

November 2022

Mobilizing Capital for School Connectivity in Brazil

UTILIZING SPECTRUM AUCTIONS TO ACHIEVE UNIVERSAL ACCESS



TOTAL SCHOOLS	138,803
CONNECTED SCHOOLS	108,779
AVG. INTERNET SPEED (DOWNLOAD)	36.9 Mb/s
The average internet speed is good enough for e-learning	

● Connected ● Unconnected ● Data unavailable

Brazil connectivity map, September 2022

Introduction

Radio frequency spectrum is a finite public resource that has a wide range of use cases for broadband communications providers and other actors.

In recent years, governments have made intentional decisions about spectrum allocations to maximize the economic and social benefits of the resource. By way of auction mechanics, governments introduced additional obligations to auction participants to produce targeted results. While these obligations have an impact on the market value of the licenses, as they often pose a financial burden on the winning bidder, they also transfer responsibility and risk to the entities most capable of delivering certain public goods. In the case of Brazil's 2021 5G spectrum auction, the auction had no discretionary revenue objective. **Rather, the entirety of the proceeds was earmarked for reinvestment in**

the country's infrastructure, including school connectivity.

Giga's founding partner, the International Telecommunication Union ("ITU") served as an advisor to the Brazilian government in the leadup to the country's 5G auction. Giga will support the government in several key capacities as the country deploys auction proceeds and connects currently unconnected schools to the internet for the first time.

CASE STUDY

Brazil's 5G Spectrum Auction

Background

Brazil completed a multi-band auction in November 2021 that was the largest ever in Latin America and served as the foundation for investment and propagation of 5G services. Originally scheduled for March 2020 but postponed due to the COVID pandemic, the government raised BRL 47.2 billion (USD 9.4 billion) via the sale of four radio frequency bandwidths, 700 MHz, 2.3 GHz, 3.5 GHz, and 26 GHz, each with specific market applications and divided into lots. Successful bids were submitted by eleven operators, including the three market leaders, Telefônica Brasil, Claro and TIM S.A., regional operators Algar Telecom and Sercomtel, as well as six new market participants. Through the auction process, Brazil established itself as a regional and global leader in spectrum management, striking a delicate balance between government objectives, operators' needs and consumer welfare. While the spectrum proceeds will be used to advance a variety of national infrastructure priorities, the most notable is the BRL 3.2 billion (USD 600 million) set aside to achieve universal school connectivity by 2024.

AUCTION STRUCTURE AND TIMELINE

Preparation for the auction began several years prior to the auction itself with the modernization of key regulatory policies to promote investment. In 2019, telecommunications law was introduced that established longer license terms, a secondary spectrum market, and unlimited renewal terms. During the leadup to the auction, the country's regulator, Agencia Nacional de Telecomunicacoes ("Anatel") thoughtfully engaged with market participants on a range of topics, from an IOT tax to prevention of frequency interference, to ensure broad participation and a successful result.

While a school connectivity requirement was not contemplated in the initial auction rules, a lobbying effort led by the Brazilian Education Commission that was ultimately backed by Brazil's Federal Court of Accounts, led to its inclusion. Winning bidders of multiple lots of the 26 GHz band were required to make financial commitments to be in compliance with the Connected Education Innovation Policy, which was established by decree in 2017 and law in 2021. The policy broadly states that connectivity infrastructure must deliver the quality and speed necessary for the pedagogical use of information and communication technology in educational activity.

The auction was conducted over a two-day period during which 85% of the available radio frequency bands were awarded generating proceeds totaling BRL 47.2 billion, an amount that exceeded the government estimates, with BRL 3.1 billion exclusively dedicated to school connectivity projects.

DELIVERING SCHOOL CONNECTIVITY

Upon the conclusion of the auction, Anatel established a decision-making and oversight body, the Grupo de Acompanhamento do Custeio a Projetos de Conectividade de Escolas ("GAPE"), to produce a plan to establish connectivity standards and deliver internet to schools. Composed of representatives from Anatel, the Ministry of Communications ("MCOM"), the Ministry of Education ("MEC"), as well as the winners of 26 GHz band lots, including Algar Telecom, Claro, Telefônica Brasil S.A., Neko Serviços de Comunicações, and TIM S.A, GAPE meets monthly and immediately publishes meeting minutes. GAPE meetings have focused on setting baselines and standards for the implementation of the resources coming from the 5G auction. To organize the discussions, GAPE has created working subgroups for communication, finance, and school connectivity diagnosis. As a first step towards implementation, GAPE has approved a

pilot project with 181 schools in 10 municipalities from all Brazilian regions.

One of the first, official actions of GAPE was to create an administrative entity, Entidade Administradora da Conectividade de Escolas (“EACE”). With its own governance, compliance policies and organizational structure, EACE is tasked with executing the projects that GAPE defines, which includes delivering connectivity infrastructure and equipment. Each of the five winning bidders of lots in the 26 GHz auction are obligated to pay BRL 630 million to an account controlled by EACE, in five semi-annual installments, starting in April 2022. Capital is currently reserved on the balance sheets of the wireless communications providers and disclosed in their financial statements. To support project management and coordinate with network operators, GAPE will work closely with the Rede Nacional de Ensino e Pesquisa (“RNP”), the Brazilian National Education and Research Network. RNP, defined by the government as a Social Organization connected to the Brazilian Ministry of Science, Technology, and Innovations (“MCTI”), is responsible for managing the country’s fiber backbone and promoting innovative use of advanced networks. RNP is expected to support GAPE with procurement, provision of technical expertise and network delivery, and contract management, among other functions.

DELIVERING SCHOOL CONNECTIVITY

GAPE-designed pilot project was approved at the board's seventh meeting, in July 2022. GAPE identified 181 schools, distributed across ten Brazilian cities to connect to the internet with fiber. To ensure geographical diversity and maximize learnings, GAPE selected two cities per region. The schools were selected based on criteria including the Municipal Human Development Index (IDHM), the percentage of students without internet, the density of Multimedia Communication Service (SCM) and the differentiated location of the schools (e.g. indigenous lands, quilombolas or settlements). Details of the project were first introduced at a meeting by the Diagnostics and Projects Technical Subcommittee (SGT Diagnóstico). The pilot project was brought to Anatel's Board of Directors then to EACE, which is tasked with technical

site visits alongside the Ministry of Education (“MEC”). While the technical evaluation process is underway, the costs to connect these 181 schools to the internet will be determined by Anatel and the Ministry of Communications (“MCOM”).

For public transparency purposes, GAPE has also launched a real-time dashboard with real-time updates on the initiative’s progress. Information displayed includes the total number of active primary federal, state and municipal public schools, the total number of urban and rural schools, the number of schools without internet, both urban and rural, the number of schools without a computer lab, and the number of schools without electricity. Giga will play an important role in the ongoing monitoring of connectivity, ensuring that schools receive the consistent, high-speed access that they contracted.

CONCLUSION

Spectrum auctions have the potential to generate significant state revenue, and if invested in purposeful and thoughtful ways, produce meaningful socioeconomic impact. To maximize the value and impact of spectrum resources, the structuring and execution of the auctions becomes increasingly important.

Clearly establishing priorities, consulting with stakeholders on how best to achieve them, and conducting the auction process and subsequent investment in a transparent manner is critical. As governments increasingly acknowledge that access to the internet is a fundamental right, and prioritize school connectivity accordingly, Giga will warmly welcome opportunities to support governments and regulators in achieving their objectives.