CATIE

Solutions for environment and development
Soluciones para el ambiente y desarrollo

# Institutional Strategic Plan 2021-2030

# Inclusive Green Development for Latin America and the Caribbean

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# Presentation

The Institutional Strategic Plan (ISP) of CATIE (Tropical Agricultural Research and Higher Education Center) for the period 2021-2030 is the result of an institutional effort that included the analysis of the experience, capacity and products generated by the institution, as well as face-to-face consultations with professionals who work in the different units and directorates. The directorates of CATIE (Research for Inclusive Green Development, Education, Outreach and Global Partnerships, Finance and Corporate Services) coordinated internal consultations and provided important inputs for the development of this plan. We received opinions from key stakeholders through consultations made by CATIE offices in member countries, meetings held with the President and members of the Board of Directors, as well as with strategic allies such as IICA, CIRAD, GIZ, the Bioversity Alliance - CIAT and people with noteworthy experience in the work and mandate of the institution. In the process, we had the support and facilitation of external consultants, doctors Nicolas Mateo and Carlos Pomareda, who are recognized hereby for their efforts.

The document is structured in three sections: 1) the institutional context, 2) the strategic framework, and 3) the implementation strategy. The plan begins with the synthesis of CATIE's institutional contributions and capacities in recognition of the aspects that define the turning point for the new ISP. It is also recognized that CATIE is an organization of high value for agriculture in the tropics and in particular for the Latin America and the Caribbean (LAC) countries.

Then, the document presents the context in which CATIE has developed and how changing scenarios (global and regional) could affect the work of our organization in the coming years. The demands for CATIE's contributions and its response will undergo adjustments and therefore this section considers the elements that will influence them.

Further on, it shows the vision, mission, values and institutional policies are presented, whose compliance is essential to ensure effective synergy between CATIE´s directorates and allied institutions. The document also presents the strategy of the plan, showing the restatement of the principles and then defining the route and the strategic objectives. The inclusion of the objective on institutional capacity development is considered essential and necessary to achieve the other objectives. The operational strategy and the elements required to achieve it are also presented and are the basis for CATIE's transition towards a more functional organization model.

The document concludes with the regarding planning, monitoring and evaluation, and the institutional commitment of actions to be taken as part of the planning and programming process of the Biennial Plan and Annual Operative Plan.

This document reflects CATIE's prospective vision within the framework of its mandate, the context in which it has performed in recent years, the lessons learned, and possible future scenarios.

We thank each of the people and organizations consulted for their participation, time, contribution of ideas and perspectives for the construction of our ISP 2021-2030.

# Executive summary

CATIE's Institutional Strategic Plan (ISP) aims to promote a favorable path to achieve Inclusive Green Development (IGD), through the construction of human capital, institutional strengthening for research and development, and outreach.

This plan is the result of an institutional effort that includes the analysis of the demands of the countries and the consultation with strategic allies and the Board of Directors of CATIE. This review includes detailed attention to the products generated by CATIE, as well as the policies, mission, vision and institutional values, and strategic objectives. For the design of these objectives, the theory of change approach was applied, all within the current and prospective context in the LAC region.

**Inclusive Green Development (IGD)** *ensures intergenerational equity, the full participation of different groups in society, and the maintenance of the capacity of natural capital to provide the ecosystem services on which human well-being depends.*

The application of the theory of change defines the causal path that shows how the products generated by CATIE (sphere of control) are transformed into results (sphere of influence) and impacts. This represents the basis and starting point for the definition of the implementation strategy and the monitoring and evaluation plan that are part of this ISP.

The starting point is CATIE's institutional contributions, embodied in products that constitute the basis for sustainable agricultural production, sustainable management of natural resources in the tropics and human capital development. These products represent the raison d'être of the organization. Among the most outstanding are: agroforestry systems with coffee and cocoa; intensification of livestock production and environmental management; silvopastoral systems; climate action; management, conservation and restoration of tropical forests; environmental and agricultural economics; territorial approach to landscapes and hydrographic basins, and human capital development to influence the transformations towards IGD.

A key aspect comprises CATIE's institutional capacity, which is reflected in its institutional model, its human and financial resources, its fixed assets, and genetic collections, also adding alliances and collaboration with other actors. This has allowed CATIE to achieve products and results in research, innovation, education, capacity building, and outreach.

The review of the current and prospective context raises the scenarios in which CATIE has been immersed in recent decades. Socio-economic and environmental conditions are taken into account, such as poverty, social exclusion, and migration; food and nutrition security; impacts of climate change and water scarcity, as well as degradation of ecosystems and loss of biodiversity. In addition, key issues such as gaps in productivity in agri-food systems and human resources in agriculture are considered.

In the future context, an analysis is presented on the implications for CATIE of the practices of small-scale agriculture and commercial agriculture based on monocultures, as well as technological progress and climatic instability. The possibility that some conditions may worsen is contemplated, such as the case of migration, poverty, and inequality. Other conditions are exposed and uncertain, among them, the demand for food and its composition (associated with the generation and distribution of income), the availability of food in the international market, and the possibilities of continuing to export the products that have dominated the market until now. No less important are the issues that link ecosystem health with human health (One Health).

In the same contextual line, among the future opportunities in this plan are the development of agri-food systems aligned with the conservation of ecosystem services and health, as well as new technologies, digital tools, and agribusiness models. Climate action as a whole, the restoration of degraded areas, and the management and sustainable use of biodiversity continue to be an important part of the institutional lines of work, always in the interests of a new vision of agriculture and the IGD for the LAC region, as a promising space to address urgent issues such as gender equity and social inclusion.

To this end, CATIE's mission is to:

*Promote Inclusive Green Development, through scientific knowledge and the training of new leaders, managing ecosystems, landscapes, and food systems, which with their permanence favor the sustainable well-being of populations in the tropics of Latin America and the Caribbean.*

The structure of ISP includes three components: 1) the principles of the plan, 2) the theory of change, and 3) the strategic objectives (SO). The principles include a comprehensive analysis of the synergies among research, education-training and outreach, the importance of agriculture, inclusive production systems, ecosystems, biodiversity, and climate; it also details CATIE`s response to the demands of member countries. Functional alliances and interactive complementarity with them also appear as key points of the strategy and contribute to organizational cohesion and alignment.

The theory of change exposes the causal foundations to define the pathway towards the achievement of results and impacts. Through the design of conceptual models, the activities that will be carry out for the 2021-2030 period are synthesized to achieve strategic objectives, transformations and impacts, and, consequently, achieve the institutional mission. The actions that we will carry out for this purpose will focus on the areas of research, knowledge management, capacity building, and outreach.

We recognize the need for an IGD model for agriculture in Latin America and the Caribbean, committed to a balance between the conditions of economic growth, social inclusion, the conservation and use of natural resources, and a greater capacity for adaptation to climate change, the latter being a need and an expectation of particular relevance for the tropics. It is in response to the need for such development model that CATIE conceptualizes IGD. To achieve the transformations that the IGD requires, the following strategic objectives are proposed:

## SO1. Generation of scientific and technical knowledge, through systemic research for Inclusive Green Development (IGD)

1. Food security based on agrobiodiversity and food systems
2. Intensification of livestock production based on good practices in agrosilvopastoral systems
3. Genetic improvement of coffee and cocoa
4. Modern agroforestry for annual and perennial crops
5. Climate action in all its areas
6. Conservation and sustainable use of biodiversity and its ecosystem services
7. Economy, environment and sustainable agribusiness in the field of family farming and competitiveness of value chains
8. Water security and sustainable watershed management
9. Restoration of productive and natural ecosystems (the soil component is particularly critical)
10. Use and production of renewable energy in agriculture

## SO2. Training leaders with professional competencies that influence Inclusive Green Development (IGD)

1. A renewed and competitive Graduate School that differs from other similar ones by its systemic approach, its programs in alliances with highly prestigious international universities, the care of the professional functionality in the English language of its graduates, and the emphasis on critical research topics and development that have been eroded in recent years.
2. A faculty with doctoral-degree (preferably) with strengths in knowledge and skills aligned with the scientific and technical principles of IGD.
3. A flexible academic offer adapted to current demands that includes face-to-face, hybrid, and distance education in its modalities (assisted and self-paced).
4. Professional growth training programs, at the technical level and with producers at the community level, through face-to-face, remote or mixed versions, using technology and training materials appropriate to each level and that contribute to the expectations of IGD.

## SO3. Outreach through knowledge management and institutional strengthening for Inclusive Green Development (IGD)

1. Increasing CATIE's capacity in the countries to facilitate alliances and the negotiation of new projects and additional resources, as well as the transfer of innovative and appropriate digital tools for agriculture 4.0.
2. Development of the concept of nesting CATIE`s country offices with national and multilateral institutions that promote the dissemination, validation, scaling, and evaluation of technologies and educational opportunities and the negotiation of new projects and additional resources.
3. New (or renewed) thematic platforms for development and governance in countries or regions, through which knowledge is managed, relevant results are validated and scaled, and communities of practice are formed in favor of IGD.
4. A strengthening of bilingual institutional strategic communication (Spanish/ English) in social networks and other media to position CATIE`s achievements and results with a broader audience and allies.

## SO4. Institutional development and modernization

1. The efficient use of human resources with gender equity, capital goods and operating resources.
2. Effective actions for research and training of human resources with gender equality that generate knowledge of high value for the member countries.
3. A solid financial ground with medium and long-term regarding sources of funding.
4. Efficient and effective negotiation and mobilization of resources and establishment of strategic alliances.

The ISP lays out an implementation strategy highlighting critical areas in which CATIE will work to improve its effectiveness, efficiency, and impacts. Finally, the monitoring and evaluation plan explains the conceptual model and framework of reference used for the design of the theory of change, on which CATIE's pathway for the 2021-2030 period is based. It also shows the portfolio of indicators of CATIE's products, results, and impacts for each strategic objective. This monitoring plan constitutes the basis for biennial and annual operational planning of the institution's operational units.

# Institutional context

## 1. Introduction

CATIE (Tropical Agricultural Research and Higher Education Center) is a unique regional organization that, based on the synergy among postgraduate education, research, innovation, and outreach, influences the transformation of agricultural systems and natural resources of the tropics in Latin America and the Caribbean (LAC), to increase productivity, meet the demand for healthy and nutritious food and conserve ecosystem services. Its contribution to sustainable development has a history of just over 75 years, and it has made relevant contributions, in close coordination with partners and allies, to the solution of socio-economic, productive, and environmental problems.

*Although it is true, the date of creation of CATIE was in 1973; from the beginning as the Inter-American Institute of Agricultural Sciences (IICA), today the Inter-American Institute for Cooperation on Agriculture, in 1942 it was born as an academic center and remains faithful to its founding spirit since those years.*

The institution also has a mandate of a political nature, given the structure of its Board of Directors, the Higher Council of Ministers of Agriculture, and its source of basic resources provided by the member countries, which allows CATIE to be close to the decision-makers who influence the development of agriculture and the rural environment and demands the generation of practical solutions applicable in the short and medium-term. This contributes to its uniqueness, represents an attraction for CATIE's allies, and is taken into account when defining this Institutional Strategic Plan (ISP).

The ISP 2021-2030 has been developed amid very significant challenges and opportunities. Among the former, the threats of global change remain a priority: the degradation and loss of natural resources, increasing urbanization and migration within and between nations, and the increase in climate change and variability. It is in the face of these challenges that the countries of the region have adhered to two transcendental international agreements: the Paris agreements on climate action and the 2030 Agenda with its 17 Sustainable Development Goals. The pandemic caused by COVID-19 and the occurrence of extreme natural events in 2020 have had a negative impact on the loss of life and human health, employment, income, and the disruption of food systems and ecosystem services. The duration of the effects of the pandemic was not clear at the time of writing this document, although important trends were seen such as the post-COVID "green-blue" recovery proposed by the Government of Costa Rica and calls for proposals for projects that focus on that recovery. However, an increase in the frequency and intensity of extreme natural events is expected with a high degree of probability.

The opportunities target to value the richness of the tropics in LAC and Inclusive Green Development (IGD) that requires the acknowledgement of sociocultural and ecosystem particularities and the integration of diversity of resources, knowledge, and potential of people and ecosystems from the local to the regional scale. CATIE has a great opportunity to continue its contribution to development, which implies that the work must be supported by alliances with public and private actors that share interests and complement the capacities to overcome the challenges and take advantage of the opportunities derived from multiple demands.

The challenges and opportunities ratify the need for our institution to continue systemic research focused on IGD for production systems and the conservation of natural resources, ensuring gender equity and social inclusion, actions that, by its founding mandate, CATIE has carried out since its inception by combining research and innovation with the strengthening of human capital and outreach.

The ISP includes a prospective analysis that considers the environment of change in the economic and environmental aspects and in the social dynamics and internalizes the adjustments in the priorities of international cooperation, with the objective to improve its positioning and strengthening its substantive activities. The strategy outlines innovations in research, in postgraduate education, in outreach and impact, as well as in institutional development and the modernization of its processes.

# 2. CATIE: institutional contributions and capacities

## 2.1 Institutional contributions of CATIE

Our products constitute, both in sustainable production systems and in the management of natural resources in the tropics and the formation of human capital, the raison d'etre and the response to the institutional nature. The most outstanding ones are summarized below.

***Agroforestry systems with coffee and cocoa.*** We have contributed to ensuring the future of both crops, maintaining for more than 70 years international collections of coffee and cocoa that are globally recognized and available in the public domain. They have allowed us, together with the genetic improvement programs of many countries, the development and use of superior materials, differentiated by quality, productivity, and resistance to pests and diseases. We have also developed modern methodologies and tools that have facilitated the establishment of successful and innovative agroforestry models throughout the tropical belt of the continent. These diversified systems have improved the livelihoods of rural families, in association with the generation of ecosystem services such as water conservation, carbon sequestration, improved soil quality, and the pollination service of crops by beneficial insects.

***Intensification of livestock production based on good practices in agrosilvopastoral systems.*** Thanks to intensive work over the past decades, we have achieved a leading role in promoting the sustainable intensification of livestock production systems. An improvement in efficiency and productivity per unit area is sought in livestock systems. The benefits are obtained as a result of the release of areas of less vocation for livestock, which are destined for restoration, helping to reduce environmental degradation, increasing tree cover, improving habitat for wildlife, and increasing carbon sequestration. Parallel to this, these systems and good practices make it possible to improve the management of resources within the properties, reduce emissions and promote adaptation and resilience to climate change. The protection and restoration of the ecosystem, based on the productive intensification and the approach of One Health, contributes to improving the interaction and harmony among biodiversity, livestock, and human beings for the better health of the planet.

***Management, conservation and restoration of tropical forests.*** We are internationally recognized as a leading institution for its contribution to the scientific knowledge of tropical forests, their biodiversity, and the ecosystem services they provide, in the context of landscapes and societies resilient to climate change and natural disasters. Our medium- and long-term research on the effects of global change drivers on tropical forest ecosystems and ecosystem services is widely reported. Our contribution to the promotion of sustainable forest management in general, community forest management in particular, and the restoration of forests and landscapes in LAC has been key in the development of the region.

*CATIE is a founding member of the 20x20 Initiative for the restoration of ecosystems in Latin America and the Caribbean.*

***Climate action.*** We are pioneers in proposing science-based solutions with an ecosystem and sustainable landscape vision, developing cutting-edge technologies for analysis, action, and monitoring of ecosystems facing the effects of climate change. Among our achievements, the pioneering concept of synergies between adaptation and mitigation to climate change (SAM) stands out, which includes adaptation actions based on ecosystems, support for the construction of the REDD + mechanism, and blue carbon. Since 2011, we have been the leading regional actor in blue carbon, developing scientific and political actions with innovative climate action tools that strengthen the flows of ecosystem services and the livelihoods of rural marine-coastal populations in the region. In addition, we are first-line actors in instances of the United Nations Framework Convention for Climate Change (UNFCCC), the Intergovernmental Panel of Experts for Climate Change (IPCC) and we promote the construction and implementation of new mechanisms of action under the Paris Agreement as REDD +, National Appropriate Mitigation Actions (NAMA) and National Determined Contributions (NDC).

***Environmental economics and strengthening of value chains and sustainable agribusiness.*** We have actively participated in the design and evaluation of public policies, development, and validation of market instruments that affect the protection of the environment, the sustainable management of natural resources, and the reduction of poverty. We are pioneers in the conceptualization and implementation of payment for ecosystem services schemes and with leadership on the circular economy approach. Since 2007, we host the regional center of the global *Environment for Development* (EfD) network, which consists of 15 research centers in environmental economics. This network contributes to the generation of relevant scientific knowledge to strengthen environmental management and economic development (https://www.efdinitiative.org/). In addition, we innovate in the analysis, creation, and promotion of inclusive value chains and sustainable green businesses considering indicators and parameters that reveal viability from a sustainability perspective, the connection with livelihoods, competitiveness, and its adequate connection with the differentiated multilevel markets (local, national, regional and international). It is important to mention that this transversal action is the one that links family agriculture (small producers) with their organizations (cooperatives and associations) and the markets, through processes that increase the competitiveness of the actors and ensure long-term commercial alliances with private companies. CATIE has extensive experience strengthening value chains in tourism, cocoa, coffee, and livestock, among others.

***Territorial approach of sustainable landscapes and hydrographic basins.*** For more than 45 years, we have proposed models for integrated management of hydrographic basins, which now contribute to water security strategies and increase resilience having water as integral core. At the same time, we have recognized the need for multi-scale approaches in the conceptualization, communication, and implementation of land and landscape management measures. Through this approach, we have generated solutions not only in watershed management and the conservation of water resources for multiple uses (particularly irrigation) but also in the biological corridor programs of the Central American countries. In addition, we have positively influenced the more than 31 million hectares in 15 countries where landscapes are managed applying a participatory approach through the Latin American Model Forest Network.

***Human capital training to influence transformations towards sustainable development.*** Through postgraduate education programs (masters and doctorates) in agricultural, natural, and social sciences, we have graduated more than 2,600 professionals from the countries in the region, without discrimination of any kind, as part of CATIE`s inclusion and gender policies. The ratio of women has increased from

10% during the first 10 years to 51% in the last 10 years of institutional life. It also stands out that 30% of master's degree graduates have pursued doctoral degrees, mainly in Europe and North America. Our graduates work in research, teaching, technological innovation, extension, and other strategic endeavors in public and private spheres (many of them lead the management of public policies at the highest levels of government and educational matters). Some hold positions in senior management of universities, such as deans or provosts, which has undoubtedly improved the educational offer in the region.

The work of the Graduate School has been complemented with training programs that offer the opportunity to thousands of Latin American decision-makers, technicians, and producers to update their knowledge and improve skills as the situation demands or to meet structural needs. An average of 6500 professionals are trained each year by our programs. Always in terms of training, CATIE through its projects has trained hundreds of field promoters through Field Schools, promoting human resources with better knowledge and skills who remain in the same rural communities and contribute to their cooperatives, producer associations, and their families.

## 2.2 Capabilities[1]

CATIE's institutional capacity is reflected in our institutional model, which is composed by its human and financial resources, fixed assets, genetic collections, alliances, and collaboration with other actors, which has allowed it to achieve products and research results, innovation, education, and capacity building.

CATIE's headquarters are located on a green and sustainable campus in Turrialba, Costa Rica. Our campus has an important natural capital that is combined with other valuable capitals such as human resources and infrastructure (functional laboratories in soils, biotechnology, Geographic Information Systems, and environmental modeling). It also has facilities for higher education and training. It is important to highlight our genetic collections that have allowed it to intertwined research, higher education, training, and external projection under an integrated model. This unique form of intervention has proven to be very attractive to international cooperation, donors, prestigious international universities, and scientific organizations. In addition, we have highly qualified personnel with transdisciplinary training that integrates experience and prestige with very promising young scientists.

Our research and teaching support structures, such as the Orton Memorial Library, which together with IICA offers collections of historical value and the most recent literature, and provides, through the Online Documentation Center, access to databases and better documentary platforms for researchers, professors, and students of the CATIE community. Our headquarters are permanently connected to the national offices, so most of the remote facilities are of equal benefit to the member countries of the Center. Very important is the feedback that the headquarters receives from the countries in relation to the adjustment of the needs and demands for services that they require from CATIE in matters of research, education, training, and the requirements in the implementation of projects at different scales.

***The institutional model.*** The synergy between research, training of human resources, outreach, and incidence in the member countries has been decisive for the configuration of a school of thought that aims at the sustainable use of biodiversity, social inclusion, the use of systemic and integrative approaches to the tropical agriculture and livestock, the management of natural resources and the promotion of

1 Some paragraphs in this section have been taken from the contents of the presentation of the institutional document: CATIE Facing the Challenges of the 21st Century, still in preparation.

successful participatory management schemes. These notions have laid the foundations for the promotion of sustainable agricultural, livestock, and forestry production schemes and combinations of these, in different systems and scales in the territories and landscapes, some of which are part of the centers of origin of plants and animals that make up the current agri-food systems.

***Graduate education and training.*** CATIE's capacity to train human resources is reflected in the quality of its faculty, the structure of the programs and courses, and the orientation of these programs towards the creation of capacities to achieve innovative solutions. A very important element of the capacity has been built through the participation of the researchers in the delivery of the courses and the participation of the students in research through theses with the support of the researchers. Short-term training experience is also relevant. Our institution, ahead of the times, ventured into distance education and has three professional master's degrees in virtual mode. Training programs under this modality are very active and their dynamism has increased as a result of the pandemic. As long as pandemic conditions prevent a safe return to presence, the Graduate School has made the decision to convert all its academic offerings into distance education.

***Projection and impact.*** Projection and advocacy work in member countries is another strength, having made our technical-scientific contributions available to priority development subjects in the countries and in the region. For this purpose, the institution will accompany them at different times and circumstances with technical assistance, provision of resources, through projects and capacity building that make the proposed development initiatives viable.

CATIE's National Offices have achieved an institutional anchor over the years, thanks to their technical skills and the development of alliances with local institutional actors, through which a synergistic action in political advocacy has been achieved. Likewise, our offices have been strengthened and positioned in these spheres of advocacy and our allies have strengthened in their technical positioning, based on their interaction with CATIE.

***Alliances.*** CATIE's global alliances are an essential part of its strength and include some of a strategic and long-term nature such as IICA, CIRAD, the Bioversity-CIAT Alliance, the World Agroforestry Center, and GIZ. While others are specifically associated with specific programs, projects, and initiatives of a different nature. These alliances are usually part of the scientific platforms led by CATIE or in which CATIE participates. On the other hand, although they are not defined as alliances in the strict sense, the donor agencies and the member countries, with their contributions, have largely supported the institutional work. The alliance with IICA (established by legal mandate) is critical to achieving political impact and scaling up CATIE's results in Tropical America. Therefore, strengthening this alliance is essential. The two institutions are working to renew their cooperation agreement that includes the new challenges for the region described in this ISP.

# 3. Current and prospective contexts

The current context in which we are immersed is briefly developed in this section. Subsequently, some future scenarios are considered, which determine our pathway.

## 3.1 The situation today

***The Anthropocene and emerging threats.*** The range of Earth System conditions that enables human life, as we know it has been named as the safe operating space. This space can be defined in thresholds characterized by nine key indicators that comprise the planetary boundaries. These planetary limits have been exceeded, perhaps irreversibly, in at least three cases already documented: the integrity of the biosphere and the biogeochemical fluxes of nitrogen and phosphorus. In addition, the most recent evidence suggests that the stability of the large Amazon forest mass and the polar and boreal caps, and the functioning of the "great ocean conveyor belt" could irreversibly collapse within the next 30 years.

***What is the Anthropocene?***

*Human life depends on the conditions of the Earth System. The biosphere (biodiversity) provides human beings with the ecosystem services on which we all depend. However, the current magnitude of human influence causes such profound changes in the conditions of that system that for some the present era is now known as the Anthropocene.*

The effects of the Anthropocene are negatively manifested on agricultural productivity and food and nutritional security due to the considerable degradation of soils, in the variability of precipitation in the Pacific zone of Mesoamerica in fires and pests that destroy pine forests and the livelihoods that depend on them in Honduras and Guatemala, and in the fires in Amazonian forests that accelerate the risk that this unique ecosystem, until now considered perpetual, will become savanna, affecting the climate of the entire planet. It is also shown in the degradation of soils and the associated reduction in agricultural production. Combating desertification and soil degradation is a top priority in mountainous countries with high population density, such as Haiti, Guatemala, Honduras, El Salvador, and the Andean countries. In addition, water scarcity afflicts urban and rural areas more strongly, requiring radical changes in national regulation, such as Costa Rica that have declared access to water as a constitutional right (in quantity and quality).

Finally, the COVID-19 coronavirus pandemic and the risk of future pandemics of other zoonoses (125 emerging infectious diseases), created or exacerbated by the destruction and degradation of biodiversity, add to climate change as the main modern threats to human beings. As climate change and emerging infectious diseases are interdependent, both must be monitored as major threats together.

***Economic growth and environmental deterioration.*** The alarming environmental deterioration as a result of the political guidelines for a global development model based only on economic growth, which began in the 1970s, reached a turning point with the Earth Summit Agreement in Rio de Janeiro. However, instead of making the necessary adjustments in development patterns, humanity accelerated its negative impact on the Earth System (Steffen, Broadgate, et al. 2015)originally published in 2004 to show socio-economic and Earth System trends from 1750 to 2000, have now been updated to 2010. In the graphs

of socio-economic trends, where the data permit, the activity of the wealthy (OECD. Progress has been made in the conceptualization of the place of the human being on the planet through the framework of Nature's Contributions to People (Díaz et al. 2015), but not in the implementation of effective actions that can keep us within a safe operating space for human and planet health (Steffen, Richardson, et al. 2015) introduced in 2009, aimed to define the environmental limits within which humanity can safely operate. This approach has proved influential in global sustainability policy development. Steffen et al. provide an updated and extended analysis of the PB framework. Of the original nine proposed boundaries, they identify three (including climate change).

In the last 20 years, trade liberalization policies have been added within the framework of free trade agreements. The result of these changes can be analyzed from two major trends observed. On the one hand, the countries of the tropics accelerate their agri-food exports, via large international consortiums and concentrated on few primary products with low added value, and at the same time, they increase their imports of basic foods (especially grains).

The concern of some European countries to counteract this trend made resources available to cooperating organizations that would support a development model that recognizes and values measures to protect natural resources. Concurrently, there was a decrease in support for the public agricultural sector, which had an impact on policies that affect it, especially commercial ones.

In the context described, relevant processes have been observed that have influenced CATIE's work, such as aggravation of rural poverty in some territories, environmental degradation, greater effects of climate change, acceleration of migration, threats to biodiversity, limited increase in productivity in agriculture and gaps in human resource training. These processes are briefly considered below.

***Poverty, social exclusion and migration.*** An important phenomenon in the region is the accelerated urban growth and the persistence of rural poverty, especially in some territories, those most affected by the degradation of natural resources (FAO 2019; CEPAL 2012)published by the Food and Agriculture Organization of the United Nations (FAO). The lack of opportunities in rural areas - and in some countries, violence -accelerates the migration of young people to urban areas and other countries in the north of the hemisphere. In addition, gender gaps have increased, as have inequalities in indigenous populations. Urbanization and rural-urban and extra-regional migratory processes require a reconsideration of the role of agriculture, particularly in Mesoamerica and the Caribbean, as well as a greater articulation between agricultural and livestock production, agro-industrial, and markets to make value chains more functional.

***Food and nutrition security.*** Food insecurity has increased especially for the population with limited resources, including rural communities, located in ecologically fragile areas and in spaces with limited access. Recently, the food problem has also affected the group of small agricultural producers and their families, who are limited in their ability to obtain complementary income from jobs, such as day laborers on larger farms or in urban areas, due to limited access problems. A phenomenon generally observed is that the prices that small producers receive are a decreasing proportion of what consumers pay, this being a condition that affects globally, since "the human cost of our imperfect food systems is that almost one billion people starved and nearly 2 billion overconsume inappropriate foods[2]", which contribute to malnutrition, obesity, and up to 11 million premature deaths per year (GBD 2018).

2 Lucas and Horton (2019)

***Climate change impacts.*** Meso-America and the Caribbean are among the region's most vulnerable to the negative effects of climate change. The chain of impacts is long and challenging: from 71% of agricultural areas and half of the largest cities under risk of periodic water deficit (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services 2019), a higher and growing incidence of extreme events including storms, hurricanes, storm surges, droughts, and fires, as well as the proliferation of pests and diseases, change of conditions in optimal areas for crops considered raw materials (*commodities),* such as coffee and cocoa; to the extreme of migration and replacement of entire ecosystems and/or biomass. The latest IPCC reports suggest that we are dangerously approaching the limits of planetary functioning that will put all basic systems for human subsistence at risk of collapse. For this reason, broad, forceful and concerted climate action, implemented from specific scales (farm) to regional ones, is urgent and an operational space where we will continue to lead processes that we started more than 15 years ago.

***Ecosystem degradation, loss of biodiversity and ecosystem services.*** The degradation of biodiversity and ecosystems is a reality in the American tropics. In its 2019 report, the IPBES reveals that 23 of the 27 indicators (85%) for 18 ecosystem services show negative or very negative trends in the last 50 years. The two main drivers of the deterioration of nature, responsible for more than 50% of the loss of biodiversity in the world, are land-use change and direct overexploitation, followed by climate change, pollution, and invasion by exotic species. The loss of biodiversity has led to immense economic losses, as exemplified by the reduction in the number of bees and the reduction in crop yields.

***Population and food and nutritional security (SAN).*** The innovations of the green revolution, mainly achieved thanks to the genetic improvement of crops and the use of agrochemicals and machinery on farms of all sizes, have contributed to meeting the food needs of the current population. The gains from the green revolution approach can be further increased, as long as access to food is improved and post-harvest losses that can reach, and even exceed, 30% are reduced. However, this same revolution causes considerable negative impacts on the stability of production systems: the global food system is the largest emitter of greenhouse gases (GHG), the largest driver of the destruction of terrestrial ecosystems and the loss of biodiversity, the biggest consumer of fresh water and the biggest cause of soil and water pollution due to the excessive use of nitrogen and phosphorus. Most of the environmental impacts of agri-food systems are generated by large monocultures managed with high doses of chemical inputs under an industrial model.

However, the impacts of smaller-scale production cannot be ignored. Small farmers and family agriculture provide more than 70% of the food of the human population, using 25% of natural resources (land, water, and energy). In LAC, family farming encompasses about 81% of agricultural holdings, generates between 57% and 77% of agricultural employment, employing more than 60 million people; it provides, depending on the country, between 27% and 67% of total food production; and occupies between 12% and 67% of the agricultural area. We recognize that family farming is key in any agri-food and environmental development strategy and will surely demand more attention from us in the future.

Considering a projected increase in the population of LAC to 770 million until the year 2050 and an increase in the standard of living, it is necessary to increase agricultural production by 50-60%. However, we face the challenge of reaching this goal in the face of increasing land degradation. Therefore, the need to restore productively and ecologically the extensive agricultural and livestock landscapes of Latin America and the Caribbean is well known and is already part of the national restoration strategies of several of their countries in the context of the United Nations Decade of the Restoration.

On the other hand, the experiences of the long fight against hunger and malnutrition have shown that this problem cannot be overcome with simple increases in production since, apart from serious limitations on access to food in many regions of the world, the poor quality of many foods plays an essential role in human health. The great biophysical and population variability between countries and regions in LAC generates marked differences in their capacity to provide food as a function of national production and their financial capacity to import foreign products. At the national level, the countries most affected by food insecurity are Haiti, Guatemala, Bolivia, Peru, and Venezuela, especially in rural and indigenous populations, but the central challenges for food and nutrition security (FNS) apply in all member countries of the CATIE.

***Human resources in agriculture.*** The migration of rural youth is a growing phenomenon, with the consequent loss of work capacity in the countryside. The lack of opportunities is pointed out as a factor that affects this process; however, there are two other aspects that are usually not analyzed. The first is the low adoption of technology that allows greater productivity of work and therefore wages improve. The other is the negative image that is often generated about agriculture, including its role as a greenhouse gas emitter. The absence of more robust and better-funded national systems for research and extension in tropical agriculture has contributed to the observed situation. From the described context, the need to train human resources for the development of agriculture with a renewed vision in the region is evident.

*Some areas where knowledge gaps are observed and that may become part of the new programs include integrated soil management, new tools for genetic improvement, integrated management of pests and diseases, watershed management and water security, management of the geospatial science, geographic information systems, rural extension, circular economy and bio-economy, blue carbon and agri-food systems.*

## 3.2 Future context (prospective vision)

This section addresses some important elements in the context of the coming years and refers to their possible implications for CATIE. There are structural conditions associated with the tropics that are likely to change, but more gradually (for example, small-scale agriculture and monoculture-based commercial agriculture). Other aspects are changing very quickly such as technological advancement and climatic instability. Some conditions could be aggravated, for example, the migration process, poverty and inequality. Other conditions are exposed as uncertain, among them, the demand for food and its composition (associated with the generation and distribution of income), the availability of food in the international market, and the possibilities of continuing to export the products that have dominated the market until now.

Faced with this complexity and uncertainty, in this decade —the most challenging in history to date in terms— of sustainability, the Paris Agreements, the 2030 Agenda, and the Decade of Restoration represent essential frameworks for international collaboration and orientation of national strategies. No less important are the issues that link the health of ecosystems with human health. As indicated below, this concept of One Health refers to the interdependence between the health of the planet and human

health; for example, the establishment of regulations for the safeguarding of food safety (such as the maximum level of pesticide residues allowed in imported agricultural products imposed by the European Union); the zero-deforestation initiative in supply chains; the implications of free trade between Central America and the Dominican Republic and the United States and Canada as of 2025 in the framework of DR-CAFTA; changes in the national institutionalism; budget allocations and adjustments in international cooperation. The analysis of these issues is essential for CATIE, in order to define its response and the adjustments to its scientific, technical and operational strategy.

***Development of agri-food systems aligned with the conservation of ecosystem services and health.*** The One Health initiative recognizes the interdependence between human health, animal health, environmental health, and possible changes in agri-food systems, in order to align these with the considerations of global health (EAT-Lancet Commission 2019). It will be necessary to apply systemic approaches and use the genetic collections of vegetables, tropical fruits, and other species to improve the productivity and resilience of food systems with healthy and highly nutritious products that improve the diet of rural families and increase the availability of products in local markets. CATIE's coffee and cocoa collections will remain relevant for the development of new varieties that are integrated into modern agroforestry systems. Livestock systems will provide another opportunity since CATIE is a leader in approaches and technologies for the sustainable intensification of silvopastoral systems that reduce the impact of climate change, strengthen environmental services, and responsible and equitable consumption (EAT-Lancet Commission 2019).

***New technologies and digital tools.*** In the coming years, nanotechnology, biotechnology, bio-inputs, integrated pest management, precision agriculture, circular economy, and bio-economy are emerging as positive development options to improve the performance of agri-food systems and preserve natural capital. The circular economy is changing the paradigm of linear development, generating positive results from the design of products, maximizing life-of-the-product, and promoting natural regeneration. As part of the technological evolution, the application of digital tools to generate knowledge for production and food systems will be intensified. When exploring the fourth industrial revolution "4RI" three megatrends are identified: 1) physical (such as robotics), 2) digital and biologically derived from genetic technology and 3) synthetic biology. All three areas offer opportunities for CATIE, its partners and allies. For example, the development of digital platforms that integrate geospatial information with climate databases, forest, agroforestry, and silvopastoral models and the operation of on-farm production to optimize productivity, traceability (for example, with block-chain), and links with the markets. Automation, precision agroforestry, and regular use of drones, remote images, and other virtual means will be consolidated within the framework of this ISP. These elements will impact virtual education, the operation of Digital Field Schools, and new extension models for young people.

***Sustainable agribusiness models.*** Technological innovations for the use of biodiversity will generate new and better opportunities for sustainable agribusiness of public and private interest. Innovative market information systems, vertical integration with local markets, and short value chains of healthy food products are already observed in the region. This opens up opportunities for CATIE's support to family farming to improve systems based on agrobiodiversity, the organization of producers, and their insertion in differentiated markets with an emphasis on creating value for rural women and youth.

***Climate action.*** Climatic conditions characterized by instability and severity will require public and private investment strategies for ecosystem-based-adaptation and the promotion of synergies between adaptation and mitigation to climate change (SAM)—, an innovative concept of global relevance that emerged from CATIE and which we will continue to develop and promote. In addition, our institution is a pioneer in the scientific and technical development of blue carbon policy proposals for the creation of innovative tools that ensure the provision of ecosystem services and the livelihoods of marine-coastal populations. We will continue to conceptualize our innovative climate interventions, considering broad contexts to reinforce ecological, economic, and social resilience in the landscapes where we work.

***Water security.*** CATIE will continue to deepen its knowledge on the integrated management of water resources for the sustainable intensification of agriculture, inclusive water security, and the reduction of water availability gaps in marginal groups. In this context, we will work on the design and management of production systems that improve efficiency levels in the use of water and the water footprint of agricultural products. Additionally, CATIE will generate innovations for integrated watershed management and management of water harvesting systems, mainly in those areas where the water deficit is critical, as is the case of the Dry Corridor in Central America.

***Restoration of degraded areas for the management and sustainable use of biodiversity.*** We anticipate that within the framework of the United Nations Decade of Ecosystem Restoration (https://www.decadeonrestoration.org) countries will strengthen transformational policies and tools for the restoration of degraded areas, recovery, and sustainable management of biodiversity. These are areas where CATIE is recognized worldwide for its work on systemic approaches at the landscape level (for example, model forests, biological corridors, mosaics of productive landscapes, and protected areas) and the development of knowledge and tools on restoration of degraded landscapes and analysis of climate change impacts on biodiversity. CATIE will recognize the role of biodiversity as a natural capital that generates multiple services.

***Development of economic tools applied to IGD.*** At CATIE, through transdisciplinary approaches, we will advance in the development of modern tools to quantify and value environmental services, such as measuring the economic impact of pollination by bees on agricultural crops; promote production chains identified with zero-deforestation or *net forest gains* and develop market instruments; for example, *blended finance* and *climate finance*; to promote the conservation of biodiversity and ecosystem services. In addition, at CATIE we intend to use behavioral economics methodologies to evaluate the effectiveness of different policies, supporting the implementation of the most effective strategies that encourage the adoption of low-emission technologies and practices.

***A new vision of development: Inclusive Green Development.*** The recognition of the need for a development model committed to a balance between the conditions of economic growth, social inclusion, the conservation and use of natural resources, and the greater capacity to adapt to climate change, is a need and an expectation of particular relevance to the tropics. This is precisely one of CATIE's strengths and the starting point for redefining its future actions. Based on this prospective analysis, we perceive the global trend to prioritize agriculture and support its development in a manner consistent with the economic and social needs of the region as an opportunity. Transformations must include, not only mitigation and adaptation to climate change and the conservation of biodiversity and the ecosystem services it provides, but also those that ensure better levels of productivity, efficient use of water, restoration of degraded

ecosystems, carbon sequestration, the appropriate use of external inputs such as nutrients and pesticides, and finally, the resilience of natural ecosystems. On the other hand, market preferences will be analyzed, that is, the consumer's perspective regarding the attributes that encourage the willingness to pay for more environmentally friendly products, and the implications at the level of competitiveness in value chains in LAC. All this, in a marked context of social inclusion and gender equity, as discussed below.

***The region (Latin America and the Caribbean) as a promising space.*** The region poses challenges and shows opportunities for progress in light of global challenges. The main challenges are based on finding ways to overcome poverty, reduce migration, less severe the fragility of their ecosystems and face climate vulnerability. The region, of course, does not only pose challenges, it also shows opportunities for progress in light of global challenges. The opportunities will derive from the good road, natural and digital connectivity, and regional institutions and agreements that promote trade over and above political differences between countries. In this framework, approaches have been emerging to renew the model in agriculture and rural areas, and visions of territories, landscapes, ecosystems, and basins for increasing resilience and reducing emissions in productive systems, conservation, valuation and use of biodiversity, and the creation of added value in some agri-food chains.

***Gender and social inclusion.*** This is an issue that will gather new importance in the ISP. At CATIE, we have promoted institutional policies that respond to the inclusion of development subjects and social groups whose rights have historically been violated (as in the case of indigenous peoples). On the other hand, the institutional gender equity policy has shown effective results in the educational offer, as well as in the real participation of women in the decision-making processes of the programs and projects promoted from headquarters and in the countries of the mandate of the institution. At CATIE, we recognize the urgency of adopting measures to mitigate and eliminate the causes of discrimination that restrict women's rights, as well as their equitable participation in decision-making at all levels and equal access to resources.

***The institution at the national, regional and international level.*** We operate closely with national, regional and international partners and allies. The stakeholder groups of interest to CATIE include national organizations (Ministries of Agriculture, INIAS, Ministries of the Environment, Universities, NGOs, and the private sector); cooperation agencies (IICA in particular); entities of the multilateral development financing system (IDB, WB, CABEI); the international centers of the CGIAR, CIRAD and technical cooperation institutions (FAO, UNDP, UNEP, among others). In all cases, it is necessary to know their strategies, as well as their availability of resources and their interest in making alliances for effective action and fundraising. Within the framework of this new ISP, CATIE will conduct a strategic and aggressive negotiation action that will allow it to strengthen its capacities to achieve results and impacts. It is anticipated that the regional institutional framework will be strengthened in order to achieve more integrated efforts of regional organizations within the framework of SICA, CAC and CCAD in Mesoamerica and through cooperation with IICA, the Caribbean Community (CARICOM) and the Agricultural Council of the South (CAS). On the other hand, robust negotiations with CABEI and other financial entities are required to face the opportunities and changes in the scenarios described in this document. We also anticipate having greater recognition within the regional and international institutions based on the evidence of our scientific, technological and human resource training achievements. As a second-tier instance, we will have a qualified partner position for joint work and the development of synergies.

# 4. Institutional policies, vision, mission and values

## 4.1 Institutional policies

The starting point for CATIE's action in the coming years is the articulation between its institutional policies, the ISP 2021-2030, and the Biannual Operational Plans. The first represent the orientation of the institution's work and are listed below:

- CATIE is an international organization, and its priority task is to generate regional public goods that strengthen and complement the efforts of the member countries in research, innovation, knowledge management, and capacity building.
- CATIE's area of responsibility is sustainable production systems with added value and linked to markets, the conservation and sustainable use of natural resources in rural areas, and the functional relationship between rural and urban areas from the viewpoint of natural resources and ecosystem services.
- The Center effectively integrates education, research, and outreach, in such a way that this consolidates a unique institutional model that has proven to be effective in generating quality and valuable products based on the efficient use of resources.
- CATIE, in addition to generating public goods, can create complementary instances of a commercial nature that allow it to develop products and services related to research and teaching and generate economic resources in support of its strategic objectives.
- CATIE is one and the programs, units, and projects are an integral part of an institutional structure and are governed, without exception, by common standards that ensure complementarity and capacity building within the framework of the strategic objectives.
- Although CATIE's governance rests with the Ministers of Agriculture of the member countries and its Board of Directors, the Center also builds alliances with other ministries related to its mandate and partners with the capacity to promote scientific, technical, and educational platforms regionally.
- CATIE's relationship with IICA is close and rests on a set of legal provisions, commitments to contribute resources, and agreements from its higher governance bodies.
- From an operational point of view, CATIE maintains its headquarters in Costa Rica and representations or liaisons in the member countries, their role being to gearing institutional outreach to strengthen the networks and projects to generate, analyze, and validate new knowledge and technologies, as well as the different training and education initiatives.

## 4.2 Institutional vision, mission and values

### *Vision*

CATIE positioned as a benchmark in research, education, and innovation at the service of the peoples of the tropics of Latin America and the Caribbean, seeking a balance between the use and protection of landscapes, ecosystems, and production systems that are part of sustainable well-being and the health of the people, as well as of all forms of life that are part of the planet.

### *Mission*

We promote Inclusive Green Development, through scientific knowledge and training of new leaders, managing ecosystems, landscapes, and food systems, which with their permanence favor the sustainable well-being of populations in the tropics of Latin America and the Caribbean.

### *CATIE values*

At CATIE, we recreate fundamental and operational values. The former reflect the institutional nature of CATIE and form the foundations that inspire thinking and acting with the ethical-scientific bases that the academy demands. The operational values represent the institutional action guidelines that seek transformative outcomes alligned to the fundamental values.

Our values reflect the institutional way of being and acting, which permeates all levels of action and professional, administrative, financial, and support profiles, from our field staff to the highest-level of executives, our external consultants and collaborators. They respond to a broad internal dialogue process and reflect our aspiration as leaders of change inside and outside the institution.

### *Core values*

- ***Knowledge at the service of transformation:*** taking into account its institutional nature, CATIE favors the generation of rational knowledge for innovation and the transformation of realities towards states of the well-being of people and their natural and social environment. It values the synergistic relationship between scientific knowledge and ancestral knowledge that is available thanks to the multi and intercultural work that is developed. It also recognizes that knowledge must be adequately mediated to optimize its transformative potential, taking into account the particularities of the communities where it develops its work.
- ***Appreciation of plurality:*** CATIE recognizes and values that people, even belonging to the same social group, have particular ways of living and expressing themselves, have different tastes, ideologies, and customs. This appreciation favors coexistence, inclusion, and enhances interpersonal relationships.
- ***Appreciation for diversity:*** CATIE recognizes the benefits of natural, cultural, and social diversity. In the first case, it ensures the permanence of ecosystems, species, and genes as the material and spiritual basis for the well-being of peoples. In the second case, it appreciates the differences among

people in terms of their ethnicity, sexual orientation, race, origin, language, religion, opinion, and gender, that define the particular identity of each person and peoples. It considers that this value is fundamental in favoring coexistence, inclusion and is at the basis of the recognition and exercise of universal human rights.

- ***Inclusion:*** at CATIE, we privilege intra- and inter-generational equal opportunities without discrimination based on class, ethnicity, gender, age, religion, or any other form of discrimination that violates universal human rights.
- ***Solidarity:*** at CATIE, we promote day-to-day good relations between people, between work teams, and within them, fostering relationships that are based on unity, fraternity, and good correspondence.
- ***Common good:*** CATIE seeks that its actions, strategies, and work tactics ensure that individual benefits do not compromise the benefit of the majority (especially those groups at a clear disadvantage in terms of power and capabilities), observing the applicable national and international regulations.

## *Operational values*

- ***Excellence:*** CATIE serves its partners and its target audience with the highest technical and administrative efficiency and quality. It generates commitment for professional development and quality improvement in the delivery of results, promoting group and individual initiatives, encouraging creativity and innovation.
- ***Integration:*** CATIE strengthens interdisciplinary work to promote systemic and collaborative approaches at local, national, and global scales. The spirit of alliances and the construction of mutually beneficial connections with other personal and institutional actors are fostered.
- ***Transparency:*** CATIE creates an environment of trust necessary to promote cooperative relations with partners, donors, and counterparts and adopts a culture of accountability, monitoring, and evaluation of the performance of the impact attributed to institutional actions, necessary feedback for improvement of CATIE`s vision and mission.
- ***Entrepreneurship spirit for innovation:*** we develop new ideas, methodologies, and technologies that propose solutions to the challenges of a changing environment. We seize and generate opportunities with leadership, energy, and enthusiasm to attract the necessary resources for a successful and sustainable operation.

# 5. The Institutional Strategic Plan (ISP)

The ISP is presented in three parts: 1) the principles, 2) the conceptual framework (based on the theory of change tool) and 3) the objectives.

## 5.1 Core principles of the strategy

This section presents the principles that underpin the ISP based on the elements that distinguish CATIE from other research and higher education centers.

***Synergy of research, education/training and outreach.*** This has historically been our key differentiator from other entities that have fulfilled the three functions independently or that have specialized in one of them. The added value of these three functions in an integrated way is significant: research products are harnessed in higher education and training, and students carry out their graduation assignments in research projects. The products of both activities constitute the base of the diffusion and the relation with other organizations of the public and private sectors for the design and execution of scaling and development and advocacy projects.

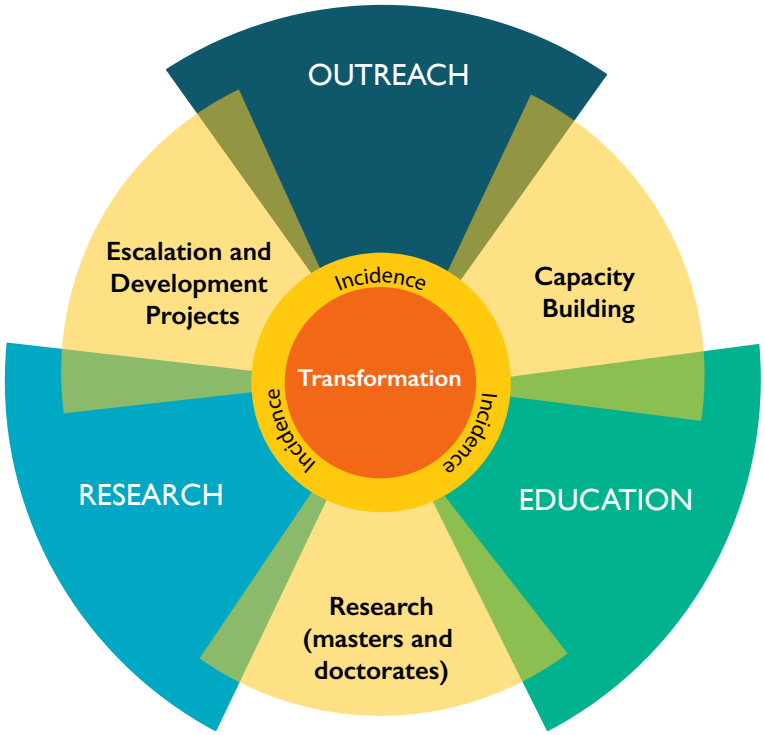


*Figure 1. CATIE's offer of value*

Figure 1 shows the interactions and highlights that advocacy actions result from the synergistic action among the three pillars that make up this value offering from CATIE. It is clear that in order to achieve substantive transformations, it is necessary to have partners that strengthen and complement CATIE's actions since normally, both the results and the impacts are outside the scope of institutional control.

Similarly, the intersections between the pillars generate other important externalities to be noted, for example, training requirements arise from regional demand and the Graduate School and the Training Unit respond to this.

***Agriculture, inclusive productive systems, ecosystems and climate action.*** We are committed to increasing sustainable productivity in agriculture, improving social conditions in rural areas and especially the well-being of women and young people, the conservation, restoration, and sustainable use of terrestrial and marine-coastal ecosystems, its biodiversity and the ecosystem services it provides, and the creation of means to cope with instability and climate change.

***Response to the demands of the member countries.*** Our principle is that our research program, in addition to being continually enhanced by scientific progress, must respond to specific problems in the territories and in rural society. In many situations, for example in the adaptation of small-scale agriculture to inter-annual climate variability, the emphasis should be on the short and medium-term. In others, it requires long-term research, for example, on the restoration of ecosystems and adaptation to climate change in key forested areas for the provision of water and hydroelectric energy. This implies a close relationship with research centers that have carried out pioneering work, as well as government organizations, non-governmental organizations, the private sector, and civil society.

***Functional alliances.*** This expression reveals CATIE's willingness to establish alliances for research, human resource training, and external projection with entities that meet a basic condition: the willingness to cooperate to generate complementary added value in a defined period. In this sense, agreements and memorandums of understandings that do not comply with this principle will be avoided.

***Use of assets to generate goods and services inside and outside CATIE.*** We use high-value assets to generate goods and services in synergy with research, postgraduate education, training, and external projection activities. The international collections of cocoa, coffee, tropical fruits, the botanical garden, and the vegetable and forest seed banks are unique spaces in which we conserve high-value genetic material. Added to this is the dairy farm that is managed under a climate-smart production model. In all these spaces, we will develop profitable activities and programs that allow strategic alliances with other partners. In coordination with IICA, we will design a Master Plan for the development of the farms, favoring the best use and the highest productivity of these lands. We will also promote alliances with universities and other organizations for research-training tours and graduate thesis using these assets as a source of income.

***Organizational cohesion.*** The nature of the tropics demands a multidisciplinary effort for research and training of human resources. For this reason, the complementarity of efforts, inside and outside CATIE, with other partner institutions from the public and private sectors will be privileged. CATIE's own experience shows that these collective action efforts have been possible and fruitful.

## 5.2 The theory of change [3]

The theory of change, which is presented in Figure 2, outlines the pathway for the implementation of the ISP and synthesizes the set of actions that CATIE will take during the period of 2021-2030 to carry out its mission, achieve its strategic objectives, generate the products in accordance with these objectives and thus contribute to the achievement of results and impacts. The magnitude and quality of the latter will depend on the good use that decision makers in the countries make of the products generated by CATIE in synergy with partners and allies that allow policies and programs to be aligned with IGD. It is within this framework of CATIE's actions in research, knowledge management, capacity building, and outreach and advocacy actions that results and impacts can be achieved.

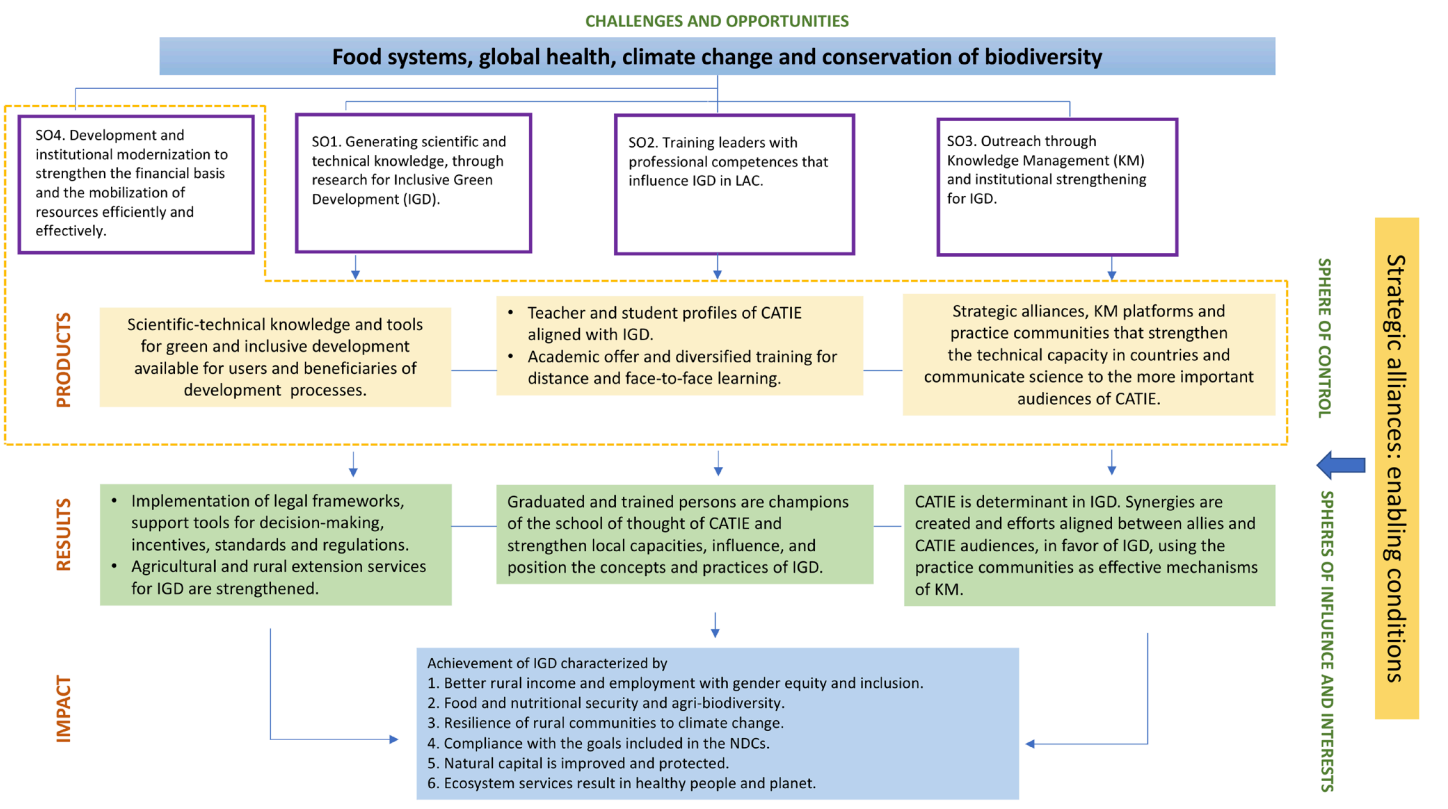


*Figure 2. CATIE's theory of change of the Institutional Strategic Plan (ISP) 2021-2030*

3 This section has been built through a highly participatory process, benefiting from inputs provided in external consultations which support the theory of change.

## 5.3 The strategic objectives, products, results and expected impact

### *SO1. Generation of scientific and technical knowledge, through systemic research for Inclusive Green Development (IGD)*

**Products associated with this objective include knowledge (publications[4]) and tools (technologies, methodologies, digital tools, models, roadmaps, databases, etc.) for**

1. Food security based on agrobiodiversity and food systems
2. Intensification of livestock production based on good practices in agrosilvopastoral systems
3. Genetic improvement of coffee and cocoa
4. Modern agroforestry for annual and perennial crops
5. Climate action in all its areas
6. Conservation and sustainable use of biodiversity and its ecosystem services
7. Sustainable economy, environment and agribusiness in the field of family farming and competitiveness of value chains
8. Water security and sustainable watershed management
9. Restoration of productive and natural ecosystems (the soil component is particularly critical)
10. Use and production of renewable energy in agriculture

**Expected results.** CATIE with its allies achieve the enabling conditions (the assumptions of the theory of change) that allow the implementation of legal frameworks, support tools for decision-making, incentives and extension services for the IGD that favor changes in

1. Transformation of production systems that increase productivity in a sustainable way to contribute to IGD.
2. Promotion of sustainable family farming businesses in short value chains.
3. Resilience of agricultural and livestock systems to climatic events.
4. Conservation and optimization in the use of water resources and water security.
5. Restoration, conservation and sustainable use of natural and productive ecosystems.
6. Implementation of policies and incentives, by member countries, of measures to achieve the NDC goals[5] and the IGD goals.

4 Books and monographs, book chapters, publications in conference proceedings, articles in referenced scientific journals, articles in technical journals, conference presentations (posters, abstracts, etc.), reports and other publications, technical series, and theses.

5 Nationally Determined Contribution (NDC). It is the national commitment on the level of greenhouse gas emissions agreed with the United Nations Climate Change Forum.

## *SO2. Training leaders with professional competencies that influence the Inclusive Green Development (IGD)*

The products associated with SO2 are summarized as follows:

1. A renewed and competitive Graduate School that differs from other similar ones by its systemic approach, its programs in alliances with highly prestigious international universities, caring for the professional functionality in the English language of its graduates, and the emphasis on critical research topics and development that have been eroded in recent years.
2. A faculty with doctoral-degree (preferably) with strengths in knowledge and skills aligned with the scientific and technical principles of the IGD.
3. A flexible academic offer adapted to current demands that includes face-to-face, hybrid, and distance education in its modalities (assisted and self-paced).
4. Professional growth training programs, at a technical level and with producers at the community level, both in face-to-face, remote or mixed versions, through the use of technology and training materials appropriate to each level and that contribute to the expectations of the IGD.

**Expected results.** Based on the products in training of human resources, CATIE, under the assumption that CATIE graduates are the champions of the school of thought, contributes to the achievement of the following transformations:

1. LAC agricultural leaders trained at CATIE strengthen academic institutions, research centers, and government and private sector institutions, improving their institutional profile in favor of IGD.
2. The professional critical mass in the region and the institutional positioning allows CATIE and its allies to have a higher greater impact on decision-makers to achieve IGD.
3. The professional growth program at the doctorate and master's level allows the development of new professional skills in key subjects for IGD (which over the years have eroded in the region).

## *SO3. Outreach through knowledge management and institutional strengthening for Inclusive Green Development (IGD)*

The products associated with this objective are the following:

1. Increasing CATIE's capacity in the countries to facilitate alliances and the negotiation of new projects and additional resources, as well as the transfer of innovative and appropriate digital tools for agriculture 4.0.
2. Development of the concept of nesting CATIE`s country offices with national and multilateral institutions that promotes the dissemination, validation, scaling, and evaluation of technologies and educational opportunities, while allowing for the negotiation of new projects and additional resources.
3. New (or renewed) thematic platforms for development and governance in countries or regions, through which knowledge is managed, relevant results are validated and scaled, and communities of practice are formed in favor of IGD.
4. A strengthening of bilingual institutional strategic communication (Spanish/English) in social networks and other media to position CATIE`s achievements and results with a broader audience and allies.

**Expected results.** Strengthened presence of CATIE in the countries is the assumption of the theory of change that allows advocacy actions, with allies and partners, that contribute to the achievement of the following results:

1. Institutional strengthening in member countries and in the region generates new opportunities for research, innovation, and education, and CATIE is positioned as a technical reference and preferential ally for IGD.
2. An institutionalized model of rural extension systems that allow the scaling of programs aligned with IGD.
3. Member countries, in partnership with CATIE, develop a growing prospective ability to analyze and develop opportunities and a better-negotiating capacity to finance them.
4. CATIE's strategic alliances are functional and generate synergies in favor of national and regional transformations that aim at IGD, with national funds, or from the multilateral development banks.
5. The communities of practice that are developed from the platforms for development become an effective mechanism for the management and dissemination of knowledge in favor of IGD.

## *SO4. Institutional development and modernization*

Lessons learned by CATIE in recent years, the results and recommendations of the latest evaluations, the current environment described in the previous sections, and in particular the prospective vision of the new decade, motivates the development and implementation of an institutional modernization objective. For practical purposes, this objective is crosscutting in nature and includes a very diverse range of strategies, implementation actions, and negotiations.

Unlike the objectives indicated above, SO4 requires not only to specify products, results, and potential impacts, but also a description of strategies, routes, and concrete actions (discussed in Section III on implementation strategies) aimed at institutional modernization.

The products associated with this objective are the following:

1. The efficient use of human resources with gender equity, capital goods and operating resources.
2. Effective actions for research and training of human resources with gender equality that generate knowledge of high value for the member countries.
3. A solid financial base with medium and long-term perspectives in terms of sources of resources.
4. Efficient and effective negotiation and mobilization of resources and establishment of strategic alliances.

As main results, the following are anticipated:

1. CATIE performs successfully and achieves, endorsed by formal evaluations, the achievement of its strategic objectives.
2. The organization gains increasing prestige at the regional and international level, demonstrated in publications, forums, social networks and other media.
3. The organization strengthens and consolidates its financial position and its administrative efficiency and projects its action and influence to partners and allies.

## *Expected impacts as synergy of the four strategic objectives*

These impacts correspond to what CATIE means for IGD. His expression and achievements are manifested as follows:

1. Increasing rural income and jobs, ensuring gender equity and social inclusion.
2. The reduction of food and nutritional insecurity as a result of the improvement of food systems based on agrobiodiversity.
3. Increasing the resilience of rural communities and productive ecosystems to climate change and other extreme events.
4. The fulfillment of the goals contained in the NDC in the member countries.
5. The improvement and protection of natural capital.
6. The alignment of ecosystem services for the health of people and the planet (One Health).

# 6. Implementation strategy

The following summarizes the critical areas in which CATIE will work in the new ISP to improve its effectiveness, efficiency, and impacts.

## 6.1 Strengthening institutional capacity for a unified management system

The focus will be a simplified organizational structure to capitalize on synergies among education and training, research and outreach programs, and liaison with country offices. The unified management system will help to simplify systems and procedures and will reinforce the institutional culture in the areas of information technology, communication, and knowledge management. With this in mind, we will modernize institutional processes with advanced digital technologies and a modern Enterprise Resource Planning System (ERP), as well as the implementation of the Integrated Institutional Management System (SIGI), which is referred to later.

**Modernization of infrastructure for research and education.** We will modernize our infrastructure to support the programs, through a transformation and integration of virtual tools, including distance education, training, and dissemination through digital marketing. We will strengthen biotechnology laboratories to support research and commercialization of genetic material from their collections, as well as to improve geographic information systems in the soil and ecosystem-modeling laboratory, all with the support of modern software and equipment. It also includes the expansion of the capacity of the greenhouses for research and commercial activities, as well as the improvement of the housing infrastructure for residents and students that make the CATIE campus a climate-smart environment, using renewable energies (for which it is planned the development of a photovoltaic park).

**Development of human resource capacities.** We will strengthen capacities with a transdisciplinary approach and with an emphasis on gender equity in terms of salaries and management positions. We will review and update hiring policies to ensure equal opportunities. We will do a knowledge gap analysis and develop a strategy to close these gaps. We will ensure that staff has the tools or equipment to maintain adequate research for development, education, training, and outreach purposes. We will continue to attract, motivate and train high-level professionals to comply with a culture based on pursuing excellence, both in research and in education.

## 6.2 Resource mobilization, sustainability, efficiency and financial effectiveness

CATIE's financial model is based on high dependence on financing from external cooperation. The changing socio-economic and political environment has resulted in the migration of many donors outside of the Latin American region, which makes CATIE financially vulnerable. Furthermore, the finance management system results in relatively high transaction costs. For this reason, work will be done on the development of an innovative financial management model and processes will be implemented for the management and transparent handling of funds. The main elements are as follows:

- Identify and adapt to changing donor mechanisms and requirements and develop alliances with strategic partners to leverage resources and reduce transaction costs.

- Establish and strengthen a private social enterprise that can conduct CATIE's commercial activities, that is aligned with the institutional mission and that has the appropriate legal statutes. This company will facilitate relationships and business with private sector organizations and investors that will generate complementary income for CATIE. This initiative will aim to increase the productivity and economic efficiency of the commercial areas and the commercialization of products and services, including varieties of coffee and cocoa, seeds of forest species and species from CATIE's Botanical Garden.

- Implement a strategy with member countries to mobilize financial resources that governments are investing through loans and/or donations from multilateral banks. This strategy should finance activities aligned with CATIE's knowledge and experience, such as agri-food systems, conservation of natural resources, watershed management, and water security, as well as capacity building.

- Revitalize The Tropics Foundation in the United States so that it can fulfill its mission of securing funding for the institution by providing the tools and support necessary to restart its operations. Its board of directors will be reorganized to incorporate people with credibility and connections in the world of philanthropy. CATIE will continue with the Crop Trust, which will allow it to create a trust fund for the maintenance of the International Coffee Collection and explore other venues of financial support for the International Cocoa Collection.

- With the support of The Tropics Foundation and other people and organizations with capacity and experience, CATIE's senior management will promote the establishment of a network of philanthropists by identifying and negotiating with champions (prominent people in the business world) who can summon their peers and support specific projects or initiatives designed by CATIE.

- The institution will put into operation a financial model that ensures scholarships and financing for the Graduate School and training programs. In addition, it will redesign the educational program with a transition to high-quality distance and blended education that increases the critical mass of students. Additionally, it will build strategic alliances with prestigious universities to offer joint doctorates. The Training Program will be restructured to respond to the demand of the countries and may become an important source of income for the institution.

- CATIE's senior management will implement a modern system to track and analyze financing opportunities and will assign internal responsibilities for managing these opportunities. In addition, the capacities of the country liaison offices will be strengthened to support resource mobilization.

- This financial plan and strategy will be updated regularly with the support of market research that can map potential sources of financing. The plan includes metrics to evaluate the correspondence of the funds with the priorities of the institution and the total recovery cost.

## 6.3 Alliances

CATIE is a relatively small institution with a large regional mission and a clear expectation of working with other actors related to its mandate. To achieve the products, results, and impacts embodied in the theory of change (Figure 2), the following strategies are required:

- **Strengthening cooperation.** At the national level, we will collaborate with other international institutions (for example, CIRAD, Bioversity-CIAT alliance, ICRAF-CIFOR, GIZ, EfD) to work with and strengthen the INIA and other organizations in the validation and scaling of research results in agricultural systems. The new ISP will include the strengthening of cooperation with the private sector and industry to work in areas of common interest such as coffee and cocoa, tropical fruits, dairy products; as well as, water resources, carbon footprint, renewable energies, among the main ones.

- **Partnership program for higher education.** Over the next few years, the Graduate School will negotiate with top-tier universities to strengthen their doctoral programs. This alliance will make it possible to increase the number of highly qualified and experienced associate faculties to increase CATIE's capacity in new areas of interest.

- **Alliances for policy advocacy.** We will develop closer cooperation with IICA, which is a mandate of its governing bodies, and we will take advantage of the synergies between both institutions, through a technical cooperation plan to generate impacts, among others, on policies related to the diet systems with a One Health approach. Additionally, we will increase cooperation with strategic regional organizations (for example, SICA CCAD, CAC, OEA, CABEI, IDB, WB) so that the knowledge generated can influence the establishment of policies.

- **Alliances for innovation platforms.** To achieve its objectives, we will partner with individuals and organizations from the public and private sectors that have the skills and experiences to catalyze functional coalitions that allow for setting-up dynamic networks, multi-actors, communities of practice, and innovation platforms that influence decision-making on the main challenges and opportunities in the region.

# 7. Planning, monitoring and evaluation (PME)

## 7.1 PME framework

Planning at CATIE has the purpose to align all institutional activities with policies and strategic objectives, in order to fulfill its mission and achieve the proposed vision, responding personally to its fundamental values and institutionally to its operational values. It is certainly a facilitated activity, but it depends on each of the directions and operational units of the institution. CATIE's planning cycle is 10 years, and this begins with the issuance of the ISP. The current plan covers the period 2021 to 2030 and it is adjusted every two years, with the issuance of biannual plans, which take into account changes in context, short-term situations and identifies the goals of its main indicators and institutional milestones. The programmatic unit is the Annual Operating Plan and this is aligned with both: the ISP and the Biennial Plan.

On this occasion, CATIE has used the theory of change approach to define its strategic pathway, which lays out the foundations of the impact chain and causal link among the activities of the annual operating plans, the products, and the results. Figure 3 shows the path and logic that the theory of change follows from challenges to impacts and new challenges.

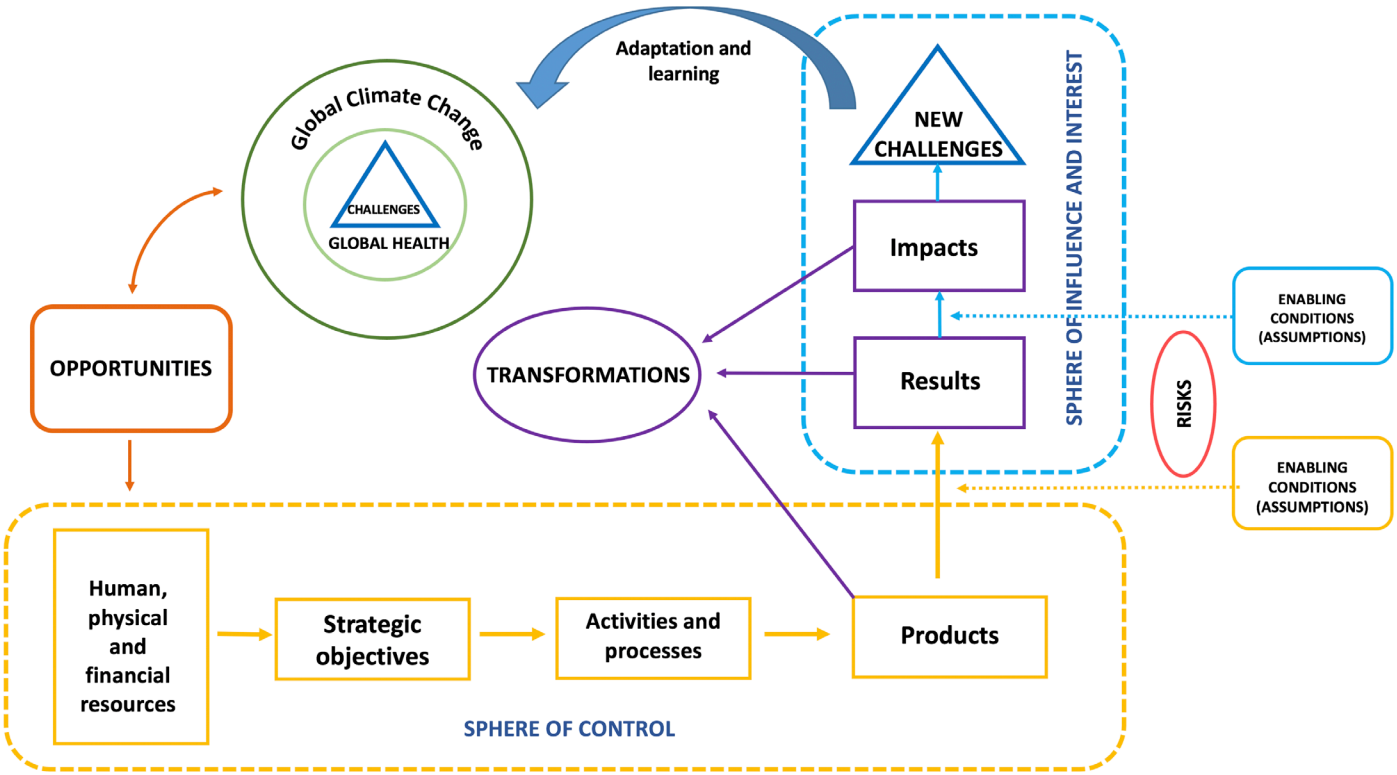


*Figure 3. The theory of change model*

This figure clearly shows the scope of the control sphere where the planned and programmed activities generate the institutional products, starting from the challenges and opportunities. These in turn, already in the sphere of influence and interest and in collaboration with partners and allies, achieve results and impacts by generating the desired transformations. It is important to bear in mind that, in this phase, the theory of change contemplates that certain conditions should be met to enable the achievement of said transformations. It is for this reason that alliances and partners are central elements in the scope of these transformations, as they remain outside of institutional control, which always poses significant risks in achieving the results.

The following matrix (Figure 4) succinctly presents the strategic objectives, and the key indicators related to the expected results, which derive from the theory of change used in the formulation of this ISP, based on specific products that are generated under CATIE's sphere of control up to results that can be verified in its sphere of influence. It is important to clarify that all those indicators that refer to the number of people are disaggregated by gender. To understand the matrix better, Annex 1 presents a series of related definitions.

| | Chain of impact in the theory of change | SO1. Knowledge generation | SO2. Leadership training | SO3. Outreach |
|---|---|---|---|---|
| | | Indicadores | | |
| Products, results and impacts of CATIE | 1. Findings (control sphere) | • Findings and innovations<br>• Publications | • Updates in the curriculum of the face-to-face postgraduate courses and distance education (DE)<br>• Master's and PhD theses | • Scientific information on website, social networks, media, blogs and newsletters<br>• Accessible and diverse DE opportunities |
| | 2. Piloting (sphere of control and influence) | • Validation tests (e.g., plots, laboratory, short and inclusive value chains, sites) | • Internships<br>• Alliances with universities | • Alliances with the INIAs and their national plans<br>• Partnering with the private sector |
| | 3. Tool development (sphere of control) | • Tools for innovation management (e.g., models, systems, maps, digital tools)<br>• Publications | • Master's and PhD theses<br>• Updated training plans | • Alliances with INIA and Ministries of Agriculture and Environment<br>• Partnering with the private sector |
| | 4. Scaling-up (sphere of influence) | • Definition of territories<br>• Improved systems and tools<br>• Improved technologies and seeds<br>• Green financing instruments | • Internships<br>• University partnership<br>• Joint training programs | • Scaling-up projects (international cooperation)<br>• Partnerships with governments and the private sector<br>• Alliances with indigenous people organizations |
| | 5. Knowledge management (sphere of influence) | • Inputs and tools for knowledge management platforms | • Conferences and webinars with researchers, professors and students | • Platforms, knowledge management and communities of practice |
| | 6. Development of policy proposals (sphere of influence) | • Documents and inputs for the proposal of policies and strategies | | • National policies and strategies<br>• Alliances IICA, FAO, governments and local partners |
| | 7. Scaling up of business (business sphere of Influence) | • Area of influence (e.g., territories under sustainable management and approach; short and inclusive value chains)<br>• Increased volume of improved seeds<br>• Population of producers involved with a gender equity and inclusiveness approach<br>• Green financing amounts | • Graduates who influence development actions | • Hectares with commercially improved production systems<br>• Alliances with governments and the financial sector for multilateral and local development |
| | 8. Building human capital for innovation (sphere of control) | • Professional growth programs for researchers and the faculty of the Graduate School | • Master's and PhD students (face-to-face and distance)<br>• Exchange of teachers and students (sabbaticals and internships) | • Joint master's and doctoral degrees with local universities and alliances with prestigious international universities |
| | 9. Rural and agricultural extension (sphere of influence) | • Documents and inputs for rural and agricultural extension policies<br>• Training manuals | • Diplomas, rural and agricultural extension courses | • Rural and agricultural extension systems<br>• Development projects with rural extension and technical assistance |
| | 10. Impact evaluations[6] (sphere of control and interest) | • Impact evaluation of innovations<br>• Publications | • Master's and PhD theses<br>• Courses and internships | • Recommendations incorporated in development projects and new research |

*Figure 4. Key indicators of the theory of change*

6 Annex 2 presents a table that lists CATIE's areas of interest and the benchmark indicators for impact evaluations. It is expected that other indicators will be determined with the technical design of each of the impact studies.

## 7.2 The planning and scheduling process

Planning only makes sense if it is accompanied by good programming that aligns the strategic plan with the biennial plan and operational plans. The ISP will only be a good intention, if a good programming of resources does not follow it. This 10-year plan provides strategic guidance, the biennial plan adjusts the strategic outlook with the short-term situation, setting the institutional goals and planned milestones, and the annual operating plan assigns the human resources and financial resources that align the institutional effort in the direction of the institutional strategic objectives.

Planning only makes sense if the divisions and operating units are empowered by the plan, because at the end of the process they are the ones that schedule the activities by allocating the (usually scarce) resources to the product generation process in the annual operating plans. Although it is true, the allocation of resources is a vertical activity, it must correspond to a two-way exercise where priorities are aligned with the programming of activities and institutional processes.

CATIE, at this programmatic level, will establish the Integrated Institutional Management System (SIGI-CATIE) as part of the integration and monitoring of indicators. The technical product indicators correspond to the budget allocation and the allocation of personnel in each of the activities of the Annual Operating Plan. The current implementation of the institutional ERP will make the operation of the SIGI more effective. The output boards of this SIGI relate technical indicators, with budgets and personnel through an ERP's own business intelligence system. These relationships between the technical performance of the institution, the execution of the budget, and the performance of its personnel are key for institutional management not only for the allocation of resources but also in the alignment of priorities with the institutional strategic objectives and therefore, guides the mobilization of external resources that the institution manages on a permanent basis.

The Biennial Plan is prepared once at the beginning of the new ISP and is updated every two years. This should be a highly participatory exercise, with well-detailed programming at the level of the schedule and responsible. This must be approved by the Executive Committee, by the Board of Directors and be ratified by the Superior Council of Ministers at its second ordinary meeting every two years, respectively. In the case of the Annual Operational Plan (AOP), the programming is similar to the case of the Biennial Plan, but on an annual basis and with the specificities of the AOP.

## 7.3 The monitoring and evaluation process

The process of monitoring verifiable indicators will strengthen transparency, while measuring the progress and level of success of the institution. We will review the strategic planning every two years through the biennial plans, where the institution adjusts its indicators and the goals associated with them in its AOP.

The monitoring process has several levels and therefore different roles are necessary: 1) the monitoring of institutional management is conducted by the Office of Planning and Knowledge Management and this is done based on indicators of key institutional products and for this purpose, SIGI has been conceptualized and implemented, as already noted in previous sections; 2) monitoring of result indicators, which are achieved by synergistic action between CATIE's directorates (research, education, and outreach), its allies and partners. At this level, the monitoring of indicators will be a joint action of CATIE in the countries, and 3) the monitoring of indicators of the scaling-up and development projects takes place within the

executing units of these and follows a programming cycle of the projects themselves. Normally, monitoring at this level is a joint action between the executing unit, the development partners, and the donors.

The report must be an institutionalized practice that fulfills the function of timely and reliable feedback for decision-making at the different levels. In formal terms, both the Executive Committee and the Board of Directors know and approve the annual reports that include a section of the key institutional indicators. CATIE's Higher Council of Ministers ratifies these reports.

The evaluation process is also presented at different levels: the first is the institutional performance analysis, which is usually periodic external evaluations that under specific terms of reference make a targeted analysis and use, as far as possible, quantitative information from records of key indicators, but also use qualitative and perceptions information by consulting qualified institutional and individual stakeholders. Normally, these types of evaluations are made at the request of the Board of Directors and, therefore, the recommendation reports are approved at this level, and CATIE's senior management is responsible for incorporating these in the most effective way possible. Second, project evaluation is normally carried out as a requirement of the donor and is a commitment that CATIE acquires on a contractual basis. A third party carries out this evaluation. There are mid-term project evaluations, and, in this case, the reports are used to adjust the actions of the project that are subject to change to correct or improve their actions. Normally, project evaluations take place at the end of the project, and in this case, they are the main source of systematization of the lessons learned. Lastly, impact evaluations are gaining particular importance and are required to establish the level of attribution that CATIE has in a transformation that benefits populations or the environment. Usually, this type of impact occurs in CATIE's sphere of interest. Annex 2 lists the areas of interest and the benchmark indicators for these impact evaluations. These require a very rigorous methodology statistically speaking that allows estimating the level of attribution of the intervention. For this, we will make an effort to have the technical capacity to carry out this type of study.

# Annexes

## Annex 1. Definitions

**Product.** Knowledge, technical or institutional progress produced through research, participation, and/or capacity building activities (higher education and training). Some examples of results include new research methods and tools, policy analysis, genetic sequencing and maps, new crop varieties and varieties, improved systems, new graduate programs, institutional innovations, and other products of research work. These are generated under the sphere of institutional control.

**Result.** An outcome is a change in knowledge, skills, attitudes, or relationships, manifested as a change in behavior, contributed to by the products of research, training or higher education, outreach, as well as activities related among people, groups, or organizations. These require the participation of external actors to the institution, normally partners and institutional allies that influence the decision-making processes. Results are typically achieved under the institutional sphere of influence.

**The impact.** The impacts of the results should be described according to their maturity and scale, from early changes in behavior in the direct partners to long-term and large-scale changes in factors such as health, food security, wealth or environment to which the research, outreach, education, and training have contributed. These are achieved in the sphere of institutional interest and normally depend on variables external to the control and actions of institutional incidence.

**Impact assessment.** This is a study that conclusively demonstrates that the observed transformations can be attributed to the results of the interventions of CATIE and its partners. To carry out these evaluations, CATIE must align itself with its institutional partners at the regional or country level and carry out these exercises to the extent possible.

**Innovation indicators (research for development).** New or significantly improved (adaptive) products or product groups, including important research management practices, knowledge, technologies, findings / methods / tools.

### *Number of disaggregated research and development innovations*

- By leading organizations and partners
- By type of innovation
- Geographic scope
- By stage marked by the end of the investigation:
  - **Stage 1:** discovery / proof of concept
  - **Stage 2:** the successful pilot test
  - **Stage 3:** available/ready for third party use
  - **Stage 4:** adopted by third parties

## *Examples of innovations*

- Genetic materials (varieties, hybrids and races)
- Production systems and management practices, agroforestry systems, forestry systems (concessions)
- In social and environmental sciences
- Biophysical research
- Research and communication methodologies and tools
- Methods for the quantification of ecosystem services
- Methods for the conservation and management of water
- Methods for economic valuation and incentive systems

## *Policy indicators*

Number of policies, legal instruments, economic instruments or investments in the design and implementation of the policies. This indicator can be disaggregated:

- By policy/type of investment
- By the lead organization
- By geographic scope of change
- By level of maturity of the process, the policies are presented in three levels:
    - **Level 1:** policy inputs are incorporated by the decision maker or an intermediary
    - **Level 2:** approval and implementation of the policy (based on its instruments)
    - **Level 3:** evidence of the impact of the change on people or the natural environment due to the implementation of the policy

## *Examples*

- **Policy or strategy:** a written decision or commitment to a particular course of action by an institution (policy) or a high-level plan that describes how a particular course of action (strategy) will be carried out.
- **Legal instruments:** laws (a bill approved by the highest elected body) or regulations (a rule or norm adopted by the central government or local governments, backed by some threat of criminal or civil consequences).
- **Economic instruments:** positively or negatively affect economic activities in favor of desirable or undesirable transformations.
- **Budgets or investments for development:** public or private funds destined to the development of actions in favor of people and the environment.
- **Curriculum development policies:** the planned means and materials with which students will interact, in order to achieve the identified educational results, at any level of their training or for target groups, ranging from university degrees, training of trainers, design Farmer Field Schools or any proposed rural extension program.

# Annex 2. Summary of impacts of the Institutional Strategic Plan

## *Expected impacts, strategic objectives and indicators of expected impacts*

| Expected impacts (CATIE Sphere of Interest) | Strategic Objectives | Benchmark Indicators (To be defined in the Impact Studies) |
|---|---|---|
| 1. Increased income and rural employment with gender equity and inclusion | **SO1:** Generation of scientific and technical knowledge, through systemic research for Inclusive Green Development (IGD)<br><br>**SO2:** Training of leaders with professional competencies that affect Inclusive Green Development (IGD) in LAC<br><br>**SO3:** Outreach through knowledge management and institutional strengthening for Inclusive Green Development (IGD) | • Per capita expenditure at the household level, as a proxy for income (remittances, as a critical variable)<br>• Level of formal and informal rural employment<br>• Women's empowerment index<br>• Increased income with gender equality<br>• Income from compliance with climate action in indigenous people |
| 2. Food and nutrition security and agrobiodiversity | | • Prevalence of chronic malnutrition among children under-five years<br>• Improvement in the diversity and level of diet in households |
| 3. Resilience of rural communities to climate change | | • **Quantitative indices related to quality of life strengthened with an emphasis on** rural areas**:**<br>○ Reduction in crop losses<br>○ Level of local food sovereignty<br>• Reduction in the migration of men and women (proxy for quality of life levels)<br>• Capacity to recover from climatic shocks and stress |
| 4. Compliance with the goals contained in the NDC | | • Climate change metrics and national reports to the UNFCCC, enhanced by data generated by CATIE:<br>○ Emission reduction compared to baseline<br>○ Increase in carbon capture<br>○ Reduction of the carbon footprint of agricultural sectors: livestock, coffee, cocoa |
| 5. Natural capital is enhanced and protected | | • The area of natural ecosystems that is maintained or increased in sustainable landscapes:<br>○ Improved forest cover<br>○ Increased connectivity for biodiversity |
| 6. Ecosystem services result in healthy people and planets | | • The magnitude and quality of key ecosystem service flows:<br>○ Level of water security in rural areas (dry corridors)<br>○ Quantification and valuation of ecosystem services (modeling) |

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# List of acronyms

| | |
|---|---|
| **AOP** | Annual Operating Plan |
| **CABEI** | Central American Bank for Economic Integration |
| **CAC** | Central American Agricultural Council |
| **CAFTA** | Dominican Republic–Central America Free Trade Agreement |
| **CARICOM** | Caribbean Community |
| **CAS** | Southern Agricultural Council |
| **CATIE** | Tropical Agricultural Research and Higher Education Center |
| **CCAD** | Central American Commission for Environment and Development |
| **CIAT** | International Center for Tropical Agriculture |
| **CIFOR** | Center for International Forestry Research |
| **CIRAD** | French Agricultural Research Center for International Development |
| **DE** | Distance Education |
| **EAT** | Science-based global platform for food system transformation |
| **EfD** | Environment for Development |
| **FAO** | Food and Agriculture Organization of the United Nations |
| **GIZ** | German Corporation for International Cooperation |
| **ICRAF** | World Agroforestry Center |
| **IDB** | Interamerican Development Bank |
| **IGD** | Inclusive Green Development |
| **IICA** | Interamerican Institute for Cooperation on Agriculture |
| **INIA** | National Institutes of Agricultural Innovation |
| **IPBES** | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| **IPCC** | Intergovernmental Panel of Experts on Climate Change |
| **ISP** | Institutional Strategic Plan of CATIE |
| **LAC** | Latin America and the Caribbean |

| | |
|---|---|
| **NAMA** | Nationally Appropriate Mitigation Actions |
| **NDC** | Nationally Determined Contribution |
| **NGO** | Non-Governmental Organization |
| **OAS** | Organization of American States |
| **PME** | Planning, monitoring and evaluation |
| **RDIGD** | Research Division for Inclusive Green Development |
| **REDD+** | Reducing Emissions from Deforestation and Forest Degradation |
| **SICA** | Central American Integration System |
| **SIGI-CATIE** | CATIE's Integrated Institutional Management System |
| **SO** | Strategic objective |
| **UNCCD** | United Nations Convention to Combat Desertification |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environment Programme |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **WB** | World Bank |

CATIE

Solutions for environment and development
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# Institutional Strategic Plan 2021-2030

# Inclusive Green Development for Latin America and the Caribbean