



COSTA RICA

LAND USE

After ending deforestation: strategies and actions for viable land use

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**COSTA RICA**

After ending deforestation: strategies and actions for viable land use

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In 2019, Costa Rica has published The National Plan of Decarbonation of Costa Rica which has been recognised by U.N. for having focus the political and economic strategy of the country on environmental concerns; the country has been also awarded with the 2019 Prize Champions of the Earth (Campeones de la Tierra). In the case of Costa Rica, a country with less than 5 million people, we analyse how this governmental plan is being carried out in collaboration with farm producers, the private forest owners, local governments as well as with civil society, including native peoples.

The example of Costa Rica shows that a national strategy which identifies the needs of its actors can be rapidly successful in fighting against climate change as much as in creating a better social and economic situation and a better environment for its citizens. This notwithstanding, there is not a sufficient monitoring of the actions of private actors and local governments, in order to estimate its impact.




Key takeaways


 Between 1997 and 2015, Costa Rica managed to reduce 166 million tonnes of CO₂e due to deforestation, and since 2013 land use has become a carbon sink, whereas forest coverage reached again 54% of the country.

 Protected Public Wildlife areas have been the key of the deforestation reversal, even so, Costa Rica implemented financial mechanisms of public/private management (through payments for environmental services) which made the preservation of forest coverage more attractive than agriculture, without any need to buy lands.

 The national strategy consists in converting agriculture and livestock farming into carbon sinks by promoting agroforestry and silvopastoral systems. In parallel with big governmental plans such as REDD+ and Nationally Appropriate Mitigation Actions in key-sectors

such as the production of coffee and livestock, FONAFIFO, a public institution, funds little producers of forest properties, guaranteeing the spreading of practices at all levels.

 In Costa Rica, ecotourism turned out to be an efficient strategy of forest conservancy, having being accompanied by an explicit mechanism of conservancy, a local economic benefit and a strict monitoring and applications of environmental regulations.

 Native peoples and especially women, organised in ACOMUITA network, have been proactive in adapting the mechanism of payments for environmental services to the practices and needs of these peoples. ONGs for conservancy carry out their supporting action through specific projects with producers or as intermediary in the implementation of national mechanisms.

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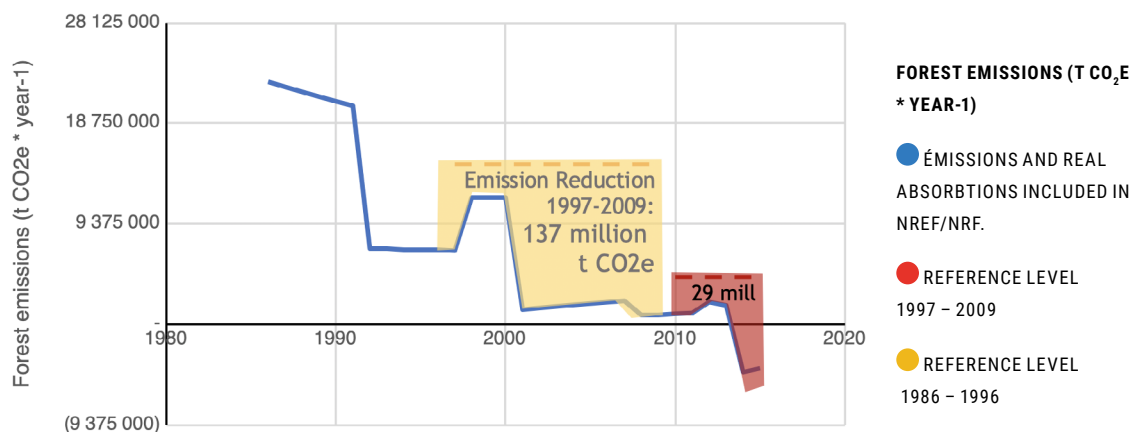
1. The inversion of GHG Emissions and Deforestation in Costa Rica

• **THE LAND IN COSTA RICA BECAME A CARBON SINK** • Between 1997 and 2015, Costa Rica succeeded in reducing 166 million tonnes of CO₂e emissions (MtCO₂e) due to deforestation. Since 1986, Costa Rica implemented a series of environmental policies, which allowed for the significant reduction of deforestation and, therefore, also the reduction of forest emissions of greenhouse gas (GHG) from 22,6 to -4,11 'million of tonnes of carbon dioxide per year (fig. 1) ([Ministry of the Environment and Natural Resources, 2016](#)). **In 2013, for the first time, the land use sector became a carbon sink, absorbing up to about 5 million tCO₂ in 2014.**

In 2016 FAO recognised Costa Rica as an example in the area, thanks to the significant increase of the forest coverage that it successfully recovered today up to 54% of the country ([FAO, 2016](#)). In 2016, about 50% of forest cover in the country was located in protected areas, where forestry law forbid land-use conversion ([FAO, 2016](#)). The same year, the National Forest Inventory indicates that the country has six types of forest cover, mature woodlands covering 31% of the area, as well as 18% of secondary forests and 3.1% of other typologies such as mangroves, palm woods and forest plantation.

FIGURE 1

HISTORICAL SERIES OF EMISSIONS AND FOREST ABSORPTIONS IN COSTA RICA - Source : *Ministry of the Environment and Natural Resources of Costa Rica, 2016; Preliminary results - monitoring program 2014 – 2015, REDD+ Costa Rica Secretary's Office*.



Protected Wildlife (mostly public) have been an important factor against land-use conversion.

Deforestation took place much more in woodlands located in private lands than in these protected areas, such as National Parks and Biological Reserves, which are the absolute protected categories. We could then argue that in Costa Rica lands with less legal restraints tended to be more subject to land-use conversion ([FONAFIFO, 2017a](#)).

However, in an innovative way, Costa Rican Government focused its efforts on the expansion of forest areas and the sustainable management in private lands, through the implementation of a series of financial mechanisms such as the Program of Payment for Environmental Services (PPSA), which - alongside private conservancy patterns such as the Costa Rican Network of Natural Reserves - succeeded in making the preservation of forest cover more attractive than livestock farming and subsistent agriculture, without having to buy lands to create national parks, biological reserves and wildlife refuges ([Ministerio de Ambiente y Energía / Ministry of Environment and Energy, 2018](#)).

1 - Preliminary results of the monitoring program 2014-2015 realised by the REDD+ Costa Rica Secretary's Office.



In the period 1986 - 2015, Costa Rican government realised a total investment of US\$ 318 million (FAO, 2016), in the recovery of woodland areas, the realisation of forest plantations, agroforestry systems and the conservancy and sustainable use of woodlands, within private lands. Through legal instruments promulgated by two forest laws (in 1986 and 1996), the Wildlife Law (Ley de Vida Silvestre - 1998) and the Organic Law for Environment (Ley Orgánica del Ambiente -1995), important governmental funds were developed.

FOR A BETTER UNDERSTANDING

THE COST RICAN PROGRAM OF PAYMENT FOR ENVIRONMENTAL SERVICES (PPSA)

In the late 1990s the program of payment for environmental services was created with its own management structure and its own board of directors. The 1996 forest law 'Ley Forestal 7575' is the legal foundation of PPSA, and the Law of the Authority regulating Public Services (Ley de la Autoridad Reguladora de los Servicios Públicos) provides the institutional framework. The National Fund for Financing Forestry (Fondo Nacional de Financiamiento Forestal - FONAFIFO) created in 1991 by the Ministry of Environment and Energy (MINAIE) extended his scope and included among its objectives the *"fundraising for the payment of environmental services related to woodlands, forest plantations and other activities necessary to increase the development of the natural resources sector"*.

PSA program consists in the Government's financial rewards destined - through the FONAFIFO - to the owners and possessors of woodlands and forest plantations for the environmental services that they provide and which directly contribute to the protection and improvement of the environment. This program replaces the traditional notion of *"subsidy"* or *"incentive"* with that of *"financial rewards"* for the environmental services provided to woodlands, which also contribute to increase the ecological, social and economic value of this latter. Its funds come mainly from the single tax on fuel, whose 3,5% is destined to PPSA, and the Environmentally Adjusted Levies for Water Use (Canon ambientalmente ajustado por aprovechamiento del agua). Furthermore, the program receives and promotes the fundraising through donations and loans from national and international organisations such as the World Bank and the GEF (Global Environment Facility).

The Forest Law recognises also four environmental services: the mitigation of greenhouse gas emissions, the protection of biodiversity, of water and of the natural scenic beauty. The criteria through which Psa prioritises projects are the protection areas in the gaps of conservancy (protected wildlife areas, biological corridors, water resources etc.), reforestation, natural recovery and regenerations, forest management and plantation.

Source : [Ministry of Environment and Energy / Ministerio de Ambiente y Energía. \(2018\)](#) ; [National Strategy REDD+ Costa Rica / Estrategia Nacional REDD+ Costa Rica \(2015\)](#). San José, Costa Rica

BOX 1

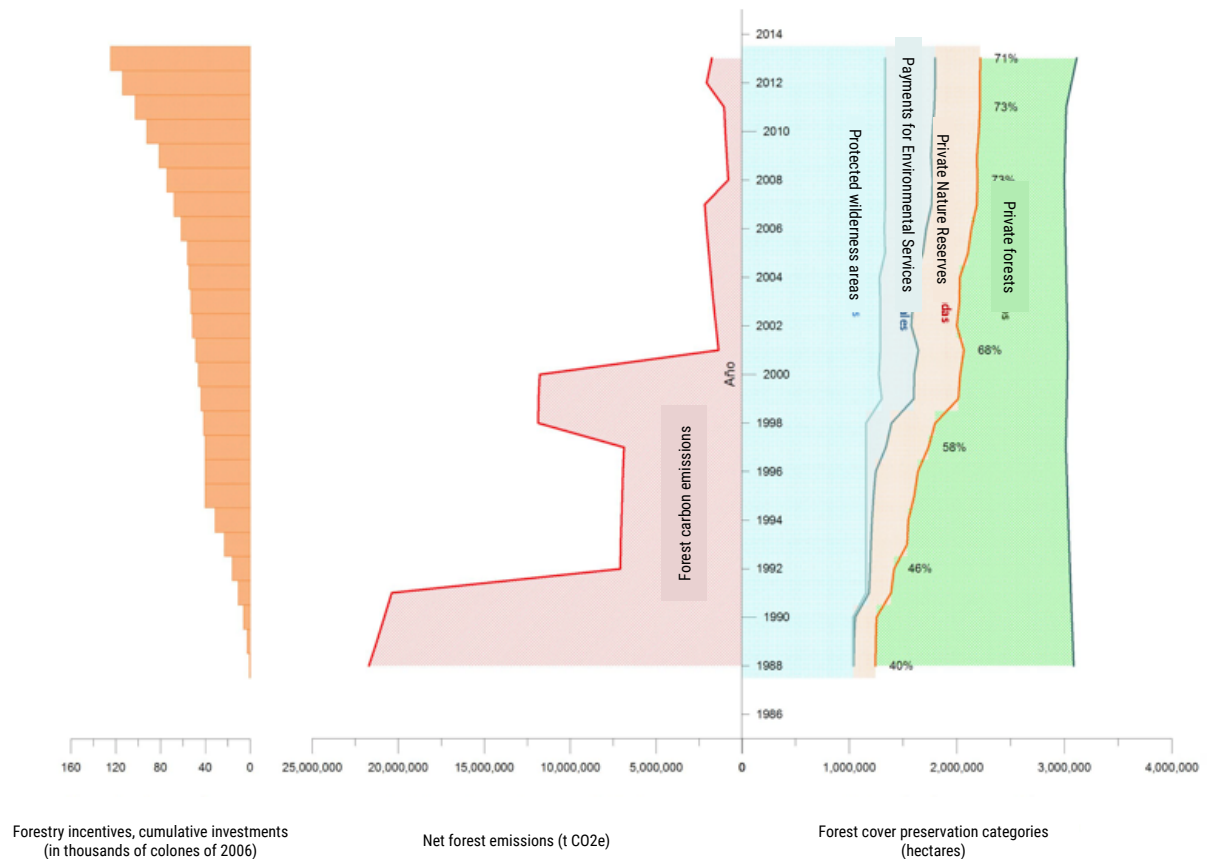
Through PPSA and the private contribution of the Costa Rican Network of Natural Reserves, before the end of 2013 (fig.2) there was a 38% increase of the forest cover destined to protection and sustainable use. In 2016, PSA results showed :

- 1.122.312 hectares had been proposed for PSA program in Costa Rica;
- 6.478.254 trees had been planted according to agroforestry systems;
- 16.000 families had taken part in the program;
- More than 136.000 hectares of the native people's areas adhered to PSA (GGGI, 2016).

FIGURE 2

IMPLEMENTATION OF FOREST INCENTIVES AND ITS CONTRIBUTION IN THE REVERSAL OF DEFORESTATION AND FOREST DETERIORATION IN COSTA RICA.

It has to be noted that in 1988 barely 40% of Costa Rican forest cover was under some category of conservancy management (Wildlife areas), the Payment for Environmental Services or as Forest reserve. Within 2014, the managed forest area increased up to 71%, thanks to the creation of new protected areas, the expansion of forest reserves and the implementation of PSA (elaborated by the author on the basis of information accounted in de Camino, n.d.; Pedroni, 2016; Program State of Nation/Programa_Estado_de_la_Nación, 2014)



PPSA contributed to strengthen the political dynamics that made the restraints provided by the Forest Law (Ley Forestal) on deforestation socially acceptable and, actually, politically popular (Boucher, Elias, Faires & Smith, 2014).

• THE MAIN EMISSION FACTORS: DEFORESTATION, DEGRADATION, AGRICULTURE •

1 - Deforestation

According to the results of the monitoring program 2014-2015 carried out by REDD+² Secretary's Office, in Costa Rica the deforestation rate is of 17.312 ha per year. Woodlands within private properties are considered the most susceptible to land-use conversion, and the secondary forests³ are the most vulnerable to deforestation (77%) (REDD+ Costa Rica Secretary's Office (REDD Costa Rica, 2015).

2 - REDD+ is an international initiative launched in 2008 to reduce GHG emissions from forest degradation, destruction and fragmentation. It is coordinated by the UN through the UN-REDD programme and is supported by financial incentives and is indirectly linked to the carbon market.

3 - Definition of Forestry and Climate Change Fund "Secondary Forests are forests that regrow through a natural process after a greatly significant and/or complete human or natural disturbance of the original forest vegetation. Their structure, species composition and age profile is greatly different from the primary forests."



The main factor causing deforestation in private lands is the conversion of woodlands to agriculture or livestock farming. These dynamics of use conversion from woodland to farming activities is a two-way process, since pasture is what contributes the most to the regeneration of the natural woodlands. In the period 2008-2013 there was a loss of 45.059 hectares, mainly due to the creation of pastures, which represents 68% of the loss of forest vegetation, and totally 218.752 hectares of forest was regenerated through pastures (about 65% of the area at issue) ([MINAE, 2018](#)).

2 - Forest Deterioration

Only 155.023 hectares were affected by forest deterioration in the period 2005-2015, which represents about 7,0% of the area of primary forests (Gonzalo2017). This notwithstanding, emissions due to forest deteriorations are significant and estimated to be about 2 million tonnes of CO₂ per year.

The sustainability of private forest coverage could be affected by the conservationist forestry system of the country, which limits to great extent the access to forest management, considering that in some areas of conservancy there are administrative seasonal prohibitions concerning some species as well as harvesting in natural forests; the law system and its interpretation are considered to be negative for this activity, especially for the small and middle-scale producer ([de Camino et al., 2016](#)). Forest deterioration is mainly the effect of the loss of competitiveness in the management of natural forests as land use ([Navarro et al., 2006](#) et [Navarro et al., 2008](#)).

This caused an important change in the dynamics of wood supply in Costa Rica. Until the mid-1990s, natural forests were the main source of supply for factories; nevertheless, the restrictive policy applied to the management of natural forests (primary and secondary forests) resulted in a rapid increase of the exploitation of trees in farm lands as well as in the forest deterioration and deforestation.

Since 2002, MINAE formalised the strategy for the control of illegal felling and tightened the requirements for the permission to fell trees in farm lands (SINAC, 2007); consequently, there was an increase in the exploitation of forest plantations, which became the main source of raw materials for the forest industry. As a result, the structure of wood sources radically changed: in 2019, more than 70% of the wood used in Costa Rica comes from plantations, whereas the rest of that is imported from countries such as Chile, in particular from natural forests or farm lands (TEC, 2019).

Unfortunately, this resource has not been adequate replaced, and this caused the scarcity and premature felling of forest plantations, which might produce serious environmental and economic consequences. In the same way, this aspect caused a price increase and at the same time triggered a quite low-quality wood supply (General Controllorship of the Republic - ([Contraloría General de la Republica, 2008](#); [Chavarría-Navarro & Molina-Murillo, 2018](#)). However, a new decree on the leading principles of the forest producing sector states this latter as strategic for the plans of forest and economic development. But also as instrument of decarbonation, since it requests all the institutions attached to the central and decentralised administration to make all the necessary efforts in order to replace high Carbon-footprint products with national wood. In 2020 FONAFIFO shall establish a plan to promote wood cultivation with a target of 5,000 ha of forest plantations and, at least, 500,000 trees complying with the agroforestry systems per year (Decree number / [Décreto N°41772-MINEA, 2019](#)).

3 - The impact of the farming sector

According to World Bank et al, (2014) in Costa Rica the farming sector represents 37% of total national GHG emissions: methane emissions are mostly due to livestock farming (15% of total national emissions) and the nitrous oxide emissions produced by the use of nitrogenous fertilisers (20% of

total national emissions). Most of the farming cultivations are occupied by monocultures with 87% of the sown area occupied by monoculture of coffee, oil palms, sugarcane and bananas ([Encuesta Nacional Agropecuaria, ENA 2019](#)). However, the emissions due to this sector are compensated up to about 28,5% (of total national emissions) thanks to seizure of carbon in the forest biomass and to the land-use conversion from pasture to secondary forests.

EXPERIENCE FEEDBACK

« MOCUPP » FOR MONITORING LAND-USE CHANGE IN PRODUCTIVE LANDSCAPES LINKED TO TENURE

In the last years, one of the most discussed human impacts on forest coverage in Costa Rica was the expansion of pineapple, African palm oil tree cultivations and farming, among the others (Sanchez and al., 2017). Recently the country counts on the « MOCUPP a tool for the monitoring losses and gains in forest coverage and in terms of total areas of cultivation of export products in productive landscapes over the national territory. MOCUPP allows the articulation and use of the technical competences and skills of three entities:

- The Airborne Research Laboratory of the National Centre for High Technology (PRIAS), which is responsible for the interpretation of remote sensors.
- The Directorate of Real Estate Registry (DRI), responsible for advancing the digitization of national cadastral information.
- The technical unit of the National Geographic Institute responsible for maintaining the National Environmental Information System (SNIT) where the maps are published.

MOCUPP identified 5,566 hectares of forest coverage seized from pineapple expansion (200-2015) and includes the properties which are potential transgressors (U.N. Program for Development, 2018). ([PNUD, 2018](#)).

Source : [MOCUPP](#)

BOX 2

2. The national strategy to conserve forest cover and make agriculture a carbon sink

According to its National Determined Contribution (NDC), Costa Rica engaged for a maximum of ~9,3 MtCO₂/year within 2030, carrying out a reduction up to ~6 MtCO₂/year within 2050 ([UNFCCC, 2019](#)). Among the other actions, NDC considers as option of mitigation the improvement of carbon sinks in private lands dedicated to agriculture, livestock farming and foresting, through the involvement of private owners of forest and farming land.

Between 2012 and 2024 the country shall invest US\$ 272 million for the implementation of the REDD+ strategy, with the following actions on private lands:

- The annual investment in the Program of Payment for Environmental Services (PPSA);
- A Forest Certification programme as a mechanism promoting the sustainable development of forest resources as well as the actual protection of water sources;
- Promotion of a National System of Biological and of a National System of Protected Areas (Sistema Nacional de Áreas de Conservación - SINAC).



In parallel, FONAFIFO, the public institution in charge of funding the small and middle-scale producers of forest goods and services, is implementing a Forest Harvesting Plantation Program (PPFA), a credit operation for small-scale producers, aimed at promoting tree plantation in accordance with agroforestry and silvopasture systems. Since 2013, PPAF financed 80 projects of wood SAF in which 129,000 árboles were planted, and this represented a financial increase of C285 million colones (450.000 euros) ([FONAFIFO, 2017](#)).

• **DIFFICULTIES IN IMPLEMENTING CLIMATE-SMART AGRICULTURE** • Climate smart agriculture (CSA) aims to integrate farming development and the climate response capacity through fundamental activities in productivity, adaptation, and mitigation. **Among the most adopted CSA practices in Costa Rica we find activities such as the prevention of soil erosion in pineapple fields, the use of agroforestry systems in coffee plantations, the application of silvopasture systems in the livestock production, the improvement of water management in treatment installations and the launch of NAMAs** (National Appropriate Mitigation Actions) that have been already implemented for coffee, livestock farming, sugarcane, rice and banana productions, currently in progress. CSA's funding action to the agricultural sector is carried out through independent public agencies and producers' organisations such as the Coffee Institute of Costa Rica (ICAFFE) and the National Banana Corporation (CORBANA). As to the small and middle-scale producers, PSA mechanism funds such practices in agroforestry and silvopasture systems (cf. Table 1).

However, measures such as the control of the use of agrochemicals and the increase small-scale producers' adoption of CSA practices, are the main challenge. At the moment, the farming sector is focused on the reduction of nitrous oxide and methane emissions (reducing fertilisers and improving enteric fermentation), the increase of carbon capture, the productivity and creation of environmental service through the implementation of agroforestry systems.

FOR A BETTER UNDERSTANDING

LIVESTOCK FARMING AS WELL CAN BE USEFUL TO IMPROVE CARBON SINKS

Livestock farming is responsible for 23% of gross GHG emissions in the country. The National Appropriate Mitigation Action (NAMA) for Livestock Farming in Costa Rica is one of the mechanisms aimed at implementing the National Strategy of Low-carbon Livestock Farming - Estrategia Nacional de Ganadería Baja en Carbono 2015-2034 (Corporación Ganadera, 2016).

This project promotes the development of silvopasture systems which are expected to bring several benefits for the ecosystem, but also to give rise to an increase of productivity and in turn a reduction of emissions through a correct management of the natural resources present in the farms (soil, fodder, trees, water, among the others). Currently the National Pilot Program for Low-carbon Livestock Farming operates in 93 farms throughout 5 regions: Chorotega: 20 farms; Pacífico: 18 farms; Norte: 18 farms; Brunca: 19 farms; y Atlántico: 18 farms.

The aim of the monitoring is not to assign a certification concerning Carbon Neutrality, considering that this process entails a further expenditure for the producer and that at the moment there is no actual compensation on the market. However, it is important to provide tools (procedures and registers) which can be used at any moment by these producers, in order to differentiate their production and to show a GHG reduction per kilo of produced meat or milk.

Source : [Government of Costa Rica - Gobierno de Costa Rica, 2019](#)

BOX 3

In this sense, important national appropriate mitigation actions are currently carried out under the NAMA implementation of Costa Rican private sector. The most advanced action is that concerning coffee production.

• **COFFEE: AN OUTSTANDING EXAMPLE OF MITIGATION STRATEGIES IN AGRICULTURAL VALUE CHAINS** • Coffee production in Costa Rica is strictly linked to the national identity of the country and provides employment for up to 150,000 people (in the harvest season). Nevertheless, it also represents 1,56% of Costa Rican national GHG emissions. In order to maintain a sustainable coffee production in the future, the Costa Rican government has planned the implementation of NAMA within a participative process between 2011 and 2021 ([NAMA Café, 2019](#)).

• **It is the first agricultural NAMA in the world to be implemented and represents an innovative effort of collaboration between the public, the private, the financial and the academic sectors.** Once successfully implemented, this initiative intends also to create the basis for the extension of NAMA to other agricultural systems:

- reducing the use of fertilisers, water and energy
- promoting financial mechanisms to support new agroforestry systems in coffee production
- undertake an audit on coffee benefits in order to determine the Carbon footprint
- developing strategies to promote a differentiated coffee
- implemented low-emission technologies.

ive years, the project brought as result that 22% of coffee harvesting in Costa Rica is performed in a sustainable and low-GHG-emission mode. The project reached a 60.000 tCO₂e reduction in coffee production, over the expected 340.000 tCO₂e. This was possible thanks to the tutoring more than 8.900 Costa Rican coffee farmers (with 25.000 hectares of coffee plantation) in the application of agricultural good practices. Additionally, more than 60 pilot companies (compañías benedictoras) of the whole country received support in the annual increase of their GHG inventories as well as more than \$3,8 millones in private funds to facilitate the purchase of equipments.

It is important to note that this effort was carried out with the aim to make this kind of coffee a differentiator to be presented on new markets. In this way 21 managers of pilot companies were tutored in their trade and selling. Fourteen of them managed to present their products on the German and USA markets after a series of commercial tours organised by the programme.

As well, through a project of agroforestry systems in collaboration with the Fundación Banca Ambiental (Environmental Bank Foundation), at least 75.000 shade trees were successfully planted in coffee farms of the country, thus contributing their adaptation to climate change ([La Nación, 2019](#)).

• **IMPROVING LAND USE MONITORING** • Within the framework of the National Environmental Information System (www.sinia.go.cr), the national government of Costa Rica has developed SIMOCUTE for National System of Monitoring of Coverage and Use of Land and Ecosystems. Its general objective is to know the current status and changes in the coverage and use of land and ecosystems in Costa Rica in order to consolidate institutional efforts, support public management and decision making.

SIMOCUTE was developed through a participatory and inter-institutional process, in which 40 institutions from the government, the academic world and the private sector participated. It has the technical and financial support of several international organizations (FAO, Global Forest Observation Initiative (GFOI), etc.)

This system has been designed considering 3 main processes: 1. Thus, SOMICUTE publishes numerous layers of fundamental environmental data with their respective metadata that are constantly



updated, and also precise mappings for example of the distribution of wetlands throughout the country and the different types: estuarine, marsh, lake ([SIMOCUTE, 2020](#)).

3. Private actors show their skills in co-managing conservancy spaces

• **ECOTOURISM FOR FOREST CONSERVATION: A STRATEGY UNDER DISCUSSION** • Costa Rican scientists' interest in biodiversity promoted the development of ecotourism in Costa Rica. Additionally, in 1990s the Costa Rican government established new National Parks as well as the formalisation of environmental sustainability in the touristic sector in 1997 by ICT (National Institute of Tourism) through its program of Sustainable Certificate for Tourism (Certificado de Turismo Sostenible - CST). Within 2002 Costa Rica had already become a centre of ecotourism recognised as a pilot model in the certification of sustainable touristic business. ([Mackenzie y Gannon, 2019](#)).

Nowadays, one-fourth of the incomes related to Costa Rican exportations come from tourisms, and ecotourism is the preeminente form of tourism in the country. Since the 1980s, Costa Rica successfully hosted about one million tourists per year ([Mylan, 2018](#)). More than half of private reserves are destined to ecotourism at any level and are potentially more involved in this activity, since they can use external operators and take part in a more sophisticated trade ([Buchsbaum, 2004](#)).

In Costa Rica there is a link between ecotourism and forest conservancy and restoration, which is due to the fact that farmers quit the agricultural exploitation of lands for further business opportunities, including tourism. Even when tourism has caused the deforestation and fragmentation of the primary forests, ecotourism has been an effective strategy to restore forests and to protect high-value vulnerable forests when it is accompanied by an explicit and concrete preservation tool ([Brandt & Buckley, 2018](#)).

However, ecotourism is still considered as a debated factor in Costa Rica, since, on the one hand, it can get to generate awareness, but on the other it can potentially damage environment if the tourism flows is not managed properly. The burden of population growth, although for not a longtime, can prevent the country from a rapid recovery of the environmental damage ([Gruber et al., 2018](#)).

EXPERIENCE FEEDBACK

THE PUBLIC-PRIVATE MANAGEMENT OF THE PROTECTED AREA “ZONA PROTECTORA ARENAL MONTEVERDE” (ZPAM) »

The environmental conservancy activities both within and around the ZPAM are characterised by the mix of public and private participation. 20 % of the area belongs to private owners, whereas 80 % is managed by three organisations: the Conservancy Association of Monteverde (ACM) a no-profit public organisation (18.447 ha), The Biological Reserve Bosque Nuboso Monteverde of the Scientific Tropical Centre (CCT - 4.092 ha), the Reserve Bosque Nuboso Santa Elena, a farm owned by the government (296 ha).

The Biological Reserve of the Bosque Nuboso de Monteverde hosts most of tourists per year, but it has recognised by the Costa Rican Institute of Tourism (ICT) as promoting sustainability and improving life quality in the area of Monteverde. Only 2% of the reserve is destined to public use, the remaining part is dedicated to conservancy and investigation tasks. Furthermore, it is a self-sustaining reserve, which obtains resources through the payment for environmental

services; the admission to the reserve; the provision of courses, talks, workshops, walks; through a craftwork shop or the rental of huts or binoculars and also incomes from the concession for restaurant privilege.

The sustainable management is also allowed by the coordination of these NGO with the economic actors of the area within the “ecotouristic cluster” of Monteverde, which includes hotels, restaurants, transport, laundries, etc. The combination is described “as a mechanism of concentric circles” for the direct and indirect links between business activities and the natural attractions of the area and, according a recent survey, “most of businessmen specifically related to the ecotouristic sector consider environmental management and the obtention of a eco certification for their activities as an opportunity to gain a better position in the market” (Céspedes, 2019).

Sources: [El Mundo, 2017](#); [Céspedes, 2019](#); [Sinac 2016](#)

BOX 4

• **LANDOWNER'S PARTICIPATION IN REFORESTATION** • In Costa Rica, according a study of the University of Colorado (U.S.A.), owners' participation in reforestation is mainly due to environmental reasons; however, the external support is crucial in order to overcome the initial difficulties to participate. Farmers' main motivations to plant trees in their lands are water protection and fruit and wood production. Moreover, the decision to plant trees also depends on the size of the farm as well as on the number of years of ownership. ([Powlen y Jones, 2019](#)).

However, the difficulties limiting reforestation also include the lack of technical skills in planting trees, the past failed experiences, the lack of trust in external organisations and the initial costs of reforestation. Currently, in the country the support for reforestation has taken place in two forms: trees for free, labour for free, enclosure material or direct payments (PSA). Owners prefer as support trees for free and enclosure material, whereas they consider PSA program as less important. **The application procedure and the owners' lack of trust in governmental agencies discourage owners' participation in PSA.** Considering that most of PSA participants were already active in forest conservancy before entering the program, this mistrust does not actually affect owners' attitude. Therefore, depending only on PSA national programs would not increase owners' participation in reforestation.

EXPERIENCE FEEDBACK

NATIONAL INITIATIVE FOR PINEAPPLE SUSTAINABILITY (INSP) LACK IN MONITORING

6,35% of the Costa Rican land surface is destined to pineapple plantations. According to the outcomes of the last survey of Monitoring Land Use Change within Productive Landscapes (Moccup) published in 2015, in the last 17 years, Costa Rica lost more than 5 million hectares of forest because of the expansion of pineapple cultivations, which gives rise also to a contamination of lands and rivers due to the use of agrochemicals.

National Initiative for Pineapple Sustainability (INSP) is a space of coordination aimed at harmonising the pineapple production increase with lands, water and human diversity. To this aim, it identifies and organises its members' resources in order to accomplish the tasks planned by the Action Program, which includes the identification of impact of pineapple production on the hydric resources of the communities adjacent to the plantations; a better management of the use of agrochemicals and supplies; the adaptation to the impacts due to climate change; the adoption of better practices in using and conserving lands.



INSP is run by the Ministry of Agriculture and Farming (MAG) and by that of Environment and Energy (MINAE), which work along with other ministries, the Cost Rican Institute of Aqueducts and Sewage Systems (AyA), the National Coordination of Small Fair-Trade Producers (180 pineapple producers) and community organisations of the regions where pineapple cultivation is more present (Huetar Norte and Huetar Atlántica). Further participants are the U.N. Program for Development (PNUD) and the Ombudsman of Costa Rica (DHR) as observers and guarantors.

So far, the initiative has not published the outcomes of INSP. Moreover, in 2019, The National Institute of Surveys and Census (INEC) highlighted that main pineapple producers refuse to provide information to survey institutes since 2017, and this information is necessary to estimate and compare the hectares of pineapple plantations in the country with respect to other monocultures such as coffee and palm oil trees etc.. The Costa Rican Federation for Environment Protection (FECON) has recently recalled that pineapple production industries have been reported for deforestation, water contamination with agrochemicals, fumigations of houses, outpatient clinics and schools.

Source : [INSP, 2020](#) ; [Ojo al Clima, 2020](#) ; [FECON, 2019](#)

BOX 5

4. Local governments identified emission sources

Land use is one of the main areas of local governments' control, which define socioeconomic development by authorising, or not, constructions ([Semanario Universidad, 2018](#)).

6 municipalities and departments (San José, Belén, Desamparados, La Unión, Monteverde and Golfito) took part in a pilot plan carried out by German GIZ Cooperation and by the Centre for Urban Sustainability (CPSU), in order to realise in 2018 their GHG inventories and to develop action programs aimed at implementing possible mitigation actions. This program was extended to 14 further municipalities in order to strengthen their skills and to support them in their contribution to the national goal of decarbonation ([CRUSA, 2019](#)).

On the other side, in the municipality of Belén a departamental commission for Climate Change de Belén was constituted since March 2014, along with the School of Environmental Studies of the National University (Universidad Nacional). This latter comprises of people belonging to institutions such as Conservancy Area Central Volcanic Cordillera, Alajuela Office (SINAC-ACCVC), MINAE; Área Rectora Belén- Flores, the Ministry of Health, councillors, administrators of the Town Council, private enterprises, health service organisations religious organisations and people of the community. This commission realised the land use GHG emission inventory of the Department of Belén in the period 2006-2013 and identified measures of mitigation which are available on line ([Belén, 2014](#)). If the municipality realises every year river and path cleaning campaigns, forestry, park and protected area conservancy, among other measures of mitigation ([Améliarueda, 2019](#)), it still lacks a proper monitoring of its actions which could allow for a mitigation of the emissions due to land-use change.

In turn, the Municipality of Grecia and Rio Cuarto influenced by the national Strategy of Climate Change initiated local planning processes with a focus on climate change. With the contribution of the National University, both the municipalities released their GHG inventories for the period 2005-2012, in addition to the analysis of the mitigation option in forestry and land use as well as of the real potentiality of mitigation. In Grecia, emissions up to 52.708 tCO₂e were identified, due to the conversion of coffee plantations and pastures to urban areas. The increase of tree coverage in coffee plantations represented the best potentiality of GHG mitigation in forestry and land use sector (6,68 tCO₂/year). In Rio Cuarto land use change from pastures, forests and forest plantations

to pineapple cultivation represented 91.076 tCO₂e of emissions. Combined implementation measures are necessary, such as river protection and their forest coverage, and the implementation of agroforestry systems in pasture and new areas ([Rodríguez-Sánchez, 2017](#)).

The National Institute for farming Innovation and Technical Tools Transfer (INTA) is currently entrusted with the task of mapping the lands present in the 25 thousand km² territory of the departments of the Pacific or Caribbean coast. Digital maps “will be published in the official journal La Gaceta, department by department, so that they came immediately used by the involved local governments as well as by other institution which might request this information for the improvement of the code of the maritime-terrestrial areas of the country” ([Government of Costa Rica/ Gobierno Costa Rica, 2017](#)).

5. Indigenous peoples and conservancy-focused

NGOs adapt and implement local projects

Within the objectives of REDD+, indigenous peoples have proposed a Indigenous PSA - Payment of Environmental Services, based on the current PSA model, although considering the reality of indigenous communities. Since 2014 FONAFIFO compensates indigenous peoples for their forest protection in local territories. During the period 2014 – 2017 a total amount of 170.100 trees were planted and 41.258 hectares of forest were taken care of. FONAFIFO paid totally €7,198,838,369 through PSA.

Currently 24 indigenous peoples are involved, always respecting the principle of people self-determination, so that each of them voluntary decided to take part in the project, choosing terms and timeline. Additionally, indigenous women’s participation has been a key-element and it is worth mentioning the document issued by ACOMUITA (Association of Indigenous women’s’ Commission of Talamanca - confer the following table) as sign of these women’s’ emancipation alongside this process.

EXPERIENCE FEEDBACK

ACOMUITA ACTION (ASSOCIATION OF INDIGENOUS WOMENS’ COMMISSION OF TALAMANCA)

Bribris Association of Indigenous womens’ Commission of Talamanca consists of 75 female members of the communities of Bribris and Cabecar, who are mostly heads of household, cocoa, banana and plátano producers. Moreover, this organisation collaborated with the Associations for Integral Development ADITIBRI y ADITICA. The work of the association focuses on the realisation of tutoring, cocoa rehabilitation and trade, carbon-sink, appropriate land use, use of traditional cultivations and ecotourism; through its work, it also promotes the document of indigenous women within the development and the economic welfare of their communities. On the other side, this organisation manages, receives and organises the donation in view of the financial support of its projects. Some of these collaborators are PPD-FMAM, CATIE, UICN, ACICAFOC-CICA. At the same time, their activities are self-financed by selling cocoa products and ecotourism.

Source : (s.f.). Bribris Association of Indigenous womens’ Commission of Talamanca.

BOX 6



During the first Expo of National Adaptation Programs of Latin America (Exposición sobre Planes Nacionales de Adaptación en América Latina - NAP Expo Regional) in 2018, Costa Rican Catalina Molina Bustamante was granted recognition for her work in favour of the adaptation of the community of Bahía Ballena de Osa, which promoted the restoration of the coast forest line and the adaptation of tourism to extreme climate events ([ONU Medio Ambiente, 2018, 2018](#)).

There are currently 82 non-governmental organisations dedicated to biodiversity conservancy ([MINAE, SINAC, 2017](#)). These NGO can be divided into three categories: international: 8, national: 18 and local: 22. More than half of them (48) carry out activities related to conservancy, reforestation and forest monitoring; management of Protected Forest Areas, creation of private natural reserves, administration and counselling in PSA; wetland management and reforestation, sustainable development of communities through sustainable agriculture programs with agroforestry and silvopastoral systems; aid to indigenous families, ethnic or indigenous groups for the development of ecological tourism.

These NGOs can be classified into three groups: international: 8, national: 18, and local: 22.

EXPERIENCE FEEDBACK

AQUA TICA MULTIACTOR ALLIANCE

qua Tica was created in 2015 and is a public-private alliance, comprising of the Government, MINAE, AYA, the National Bank Banco Nacional, BLP, COca-Cola Costa Rica and FEMSA, Cristal, CRUSA Foundation, Water Management, ESPH, Florida Bebidas, FUNDECOR, UNA, UNA-SIL, UNAGUAS Latin American Alliance of Water Funds (Alianza Latinoamericana de Fondos de Agua), The Nature Conservancy, FEMSA Foundation, BID, FMAM. The aim of this alliance is the protection of water sources in the sub basins of Rio Grande and Rio Virile belonging to the basin of the rio Grande de Tárcos. Along the project, up to 33 departments, 23 micro-basins, 14 protected areas and more than one million people have been direct beneficiaries (FUNDECOR, 2018). The strategy of this project is the implementation of 8 lines of investment in: land regeneration, good agricultural practices, restoration of degraded areas, environmental education, agroforestry systems, slope control, forest protection and reforestation ([Angulo, 2015](#)).

BOX 7

CONCLUSION

Costa Rica successfully reversed the deforestation process thanks to the creation of protected areas, the expansion of forest reserves and the implementation of forest incentives such as the Payment for Environmental Services. In the next five years the most important challenge in Costa Rica will be to guarantee the necessary funds for the forest coverage maintenance and expansion. At least further US\$272 million will be necessary to implement the REDD+ Strategy. The country must still work on the control of forest deterioration. Regulations and constraints in managing natural forests tend to be excessive, which caused a considerable decrease of the profitability of their activity, so that forest owner opted for illegal and non-sustainable exploitation of resources, which results in more than 2 million tons of carbon emissions per year into the atmosphere.

Costa Rican non-state actors successfully assimilated the environmental success of their country into the national economy, mainly through ecotourism. Currently, one-fourth of the incomes due to Costa Rican exportations come from tourism and ecotourism. More than half of private reserves in the country are dedicated to ecotourism at all levels.

And finally, the involvement of the civil society and local governments has further possibilities of improving the implementation of mitigation measures in land use. The participation of indigenous peoples in the Indigenous PES Programme and its impact on forest restoration and protection is also noteworthy.

**Please do not hesitate to react to this sheet, and to notify us of additional reports and data via the following address:
contribution@climate-chance.org**



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