Restoration Cases Flagship Collection

Case #17

Reforesting watersheds through comprehensive development in Southern Haiti

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FORESTORATION INTERNATIONAL

View of demonstration forest. Photo credit: James Rhodes

Contents

In brief

Overview

For the past 32 years, The Haiti Reforestation Partnership, together with the Comprehensive Development Program (CODEP), has worked to implement reforestation, soil recovery, and community development in the Cormier Watershed and adjacent areas in Léogâne County in Southern Haiti. CODEP began operations in 1991 as a loose consortium of small, multi-household groups led by 15 local leaders. CODEP has planted approximately 16 million trees, with a survival rate of 81%, despite drought, feral goats, and disease. Forty-one nurseries produce 500,000 seedlings annually for planting in local watersheds on CODEP members' land holdings. Reforestation has stabilized soils, improved water flows in local springs, and improved livelihoods and food security for local communities. Reforested areas and agroforests supply diverse products for local use and livelihoods, from peanuts to charcoal.

Exemplary practices

Although many reforestation projects in Haiti have failed, CODEP succeeded. Key to their success was integration of strong technical support with community development and support of local leaders. Other successful practices include adaptation of informal land and tree tenure systems and capacity development of local communities in appropriate techniques and practices. CODEP practices enriched social, human, and community capital while providing modest salaries and other economic incentives for members. For every tree harvested, 4–5 trees are newly planted nearby. CODEP founded a local school and is training youth in reforestation practices. A mentorship program is underway to ensure a new generation of capable, motivated, and highly trained youth can sustain leadership and broad community participation long into the future.

Key lessons learned

- *Building local technical capacity and trust develops leadership skills and community capital across all age groups.*
- *Women make effective leaders and essential workers on reforestation teams.*
- *Restoring watersheds is a social enterprise and requires leadership from a local organization that supports the values, cultural traditions, and informal relationships that maintain social equity.*
- *A small and steady subsidy for work can go a long way to build long-term commitment and engagement of community members and reduce dependency on external funding.*
- *Livelihoods of those who most depend on forests are a crucial leverage point for reducing deforestation and increasing reforestation.*

4

Restoration narrative

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Reforesting watersheds through comprehensive development in Southern Haiti

Visit and learn more about the project's ecological analytics here:

Haiti Reforestation Partnership

RESTOR

"This is a gem of a project, and it is worth telling people about how it works. It produces results and they can start to dream."

—Martha Johnson, Board Member, Haiti Reforestation Partnership

Geography and ecological Setting

The country of Haiti is located on the island of Hispaniola in the Greater Antilles archipelago of the Caribbean Sea. Haiti extends over 27,750 km^2 (10,714 sq mi) in the western part of the island, which it shares with the Dominican Republic. Haiti is the most populous country in the Caribbean, with an estimated population of 11,402,528 in 2020, of which 57% is urban (Worldometer, 2022). The climate is tropical with cooler temperatures from 15°C to 25°C between late December and early March and hotter temperatures from 25°C to 35°C between June and September. Average annual rainfall ranges from 1,397 to 2,006 mm (Pauleus and Aide, 2020). Rainfall is seasonal; large areas of the country are semiarid (Country Reports, 2022).

The country's name is derived by the indigenous Arawak word "Ayti," meaning mountainous land (Pauleus and Aide, 2020). More than 60% of Haiti's land has slopes exceeding 20% (Bargout and Raizada, 2013). The highly dissected landscape creates diverse microclimates, endowing Haiti with some of the highest levels of biodiversity in the Caribbean. Following loss of forest cover, however, steep denuded slopes led to severe erosion and flooding (Tarter et al., 2016). Haiti is one of the world's most vulnerable countries to natural hazards, primarily hurricanes, floods, and earthquakes. More than 96% of the population is exposed to these natural disasters (World Bank, 2022).

Together, the Haiti Reforestation Partnership (HRP) and the Comprehensive Development Program (CODEP), have worked to implement reforestation over the past 32 years in the Cormier Watershed and adjacent areas in Léogâne County in Southern Haiti (Figure 1). The port town of Léogâne is about 30 km west of Port-au-Prince. Steep topography, population pressure, and lack of access to mechanization in the Cormier Watershed has forced land users to cultivate land on steep slopes and to plow the soil by hand. The catchment extends over 30.4 km^2 (Eichenberger, 2019; Figure 1).

Figure 1. Map of the Cormier Watershed (outlined in blue) and location within Haiti. Source: Eichenberger, 2019.

Colonial history and debt

Hispaniola was the base of the Spanish colonial empire in the Americas in 1492 and remained under Spanish control for over 200 years. Prior to Spanish colonization, indigenous peoples engaged in subsistence farming and shifting cultivation based on agroforestry. France took over as the colonial power of the western third of the island in 1697 (Marzelius and Droste, 2022). Colonial rule brought large-scale deforestation and watershed erosion as forests were cleared for agricultural plantations (predominantly sugar cane), cattle grazing, firewood, and construction materials (Castilla-Beltrán et al., 2018). The French colonial economy was based on intensive agriculture, timber extraction, and large-scale monoculture farming—all driven by slave labor (Jean et al., 2021). Domestic and international wood markets were key drivers of deforestation (Tarter et al., 2016).

After 13 years of armed struggle, Haiti became independent in 1804. France demanded reparations of 90 million francs, equivalent to $21 billion USD in May 2022 (Gamio et al., 2022). The Haitian government was forced to service this debt, accounting for up to 80% of government expenditures by the 1880s, severely compromising public funding for education, healthcare, infrastructure, and other needs (Alcenat, 2021).

To pay off the large debt, Haiti intensified tree cutting for timber all over the country (Tarter et al., 2016) and borrowed money from banks in Europe and the United States (Alcenat, 2021), crippling the country's economic development.

Haiti is the poorest country in the Latin American/Caribbean region and among the poorest countries in the world (World Bank, 2022). More than half the population lives below the poverty line, and many people rely on subsistence farming to feed their families (Labrador and Roy, 2018). Nearly half of the population in Haiti has high acute food insecurity (FAO, 2022). Plagued by natural disasters, extreme social inequality, political instability, and economic crises, Haiti ranked 163 out of 191 countries in the United Nations Human Development Index in 2020 (World Bank, 2022).

Deforestation history

Haiti was never fully covered by forest, as mountain ranges to the east block precipitation from Caribbean trade winds (Tarter et al., 2018). Estimates of pre-colonial forest cover range from 35% to 55% (Tarter et al., 2018). Little remains of the forests present before Spanish and French colonization. From 1988 to 2016, cover of primary (not significantly disturbed) forests in Haiti declined from 4.4% of total area to 0.32% (Hedges et al., 2018). Other studies have found considerably higher levels of forest cover using broader forest definitions. Based on Landsat Thematic Mapper imagery from 2010–2011, Churches et al. (2014) found that approximately 32.3% of Haiti's land area was covered by forest—including well-protected and regenerating forests and mangroves—significantly higher than figures published by the Global Forest Resources Assessment (FAO, 2010). In 2020, the Forest Resource Assessment report on forest cover in Haiti indicated 12.6% forest cover (FAO, 2020).

Studies of changes in forest cover in Haiti since 2000 have used a variety of methods, with conflicting results. Based on random sampling of aerial photographs, Rodrigues-Eklund et al. (2021) found a dramatic increase in estimated tree cover from 14.3% in 2002 to 19.3% in 2010.

Figure 2. A CODEP worker producing charcoal. Photo credit: James Rhoads

Another study, however, found that forest cover in Haiti declined from 26% in 2000 to 21% in 2015 (Pauleus and Aide, 2020). From 2000–2010, Haiti was the only country among six islands in the Greater Antilles that showed net woody vegetation loss (Álvarez-Berrios et al., 2013).

The main driver of forest loss from 2000 to 2015 is agricultural expansion. In rural Haiti, agriculture is the primary income-generating activity and employs more than half of all workers (Pauleus and Aide, 2020). Illegal charcoal production is also an important driver of forest loss (Cho, 2011). Charcoal and firewood are the primary sources for fuel for more than 80% of the urban population (Figure 2). Approximately 946,500 metric tons of charcoal are consumed nationally in Haiti each year (Tarter et al., 2018).

Forests in Haiti are all on public or state property. But secure tree tenure is possible under heterogeneous informal arrangements for Haitian land tenure (Murray and Bannister, 2004).

The turning point

“In short, its troubling economic and social statistics, its political chaos, and its denuded hillsides make Haiti an unlikely setting for a happy tree story” (Murray and Bannister, 2004, p. 384). Despite repeated landscape restoration and management efforts from both the Haitian government and the international community, declines in forest cover have not been reversed. In 2013, the Haitian Government launched a massive reforestation campaign (Grogg, 2013), but the campaign was largely under-funded and ineffective (Sprenkle-Hyppolite et al., 2016). On steep mountain slopes, there was essentially no soil. “The country’s thin subtropical topsoils, vulnerable to start with, long ago succumbed to erosion under land-use systems based not on the practices of unknown African ancestors but on the extractive technologies of a market-oriented colonial plantation system” (Murray and Bannister, 2004, p. 384).

Reforestation projects in north and northeastern Haiti failed to accomplish effective reforestation due to unclear goals, poor follow-up, lack of understanding of the needs of the local population, and lack of participation of residents in decisions regarding tree planting (François et al., 2022).

The drivers of deforestation persisted (Figure 3), leading to continued tree harvesting to produce charcoal, expand home gardens, produce furniture, and construct houses. Without addressing the needs of people for health care, food security, and energy security, tree harvesting wins out over tree planting and recovery of soil. Effective restoration practices in Haiti would have to provide alternative livelihoods and fuels that drove reforestation instead of deforestation (François et al, 2022). Smallholder-based agroforestry systems based on locally tailored practices and species selection offered a promising solution (Murray and Bannister, 2004).

It took a group of missionaries from the Presbyterian Church USA to establish the fundamental linkage between reforestation and addressing the basic needs of rural communities. Through initial connections with Hôpital Ste. Croix, an Episcopal missionary hospital in Léogâne, the Haiti Fund was initiated to tackle malnutrition and disease by adopting a holistic approach to address unresolved chronic diseases and environmental degradation in the Cormier Watershed.

Figure 3. An isolated mango tree grows on heavily eroded soils. To the left are Eucalyptus saplings planted by CODEP. Photo credit: James Rhoads

Jack Hanna, a retired engineer who had an association with the Presbyterian Church USA, visited several villages near Léogâne and saw the need for community development and watershed-scale reforestation. Over time, he enlisted nearly 50 churches in the U.S. to provide volunteers, financial support, and technical expertise for the Cormier watershed project. His early vision of “adopting a village” evolved into a multi-generational transformation of watersheds and rural communities, making steep mountain slopes green and productive again.

Actors and arrangements

In 1989, Jack Hanna founded the Cormier Development Project (CODEP), which later became called the Comprehensive Development Program. At the same time, he initiated the Haiti Fund to develop a watershed-based approach to community development. The Haiti Fund brought in technical experts with agricultural backgrounds who provided training in reforestation techniques and provided financial support for local community workers. The Episcopal Church of Haiti supervised the Haiti Fund and the US Episcopal Church and Presbyterian Church USA (PCUSA) provided funding for operations (Haiti Reforestation Partnership, 2022). CODEP and the Haiti Fund worked together to accomplish their goals of watershed-based community development and reforestation for over 32 years.

In 2018, the Haiti Fund was reconstituted as the Haiti Reforestation Partnership (HRP), which moved to broaden support beyond the faith community and to build partnerships with government agencies and academia. The HRP’s mission is now restricted to financing reforestation activities through support for CODEP and its local activities.

Currently, the NGO is led by a Board of Directors of 13 members, an Advisory Council of 20 members, and a half-time Executive Director who has been resident in Haiti for 14 years.

In Haiti, customary forms of land tenure prevail more than statutory systems (Smucker et al., 2000). CODEP began operating in 1991 as a loose consortium of small, multi-household communities, called *lakous*. Within the *lakou* system, each individual or nuclear family inherits and owns their landholding, which they use to grow food and raise livestock for their own consumption and for sale in local markets (Mocombe, 2020). The formation of *lakous* gave communities access to land for planting trees and gardens through free-hold rights. The occupier of the land had legal rights to rent out property for a few years.

Only a *lakou* could join CODEP, not individuals within it (Winings, 2016). Initially, there were seven CODEP *lakous* or work groups (Winings, 2016). Each *lakou* consisted of 15–30 members led by a *chéf ekip* (Haitian Kreyòl for team leader), who was responsible for keeping records for the group. Now, *chéf ekips* supervise nurseries and tree plantings. As CODEP grew, the number of *lakous* increased to 32 in 2009 and to 71 in 2017 with over 1,400 families involved (Winings, 2019). Currently, CODEP has 41 *chéf ekips* and a workforce of 750 workers, 85% of which are women (Michael Anello, 2022, personal communication).

The local leaders of CODEP are called Animators, and they had responsibilities related to several *lakous* they worked with. Animators advised team members, energized them, and helped them to do their work (Winings, 2016). Initially, there were 15 Animators; now there are 13 as two of the original Animators have passed away. Four of the Animators have worked with CODEP for over 25 years (Haiti Reforestation Project, 2022b). The Animators meet as a group on a regular basis, as often as twice per month. They receive a modest but steady paycheck. A special fund was established for Animators and other leaders to get loans for investments for renting land for reforestation, gardens, nurseries, and other needs. Loans are repaid from payroll deductions (Winings, 2019). As CODEP sought new areas to expand, some of the long-term Animators sought out new *lakous* and parcels of land to rent for tree planting.

Political turmoil and earthquakes severely impacted the administrative structures of CODEP and the Haiti Fund. In 2004, after President Aristide was ousted, all American personnel were forced to leave Haiti, including project volunteers and interns. Leadership changes within CODEP and the Haiti Fund led to more active Haitian leadership but reduced financial support for earlier interventions. In 2010, an earthquake struck very close to the CODEP area, destroying Léogâne and much of Port au Prince. The Haiti Fund entered a period of economic and legal vulnerability. The post-earthquake flood of NGOs in Haiti made it impossible for CODEP to become a Haitian NGO. In 2015, CODEP gained legal status as a locally organized Haitian Kreyol language Foundation (Fondasyon CODEP) (Winings, 2019).

Figure 4. CODEP workers plant twice a year during the rainy season. Photo credit: Michael Anello

Costs, funding and other support

Initial support for CODEP from the HRP (and its predecessor the Haiti Fund) came from 50 Presbyterian and Episcopalian congregations in the U.S. This support has now declined to about 24 congregations due to a variety of factors, including political turmoil and violence that prevents visitors from coming. The operation is run on a reduced budget (US$182,522 in 2018) that is mostly derived from individual donations, church donations, foundation grants or business donations, following a slow progression away from church funding. Most of the funds go directly to support program costs (71%) and payroll for staff (19%) (Haiti Reforestation Partnership, 2022b).

Implementation

The key to successful implementation of reforestation in the upper Cormier watershed was to integrate strong technical support with development and support of local leaders, who became the core of the Animator team. After initial outreach with Episcopal churches in the lower Cormier Watershed failed, in 1991 the Haiti Fund hired Rodney and Sharon Babe, missionaries from Pennsylvania with agricultural backgrounds and ties to the PCUSA. The Babes remained involved with CODEP until 2006 (Winings, 2016). They introduced Sloping Agriculture Land Technology approaches for land restoration (Tacio, 1993) and sustainable agricultural production to the region, paving the way for social and environmental transformations for local communities.

Reforestation protocols followed what came to be called the “CODEP Method,” focused on soil conservation by contour planting of deep-rooted vetiver grass (*Chrysopogon zizanioides*) (Figure 5). Water-holding ditches are cut along contours and holding grasses are planted, with trees planted above the grass. Falling leaves collect in the ditches, and in 2 or 3 years a natural compost forms, allowing planting of gardens, fruit trees, and coffee.

Tree seeds are harvested from local market produce and seedlings are grown in local nurseries.

Young trees are carefully tended and occasionally fenced to protect them from feral goats that consume all but vetiver grass and *Eucalpytus globulus* seedlings. Once the *Eucalyptus* saplings grow to several meters in height, other trees are planted beneath their shade, including native forest species—Haitian oak (*Catalpa longissimi*) and Spanish cedar (*Cedrela odorata*)— and non-native species known to improve soil fertility—*Cassia angustifolia, Leucena leucocephala, Caliandra calthyrsus, Acacia auriculiformis*)— and fruit trees—mango (*Mangifera indica*), coffee, (*Coffea arabica*), and Barbados cherry (*Malpighia emarginata*).

Another principle of the CODEP method is that trees are to be harvested only under strict rules and under the supervision of Animators. As stated by Michael Anello, Executive Director of HRP, “It’s a working forest, not a preservation forest. There’s a big difference. For each tree that is harvested, 4–5 trees are planted in the immediate vicinity.”

Figure 5. CODEP worker planting contour hedgerows with vetiver grass to hold the soil in the Cormier Watershed. Photo credit: Wendy Thienpont

Figure 6. The 6 ha (22 acre) La Ferrier demonstration forest in 2016, can be seen from several spots along the Jacmel road. The area was completely denuded prior to tree planting in 1998 Photo credit: James Rhoads

In 1998, CODEP began to focus attention on La Ferrier, a completely barren area in the northern sector. The area was easily accessible from the Jacmel Road and was an ideal site for a demonstration forest (Figure 6). The land (22 acres; 6 ha) was available for rent, and CODEP made a 10-year rental agreement (Winings, 2016). Even before the rental agreement was signed, trees were planted using the CODEP method: large, rectangular channels with vetiver grass below and tree seedlings planted above. In addition to *Eucalyptus*, coffee, fruit trees, and beans (pigeon peas and velvet beans) were also planted to create a mixed-species agroforest. Twenty thousand tree seedlings came from CODEP nurseries (Winings, 2016).

Fertilizer was used to ensure good tree growth for the demonstration forest, and trees were cared for over many years. In 2003, trees were first harvested for charcoal to open up areas for planting coffee and longer-term canopy species. The rental agreement has long expired, and the land has changed hands several times—but the demonstration forest remains. CODEP policy is to plant five trees for each tree harvested. Tree cutting is allowed and encouraged for appropriate harvest timing, as long-term investments in CODEP areas (Jamie Rhoads, 2023, personal communication).

CODEP gradually expanded reforestation work across six watersheds as new *lakou*s were enlisted. From 2001–2004, over 500,000 trees were planted each year (Jamie Rhoads, 2022, personal communication). Although these planting rates declined for several years, they were reestablished from 2018 to present. Engagement of *lakou*s was encouraged by provision of incentives. CODEP constructed fish ponds as a source of protein and cisterns for water collection. Unfortunately, the fish ponds were all destroyed by the 2010 earthquake. Cisterns (500-gallon capacity) were rewarded to *lakou*s for their work with tree planting. These saved much time for women who otherwise had to trek long distances every day to collect water for consumption, washing, and irrigation. In some cases, *lakou*s were rewarded with construction of a new house (Winings, 2016).

Participants in CODEP volunteered one day per week to qualify as program members. During the first years of CODEP, if they worked additional days they were paid roughly US$1/day. Work included managing backyard tree nurseries (Figure 7), planting seedlings twice a year during rainy seasons in March and September, and implementing soil conservation projects. In 2013, CODEP moved to a new model with all workers as volunteers but with a performance-based bonus paid twice a year (James Rhoads, 2022, personal communication).

Animators receive a salary of about US$100/month (Michael Anello, 2022, personal communication).

In the Haitian context, engaging people in reforestation first required addressing problems of food security, health, and housing. During the 1990s, CODEP worked with other organizations to provide microcredit loans to local residents. The Adventist Development and Relief Association and the Canadian Civil Reconstruction and Emergency Fund were active within the CODEP area and provided vouchers for food and sponsored work-for-food programs that benefitted CODEP members. “Leaders were leading, farmers had supplemental foodstuff—rice and cooking oil—so they could concentrate on the longer term and the forests that would result” (Winings, 2016, p. 73). Peanuts, an important cash crop in Haiti, were grown alongside trees, providing additional revenue to CODEP members (Figure 8). CODEP invested in a peanut butter mill used as a fee-for-service model to earn revenue.

Figure 7. One of many CODEP backyard nurseries, locally called pepinyè. Photo credit: Michael Anello

Figure 8. Annual crops, such as peanuts, are grown together with diverse tree species to provide revenue for CODEP members. Photo credit: James Rhoads

In 2012 CODEP built and operated a school that was recognized as a “School of Excellence” by the Government of Haiti (Haiti Reforestation Partnership, 2022b). The school focuses on agriculture/environmental education (Figure 9). Many of the Animators went there or sent their children there. Clement Tercelin, an Animator, commented, “At the CODEP school, our kids look at trees differently because they teach every one of them how to grow a tree, what a tree means, and how the kids can do better for Haiti.” The school serves as a hub for a teacher training summer school for other schools. CODEP also engaged three local elementary schools to teach core CODEP principles and establish their own tree nurseries (Winings, 2016).

In 2021, HRP established a mentoring program with a charter cohort of nine young people who have graduated from the CODEP school (Figure 10). The program includes building nurseries, learning about the challenges of mapping, and becoming acquainted with CODEP’s history, methodology, and challenges. The two-year program provides hands-on experience working and learning with *chèf ekips* and Animators. Each student receives a monthly stipend and transportation expenses and obtains a certification upon completion of the program. One graduate of the program is receiving

Figure 9. CODEP school students select seedlings to plant in their home gardens on Agriculture Day. Photo credit: Michael Anello

continuing education support to attend college to study agroforestry (Haiti Reforestation Partnership, 2022b). Over time, HRP reduced funding for CODEP activities such as the school and the entrepreneurial activities and focused on supporting only the reforestation and mentoring activities. CODEP has since become more a self-sustainable enterprise.

Figure 10. Mentorship program graduates proudly display their diplomas. They are future Animators in training. Photo credit: Michael Anello

Outcomes and impacts

Through all of the activities over the years (Table 1), CODEP's mission has enabled a healthy and cohesive community in the region, achieving both community development and watershed-scale reforestation. Over its 32 years of existence, CODEP has planted approximately 16 million trees, of which 13 million (81%) have survived, despite drought, feral goals, and disease. Forty-one nurseries are producing 500,000 seedlings annually for planting in local watersheds on CODEP members' plots (Haiti Reforestation Partnership, 2022b). Over time, the proportion of native tree species has increased substantially (Michael Anello, 2022, personal communication).

But the impact of CODEP goes way beyond planting trees. CODEP created a microfinancing organization that is used largely to lease or buy land for tree planting. They facilitated several entrepreneurial ventures, such as production of peanut butter, coffee, and black beans, and currently run a sawmill to encourage sustainable harvesting of trees.

To assess the success of their tree planting activities and to identify the best areas for future reforestation activities, the HRP collaborated with the NASA Develop program (Roberts et al., 2022a,b).

Year	Activity
1989	Cormier Development Project (CODEP) established
1991–1998	Haiti Fund established in USA to support CODEP; Rodney and Sharyn Babe begin training, tree planting programs, cisterns and fish ponds, construction of guest house in L'Acul, work for food programs
1998–2004	Planting of CODEP demonstration forest, expansion of reforestation programs and volunteer programs
2004–2005	Political upheaval in Haiti
2010	Massive earthquake affects Haiti
2012–2014	Expansion of CODEP to 68 small communities and over 1,400 Haitian farmers, of which nearly half are women; CODEP operations moved to Duclos; Focus on economic stability of CODEP with Haitian leadership
2015	Fondayson CODEP formed
2018	Haiti Reforestation Partnership replaces Haiti Fund; 30th anniversary celebration of CODEP
2019	Political and economic upheaval in Haiti, departure of UN peacekeeping force
2021	Mentoring program initiated
2022	NASA DEVELOP project to document reforestation efforts and outcomes

Table 1. Timeline of activities of CODEP and Haiti Reforestation Partnership

The assessment was based on 75% of all planting efforts within 12 Animator zones. The NASA Develop team created a tool in Google Earth Engine (GEE) that analyzed past- and present-day patterns of vegetation indices (Figure 11). The study showed a general positive trend in Enhanced Vegetation Index from January 1984 to April 2022 (Figure 11). Some planting areas are doing very well, whereas some are underperforming compared to background forest growth.

The Demonstration Forest showed strong growth (Roberts et al., 2022b). The team also produced a Habitat Suitability Model (HSM) that correlates environmental predictors with forest growth. Assessment of habitat suitability for planting mango, *Eucalyptus*, and hardwood trees (based on topography, climate, and spectral variables) indicated 49,000 hectares of suitable tree planting area in the project area (Roberts et al., 2022a).

Soils in two watersheds have stabilized, reducing damage from hurricanes and storms. These impacts were evident during Hurricane Matthew in 2016, when sea-level bridges in two reforested watersheds sustained damage, whereas others along the coast were washed out.

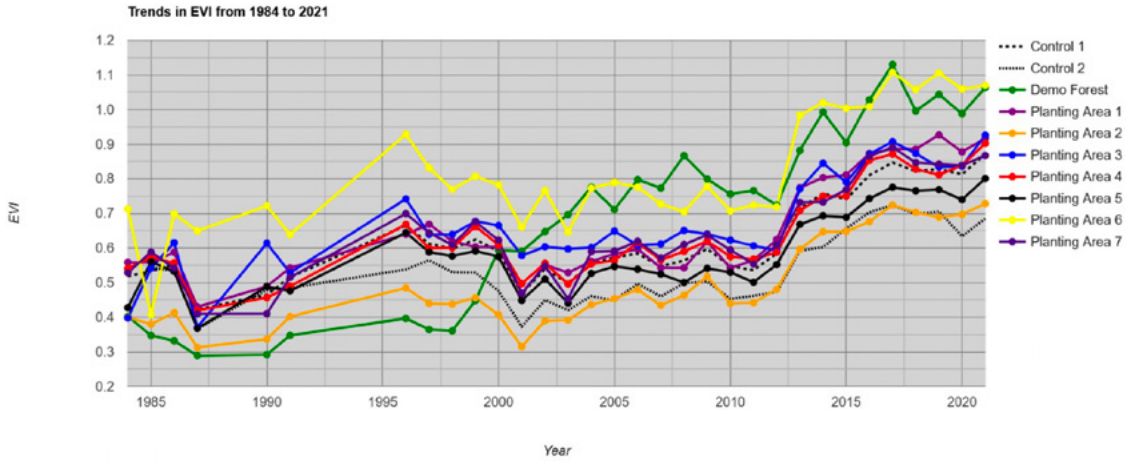

Figure 11. Trends in Enhanced Vegetation Index in CODEP planting areas and Demonstration Forest from 1984-2021. The Demonstration Forest was established in 1986. Source: Roberts et al., (2022b)

Key challenges

CODEP and Haiti Reforestation Partners faced an array of environmental, political, social, and cultural challenges over the years. Haiti's deforested mountains offered an extreme environment for reforestation because of eroded soil, limited water retention, and pronounced dry seasons— which have been aggravated by climate change (USAID, 2016). Free-ranging goats consume virtually all forms of vegetation, with the exception of Vetiver grass and *Eucalyptus* seedlings (Figure 12).

Periods of political violence reduced the ability to host visitors, volunteers, and interns and to develop a collaborative research program with foreign and resident scientists. Limitations of formal land tenure and ownership make it difficult to secure areas for reforestation, expand the scope of reforestation activities, and ensure their long-term persistence. Persistent language and cultural barriers arose between the U.S. leaders of HRP and the Haitian leaders of CODEP; few U.S. leaders spoke Haitian Kreyol. Moreover, CODEP leaders lacked trust with other Haitians. These barriers restricted the upscaling of reforestation and community development interventions, as local constraints on resources (land, human capacity, and financial support) were key limiting factors.

Figure 12. Planting seedlings and protecting trees on steep, eroded slopes presents constant challenges for CODEP workers. Photo credit: Michael Anello

As with so many restoration projects, a key challenge has been to continue to develop local Haitian leaders. Ambitious young people tend to leave the area to seek economic or professional opportunities elsewhere. Generating local capacity in youth and grooming future leaders through their mentoring program (Figure 10) are justifiably a major focus of the CODEP mission and are supported by HRP (Haiti Reforestation Partnership, 2022b).

Enabling factors and innovations

CODEP leveraged the cultural traditions intrinsic to the *lakou* system, which ensured communal assistance and exchange, shared faith and worship, and a strong tradition of leadership by women (Mocombe, 2020). *Lakou* life promotes social equity through communal sharing, increasing social harmony and collective action. Formal (statutory) land tenure is often thought to be an enabling factor for restoration, but in this case, the more informal *lakou* arrangements allowed reforestation to become a shared activity that everybody benefitted from (Murray and Bannister, 2004).

The technical support over many years from Rodney Babe and others was critical to the success of CODEP. Agronomic skills were needed to implement successful reforestation and to stabilize soils on steep slopes. Over many years, church volunteers and visitors became channels for bringing in new expertise and for creating new opportunities for financial and logistical support.

The strong bonds and aligned goals of CODEP members and HRP supporters allowed the collective mission to succeed when confronted with disruptions, catastrophes, and hardships. CODEP became a self-driven organization, led by local Haitians with a high level of trust, dedication, and respect among the Animators. The HRP encouraged and valued Haitian leadership. CODEP took on the role of a supportive family network built on a foundation of long-term personal commitments (James Rhoads, 2022, personal communication).

Parting shot

"Because of the trees we can breathe better.
Because of the trees you can get water.
Because of the trees, the rain falls down."

—CODEP worker

Figure 13. The CODEP community celebrating the 30th anniversary of HRP and CODEP in 2018. Photo credit: Michael Anello

Key lessons learned

- ***Building local technical capacity and trust led to development of local leadership and community capital.*** The CODEP method—contour planting of vetiver grass (*Chrysopogon zizanioides*) and constructing water-holding ditches for tree planting—worked well and was taught in schools and implemented in each *lakou*. It created a common language that all could speak and was taught in the local schools.

- ***Women must be engaged as leaders.*** Women are effective leaders at all levels and their engagement promotes social equity and broad participation of all community members.

- ***Restoring watersheds is a social enterprise and requires a strong local organization.*** Without the social support of CODEP and guidance from the local team of Animators, watershed-scale reforestation is unlikely to be achieved or sustainable in the long-term.

- ***A small and steady subsidy for work can go a long way.*** Rewarding community members for days of hard work develops community capacity and creates a supportive environment for teamwork and long-term commitment. Consistent support from incentives provides critical stability while reducing over-dependence on external funding.

- ***Livelihoods of those who most depend on forests through either income, primary production or in some other way, are a crucial leverage point for reducing deforestation and increasing reforestation.*** By offering livelihood alternatives to deforestation, pressures may be eased, and forest conservation initiatives are more likely to succeed (Marzelius and Droste, 2022). Agroforestry and marketing of local products strongly motivate reforestation and soil conservation.

Learn more

Further information and resources

Websites

Haiti Reforestation Partnership website

Podcast

Interview with Michael Anello, Executive Director, Haiti Reforestation Partnership
Haiti Reforestation Partnership Is Reclaiming the Land and Future of Rural Haiti

Videos

30 Years of Reforestation Success

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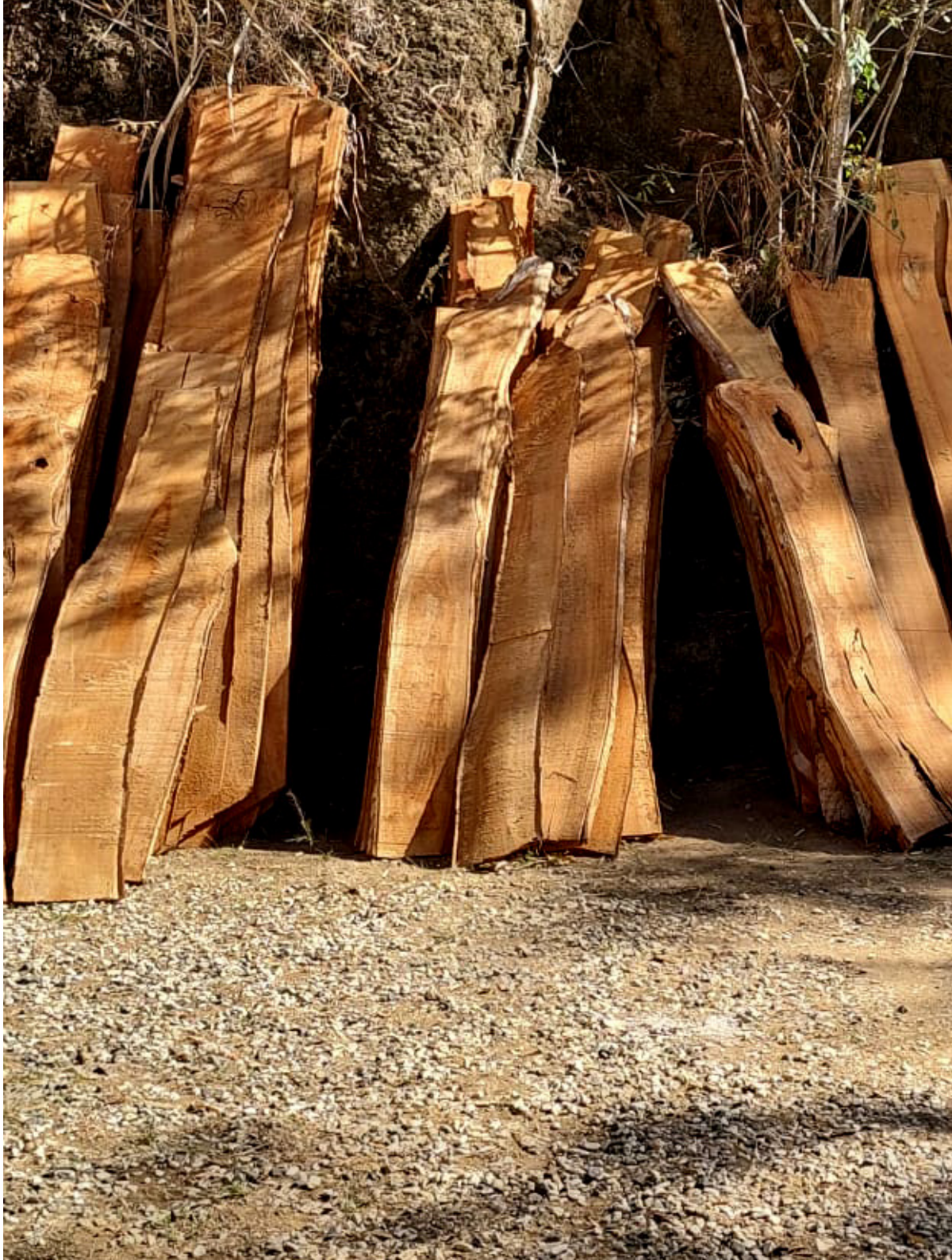

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