry of Planning

- ▶ The Board of Deans and Directors of Agrofood and Forestry Courses
- ▶ Donors Group coordinated by the Ministry of Agriculture
- ▶ Donors Group coordinated by FAO and IICA
- ▶ Mixed Binational Haiti-Dominican Republic Commission coordinated by the Ministry of Foreign Relations
- ▶ Presidential Commission for the Rehabilitation, Sanitation and Sustainable Use of the Ozama and Isabela River Basins.

MÉXICO

In 2017, Mexico was one of the countries in which CATIE undertook new initiatives to promote solutions in the areas of livestock, climate change and water resource management. The actions were coordinated through three projects:

- ▶ BioPaSOS, nanced by the German government through the International Climate initiative IKI
- ▶ Mechanisms and Networks for Technology Transfer Related to Climate Change in Latin America and the Caribbean. Coordinated by the Inter- American Development Bank (IDB) and nanced by the Global Environment Fund (GEF)
- ▶ WaterClima LAC, nanced by the European Union (EU)

Major projects and consultancies in 2018

BioPaSOS Project: CATIE's implementation of the project "Promoting biodiversity conservation through climate-smart agrosilvopastoral practices in landscapes dominated by livestock in three regions of Mexico", known as BioPaSOS, has impacted more than 900 livestock farming families in the project's intervention areas located in the states of Jalisco, Campeche and Chiapas.

Innovation Project for the Monitoring, Reporting and Verification System for National REDD+: A graphical user interface was developed to generate consultations and reports for the different components of Mexico's National Forest Monitoring System,

e.g. field data, remote sensors, community monitoring and biodiversity; the implementation and institutionalization of the MAD-Mex software , through the calibration of this tool to improve detection and management of changes in forest coverage; and adoption of the use, development and administration of this tool within the National Forest Commission (CONAFOR).

Platforms in which CATIE participates

- ▶ CATIE cooperates actively and closely with Mexican state and federal organizations:
- ▶ Implements the BioPaSOS project jointly with the Inter-American Institute for Cooperation on Agriculture (IICA) with support from the Federal Government, through active coordination of the National Biodiversity Commission (CONABIO) and the Secretariat of Agriculture and Rural Development (SADER).
- ▶ Participates in various platforms involving a large number of research, education and development institutions with similar objectives, including: the Emissions Reduction Initiative (IRE); the learning platform in El Tablón watershed; the Thematic Network in Agroforestry Systems of Mexico (REDSAM); the Network for Research and Technological Innovation for Tropical Cattle (REDGATRO); and the Virtual Center of Excellence in Forest Monitoring.

COLOMBIA

Major projects and consultancies in 2018

New proposals: CATIE submitted nine proposals, one of which has been approved to begin in February 2019.

Agreements: Eleven agreements were signed (five with the public sector and six with the private sector).

Platforms in which CATIE participates

- ▶ CATIE forms part of the Sustainable Livestock Group and of the National Advisory Group on Restoration Roundtable. During 2018, its actions focused on highlighting the institution in the country, with national and regional actors, and it established strategic partnerships for cooperation and the development of research and education proposals for development and management in the coming years. These partnerships involve institutions such as the Ministry of Environment, Ministry of Agriculture, technical units attached to the ministries, such as the Rural Agricultural Planning Unit (UPRA), the National Geographic Institute (IGAC) and private sector partnerships such as the Natura Foundation.



CATIE and IICA partners for sustainable development

As partner institutions, the Inter-American Institute for Cooperation on Agriculture (IICA) and CATIE launched a new work cycle for the interinstitutional coordination and cooperation committee, made up of officials from both institutions. Its thematic sphere of action includes corporate-administrative matters and technical-academic cooperation.

At the technical level, in 2018 CATIE worked to define a joint action model that would respond to its strategic vision and medium-term plan of action. Accordingly, it implemented important joint projects such as PROCAGICA-Central America and PROCAGICA-Dominican Republic in the area of coffee production, with the support of the Agricultural Research Center for International Development (CIRAD), and the BioPaSOS project, an initiative aimed at promoting climate-smart livestock production in three Mexican states. The latter project also involves Mexican government institutions.

At the end of 2018, CATIE and IICA signed several agreements in Mexico as a framework for their collaborative actions and negotiated a physical space (office) for CATIE in Mexico.

Other joint technical initiatives included the drafting of proposals for projects in Haiti. On the academic front, progress was made in developing an online (virtual) Master's Program on Food Security, based on a Master's program developed previously by IICA. This online Master's program is expected to begin in July 2019.

With regard to corporate matters, the Inter-American Board of Agriculture (JIA) issued Resolution 507 instructing IICA and CATIE, with the participation of the Costa Rican Government, to establish an ad hoc work group, with the aim of preparing a strategic plan for CATIE's future. This would include scenarios and alternatives for restructuring and strengthening CATIE's organizational, scientific, academic and financial platform, as well as its legal base. This work group was established in 2018 and is already working.



Technological advances

In 2018, CATIE introduced major technological changes, particularly the efforts to increase the Internet speed, which went from 80 MB (megabits) to 120 MB. In the last two years, Internet speed throughout the campus has tripled, enabling services such as Web browsing, email, IP telephony, webinars, cloud storage, etc. to function more efficiently.

Another achievement was the renewal of CATIE's access to the Microsoft Imagine Program, which has allowed all our students and teachers to use free licenses (valued at more than USD 500,000) for their academic work. CATIE also completed the process of implementing the new IP telephony system (SIPTrunk), enabling users to make better quality calls and reducing the institution's telephone costs by 30%.

It is important to mention that in 2018 CATIE launched a solar energy pilot plan for the Department of Information and Communication Technology (ICT). CATIE currently has the resources to develop the project, which has already been adjudicated. Implementation is expected to begin in the first months of 2019. This project will generate 95% of the ICT building's energy, providing annual savings of approximately USD 6,800.

In order to optimize its operational processes and install modern and efficient systems CATIE moved forward with its plans to adopt the new software, Enterprise Resource Planning (ERP), which will replace the IFIS (Integrated Financial Information System) that has been used for several decades. In this regard, during 2018 different service providers and proposals were evaluated. Implementation of the new software is scheduled to begin in 2019.

Finally, eight software projects were developed for different CATIE programs, contributing to generate income for the department and supporting the Center's research.



Our finances in 2018

It was possible to maintain a positive balance in CATIE's finances, obtaining a net result of USD 15 030. CATIE's accounting is based on IFRS (International Financial Reporting Standards) and in 2018 the new IFRS 9 standard was applied (financial instruments), in which the accounts receivable of the member countries was analyzed.

In this context, CATIE absorbed a sum of USD 678,000 for outstanding contributions in 2018, but through an important coordination with the CATIE representatives or liaisons in the countries, USD 1.2 million in country quotas were recovered.

In addition, IICA provided USD 938 100 as a contribution to CATIE, which was key to achieving positive financial health during 2018.

On the other hand, CATIE's commercial farm brought in the first harvest of the 5.4 ha of organic sugarcane that resulted in an average hectare production of 133 tons and generated an income of USD 55 555.

Finally, CATIE, through financing granted by Fundatrópicos, managed to improve its assets with the purchase of transport vehicles (four cars) and two motorcycles for the security area; as well as assets for the commercial farm with two tractors and two pickups. In addition, investments were made to improve the services of the hospitality area.

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).

