

1. Institutional framework

With a population of 5,15 million as of 2021 and a territory of 51.000 km2, Costa Rica is a highly urbanised country with some 77% of the population living in cities. It has one of the highest electrification rates in Latin America. Grid coverage expanded from 47% in 1970 to virtually universal access today. Costa Rica is well known for its large share of power generation sourced from renewable sources – over 99% – based on hydro, wind, and geothermal projects. This stands out internationally and in the region.

In 2019 the government passed a national plan to make Costa Rica one of the world's first fully decarbonised economies to reach net-zero carbon neutrality by 2050 as established in the Paris Agreement on climate change¹. The already-large share of renewable energy in Costa Rica's power sector implies that debates around deployment differ from countries where renewables contribute a minority of national electricity supply. Instead, key national challenges include the need to balance demand and supply, adjusting the overall mix of power sources in light of the variability of hydropower generation.

Key questions include the role to be played by the public and private sectors and the degree to which electricity generation should be based on centralised and decentralised sources. Electrification of the transport sector, pursued in order to meet GHG emission reduction goals, is contributing to creating a new dynamic into the power sector.

The following figure² presents a summary of the key players and their role in Costa Rica's electricity system.

¹ https://cambioclimatico.go.cr/plan-nacional-de-descarbonizacion/

² "Distributed energy innovation: International best practices and four proposals for Costa Rica," San José, Utgard, B. and Forn, E.B., 2016

Key players and their role in Costa Rica's electricity system



The MINAE (Ministry of Environment and Energy) governs Costa Rica's energy sector through the Vice Ministry of Energy, which is organised into technical divisions that manage energy issues and fuels for transport and industry. MINAE's energy planning secretariat (Secretaría de Planificación del Subsector Energía, SEPSE) engages main stakeholders such as the Costa Rican Electricity Institute (ICE), distribution companies, private generators, the national oil refinery and electrification co-operatives.

The Public Authority for the Regulation of Public Services (ARESEP) sets the technical standards guiding electricity services and electricity tariffs and monitors the application of regulations.

The Costa Rican Electricity Institute, the state-owned utility known as ICE, manages and operates the electricity sector and controls generation, transmission, and distribution grids.

In addition, the Ministry of Public Works and Transport (MOPT) plays a key role regarding electric mobility, as it oversees roads, airports and maritime ports planning and construction, and also regulates public transportation.

Costa Rica's small size allows a high degree of centralisation in political decision-making structures. This centralised governance structure mirrors the geographical concentration of the economy. The bulk of the population and economic activity is concentrated in the Grand Metropolitan Area (GAM), which represents just 4% of the country's surface area spread across the provinces of Alajuela, Heredia and Cartago. GAM is home to about 60% of Costa Rica's total population (some 3 million residents) and 65% of all companies, and accounts for 82% of commercial revenue nationwide.

The deep fragmentation of the municipal landscape is seen as one of the key challenges to the implementation of sustainable urban strategies. In contrast to many other countries, Costa Rica's highly centralised model leaves cities with close to no role in generation projects or energy-relevant sectors such as public transport. Their main function is often limited to administrative tasks such as granting permits associated with energy projects. Debates are ongoing about the need to strengthen the role of cities and municipalities.

2. Business opportunities

Oil represents nearly 70% of energy consumption and is the primary source of carbon emissions given its growing use in private, public and freight transport. A strong consensus has developed in favour of a moratorium on domestic oil exploration and exploitation. As maintained by five successive presidents from three different political parties since 2002, the Alvarado administration extended in 2021 the moratorium to 2050.

2.1. Electric mobility

While public transit is a priority, there are also efforts to promote the purchase of electrical vehicles (EV) by public institutions, companies and private users. The government estimates that an EV fleet would save about 75% in operational costs compared to petrol or diesel cars.³

In December 2017 the Costa Rican National Assembly approved the Law 9518⁴ for incentives towards electric transportation and EV use, including tax exemptions on consumption, sales and imports. An additional incentives package was added in 2018 and not only includes tax cuts on imports, but also key perks such as elimination of license plate driving restrictions, waiving payment of yearly road permits and free parking in designated areas.

By February 2019, the 2018-2030 National Plan for Electric Transport⁵ was published, setting up the basic rules for the deployment of EV infrastructure, and tax benefits for cars and spare parts. The plan drives the electrification of private, public, and institutional transportation through direct and indirect investment. The plan also sets regulations to facilitate future manufacturing and assembly of EVs in Costa Rica.

Building on the Norwegian e-mobility example, the government unveiled a special "green plate" in February 2019 to make it easier to differentiate 100% electric cars from petrol and diesel cars and to facilitate the granting of benefits, for example, free parking and no driving restrictions.

The Electric Mobility Law, discussed above, obliges the state to deploy charging infrastructure by 2020 and to develop a standard for charging stations, among other implementing measures. Currently, ICE and Compañía Nacional de Fuerza y Luz (CNFL) are the only electricity distribution companies that have incorporated the corresponding fast chargers and that make up a network with the projected mobility.

In addition, private companies have installed dozens of chargers, at business establishments such as shopping malls and car dealerships, intending to attract customers and polish their environmental credentials. They offer these services for free. During the first quarter of 2023, Blink Charging announced the installation of 14 public charging points throughout the country, as a result of partnerships with local companies.

If in 2019 the Ministry of Environment and Energy estimated at less than 1,000 existing electric vehicles in Costa Rica, in 2022 there were already 5,000. In addition, ICE estimated that in 2022 the commercialization of zero-emission cars represented 7% of the total, with 24 brands and 45 models available, in proof of the dynamization of the market.

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³ https://www.estrategiaynegocios.net/empresasymanagement/grupo-q-vende-100-autos-electricos-al-ice-en-costa-rica-EVEN1240353

⁴ http://www.pgrweb.go.cr/scij/Busqueda/Normativa/Normas/nrm_texto_completo.aspx?nValor1=1&nValor2=86581

⁵ https://sepse.go.cr/documentos/PlanTranspElect.pdf

2.2. Electric public mobility

The National Energy Plan 2015-2030⁶ set joint goals for the first time to decrease dependence on oil by calling for cleaner forms of transport and fuels. In October 2019, the government presented a set of adjustments in the National Energy Plan to 2030 to accelerate the implementation of actions to decarbonise the economy, in alignment with the National Decarbonisation Plan to 2050, as shown below.

National decarbonization plan: Sustainable mobility and public transport

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- By 2035, 30% of the public transportation fleet will be zero-emissions and the Electric Passenger Train will operate 100% electric.
- By 2050 the public transportation system (Buses, Taxis, Electric Passenger Train) will
 operate in an integrated manner, replacing the private automobile as the first mobility
 option for the population in the GAM.
- By 2050, 85% of the public transportation fleet will be zero emissions.
- By 2050, Compact Cities will have been consolidated in the main urban areas of the GAM and the main secondary cities of the country, with a 10% increase in non-motorized modes of transportation.

Several initiatives are underway to promote electric buses. In parallel, several technical assistance projects are being implemented to address capacity and knowledge gaps and provide instruments for decision making and scale-up of electric public transport.

The Costa Rica Government, in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ, Germany's development co-operation agency) and the Costa Rica-US Foundation (CRUSA) have developed an e-bus pilot project⁷. GIZ would purchase three battery electric buses and the charging infrastructure for a pilot project in Costa Rica. Starting ibn 2020, the buses were integrated into the urban bus system in order to gain experiences on the ground about the consumption to generate trust in the technology to reduce existing barriers which currently prevent private bus operators from making larger investment, and to develop capacities in the public and private sector.

The ICE Group and the Chinese bus manufacturer BYD started another project in October 2019 to test an electric bus at the campus of national universities.⁸

In 2021 the UN Environmental programme (UNEP) and the Global Environment Facility (GEF) launched the project Accelerating the transition to electric public transport in the Greater Metropolitan Area of Costa Rica⁹, which aimed at the large-scale deployment of electric public transport vehicles. The GEF's funding supports efforts to formulate needed legal reforms, promote sustainable mobility infrastructure by local governments, and green 2,000 hectares in urban areas.

In November 2022 ICE and Pulmitan (Caribbean Group), announced an agreement to deploy the first public transport route supported by electric buses and renewable energy from the national matrix.¹⁰ The route connects the central district of Liberia with the Daniel Oduber Quirós

⁶ https://cambioclimatico.go.cr/wp-content/uploads/2018/08/VII Plan Nacional de Energia 2015-2030.pdf

⁷ https://www.giz.de/en/downloads/giz2019_en_Factsheet_MiTransporte.pdf

⁸ https://electriccarsreport.com/2019/10/byd-launches-costa-rica-electric-bus-pilot/

https://www.thegef.org/newsroom/news/costa-rica-aims-transition-towards-urban-green-economy-gef-support

¹⁰ https://www.larepublica.net/noticia/liberia-tendra-la-primera-ruta-publica-con-autobuses-electricos

International Airport, totals 30.75 kilometers in both directions and was chosen because it presents conditions that allow monitoring the performance of the three available electrical units.

Furthermore, in June 2023 ICE launched a request for expressions of interest to incorporate electric buses into public transport. 11

Also, a private-sector company¹² is testing a fuel-cell electric bus in the province of Guanacaste, which could be tested soon.¹³

In addition to these projects promoting electric buses, there are other initiatives aimed at promoting other electric public mobility solutions. For example, an app-driven and privately run e-bicycle sharing scheme, OMNIBicis, operates in the main metropolitan area with a current fleet of 400 bikes and a goal of 5.000.

Finally, tourism is a key economic activity in Costa Rica, and e-mobility represents an opportunity for boosting eco-tourism Several efforts are underway by EV advocates in civil society and the private sector.

The EU Global Gateway strategy¹⁴ in Costa Rica¹⁵

Costa Rica's electric public mobility is one of the flagship projects of the Global Gateway Investment Agenda.

The EU will support the electrification of public transport, through the conversion of urban bus fleet to electric: 40 public e-vehicles contributing to a reduction of 5000 CO2 ktons per year will be part of the EU investment strategy in this country.

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In 2022, Costa Rica's President Rodrigo Chaves abandoned the US\$1.5bn San José interurban train PPP, launched by his predecessor, and even though financial support was still on the table. The previous electric passenger train project featured 5 lines and 46 stations and aimed to transport 200,000 people each day throughout the Greater Metropolitan Area (GAM). Rodrigo Chaves Government announced plans to develop instead a US\$0.5bn, Rapid Passenger Train (RTP) between the capital and the city of Paraíso, in the province of Cartago, although other options are also under discussion. The studies to develop and design the new plan are ongoing.

¹¹ https://www.bnamericas.com/en/news/costa-rica-requests-expressions-of-interest-to-incorporate-electric-busesinto-public-transport

¹² Ad Astra Rocket Company

¹³ https://news.co.cr/hydrogen-fueled-bus-almost-reality-costa-rica/60643/

¹⁴ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/stronger-europe-world/global-gateway en

¹⁵ https://international-partnerships.ec.europa.eu/system/files/2023-07/EU-Costa-Rica-partnership_en.pdf





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