

**Costa Rica:  
Where the Grass is Always Greener**

**Heather Cook**

## **Abstract**

The purpose of the following paper is to analyze the exceptionalism of Costa Rica as a nation, more specifically, their environmental impact. The implementation of the environmental protocols of Costa Rica has influenced and impacted neighboring countries, and motivated them to reduce their carbon footprint. A brief introduction of the geography and population of Costa Rica will be provided in order to build a greater understanding of the nation, followed by a history of the Costa Rican government, and environmental policies and movements that have shaped their 21<sup>st</sup> century focus as a world leader in environmental sustainability. The focus of the paper will then shift to discussing specific environmental legislation of the Costa Rican Government. The environmental legislation of Costa Rica is rooted in the country's current constitution that was established in 1949. However, the established environmental legislation did not effectively impact the country until the late 1900's.

The abundance of support for an eco-friendly state by the locals, or Ticos, due to environmental education and awareness in combination with the active efforts of numerous nongovernmental organizations in Costa Rica have all influenced the legislation of Costa Rica. The effectiveness of the current legislation of Costa Rica pertaining to the environment will also be examined. In order to measure the legislations effectiveness, a focus will be placed on their carbon neutrality goal set for 2021. Is it possible for Costa Rica to become the first carbon neutral country by 2021? In order to make an assessment, an analysis of legislation, the influence of NGOs, and the current government's push to be a completely environmentally friendly country will be evaluated.

## Introduction

The Republic of Costa Rica is a small Central American nation located between Panama and Nicaragua. It is a charismatic nation having a population of about 4.9 million people, known as Ticos. The government is comprised of a highly stable presidential representative democratic republic. Currently, more than half of the country's land is covered by lush rainforest. The country also holds more than 5 percent of the world's species biodiversity, even though it only covers 0.03 percent of the planet (Embury-Dennis, 2017). At a time in which many states are facing deforestation issues, Costa Rica is continuously increasing its forest coverage and has been doing so since the late 1980s.

The current president of Costa Rica, Carlos Alvarado Quesada, plans to continue expanding the country's environmental goals and maintaining their ambitious status as a world leader in environmental sustainability. In 2009, President Oscar Arias, had set out a goal for Costa Rica to become fully carbon neutral by the year 2021. As the country closely approached the date, Costa Rica had abandoned this goal, but still focused on steadily working towards it. Costa Rica felt it needed more time to achieve this great feat. However, the newly elected and current President, Alvarado Quesada, during his inauguration speech, spoke directly about his decision to restore this goal of carbon neutrality by 2021. The goal date of 2021 at the time of President Alvarado Quesada's speech was only a few years away, and raises a question of plausibility for the goal. However, after taking a deeper look at the environmental accomplishments Costa Rica has already achieved, this goal may indeed be within their reach despite the limited time frame.

Ticos have a unique level of unity on environmental issues referred to as "green policies". Many countries see the importance of combating climate change, and have a deep

understanding of pollution sources and their impacts. They also are aware that cleaner, greener alternatives are necessary to lower the carbon footprint on a global scale, but lack the sense of activism that makes Costa Rica stand out from the rest.

### **History & Background:**

One of the biggest contributing factors to Costa Rica's environmental success is the country's political structure. In 1917, Costa Rica experienced one of the few coups throughout its history after no presidential candidate had won a majority in the election of 1913. The lack of a clear presidential victor generated a dispute over who was the nation's leader, and created an opportunity for a Federico Tinoco Granados to take power by coup. Granado's presidency lasted for 2 years until the US threat of intervention in combination with dramatic loss of popularity led to his resignation.

Following the coup, Costa Rica reverted back to democratic elections. These elections were effective and continued to adopt more democratic practices, such as implementing secret ballots in 1925. Regular elections were held until 1948 when former president, Rafael Angel Calderón Guardia, formed a coalition that lacked the support of many Ticos. The goal of his coalition was to target social security and improve working conditions. However, the opposing party claimed that Guardia's communist backed projects were economically not feasible for the nation (Lehoucq, Fabrice Edouard). Controversy also developed over the winner of the 1948 presidential election. Candidate Otilio Ulate won the election as Costa Rica's new president. However, there were strong accusations made by his opponents, including the president he was elected to replace, that his victory was illegitimate due to fraudulent votes.

The political instability of the nation progressed into direct conflict, as José Figueres Ferrer widened the gap between these parties by publicly opposing Guardia and proceeded to

organize a militia against the coalition. The political divide throughout the country that led to military struggle had begun nearly 10 years prior, continuing to deepen until the war broke out. Ferrer's supporters became known as the National Liberation Party, whose rebellion led to a civil war causing roughly 2,000 deaths. At the end of this civil war, a compromise was made after Figueres had been in power for 18 months. This compromise put control back in the hands of the elected president Otilio Ulate. A strong democracy is a key factor in conservation because the environment would not have been a forefront issue for Costa Rica, had they not already achieved a stable and successful political infrastructure by the mid 1900s.

On November 7<sup>th</sup> 1949, the Constitution that is still currently in place was signed into power. This new constitution was important to Costa Rica. Its central proclamations included abolishing the military, promoting distribution of wealth, developing standard work week hours, defining the rights citizens have to a healthy ecological environment, and protecting natural beauty. Abolishing the military was indeed a huge step for the country, not only as a peaceful statement, but it also allowed for the reallocation of funds that would have been dispersed into the military to be allocated for education and healthcare. The significance of the military abolishment was demonstrated by President Figueres when he used a sledgehammer to smash a hole in the military headquarters of Costa Rica, followed by the act of symbolically handing the keys over to the minister of education.

The dissolution of the military in Costa Rica united its citizens and made a statement to the world about what the nation would become. The reallocation of funds previously used for military spending allowed for massive healthcare advancements. Costa Rica now provides universal health care to all citizens and permanent residents. The nation has progressed so far in its health care system that in 2017 it was recognized by the World Health Association for its

emergency and disaster relief services. Costa Rica's emergency medical team was honored with the highest level of international accreditation, Level 1. Not only are they the first nation throughout all of Latin America and the Caribbean to receive this status, but they are the 7<sup>th</sup> nation in the entire world to do so (Blum, 2007).

The reallocation of funds to the education and healthcare systems also positively impacted the education sector. Costa Rica has not only an advancing public school system, but a public university system that makes trade schools and university degrees accessible to all its citizens. The country's increase in education funding went hand in hand with the environmental goals of the country by adding programs to the curriculum that focus on sustainable habits and awareness. The environmental emphasis put in place by the constitution, however, was not truly embraced until the 1980s. At the peak of the nation's deforestation, it was the most rapidly deforested nation in the world, at a rate of about 4% annually. In the 1980s, Costa Rica began to turn things around and launched its three-fold development strategy which focused on education, conservation, and ecotourism (Blum, 2007). The shift the country made toward conservation earned Costa Rica its name as the "Green Republic". By 1995, a World Resources Institute study concluded that Costa Rica had more conservation projects within its borders than all of Brazil, a much more geographically larger nation.

Although Costa Rica serves as an exceptional example for the world in the realm of conservation today, this was not always the case. Looking back at the nation's history strictly from the perspective of deforestation, the future once looked very grim. In the 1940s, over 75 percent of Costa Rica was covered by forest, most of which was lush tropical rainforest. However, as the value of logging became evident and an increasing amount of land was needed for farming, deforestation took off all across the country. Cash crops such as coffee, bananas,

and pineapple, were and still are the main exports for Costa Rica. The need for land to grow these crops and the open grazing spaces for cattle and livestock had devastating impacts on the nation's forest cover (Flagg, 2018). By the 1980s, the percentage of Costa Rica's total forest land had plummeted to an all-time low of only 26 percent. It wasn't until more than half of the forests were gone that the impact of the country's disappearing forests started to become evident. The nation would come together to make a shift toward an environmentally sustainable policy. This shift included promoting what is now a huge sector of Costa Rica's economy, ecotourism, and removing subsidies on agricultural products. The process of reforestation was not an easy transition, but with efforts on a multitude of levels it became the complete success that it is today. Policies combating deforestation ranged from prohibiting deforestation on private lands to established incentives for reforestation efforts.

### **Education and the Environment**

The national school curriculum of Costa Rica now implements environmental learning into primary and secondary education. In the formal school setting, curricula with environmental topics first appeared in 1977 (Blum, 2007). As the environmental content covered in school slowly expanded, the Environmental Education Office was formed. The office was created in 1993 as a separate sector of Costa Rica's Ministry of Education. The Ministry initiated clubs and programs nationwide to further promote interest and provide information on sustainability and conservation throughout the youth population. The Ministry of Education is mainly responsible for training teachers throughout Costa Rica on how to better teach environmental education and raise awareness amongst their students. The nation's media sources such as newspapers, radio stations, and television also serve as sources that emphasize awareness by highlighting environmental issues and current news. It is the collective effort to raise awareness throughout

all age groups and sectors of the population that make the implementation of this strategy so effective in Costa Rica.

In 2005, the United Nations General (U.N.) Assembly declared the “Decade for Education for Sustainable Development”. Costa Rica took this decade very seriously, and used the U.N. declaration as inspiration both nationally and internationally to make a change. The United Nations Educational, Scientific, and Cultural Organization was the central agency overseeing the goals for the decade which were intended to produce more just and sustainable societies worldwide by teaching environmental integrity and economic viability. (“UN Decade of ESD”, 2018). The blueprint for achieving the “Decade for Education for Sustainable Development” goals, was similar to the strategy that Costa Rica had already began implementing, which included actions such as increasing media coverage on environmental issues, being respectful to the earth, protecting land areas, educating the public and raising awareness on sustainable development (“UN Decade of Education for Sustainable Development, 2005). The decade also emphasized the importance of peace and democracy as a foundation for sustainability, an area in which less politically stable nations intended to begin their focus. National discretion allowed these goals to be carried out in different ways relative to the specific needs and current level of environmental awareness in different nations and regions throughout the world. For example, Costa Rica was quick to take a leadership role within its region by hosting the first conference in 2006 in its capital, San Jose (Blum, 2007). The biggest ways in which Costa Rica’s exceptionalism environmentally succeeded was not only through education, but also through legislation.

## **Environmental Legislation and Initiatives**

One of the main goals of combating climate change in Costa Rica is reforestation. It has been an important area of policy making for this nation known as the “Green Republic”. In 1969 Costa Rica began implementing reforestation incentives with the enactment of the Forestry Law No. 4475. This law made the expenses of reforestation tax-deductible, thus providing financial benefits to reforestation. Unfortunately, it was misused by the industrial forest companies and resulted in continuous deforestation. The law also acted to protect wildlife, increase environmental education, and created the National Parks Department in the Ministry of Agriculture and Livestock (Flagg, 2018). Despite the 1969 law’s good intention, detrimental deforestation still took place across the nation. However, it demonstrated the country’s willingness to act on behalf of the environment and paved the way for future legislation.

The government of Costa Rica continued adding initiatives and regulations to protect their environment such as the Reforestation Act No. 6184 of 1977 and the Forestry Law No. 7032 in 1986. In the late 1990s, the nation found a more effective incentive by establishing the Payments for Environmental Services (PES) Program (Flagg, 2018). The PES program was a part of Forest Law No. 7575 that was passed in 1996. This law made protecting and conserving forests a national priority. It gave money to private landholders for providing specific services such as mitigation of greenhouse gas emissions, hydrological services, biodiversity conservation, and scenic beauty (Flagg, 2018). It was also responsible for creating the National Forest Financing Fund (FONAFIFO), which provides funding for reforestation projects, sustainable uses of land, and responsible uses of natural resources. The central focus of the 1996 Forest Law could be considered the turning point for environmental legislation in Costa Rica due to its effectiveness.

Although reforestation was on the rise, the nation still had a long way to go to recover from the environmental devastation that occurred in the mid-1900s. Costa Rica's collection of environmental legislation continued to grow in 1998 with the creation of the National System of Conservation Areas (SINAC) under the Biodiversity Act Law 7788 (Sanchez, 2018). This Ministry of Environment and Energy Program focused on eleven designated conservation areas throughout the nation, and worked to unite the public and government in conservation activities within the designated areas. These conservation sites account for one quarter of Costa Rica's total land coverage.

A less rigid form of environmental conservation was introduced in Costa Rica when a shift in their tourism industry occurred. The shift that occurred in the tourism industry was the rise of ecotourism. When ecotourism began in Costa Rica, it was sort of an experiment for both the economy and the environment, to see if the concept would succeed. Costa Rica was one of the first nations in the world to fully embrace the idea of ecotourism and put it into action. The level of success the industry has had in Costa Rica may be attributed to the country's massive levels of biodiversity and as the high percentage of protected land area. According to the Costa Rican Institute for Tourism, tourism now accounts for one third of the nation's revenue, exceeding even the most important crops such as bananas and pineapples (Sanchez, 2018). Ecotourism allows the Costa Rican people to not only gain an income from a sustainable source, but to share knowledge of their environment and conservation techniques with tourists from all over the world, thus spreading the impact of their green initiative.

### **Carbon Neutrality**

Of all the policy changes Costa Rica has made in recent years, one of its strongest initiatives is the focus on becoming carbon neutral. In the late 2000s, during his second term,

President Oscar Arias Sanchez made the bold decision that Costa Rica would become completely carbon neutral by the year 2021 (Vignola, R., et al., 2012). For a nation to achieve carbon neutrality, it must reach the point in which any carbon output still produced in the nation is offset elsewhere, such as forest cover, which removes those carbon emission amounts and purifies the air. The year 2021 was chosen to align with the nation's bicentennial celebration of independence as an added cause for celebration. This ambitious date, of great significance to the people, is associated with much doubt. The reason being, the date of complete carbon neutrality was chosen due to its historical importance more than its scientific plausibility.

The planning process to become carbon neutral began several years before the goal was announced. In 2006, when President Sanchez started his second term as president and continued his work on environmental policies, he had a much more centralized focus. A priority of his second term in office was that of "Peace with Nature," a progression from his first term in office. In 1987 President Sanchez won the Nobel Peace Prize for his work with peace efforts between national governments throughout Central America. He brought his newly transformed ideas of peace efforts combined with conservation to life when he formed a political coalition with the name of "Peace with Nature". This coalition formed as a byproduct of the "Peace with Nature" initiative that President Sanchez had declared in the beginning of his second term as president. This initiative also created a committee of 30 individuals working to execute the carbon neutral pledge (Flagg, 2018). The "Peace with Nature" coalition was the main initiative of the national plan combating climate change from 2007 to 2009.

Costa Rica's National Strategy on Climate Change consisted of two major targets: climate change agendas, both nationally and internationally, and a specific plan for carbon neutrality. The plan has six areas of focus: mitigation, adaptation, metrics, development of

capacities and technical transfers, public sensitivity education and culture, and finances. The purpose of mitigation is to fulfill the goals of reducing greenhouse gas emissions by source, carbon capture and storage, as well as developing a national carbon market (Flagg, 2018). The plan is significant, in that it identifies the main areas of carbon production. These sources provide a starting point for reduction strategies in order to achieve the long term goal of carbon neutrality. The main sources in need of emission reduction listed in the National Strategy on Climate Change included energy, transport, agriculture and livestock, industry, solid wastes, tourism, water, and land use change. Despite a national initiative to become carbon neutral, the plan challenged institutions and businesses throughout the nation to work individually as well to become carbon neutral. To become carbon neutral individually, there is a three-step process which involves taking inventory of emissions, working to reduce emissions, and paying the National Forestry Financing Fund to offset any remaining emissions that are produced by the business.

One of the biggest factors impacting the ability to reach carbon neutrality is having cost effective and reliable alternative sources of energy. In regards to doing so, the “Green Republic” has been continuously breaking its own records and raising the bar. In 2017, Costa Rica did just that when it ran for 300 days using entirely clean energy sources (Embury-Dennis, 2017). The ability of Costa Rica to use more renewable energy than many other nations as a result of its climate and landscape, has put the country at an advantage over many other nations. With Costa Rica’s abundance of river ways, volcanos and various levels of elevation, the options for hydropower, wind and geothermal energy as renewable energy sources are quite high. In 2017 Costa Rica was able to generate more than 99 percent of its energy from renewable sources. Its main energy source was hydropower, creating 78 percent of the nation’s renewable energy in

2017. That year wind and geothermal energy accounted for roughly ten percent, with the remaining one percent coming from biosolar and biomass energy (Embury-Dennis, 2017).

A common misconception often associated with carbon neutrality is that it is only achievable if it involves banning fossil fuels entirely. The government of Costa Rica, analyzing the situation rationally and economically, chose not to take that path. Instead, the Minister of Environment stated, “we don’t plan to ban the use of fossil fuels, we plan to phase them out through new policies and incentives so that eventually, down the road, they will be useless (Irfan, U., 2018, para. 4).” The incentives he referred to are programs that focus on eliminating the main sources of emissions that stand in the way of meeting their 2021 goal. One of the essential incentives currently in place, is a tax break on electric cars. Christiana Figueres, former head of the U.N., climate secretariat stated, “where Costa Rica is still underperforming – and it’s typical of most developing countries – is in transport (Rodriguez, S., 2017, para. 3).” That’s where our achilles heel is.” Despite the advantages Costa Rica has over many nations as discussed before, one area where being a developing nation makes it more challenging as compared to areas that are developed such as Western Europe, is a lack of abundant and efficient public transportation system. However, since Costa Rica uses clean sources for its electricity, the appeal of electric cars is significantly higher than in other nations. Despite Costa Rica being a developing nation, the more technology improves, the faster changes can be made. Costa Rican economist and sustainability expert Monica Araya said, “for example, it took almost 20 years to get to one million electric cars [worldwide]. It took 18 months to reach 2 million. The third million happened in around the next eight months. This is exponential growth (Rodriguez, S., 2018, para. 29).” The nation also lacks a large oil or gas industry which minimizes the impacts of phasing out those energy sources.

According to the World Bank, Costa Rica produced 1.859 metric tons per capita of CO<sub>2</sub> emissions in 2007. This was up from 1.395 in 2000. However, the production of CO<sub>2</sub> has gone down since to 1.631 in 2014 (the most recent record of CO<sub>2</sub> emissions provided by the World Bank). The decrease in emissions in Costa Rica between 2007 and 2014 is more meaningful when it is put in context with the steadily growing population. The population of Costa Rica was recorded at a total of 3,925,443 in the year 2000, 4,369,469 in 2007, and 4,757,575 in 2014.

As a result of the advancements in technology and the increased accessibility to automobiles, a main source of CO<sub>2</sub> emissions, reducing CO<sub>2</sub> emissions with a growing population is a huge accomplishment. In 1990, the nation had 9 cars per 100 Costa Ricans. In 2017 the number had more than tripled to 30 cars per 100 Costa Ricans (Murillo, 2017). The need to combat this source of CO<sub>2</sub> emissions will continue, as long as the use of personal transportation grows.

Essentially, the answer to whether Costa Rica can reach their carbon neutral goal by 2021 lies within the country's transportation industry. As the data shows, the appeal of personal transportation and the increasing accessibility of cars has caused a significant increase in carbon emissions. Despite the drawbacks associated with the transportation industry, the decline of more than 12% in overall emissions throughout the country from 2007 to 2014, exemplifies that the country's efforts to combat climate change and reach carbon neutrality are indeed being implemented effectively.

Overall, carbon neutrality is an imperative feat for combating climate change. It is a goal that many nations have been working toward, but many more also need to make the decision to prioritize. Costa Rica's success of reaching carbon neutrality hinges on the country's transportation sector. If Costa Rica is able to shift transportation to a greener form that focuses

more on public transportation and electric engines to reduce emissions, they will indeed have a chance to meet their carbon neutral goal by 2021. The key to reaching this goal depends on many factors, but Costa Rica's continuous reforestation and large percentage of forest cover are essential in compensating for their carbon output and neutralizing its effects. While 2021 is only three years away, if any country could accomplish such a goal, it would be Costa Rica because of their unique history and national unity regarding the right of its citizens to enjoy a clean environment. Not only would Costa Rica succeed because of their history and national unity, but also because of the changes that have occurred within the country. The lack of an army makes carbon neutrality plausible, with the increased allocation of funding to environmental programs and research along with the removal of the major source of emissions and energy usage. The newly elected president, Carlos Alvarado Quesada, must continue pushing the nation from every angle: reforestation, reducing emissions, encouraging electric cars with financial incentives and cycling out less efficient vehicles, to truly meet their goal. If Costa Rica does not offset their carbon emissions by 2021, particularly those from the transportation sector, it appears that they will continue their efforts and meet their goals shortly after.

### **Other Areas of Influence**

In addition to education and environmental policies, grass roots organizations, and nongovernmental organizations (NGOs) play an imperative role in Costa Rica's environmental awareness and initiatives. Grass roots organizations are typically political organizations that work based on bottom-up approaches and get the community involved with their efforts. NGOs work in a similar fashion and can also serve small local regions, nationally, or internationally. Many grassroots and nongovernmental organizations in Costa Rica share the goal of promoting conservation and sustainability. Their impacts are particularly meaningful because they have the

ability to form personal relationships and reach out to individuals in specific areas. Many of these organizations have a specific focus such as preserving a type of habitat or protecting specific species of wildlife and their habitat and food source(s). NGOs throughout Costa Rica include Conservation International, OSA Conservation, Community Carbon Trees, and Friends of the Earth International.

Friends of the Earth International, for example, focuses on environmental protection through education, training, and campaigning. Areas of action for this NGO include monitoring the actions of transnational companies in Costa Rica campaigning against their environmentally destructive acts. These companies often involve mining or the overexpansion of monoculture plantations. These single crop plantations generally use a high level of chemicals and machinery that produce negative effects and whose crops are exported. Thus they do not benefit the environment or local community. Another NGO, Community Carbon Trees, works specifically on planting trees throughout Costa Rica to help the nation reach its goal of carbon neutrality. The organization takes the donations and uses them to employ local Costa Rican workers to plant and maintain trees used for reforestation efforts.

The reason these NGOs have proven so effective in Costa Rica is that they have a narrow area of focus. As a result, the attention to detail and effective implementation of their programs make them essential to complementing government policy and filling in gaps with issues that environmental legislation has not yet sufficiently addressed.

### **Conclusion**

It is important to keep in mind the relevance of Costa Rica's unique history when looking at the success of their environmental policies. Although the abolishment of the military may not seem directly related, military efforts typically require much energy and funding. The lack of a

militia allows for less carbon emissions as well as more funding for environmental initiatives. The stable democracy of Costa Rica is also notably significant, because political stability allows a much stronger focus on problems such as environmental issues. Although there does exist differing viewpoints and competitive elections, the citizens of Costa Rica are generally united on the importance of environmental conservation. This may be attributed to their high level of education and the implementation of environmental education throughout national school curriculums.

In summation, success within Costa Rica in regards to the environment comes from many factors. Costa Rica has strengths and weaknesses in the areas of sustainability and combating climate change. However, they find success in trial and error and continuous dedication to the cause. The country has managed to achieve many goals which seemed unfeasible in the past. Costa Rica continues to set precedents not only in Central America, but on a global scale for environmental conservation. They are on par with some of most developed and environmentally conscious nations in the world. In Costa Rica, the country's unique history, the allocation of funding, and legislation have all benefited the country in their environmental journey. It will be an unparalleled experience to see the future of Costa Rica's environmental policy revealed as they seek carbon neutrality and continue to push their society more and more to preserve the environment.

## Bibliography

- A. Fischel Volio. (1992). Costa Rica: education and politics—a historical perspective. In D.A. Morales-Gómez & C.A. Torres (Eds.), *Education, Policy and Social Change: Experiences from Latin America* (pp. 138-155), Praeger, London.
- Allen, K.E., & Vazquez, S.P. (2017). Forest cover, development, and sustainability in costa rica: Can one policy fit all? *Science Direct*, 67, 212-221.  
<http://dx.doi.org/10.1016/j.landusepol.2017.05.008>
- Alvarado, L. (2018, May 12). President of costa rica signs executive decree to take steps towards reaching carbon neutrality. *The Costa Rica Star*. Retrieved from <https://news.co.cr/president-of-costa-rica-signs-executive-decree-to-take-steps-towards-reaching-carbon-neutrality-fossil-free/72957/>
- Arias, L. (2017, March 6). Costa rica pledges to improve protection of its wetlands. *The Tico Times*. Retrieved from <http://www.ticotimes.net/2017/03/06/wetlands-costa-rica>
- Blum, N. (2007). Environmental education in costa rica: Building a framework for sustainable development? *International Journal of Educational Development*, 28(3), 348-358.  
<https://doi.org/10.1016/j.ijedudev.2007.05.008>
- Carnoy, M. & Torres, C. (1992). Educational change and structural adjustment: a case study of costa rica [working document] [PDF File]. Retrieved from <https://files.eric.ed.gov/fulltext/ED368046.pdf>
- Community Carbon Trees in Costa Rica. (2018). Sponsor trees for future generations. Retrieved from <http://www.communitycarbontrees.org/planting-gallery>
- Embury-Dennis, T. (2017, November 22). Costa rica runs entirely on renewable energy for 300 days this year. *The Independent*. Retrieved from <https://www.independent.co.uk/news/world/americas/costa-rica-electricity-renewable-energy-300-days-2017-record-wind-hydro-solar-water-a8069111.html>
- Evans, S. (1999). *The green republic: A conservation history of costa rica*. Austin, TX: University of Texas Press.
- Flagg, J.A. (2018). Carbon neutral by 2021: The past and present of costa rica's unusual political tradition. *Sustainability*, 10(2), 296. doi: 10.3390/su10020296
- Graef, D.J. (2013). Negotiating environmental sovereignty in costa rica. *Development and Change*, 44(2), 285-307. <https://doi-org.ezproxy.ycp.edu:8443/10.1111/dech.12011>
- Hoivik, T & Aas, S. (1981). Demilitarization in costa rica: A farewell to arms? *Journal of Peace Research*, 18(4), 333-351. Retrieved from <http://www.jstor.org/stable/423537>

- Irfan, U. (2018). Costa rica has an ambitious new climate policy – but no, it’s not banning fossil fuels. Retrieved from <https://www.vox.com/energy-and-environment/2018/7/17/17568190/costa-rica-renewable-energy-fossil-fuels-transportation>
- Lehoucq, F. E. (1997). Class conflict, political crisis and the breakdown of democratic practices in costa rica: Reassessing the origins of the 1948 civil war. *Journal of Latin American Studies*, 23(1), 37-60. Retrieved from <http://www.jstor.org.ezproxy.ycp.edu:8000/stable/157533>
- Murillo, A. (2017, March 23). Cars, cars and more cars: Costa rica’s worsening love affair. *The Tico Times*. Retrieved from <http://www.ticotimes.net/2017/03/23/cars-cars-cars>
- Oxtoby, D.W. (2008). Biologists and carbon neutrality. *BioScience*, 58(5), 382-383. doi:10.1641/b580502
- Paladino, S. & Fiske, S.J. (2017). *The carbon fix: Forest carbon, social justice, and environmental governance*. New York, NY: Routledge.
- Rodriguez, S. (2017, November 30). Costa rica drives for a new green goal: electric transport. *Reuters*. Retrieved from <https://www.reuters.com/article/us-costa-rica-climatechange-transportati/costa-rica-drives-for-a-new-green-goal-electric-transport-idUSKBN1DU1RE>
- Rodriguez, S. (2018, April 30). Costa rica’s new president promises plan to speed clean transport. *Reuters*. Retrieved from <https://www.reuters.com/article/us-costa-rica-politics-renewables/costa-ricas-new-president-promises-plan-to-speed-clean-transport-idUSKBN1I11M5>
- Samoff, J. & UNESCO (1994). *Coping with crisis: austerity, adjustment, and human resources*. Samoff, J (Ed.) Michigan, M.I.: Cassell & UNESCO.
- Sanchez, R. V. (2018). Conservation strategies, protected areas, and ecotourism in costa rica. *Journal of Park and Recreation Administration*, 36(3), 115-128. doi:10.18666/jpra-2018-v36-i3-8355
- The World Bank Group. (n.d.). Costa rica co2 emissions (metric tons per capita). Retrieved from <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=CR>
- United Nations Educational, Scientific and Cultural Organization. (n.d.). UN decade of education for sustainable development. Retrieved from <https://en.unesco.org/themes/education-sustainable-development/what-is-esd/un-decade-of-esd>
- United Nations Environment Programme. (2017). World commits to pollution-free planet at environmental summit. Retrieved from <https://www.unenvironment.org/news-and-stories/press-release/world-commits-pollution-free-planet-environment-summit>

- Vignola, R. (2012). Public perception, knowledge and policy support for mitigation and adaption to climate change in costa rica: comparisons with north american and european studies. *Mitigation and Adaptation Strategies for Global Change*, 18(3), 303-323. doi: 10.1007/s11027-012-9364-8
- Villegas, C. (2017, November 13). Costa rica promotes the carbon neutral program in 2021. *The Costa Rica News*. Retrieved from <https://thecostaricanews.com/costa-rica-promotes-carbon-neutral-program-2021/>