



NATIONAL TELECOMMUNICATIONS AGENCY



White Paper 2030 Agenda and the Telecommunications Sector:

Strategies and Good Practices to promote
the Sustainable Development Goals

National Telecommunications Agency

SAUS Quadra 06, Blocos C, E, F e H

CEP 70.070-940 - Brasília/DF

Phone: (+ 55 61) 2312-2000 – www.gov.br/anatel

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Coordinator

Alexandre Reis Siqueira Freire

Brasília – DF
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Research Team

Coordenation

Alexandre Reis Siqueira Freire

Authors

Office of Chief Executive Officer Alexandre Freire

Alexandre Reis Siqueira Freire

Ailfran Moraes Martins

Michelle Adriane de Assis Silva de Andrade

Rodrigo de Campos Conceição

Executive Superintendence

Gustavo Santana Borges

Superintendence of Internal Information Management

Gustavo Nery e Silva

Pesquisador Externo

Thiago Gontijo Vieira

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National Telecommunications Agency
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CEP: 70.070-940 – Brasília/DF
Phone: (+55 61) 2312-2000
Website: www.gov.br/anatel

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Presentation

Technological evolution and digital transformation have been fundamental for global social and economic development, positioning the telecommunications sector at the forefront of global debates. This is because information and communication technologies (ICTs) play crucial roles in the digital age, connecting individuals, businesses, and nations.

The telecommunications sector is the backbone of the digital economy and the information society. In addition to connecting people, it boosts education, enables new business models and promotes social inclusion. Emerging technologies such as 5G, artificial intelligence, and blockchain are redefining the way we live, work, and interact. However, for these innovations to translate into concrete benefits for all, it is essential to ensure meaningful connectivity, digital inclusion, and sustainable practices.

The United Nations (UN) 2030 Agenda, with its 17 Sustainable Development Goals (SDGs), established a global commitment to eradicating poverty, protecting the environment and promoting shared prosperity. Recognizing the central role of telecommunications in this scenario, Anatel reaffirms its responsibility to lead transformations that align public policies, regulation and technological innovation with the goals of this international pact.

The Agency has been a protagonist in promoting universal and meaningful connectivity as an essential element for digital transformation and sustainable development. Therefore, it is with great honor that the White Paper entitled "2030 Agenda and the Telecommunications Sector: Strategies and Good Practices to Achieve the Sustainable Development Goals" is presented.



This is a strategic milestone for Anatel and for Brazil in building a more connected, inclusive and sustainable future. This document reflects the collaborative work of international institutions, particularly the International Telecommunication Union (ITU), the United Nations (UN) body responsible for the telecommunications sector, as well as stakeholders committed to building solutions that enhance the positive impact of the sector and partnerships celebrated by Anatel in recent years.

It is a combination of an in-depth analysis of national and international experiences, which offers an overview of the best practices that can be adapted to the Brazilian context. In addition, it proposes innovative strategies based on behavioral sciences and regulatory experimentalism, with the goal of facing complex challenges in a creative and efficient way.

As an example, the reader will be able to observe initiatives such as the SDGS module, called the "Sustainable Digital Communications" Project,

incorporated into the Electronic Information System (EIS). This project exemplifies how an integrated approach can stimulate the regulated sector to align its actions with the goals of the UN 2030 Agenda. The White Paper also highlights the role of Obligations to Do and other financing tools in the feasibility of projects aimed at digital inclusion.

It is a technical guide that brings together experiences, models, good practices, forms of financing and disruptive models, which can be used to accelerate the implementation of the 2030 Agenda in Brazil.

This is because, for telecommunications to really contribute to the accomplishment of the SDGs, it is necessary to go beyond traditional models of regulation. Rapid technological changes require nations committed to this Agenda to adopt a more flexible and experimental stance, facilitating innovation and adapting their regulations to both local and global needs.



This is a historic moment for Brazil and for the world. As Brazil prepares to develop its 2030 Agenda indicators, it calls on us to act with urgency, collaboration, and purpose.

For this reason, this document points out paths for the telecommunications sector and invites Brazilian society to reflect on its collective responsibility in building a sustainable future. Every action, whether public, private, or individual, has the power to transform Brazil into a global example of how connectivity and innovation can be driving forces for social and environmental progress.

Certain that we are taking important steps in an incessant and continuous journey, we present these reflections to Brazilian society and the world, with the expectation that they will serve to inspire and foster the development of solutions to a topic as instigating as it is fundamental in the current transition to the digital economy and citizenship.

We invite all readers to explore this document and join us on this journey towards a future where no one is left behind.



Carlos Baigorri
Presidente da Anatel



Alexandre Freire
Conselheiro Diretor da Anatel

Introducción

The 2030 Agenda is a commitment made by all countries participating in the United Nations Summit on Sustainable Development, held in 2015, covering the 193 UN Member States, including Brazil. As stated on the UN website in Brazil:

The Sustainable Development Goals are a global call to action to end poverty, protect the environment and climate, and ensure that people everywhere can enjoy peace and prosperity. These are the goals to which the United Nations is contributing so that we can achieve the 2030 Agenda in Brazil. (Available at: <https://brasil.un.org/pt-br/sdgs>)

There are 17 Sustainable Development Goals (SDGs) that make up the 2030 Agenda, whose coordination, in Brazil, is responsibility of the National Commission for the Sustainable Development Goals, established by Decree No. 11,704, of September 14, 2023:

Figura 1: Sustainable Development Goals



Source: <https://brasil.un.org/pt-br/sdgs>

Brazil is one of the signatory countries of the aforementioned Agenda, whose importance is recognized worldwide for its objectives of eradicating poverty,

respecting and protecting the environment and the climate. As an expected result, it is estimated to provide people with a more dignified and fair life.

Within this context, the National Telecommunications Agency (Anatel) plays an important role in promoting these objectives in the telecommunications sector, which is vital for the digital transformation, digital inclusion, and development of the country.

In December 2022, the SDGs theme was officially inserted in Anatel's Board of Directors by the initiative of one of its Board Members, Alexandre Freire. On that occasion, during the review of the Agency's planning, reflections were presented for the incorporation of concepts, guidelines and instruments widely used as a global reference in the formulation and implementation of public policies and in the promotion of social rights. Specifically, the UN 2030 Agenda was highlighted.

Thus, the 2030 Agenda began to guide the Agency's regulatory decisions, boosting an institutional culture focused on promoting the SDGs. In other words, decisions were based both on current legislation and on the contribution of these decisions to the implementation of the SDGs in Brazil.

The 2030 Agenda is of paramount importance for the country's development. Not by chance, due to its relevance, in September 2023, Decree No. 11,704 was published, which created the National Commission for the Sustainable Development Goals (CNODS). The commission, of an advisory nature and created within the scope of the General Secretariat of the Presidency of the Republic, aims to contribute to the internalization of the 2030 Agenda in the country, stimulate its implementation in all spheres of government and with civil society, in addition to monitoring, disseminating and providing transparency to the actions carried out to achieve its goals.



Presidential Decree No. 11,704/2023 symbolizes an act of reaffirmation of the Brazilian commitment to the implementation of the SDGS and is mandatory for the bodies and entities of the Federal Executive Branch, including Anatel.

The Agency, in the role of responsible for the design, implementation and monitoring of policies to expand connectivity in the telecommunications sector, has the discretion to assess which public policies are most aligned with the SDGs.

However, despite the fact that the Agenda was defined in 2015, according to data and evaluations by the United Nations (UN) itself, progress on half of the 169 SDG targets is weak or insufficient in this halfway mark to achieve the 2030 Agenda. In addition, 30% of the SDGS targets are paralyzed or have been reversed.

In this regard, the UN highlights that digital technologies play an essential role in achieving the SDGs, directly contributing to 70% of their goals ¹. This impact is associated with the ability of these technologies to promote economic, social, and environmental transformations in an integrated way, in addition to expanding connectivity and digital inclusion on a global scale. Tools such as artificial intelligence, big data, and telecommunications networks have driven and can bring even more significant advances in areas such as health, education, agriculture, and reducing inequalities, becoming a central axis in the acceleration of sustainable development.

In a global scenario marked by interdependence, it is extremely important that countries prioritize public policies and investments that align their digital strategies with the SDGS. According to the International Telecommunication Union (ITU), the UN entity responsible for the telecommunications sector, progress on

¹ **United Nations Development Programme (UNDP)**. *Digital technologies directly benefit 70% of SDG targets, say ITU, UNDP and partners*. 2023. Available in: <https://www.undp.org/pt/brazil/news/tecnologias-digitais-beneficiam-diretamente-70-das-metas-dos-ods-afirmam-uit-pnud-e-parceiros>. Accessed on in 12 Dez. 2024.

this agenda depends on coordination between governments, the private sector, academia and civil society to overcome structural barriers and foster innovations that promote equity and collective well-being. For the ITU, this convergence highlights the potential of digital technologies as catalysts for more inclusive, resilient and sustainable development.

From these digital technologies so closely linked to the SDGs, both the UN and the United Nations Development Program (UNDP) present that safe, inclusive and scalable digital solutions could put the 2030 Agenda back on the right track. To this end, they draw attention to the importance of the SDG Digital Acceleration Agenda, which consists of a global analysis of the connections between digital technologies and sustainable development, seeking to provide a roadmap for governments on their digital transformation journey.

The SDG Digital Acceleration Agenda² demonstrates how digital technologies drive economic and social transformation, creating scale and efficiency. As a specific topic of this White Paper, it presents digital solutions that are already demonstrating how technology can directly benefit 119 of the 169 SDG targets, including areas such as climate action, education, hunger and poverty.

Data from the SDG Digital Acceleration Agenda suggest that countries that have extended their digital maturity – as measured by digital accessibility and infrastructure indices – have outperformed their peers in SDG progress for selected income levels. The agenda also profiles the sustainable development opportunities offered by advances such as generative AI, 5G networks and blockchain.

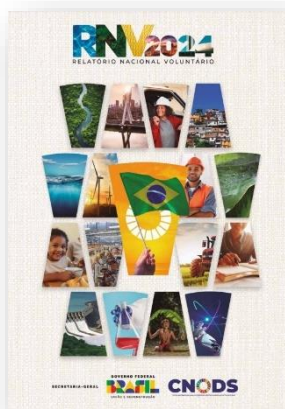
In addition, the ITU and UNDP draw attention to the financing gap of more than US\$ 3.7 trillion that exists to achieve the SDGs. To this end, they suggest that

² **UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)**. *SDG Digital Acceleration Agenda*. 2023. Available in: https://www.undp.org/sites/g/files/zskgke326/files/2023-09/SDG%20Digital%20Acceleration%20Agenda_2.pdf Accessed on 11 Dez. 2024.



international efforts should be focused on infrastructure and connectivity actions (what they call facilitators) and on the pooling of resources through collaboration, including the private sector and the use of various financing methods.

In Brazil, the CNODS prepared the National Voluntary Report (RNV 2024)³, which addresses Brazil's efforts in relation to the 17 SDGs, with an emphasis on the policies and programs implemented, as well as the challenges faced and future prospects for achieving the goals established by the 2030 Agenda.



Among the main achievements in the implementation of the 2030 Agenda in Brazil, the following stood out:

1. Reconstruction of spaces for social participation: the Brazilian government reestablished in 2023, the main forums and councils, taking social participation as a method and principle to govern, with emphasis on the recreation of the National Commission for the Sustainable Development Goals (CNODS) in 2023;
2. Integration of social participation in the 2024-2027 Multiannual Plan (PPA): with a participatory approach, involving more than 34 thousand people in regional plenary sessions and with contributions from 309 movements and civil society organizations, it sought to align national, state, and municipal public policies with the SDGs, promoting coordination between various stakeholders and ensuring that global goals were adapted to local specificities;

³ BRASIL. *Relatório Nacional Voluntário do Brasil – Resumido*. Available in: https://www.gov.br/secretaria-geral/pt-br/cnods/RNV_Brasil/portugues/RNV_BRASIL_RESUMIDO.pdf Accessed on 27 Nov. 2024

3. New Growth Acceleration Program (PAC): provides for an investment of R\$ 1.7 trillion in infrastructure. The New PAC is organized into nine axes and includes measures for ecological transition, credit expansion and economic incentives, aiming at energy security, access to water, basic sanitation, urban mobility and urbanization;
4. New industry Brazil: reformulation of industrial policy to promote sustainability, gender equity, decent work, and socioeconomic inclusion, with a focus on sustainable agro-industrial chains, digital transformation, and the creation of an economic-industrial health complex;
5. Climate Mitigation and Adaptation: the climate change agenda since 2023 is working in collaboration with economic, social, and environmental development policies for Brazil;
6. Ecological Transformation Plan: promotes structural transformation, in productive, financial, technological and cultural terms towards a sustainable economy, redirecting investments from sustainable finance to energy transition, bioeconomy and sustainable land use, technological densification, circular economy and new adaptation infrastructure;
7. Marine Conservation and coastal sociobiodiversity: investments in the preservation of coral reefs and mangroves, and progress in Marine Spatial Planning to organize the use of sustainable marine space. There was also the creation of the Oceans20 group during the Brazilian presidency of the G20, reinforcing the global commitment to the preservation of the oceans;
8. Promotion of the Food Acquisition Program: seeks to strengthen family farming and promotes food security by purchasing food directly from family producers and donating it to vulnerable populations;

9. Defending and strengthening democracy: Campaigns against disinformation and fake news are an effort by the government to promote the integrity of information. Policies for gun control and disarmament of the population, and the National Program for Public Security with Citizenship (Pronasci) are in place to reduce armed violence and strengthen the culture of peace. The inclusion of the black population in security and social development policies is also prioritized;
10. Incentive to culture: laws that support the cultural industry and ensure continuous support for artists and cultural institutions. The promotion of the autonomy of cultural collectives and networks through the National Living Culture Policy, as well as the appreciation of Hip-Hop culture and international exchanges, reinforce cultural diversity and social inclusion;
11. Decent work and dignity: appreciation of the minimum wage, combating work analogous to slavery, readjustment of public servants and debt renegotiation programs are some of the government's actions to promote decent work and reduce inequalities. Policies targeting specific sectors such as cybersecurity, domestic tourism, and recycling further contribute to comprehensive sustainable development.

In its vision of the future, the RNV: i) provides for Brazil's commitment to integrate the principles of sustainable development in all spheres of governance; ii) recognizes that only through a systemic and collaborative approach will it be possible to achieve a prosperous and sustainable future for the next generations; and iii) it states that, in order to accelerate the 2030 Agenda, it will be necessary to strengthen its domestic governance, adapt the goals and indicators to the Brazilian reality, monitor them, observe the territorialization of the SDGS, and adapt the various resources for their financing.



There is, however, no clear direction on the importance of the role of connectivity. On this topic, the report describes the work of the Monitoring Group for the Funding of School Connectivity Projects (GAPE), highlighting its central role in coordinating initiatives and aligning the actions of the ministries involved to ensure efficient and equitable access to the internet in schools.

Likewise, it draws attention to the National Strategy for Connected Schools, which consists of an effort to define adequate connectivity for schools, in order to ensure the pedagogical use of technology in the classroom and coordinate all the resources and actors of the federal government involved in the subject. The purpose is to connect all public schools of basic education in Brazil by 2026.

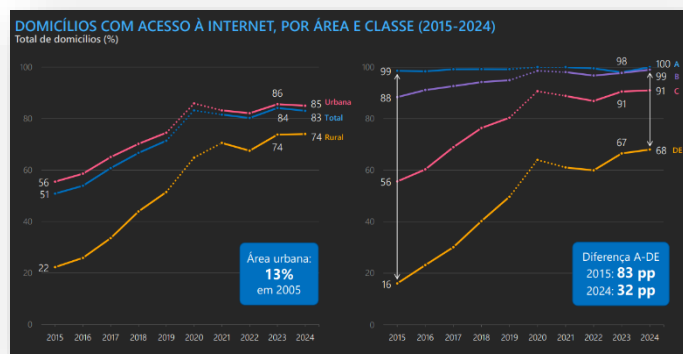
It also highlights the Fund for the Universalization of Telecommunications Services (FUST) as a tool that allocates resources for the connection of schools and other locations. A recent collaboration between the Ministry of Communications and the National Bank for Economic and Social Development (BNDES) resulted in a R\$ 1.1 billion in credit for the telecommunications sector, further expanding the reach and quality of connectivity in Brazil.

Thus, despite the brilliant work, it seems that the importance of connectivity is not yet evidenced among the priorities for achieving the 2030 Agenda in Brazil.

However, according to the ICT Domiciles 2024 survey, carried out by the Internet Steering Committee in Brazil (CGI.br) and released in the last innovation week of the National School of Public Administration (ENAP), there has been a significant increase in internet access in Brazilian homes since 2015, reaching 85% of homes in the country's urban regions.



Figura 2: ICT Households 2024



Source: https://cetic.br/media/analises/tic_domicilios_2024_principais_resultados.pdf

Despite this evolution, the numbers show that about 29 million Brazilians still do not have access to the internet, with most of them living in urban areas. This group includes many older people and those with fewer years of education.

The increase in connectivity in Brazil in recent years is also reflected in the world. In September 2024, the ITU announced a reduction in the number of people worldwide without an internet connection, which decreased from 2.7 billion in 2022 to 2.6 billion in 2023.

And it continues to reinforce the importance of statistics on the global offline population for tracking connectivity, which is the basis of the use of technology for sustainable development. However, with the current trend, it stands out that global goals of universal and meaningful connectivity are unlikely to be met by 2030.

For this reason, Anatel understands that the integration of the SDGs in the telecommunications sector goes beyond an administrative measure; It is a strategic imperative. As a central part of digital transformation, the telecommunications sector has a unique potential to influence and accelerate the adoption of the SDGs in several other sectors.

According to the Director of the ITU Regional Office for the Americas, Bruno Ramos, in the preface to the book *Digital Policies in Brazil: Internet Access, Data Protection and Regulation* (Ramos, Bruno, 2021, p.10 and 11), ICTs are the engine to promote these changes:

In the contemporary world, the forms of social and cultural interactions, as well as those of economic development, are being rapidly altered by the evolution of Information and Communication Technologies (ICT). These new technologies not only allow the exchange of information and knowledge between individuals and communities at a speed and precision previously unthinkable but also invite us to reflect on the needs of those who still remain disconnected, and to seek creative solutions to democratize access to the Information Society.

(...)

The implementation of the "Sustainable Development Goals" (SDGS) must be our north. The problems faced in eradicating poverty, eliminating hunger, achieving health and well-being, achieving quality education, working towards gender equality, the availability of clean water and basic sanitation, the provision of clean and affordable energy, the social relationship with regard to decent work and economic growth, in the existence of industries, innovation and infrastructure, in the task of reducing inequalities, in the construction of smart and sustainable cities and communities, in the search for responsible consumption and production, in action against global climate change, in the protection and maintenance of life in water, in the care of terrestrial life and in the search for peace, justice and effective institutions, pass through the ICT sector, which acts as a driver of change.

Telecommunications/ICT are the basis of this path to an inclusive and sustainable world and in this book, we can find lines of growing awareness

about the need to close the digital divide in developing countries and the search for a more inclusive Information Society, where ICT fosters social and economic development, and contributes to the sustainable growth of the environment, resulting in a better quality of life for all.

Thus, the purpose of this White Paper is to analyze how the telecommunications sector in Brazil and in the world can effectively assist in the implementation of the SDGS, successfully contributing to sustainable development.

The document identifies good practices implemented in Brazil and abroad, as well as forms of financing that can serve as a model for the performance of national and international stakeholders, including governments, companies, academia and civil society organizations.

Through this analysis, it is hoped to offer recommendations that strengthen the role of the telecommunications sector as a catalyst for positive and sustainable change, putting the world back on track to achieve the UN 2030 Agenda.



1

Global Overview: Telecommunications and the SDG

The telecommunications sector, in Brazil and in the world, is responsible for communication, education, leisure and entertainment, provision of public services, in addition to a relevant portion of the consumption experience of Brazilians and various business models, which began to flourish with the expansion of information and communication technologies (ICTs), especially from the implementation of the most modern networks, such as 4G, in the past decade.

Its essentiality stems from its main characteristic: transversality. This is because several segments of the economy, to a greater or lesser extent, have become dependent on its regular functioning, to the point that it is no longer possible to conceive of maintaining their business models without this dependence.

And this essentiality is recognized by several institutions in Brazil and around the world as a source for achieving the Sustainable Development Goals (UN) of the UN 2030 Agenda.



1.1. Brazilian Strategy for Digital Transformation - 2022-2026 Cycle

In Brazil, for example, the Brazilian Strategy for Digital Transformation - Cycle 2022-2026, in its most recent edition, states that it intends to "*contribute to the achievement of the Sustainable Development Goals of the United Nations 2030 Agenda, in addition to preparing the country to advance in the main rankings of competitiveness, security, and digital economy*" (BRASIL 2022, p. 12). In addition, it presents the following strategic action:

“Work with the various sectors of the economy and the production chains that constitute them to establish goals and engage with global commitments, in particular with regard to the link between the 2030 Agenda, Sustainable Development Goals (SDGs) and the challenges of connectivity and digital transformation” – E-Digital 2022-2026

Thus, it lists the following challenges linked to the role of connectivity in digital transformation in Brazil, evidencing the link with the 2030 Agenda:

1. Expansion of the internet service offer in unserved areas, added to the improvement of quality and speed for the entire Brazilian society;
2. Introduction of digital content at all levels of education and the wide offering of internet and technological resources in schools;
3. Continuing education and updating of Brazilian professionals in new digital technologies, in order to meet the new requirements of digital transformation; and
4. Brazil's active participation in decision-making processes on global issues, such as regulatory frameworks, international data flow, taxation,

technological norms and standards, information security, privacy and cybersecurity, among other challenges.

1.2. Federal Digital Government Strategy for the period 2024 to 2027

The Federal Digital Government Strategy for the period from 2024 to 2027 was instituted through Decree No. 12,198, of September 24, 2024. This instrument is what guides the entire transformation of digital government in Brazil.

“Art. 2 The Federal Digital Government Strategy will guide the transformation of the federal government through digital technologies that aim to offer public policies and services of better quality, simpler and more accessible to citizens.” – EFGD 2024-2027

Called EFGD 2024-2027, it is structured in 6 (six) major principles that support the digital transformation of the government of Brazil⁴:

- 1. Citizen-Centered and Inclusive Government:** highlights the role of the State as a provider of quality public services, with a focus on effectively meeting the needs and expectations of citizens and organizations. Through a pleasant, simple and agile experience, it is ensured that everyone, regardless of their socioeconomic, cultural or any other situation, has access to and can benefit from these services;

⁴ Estratégia Federal de Governo Digital 2024-2027. Available in: <https://www.gov.br/governodigital/pt-br/estrategias-e-governanca-digital/EFGD> Accessed on 12 de Dez. de 2024.

- 2. Integrated and collaborative Government:** seeks coordinated action, focusing on the integration of data, platforms and services from the Union, the States, the Federal District and the Municipalities, ensuring that the citizen's journey is simple, consistent and at a lower cost, regardless of the agency or administrative sphere responsible for providing services. It aims to improve efficiency and promote a culture of collaboration and knowledge sharing between different government entities;
- 3. Smart and Innovative Government:** uses technology and data as essential tools for optimization, maintaining a proactive posture and open to new ideas and methods to meet the needs of citizens and organizations. It accompanies transformations, innovating and promoting efficiency, transparency and sustainability in all its actions;
- 4. Trusted and Secure Government:** Goes beyond protection against digital threats, encompassing a combination of practices, policies, and mindsets that seek to ensure that citizens' interactions with government are secure and that there is trust in the integrity, accountability, and effectiveness of government. It seeks to ensure that citizens' data is protected and that public services operate efficiently and fairly;
- 5. Transparent, Open, and Participatory Government:** public administration must operate in a visible, understandable, and accessible way for citizens, acting proactively in the provision of data and information, allowing society to participate in the preparation, monitoring, and evaluation of public policies and public services. Promotes greater trust between the government and the population, encouraging responsibility and accountability;
- 6. Efficient and Sustainable Government:** uses technological platforms and shared services to optimize processes, infrastructure, and contracting,

reducing costs and expanding the offer of services, in order to ensure a modern, secure, and scalable infrastructure for digital government solutions. Sustainability is achieved through technologies that aim to reduce the consumption of paper, energy, and other resources, promoting practices that reduce environmental impact and ensure the continuity of services for future generations.

EFGD 2024-2027 aligned its principles with the SDG of the 2030 Agenda, as an "indication of Brazil's commitment to promoting sustainable development through digital innovation and inclusive, secure and transparent governance".

1.3. National Telecommunications Agency

The SDG of the 2030 Agenda was actually introduced into the National Telecommunications Agency at the end of 2022, when during the analysis of Anatel's Tactical Plan 2023-24 by the Agency's Board of Directors. On that occasion, Director Commissioner Alexandre Freire, considering the important strategic framework that the Agency was at the time (and still is), brought reflections so that Anatel incorporated, in this dynamic, concepts, guidelines and instruments that have been used as a reference around the world in the formulation and implementation of public policies and in the promotion of social rights, referring specifically to the SDG of the UN 2030 Agenda.

From that moment on, actions were promoted so that the 2030 Agenda guided the Agency's initiatives in its constitutional role. In other words, the SDG has been adopted as the basis for decisions. In practice, a certain conduct or the evaluation of a regulatory issue began to be based not only on the point of view of current legislation, but, mainly, considering whether it would promote or represent an obstacle to the implementation of some SDG in the country.



“It is important, therefore, that the Agency has and uses the 2030 Agenda as a controlling and guiding instrument for its actions, whether in the preparation of regulations or in the establishment of priorities, consisting of another instrument to strengthen its institutional capacity and strengthen decision-making” – Alexandre Freire

All the other Councilors were exhorted on the importance of emphatically exposing the points of contact with the cabinets' manifestations with the SDGs, as well as the respective goals and indicators promoted by the UN. It was also determined that this action would be deployed to the Agency's technical areas, so that the SDGs would be made explicit in the respective tasks, activities, work processes, administrative processes, projects, whether strategic or not, and matters to be forwarded to the Board of Directors.

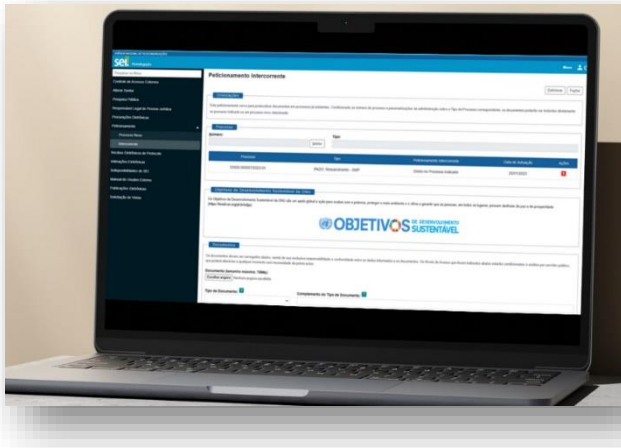
Such actions resulted in the development, by Anatel, of an internal module in the Electronic Information System (SEI), the Agency's main procedural and operational processing system. The Agency's employees began to classify the processes in which they work according to each goal and Objective of the 2030 Agenda.

The purpose was to implement an institutional culture where everyone at Anatel is imbued with the same purpose: to contribute to the achievement of the SDGs of the UN 2030 Agenda.

Taking advantage of the capillarity of the SEI, which is used by all bodies and entities of the Federal Executive Branch in Brazil, as well as entities of the Judiciary



and by some states and municipalities, this acculturation was also focused on the Agency's external audience.



Considering that the integration of the SDGs into the telecommunications sector is not a trivial task, it is of great importance to disseminate this culture to all those who relate to the government, whether through new processes, inter-

current requests in existing processes or notifications.

Thus, an external module was created at SEI, called "Sustainable Digital Communications", which integrates the SDGs into the institution's daily practices and operations, fostering sustainability, innovation and social responsibility within the telecommunications sector in Brazil.

The project innovates by using strategies based on behavioral sciences to encourage and facilitate the adoption and implementation of the SDGs by the regulated sector and by third parties that interact with public institutions. Just to put it into perspective, at Anatel alone, there are more than 30 thousand users.

Through this approach, it is expected to guide societal behavior to incorporate SDG-related perspectives into the use of the SEI, resulting in higher engagement and compliance rates, and promoting a culture of sustainability in the telecommunications sector, rather than simply applying a command-and-control technique.

Thus, in a short period of time, it will be possible for the Agency to have a broad view of the main objectives and goals that are most related to its activities and those in which there is greater opportunity for action.



It is worth noting that all this acculturation, which began at the end of 2022, resulted in the incorporation of the 2030 Agenda into Anatel's Strategic Plan, in the following terms:

Sectoral challenges related to the termination of fixed telephony concessions and pole sharing, global challenges related to the Sustainable Development Goals (SDGs) of the United Nations (UN) 2030 Agenda and the planning of the International Telecommunication Union (ITU) were also included, as well as aspects related to Anatel's internal management and the adoption of good sustainability practices.

1.4. International Telecommunications Union (ITU)

The ITU is the United Nations specialized agency for Information and Communication Technologies (ICTs) and, since 2014, has been aligning its actions for the global growth of technology and telecommunications with the Sustainable Development Goals (SDGs) of the UN 2030 Agenda. This is what he called the "*Connect 2030 Agenda*".

The ITU first adopted the topic through the aforementioned Connect 2030 Agenda, with the goal of aligning the global growth of technology and telecommunications with the SDGs. In its original structure, it listed five main objectives to promote global connectivity:

- 1. Growth:** Enable and promote access to and increased use of telecommunications/ICT (information and communication technology) in support of the digital economy and society;
- 2. Inclusion:** Bridging the digital divide and providing broadband access for all;
- 3. Sustainability:** managing emerging risks, challenges and opportunities resulting from the rapid growth of ICTs;

4. **Innovation:** enabling innovation in telecommunications and ICTs to support the digital transformation of society; and
5. **Partnership:** Strengthen cooperation between ITU members and all other stakeholders to advance the ITU's other strategic objectives.

This first structure designed for Connect 2030 brought responsibility to ITU member countries and to itself to work on issues such as expanding connectivity, reducing the global digital divide, and promoting technology and telecommunications for the good of all.

“Universal, secure, reliable and affordable connectivity as a requirement to accelerate the UN 2030 Agenda” – Agenda Connect 2030

In its latest edition (ITU Resolution 200, Rev. Bucharest, 2022), it has as one of the main objectives universal, secure, reliable and affordable connectivity as a requirement to accelerate the UN 2030 Agenda. Importantly, universal connectivity and sustainable digital transformation are equally recognized as vital to the ongoing lines of action of the World Summit on the Information Society (WSIS).

This latest update also affirms the key role of digital connectivity in effective crisis response and recovery, particularly based on the experience gained during the COVID-19 pandemic.

Thus, the Connect 2030 Agenda carries out a grouping of all the goals specified for the ITU for global digital development into two objectives:

Goal 1: Universal connectivity by 2030: requires the ITU and its members to enable and promote universal access to affordable, high-quality and secure digital technologies; promoting:

- a) universally accessible, low-cost, high-quality, interoperable and secure infrastructure and services;
- b) international coordination to prevent and eliminate harmful interference to radiocommunication services;
- c) facilitate the worldwide standardization of telecommunications; and
- d) leverage existing and emerging technologies, connectivity solutions, and business models to bridge the digital divide while ensuring access for all.

Goal 2: Sustainable digital transformation by 2030: requires the ITU and its members to use technology equitably and inclusively. It seeks to:

- a) leveraging digital technologies for sustainable development, helping to build an inclusive society and economy;
- b) initiatives to close the digital divide for all, including women and girls, youth, indigenous peoples, the elderly, people with disabilities, and people with special needs; and
- c) enable digital transformation in all spheres of life and activity, particularly to address the climate and environmental crisis, foster the continued advancement of science, promote the sustainable exploration of Earth and space, and encourage the use of resources for the benefit of all.

1.5. The SDG Digital Acceleration Agenda

The International Telecommunication Union (ITU) and the United Nations Development Program (UNDP) launched, in 2023, the Digital Acceleration Agenda of the Sustainable Development Goals (SDG Digital Acceleration Agenda). Such a need stems from the fact that there were still about 2.6 billion people around the world offline, unable to benefit from the increasingly fast-paced digital world.



To this end, through the aforementioned Agenda, the ITU and UNDP have joined their actions so that everyone can benefit from this digital transformation that is taking place around the world, whether through universal technologies or through the so-called meaningful connectivity. Overall, it shows how digital solutions can accelerate the world's progress on climate action,

education, hunger, poverty, and at least 70% (seventy percent) of the 169 (one hundred and sixty-nine) SDG targets.

“Data and digital technologies can help achieve the SDGs by providing a channel for vital services, yielding data insights, and catalyzing progress” – SDG Digital Agenda

O documento dispõe que as tecnologias digitais podem desempenhar três papéis principais na realização dos ODS:

1. **Primary channel for delivering vital services:** Digital technologies can improve financial inclusion, increase the effectiveness of government and public service delivery, and provide people with platforms and channels to ensure their voices are heard. Specific examples include the use of telemedicine to improve the accessibility and effectiveness of healthcare, the Internet of Things (IoT) to provide data to improve agricultural, conservation, and industrial practices, and digital platforms to provide education to the most marginalized populations;

2. **Providing data and *insights* to achieve specific targets:** New technologies can generate important and essential data to monitor progress and inform decision-making around the SDGs.

It exposes, as an example, the possibility of having sensor networks and the internet of things (IoT) as tools to provide data on biodiversity in order to guide conservation policies and interventions. Introduces **Rainforest Connection**, which uses AI to analyze acoustic data from tropical forests, helping to detect illegal activities such as tree cutting;



It reinforces that data analysis and modeling tools can also help governments better understand poverty-related challenges and target resources effectively..

3. **As a catalyst for progress:** highlights the role of digital technologies in improving data exchange, creating the potential for greater citizen engagement, and enabling greater government transparency. Examples of this include multi-stakeholder alliances such as Partner2Connect and Data4SDGs, which work to promote meaningful connectivity and sustainable digital transformation.

However, it warns that these digital technologies are not a remedy for all these problems, as they need to be applied in an inclusive and thoughtful way, as they have a powerful multiplier effect, both positive and negative.

For this reason, it is of utmost importance that its use minimizes any increase, consolidation, or exacerbation of inequality, especially those related to gender, location, and the broader digital and data divides. In other words, it is necessary to build and incorporate protections to maximize the benefits of digital technologies, while addressing and mitigating the associated risks.

Thus, the Agenda advocates that intentionally inclusive approaches to digital development, putting people and the protection of human rights at the center, are essential to ensure that the risks of digital transformation are eliminated, so that no one is left behind.

The document highlights how inclusive digital transformation can be scaled up. To this end, it presents 34 (thirty-four) digital solutions, two for each SDG, as examples of the potential of digital technology. In addition, one of its key findings is that digital leadership is a crucial factor in SDG progress. That is, countries with more robust digital infrastructure and digital accessibility achieved more progress on the SDGs compared to peer countries in their income bracket.

The document also presents a series of "Digital Transformation Enablers" that can support national governments in their digital transformation journeys. These components include:

- 1. Vision:** The importance of a comprehensive national digital vision and strategy;
- 2. Results:** The relevance of digital applications, products, and services in driving SDG priorities (and other national ones).
- 3. Content, apps, and services:** Inclusive, human-centered design of useful, relevant, and sustainable digital solutions delivered through channels, devices, and business models that align with the needs, realities, and aspirations of countries and communities.
- 4. Technical and non-technical enablers:** Policies, programs, initiatives, resources and capacities essential to shape, embed and scale digital transformation and digital ecosystems in an inclusive, accessible, transparent and participatory way.

Finally, it emphasizes that inclusive digital transformation cannot be led or achieved by a single actor, institution, or sector. It requires a collaborative approach involving governments, the private sector, civil society and international organizations.

“Inclusive digital transformation (...) It requires a collaborative approach that involves governments, the private sector, civil society and international organizations” – SDG Digital Agenda

1.6. Global System for Mobile Communications Association (GSMA)

GSMA, established in 1995, is an organization representing mobile operators and manufacturers worldwide. In its own words, it "unifies the mobile ecosystem to discover, develop and deliver fundamental innovation for positive business environments and social change." It operates in 3 major pillars together with its representation: Connectivity for Good, Industrial Services and Solutions and Dissemination.

In September 2023, the GSMA published its eighth SDG impact report, highlighting the impact of the mobile industry and recommending action points to help achieve these goals. The publication assesses the mobile industry's progress against each Goal and identifies areas where action needs to be improved or accelerated to achieve the 2030 Agenda.

“Countries that have achieved the greatest improvements in mobile connectivity have also generally made greater strides towards the UN 2030 Agenda” – GSMA



According to the report, a significant expansion of mobile usage was observed in the Asia-Pacific region between 2015-2022, with a sharp increase in the number of unique subscribers and mobile connections. The combination of faster network speeds, facilitated by the implementation of 4G and 5G technologies, the decline in prices, and the increase in smartphone adoption ushered in a wave of new digital services, which underpinned an uptake in the region's SDG contribution.

It also reports that developed markets with higher levels of mobile connectivity, such as North America and Europe, typically achieve more significant impacts on SDG. As an example, it presents the case of North America, where 85% of the population subscribes to mobile internet services, and the region's 5G maturity is supporting the sector's contribution to the SDG by stimulating the use of new applications and services in different sectors.

In Europe, the report highlights that more than 70% of mobile users use their devices for video calls, mobile financial services or to obtain information about products and services, contributing to a series of SDG.

The report exposes the importance of the mobile industry and how it has impacted each of the SDGs of the UN 2030 Agenda. It is noteworthy that mobile technology provides billions of people with their primary means of accessing the internet and a plethora of life-enhancing services in education, healthcare, and finance, and serves as the linchpin of the digital economy and a catalyst for transformation across different industries.

The main findings contained in the report on the impact on the SDGs are as follows:

- a) The biggest impact was on SDG 9, driven by the reach of mobile coverage around the world. According to the GSMA, since 2015, the population living in areas without mobile coverage has fallen from 1.8 billion to 400 million at the end of 2022;



at



b) Since 2015, nearly 2 billion people have gained access to the internet via a mobile device, with an estimated 4.5 billion people – or 57% of the world's population – connected by the end of 2022;

c) Progress has been made to reduce disparities in mobile internet adoption between different user segments, supporting the industry's contribution to SDGs 5 and 10;



d) Mobile internet use is reported to have increased from 710 million since 2015 to 1.5 billion people in 2022, with 61% of women in low- and middle-income countries using mobile internet, representing an increase from 470 million since 2017 to 1.4 billion people in 2022;

e) The greatest level of improvement was in SDG 4, with 2.3 billion people (42% of mobile subscribers) using mobile devices to access educational information for themselves or their children, which represents an increase of 1.6 billion individuals since 2015;



f) 6 billion people (49% of mobile subscribers) used mobile financial services in 2022, an increase of 1.6 billion since 2015, making it possible to help individuals better manage their finances and create job opportunities, contributing to SDGs 1 and 8.



It is noteworthy in the report that, despite this evolution regarding mobile devices, there is still great potential that can be explored. This is because, if nothing else is done and considering the current trajectory, in addition to the various factors that have occurred in the world in recent years (such as the global cost-of-living crisis, conflicts and the Covid-19 pandemic), the industry will only reach 76% of its total potential impact on the 17 SDGs by 2030.

Therefore, it draws attention to the need for mobile operators to collaborate with governments, regulators and the international community in order to

increase the pace and scale of the sector's contribution and unlock this untapped potential. The following actions should be highlighted:

- a) Change policies to support sustainable levels of investment in mobile broadband infrastructure;
- b) Leverage the role of the international community, UN agencies, and multilateral development banks to prioritize investment in digital development;
- c) Boost the use of mobile solutions by all segments of the population and businesses; and
- d) Promote and use mobile-enabled innovation to address societal challenges.

GSMA highlights the global impact of the mobile industry on connectivity solutions for public policy, achieving the SDGs of the UN 2030 Agenda. Next, the actions highlighted for Brazil:



Fonte: <https://sdgexplorer.gsma.com/>



2

Analysis of the Telecommunications Sector in Brazil

2.1. Telecommunications policies in Brazil

In Brazil, the Federal Constitution of 1988 attributed to the Union the exclusivity in exploiting telecommunications services, allowing this to be done directly or through concessions to companies under state control, such as those of the Telebras System. However, an amendment to the constitution of August 15, 1995, brought significant changes by allowing the exploitation of telecommunications and radio broadcasting services and sound and images to be done directly by the Federal Government or through authorization, concession or permission to other entities. In addition, it stipulated the need for a law to regulate the organization of telecommunications services, including the creation of a regulatory agency and other institutional aspects.

Thus, after discussion in the National Congress of Brazil, the so-called General Telecommunications Law (LGT) was approved, which established as its main objectives the breaking of the state monopoly and the introduction of competition in the sector. This aimed to attract investments, improve infrastructure and quality of services, universalize access to basic services, and create an independent



regulatory agency, the National Telecommunications Agency (Anatel). The Explanatory Memorandum No. 231/MC of the LGT, dated December 10, 1996, highlights these fundamental points:

The need to adopt a regulation that allows operators to react quickly to the imperatives of the market and technological developments, thus offering the full range of telecommunications services required by society, does not mean that adequate weight should not be given to the social role of telecommunications. In a country like Brazil, with an inadequate degree of meeting demand, it should continue to be a central objective of government policy to offer society basic telecommunications services throughout its territory, in a non-discriminatory manner, with uniform attributes of availability, access and connectivity, and at satisfactory prices.

In a broad way, what is intended is to create conditions so that the progress of information and communication technologies can effectively contribute to changing, for the better, people's way of living.

For this, it is necessary that the regulatory framework for telecommunications evolves in order to put the user first; The user should have freedom of choice and receive high-quality services at affordable prices. This will only be possible in an environment that stimulates dynamic competition, ensures separation between the regulatory body and operators, and facilitates network interconnectivity and interoperability. Such an environment will allow the consumer the best choice, by stimulating the creation and flow of information made available to him by a wide variety of suppliers.

Regarding the obligations of universalization of access, it was foreseen that they would vary over time, as the objectives were reached. Thus, the specific goals of universal service should be modified periodically to adapt to the conditions of each moment.

Decree No. 2,534, of April 2, 1998, approved the General Plan for the Granting of Telecommunications Services provided under the public regime (PGO), which



establishes the Fixed Switched Telephone Service (fixed telephony) as the only telecommunications service to be provided simultaneously in the public and private regimes. Subsequently, Decree No. 6,654, of November 20, 2008, replaced the PGO approved in 1998. The signing of the first STFC Concession Contracts in 1998, renewed in 2006 and valid until 2025, established the execution of the public regime linked to the STFC, deriving from the Telebrás system.

Thus, access to fixed telephony was universalized in the country initially through obligations to meet the goals of implementation of Public Use Telephones and individual accesses. Subsequently, this universalization was expanded by the offer of backhaul infrastructure in municipalities that did not have this transport network, which supports the provision of fixed telephony and broadband services, in addition to other services.

Telecommunications experienced significant transformations due to the great technological evolution. Among the changes that draw the most attention, the following stand out: i) the popularization of the mobile service (cellular); ii) the significant expansion of Internet connectivity, both by fixed means and by mobile and wireless means; and iii) modernization and convergence of networks, permitted by the evolution of computer equipment with a gigantic increase in capacity.

All this evolution was accompanied by public policies for digital inclusion, focused mainly on expanding the connectivity of the population.

This history begins with the National Broadband Plan (PNBL), created by Decree No. 7,175, of May 12, 2010, which established one of the first national public policies for digital inclusion focused on improving and expanding high-speed internet connection. The aim was to massify access to broadband internet connection services, with the purpose of bringing high-speed internet to 40 million people and connection to 4 thousand municipalities.



The purpose was to accelerate economic development, promote digital inclusion, reduce social and regional inequalities, expand e-government services, train the population to use information technologies, and increase technological autonomy and Brazilian competitiveness. However, in 2014, despite the efforts, the scenario, unfortunately, did not change much. Only a little more than 27 million people had the service and only 600 municipalities were connected, not coming close to the planned goals.

Then, in 2016, the Smart Brazil Program was instituted, through Decree No. 8,776, of May 11, 2016, which aimed to universalize internet access, expand coverage to villages and rural agglomerations through mobile broadband, and increase satellite broadband capacity for civilian purposes.

Then, in 2018, Decree No. 9,612, of December 17, 2018, was published, which provided for the public telecommunications policies, revoking the previous programs. Through it, the broadband policy in Brazil began to have a differentiated treatment, as it began to promote:

- a)** access to telecommunications under economic conditions would enable the use and enjoyment of services, through the expansion of broadband internet access, with adequate quality and speed, and its expansion in areas where the supply was inadequate, such as underserved urban, rural or remote areas;
- b)** digital inclusion, to guarantee the population access to the network and systems and services based on information and communication technologies (ICT), observing social and regional inequalities; and
- c)** a market of broad, free and fair competition.

As a result, the scenario has changed considerably. Brazil currently has more than 53.3 million fixed broadband accesses⁵, 263.5 million mobile telephony accesses and 243.6 million mobile broadband accesses⁶.



Despite all these efforts, there is still a lot to do. This is because all these achievements were not enough to solve the problems arising from the digital divide in Brazil.

At this point, attention is drawn to the Structural Plan for Telecommunications Networks – PERT,⁷ which contains the diagnosis of broadband service in the country, in order to enable Anatel to identify whether there is infrastructure capable of meeting the demands in each region, to allow the adoption of effective quality actions, expansion of access, availability of spectrum, to stimulate competition, among others.

In addition to the descriptive diagnosis of the infrastructure set, PERT clearly demonstrates the gaps in the transport and access networks throughout the country, presents the list of investment projects capable of addressing the deficiencies identified in the diagnosis and the possible sources of financing to be used by the Government for the execution of such projects.

⁵ BRASIL. Agência Nacional de Telecomunicações – Anatel. Dados Abertos. Banda Larga Fixa. Available in <https://informacoes.anatel.gov.br/paineis/acessos/banda-larga-fixa> . Accessed on 08 Dez. 2024

⁶ BRASIL. Agência Nacional de Telecomunicações – Anatel. Dados Abertos. Telefonia Móvel. Available in <https://informacoes.anatel.gov.br/paineis/acessos/telefonia-movel> . Accessed on 08 Dez. 2024

⁷ Art. 22 da Lei nº 9.472, de 16 de julho de 1997.

Its most recent edition⁸, with data from the last quarter of 2022, provides an updated overview of telecommunications in Brazil, with the following diagnosis:

- a)** The number of mobile accesses has remained stable over the last 5 years, with a stabilization trend of around 100% penetration, following the world average. The mobile market presents a maturation of offers, with the expansion of the postpaid service, which surpassed the prepaid service (when it includes legal entities), and with 83.81% of the terminals with broadband access (4G and 5G);
- b)** The consecutive drops among telecommunications services for residential use (TV and Fixed Telephony) did not affect the growth of fixed broadband service (SCM), which has shown constant evolution over the years, reaching 23.9% penetration, in line with the world average, but still far from developed countries;
- c)** There was a great evolution in the number of fiber optic accesses, which represent 74.4% of total accesses, with a positive impact on the national average speed (contracted), which reached, in 2023, 335 Mbps. Fixed broadband access with more than 34 Mbps of speed already account for 90% of total access;
- d)** With regard to telecommunications infrastructure, the fiber optic backhaul/backbone network, which served 48.2% of municipalities in 2015, served 76.5% in 2024, reaching 4,363 Brazilian municipalities. The current fiber optic backhaul network connects municipalities that represent 94.3% of the Brazilian population;
- e)** The mobile network is concentrated in 3 large telecommunications groups (Claro, Tim and Vivo) and reaches 100% of seats of Brazilian municipalities. 4G technology is present in 5,570 municipalities (100% of the total municipalities);
- f)** In addition to the coverage of the urban area of the municipal seats, there are 21,525 localities that are not municipal seats and that are mapped by

⁸ **BRASIL.** Agência Nacional de Telecomunicações – Anatel. Plano Estrutural de Redes de Telecomunicações – PERT. Available in <https://www.gov.br/anatel/pt-br/dados/infraestrutura/PERT> . Accessed on 14 Dez. 2024

the Brazilian Institute of Geography and Statistics - IBGE. The survey points to the existence of 4G or higher mobile service in 14,831 locations.

- g)** In Brazil, there are 122,216 km of federal highways. 4G mobile coverage reaches 70.4% of the total of these highways. 5G coverage is available on 15,551 km of highways.

The Plan also lists the gaps that exist from the diagnosis. It is worth mentioning that, despite the great penetration of mobile service throughout Brazilian society, inequality of access remains, especially in the states of the North and Northeast regions of the country.

It exposes that the average broadband speed is still unequal among Brazilian states and the availability of fixed broadband at high speed is much higher in municipalities that are served by backhaul with fiber optic technology.

It adds that, in all, there are 1,207 municipalities without fiber optic backhaul, most of them in the North and Northeast regions, in addition to municipalities in the northern region of the state of Minas Gerais. In the personal mobile service, despite a significant diversity of providers, in December 2023, there were three large groups, Telefônica Brasil (Vivo), Telecom Américas (Claro) and Telecom Italia (TIM), with national operations, accounting for 96.4% of the total subscribers.

It also points out that mobile coverage on federal highways is quite unequal between the regions of the country. It explains that states such as Amazonas, Roraima, Amapá and Acre, despite an important advance over previous years, still have very low 4G coverage on federal roads, hindering regional development.

Thus, based on these gaps, PERT identifies the following sources of financing for the expansion of broadband access:

- a)** Revision of the concession model of the Fixed Switched Telephone Service – STFC: amendment to the General Telecommunications Law to allow the conversion of the current STFC concession model to authorization, generating a balance of resources that can be invested in broadband projects;

- b)** Terms of Adjustment of Conduct – TAC;
- c)** Sale or renewal of radio frequencies: imposition of obligations focused at the expansion of mobile technology in areas without diagnosed service;
- d)** Fund for the Universalization of Telecommunications Services – FUST: with the approval of Law No. 14,109, of December 16, 2020, the use of these resources for the expansion of broadband became viable;
- e)** Balances resulting from the installation of transmission networks (backhaul): the balances resulting from the replacement of obligations established in the General Plan of Universalization Goals – PGMU (Multi-facility Service Stations, backhaul, payphones) were directed to the implementation of transport infrastructure (backhaul) under the terms of Decree No. 10,610, of January 27, 2021 – PGMU V; and
- f)** Obligations to do: the Agency may impose obligations to do on providers, in lieu of the application of fines.

In addition to the expansion of connectivity infrastructure, particularly linked to SDG 9 - Build resilient infrastructures, promote inclusive and sustainable industrialization and foster innovation, there is another preponderant factor that is on the agenda of Anatel and the Brazilian Government: the so-called digital skills.

As it is known, Brazil has advanced in the digital transformation of the economy, public services and business, being considered the second leading country in digital government in the world by the World Bank⁹. This progress results from the prioritization of the topic by the government of Brazil over the years, currently consolidated in the Brazilian Strategy for Digital Transformation - Cycle 2022-2026 and in the Federal Strategy for Digital Government for the period 2024 to 2027.

⁹ **BRASIL.** *Ministério da Gestão e Inovação em Serviços Públicos.* Available in <https://www.gov.br/governo-digital/pt-br/noticias/brasil-e-reconhecido-como-segundo-lider-em-governo-digital-no-mundo> Accessed on 14 Dez. 2024

Thus, in June 2024, Anatel published a study on digital skills with a focus on Brazil¹⁰, but also including the global context. The study emphasizes the urgency of promoting digital skills so that Brazilian citizens can take full advantage of technological resources and public policies for digital transformation, especially considering the country's leading position in digital government.

The study draws a comparative overview between the Brazilian context and the indicators of other countries released by the International Telecommunication Union (ITU), highlighting the digital skills gaps in specific subgroups, considering factors such as race, gender, age group, geographic region and income.

Based on the implementation of the strategic project for digital literacy, contained in Anatel's Strategic Plan 2023-2027, it exposes the need to promote digital skills so that "Brazilian citizens can fully enjoy the digital resources and public policies for digital transformation available, especially considering Brazil's leadership in digital government".

This topic gains even more relevance when considering that digital skills are part of the SDGs, with the intention of increasing the proportion of people with basic and intermediate digital skills worldwide by 2030. Anatel's goal is to increase the proportion of people over 10 years old with intermediate digital skills to 30% by 2027.

The study concludes that Brazil still faces a long way to position itself among the 20 most developed economies in terms of digital skills. In addition, it points out that, among the countries that make up the G20, Brazil ranks third in all skill levels, below Mexico and China, for example.

¹⁰ **BRASIL.** *Agência Nacional de Telecomunicações.* Available in <https://www.gov.br/anatel/pt-br/assuntos/noticias/anatel-publica-estudo-sobre-habilidades-digitais-com-foco-no-brasil-e-seu-contexto-mundial> . Accessed on 15 Dez. 2024



It also suggests that specific and punctual actions should be conducted with the following niches of the population: i) children and the elderly; ii) women and girls; iii) North and Northeast regions; iv) population residing in rural areas; and v) black, yellow or indigenous population.

Based on this data, Anatel will be able to develop new projects and programs to mitigate social and digital inequalities, as it has already done. And, in this regard, institutional experimentalism can contribute significantly to the improvement of these indicators, directly impacting the SDGs, especially Goal 4 – Quality education, which seeks to ensure access to inclusive, quality and equitable education, in addition to promoting lifelong learning opportunities for all. Similarly, Goal 10 – Reducing Inequalities, by ensuring that more people have access to digital opportunities and the benefits of the digital economy.

Having presented this direction of public policies in Brazil (connectivity, infrastructure, and digital skills), it is appropriate to demonstrate some actions and initiatives in Brazil related to them and that contribute to the achievement of the SDGs of the UN 2030 Agenda.

2.2. Obligations to Do

The obligation to do (ODF) is a measure designed to meet public interests that transcend the simple collection of resources. Through it, the public entity has the ability to identify and prioritize, based on criteria of convenience and opportunity, the locations or audiences that need improvements in quality and coverage of services.

The imposition of pecuniary penalties, resulting from fines, often leads regulated entities to seek various ways, including judicial ones, to avoid payment. ODF, as a public policy instrument, has the ability to encourage compliance with

decisions by Anatel and other regulators, with an intention of meeting the real needs of the population, especially in needier communities.

This is because the regulation of the telecommunications sector is continuously influenced by the emergence of new technologies, imposing on the regulator the need to exercise constant vigilance over evolving scenarios over time, ensuring that regulation remains effective and relevant.

Therefore, it is up to the administrator to prospectively evaluate, in view of the potential choices, which one would be the most apt to increase the well-being of the Brazilian population as a whole.

It should be noted that, despite its sanctioning nature, the obligation to do has a certain discretion regarding the object that will be enforced. The choice of the public administrator must be duly motivated and evaluated from the perspective of adequacy to the public interest. In other words, while the pecuniary sanction is fixed, the obligation-to-do sanction can offer a set of options to achieve the public end, based on criteria of convenience and opportunity, as long as the associated pecuniary value is observed.

According to the doctrine of Juliana PALMA (2010, p. 168) "*pecuniary rights, sanctioning power and acts of authorization are, therefore, examples of objects that can be fully marketed by the Government. This interpretation is plausible to the extent that the principle of the unavailability of public interest does not characterize an impediment to consensual administrative action*".

Anatel in the procedures involving the concession has given prestige to the hypothesis of consensus solution, an approach aligned with SDG 16, which deals with promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels.

As an example, Anatel, under the leadership of Counselor Alexandre Freire, negotiated with telecommunications service providers to, through obligations to do, implement public policies for the realization of social rights of women in vulnerable situations.

As highlighted, the transformation of pecuniary fines into obligations to do is a crucial instrument of conciliation and accountability, which can be employed to foster social well-being and inclusive progress in the nation. Therefore, it represents a chance for the public entity to get involved in these initiatives based on the particular needs of a specific group of individuals in vulnerable situations.

In Brazil, a specific audience deserved the Agency's attention: women in situations of social vulnerability, particularly those who have suffered violence or who are refugees. This is because social vulnerability, when linked to gender, presents extra challenges for women's progress.

According to the 4th Edition of the Visible and Invisible Report: the victimization of women in Brazil¹¹, published in 2023, referring to events that occurred throughout 2022, shows that 28.9% of women report having been victims of some type of violence or aggression, which was the highest prevalence ever seen in the time series, as shown below:

¹¹ **BRAZIL.** *Brazilian Forum on Public Security.* Available at: <https://forumseguranca.org.br/wp-content/uploads/2023/03/visiveleinvisivel-2023-relatorio.pdf> . Accessed on 07 Dec. 2024



Tabela 7: Vitimização nos últimos 12 meses - Série histórica (2017 - 2023).

	PESQUISA 2017	PESQUISA 2019	PESQUISA 2021	PESQUISA 2023
SOFREU ALGUM TIPO DE VIOLÊNCIA OU AGRESSÃO	28,6	27,4	24,4	28,9
Insulto, humilhação ou xingamento (Ofensa verbal)	22,2	21,8	18,6	23,1
Ameaça de apanhar, empurrar ou chutar	10,0	9,5	8,5	12,4
Amedrontamento ou perseguição	9,3	9,1	7,9	13,5
Batida, empurrão ou chute	8,9	9,0	6,3	11,6
Ofensa sexual (algumas vezes as pessoas agarram, tocam ou agredem fisicamente e verbalmente outras pessoas por motivos sexuais)	8,1	8,9	5,4	9,0
Ameaça com faca ou arma de fogo	4,3	3,9	3,1	5,1
Lesão provocada por algum objeto que lhe foi atirado	4,0	3,9	2,6	4,2
Espancamento ou tentativa de estrangulamento	3,4	3,6	2,4	5,4
Tiro ou esfaqueamento	1,9	1,7	1,5	1,6
Outras respostas	0,1	0,7	1,5	0,5

Fonte: Fórum Brasileiro de Segurança Pública; Instituto Datafolha. Pesquisa Visível e Invisível: a vitimização de mulheres no Brasil, edições 1, 2, 3 e 4; 2017, 2019, 2021 e 2023. Só mulheres, resposta estimulada e única, em %.

This data, as mentioned in the report, show an increase in aggressions suffered by women in Brazil. Among the forms of violence mentioned, verbal aggression led with 23.1%, followed by stalking (13.5%), threats (12.4%), physical aggression such as kicks, punches and pushes (12.4%), sexual offenses (9%), threats with knives or firearms (5.4%), physical aggression such as blows or attempted strangulation (5.1%), injuries caused by thrown objects (4.2%) and stabbings or shots (1.6%).

The document *Refugee in Numbers 2024*¹², which is in its 9th edition, presents data on the refugee situation in Brazil. It is an annual publication of the National Committee for Refugees (Conare), prepared by researchers from the Observatory of International Migration (OBMigra), which provides a detailed analysis of the refugee situation in Brazil. The objective is to provide an overview of the refugee phenomenon in Brazil, to monitor the theme statistically and to give greater prominence to refugees and applicants of the refugee status who reside in the country.

¹² **BRAZIL.** *Observatory of International Migration.* Available at: https://portaldeimigracao.mj.gov.br/imagens/Obmigra_2020/OBMIGRA_2024/Ref%C3%BAgio%20em%20N%C3%BAmeros%20-%209ed/Ref%C3%BAgio%20em%20N%C3%BAmeros%209%20edicao%20-%20final.pdf Accessed on: 8 Dec. 2024



According to the document, of the total of 58,600 people who requested recognition of refugee status in 2023, 24,319 requests are from women. This corresponds to 41.5% of the total.

The table below shows the proportion of requests for recognition of refugee status, by gender:

Tabela 2.1.2. Proporção de solicitações de reconhecimento da condição de refugiado, por sexo, segundo principais países de nacionalidade ou residência habitual, Brasil - 2023.

Idade	Total	Masculino	Feminino	Não Especificado
Total	100	58,4	41,4	0,0
VENEZUELA	100	54,8	45,1	0,0
CUBA	100	53,2	46,6	0,0
ANGOLA	100	53,6	46,3	0,0
VIETNÃ	100	60,6	39,0	0,3
COLÔMBIA	100	65,2	34,8	0,0
NEPAL	100	92,5	7,3	0,1
ÍNDIA	100	95,9	4,0	0,0
CHINA	100	62,9	37,0	0,0
MARROCOS	100	82,3	17,6	0,0
GUIANA	100	56,0	43,9	0,0
LÍBANO	100	83,2	16,7	0,0
PERU	100	66,4	33,6	0,0
NIGÉRIA	100	78,0	21,9	0,0
BANGLADESH	100	93,2	6,7	0,0
GANÁ	100	83,7	16,3	0,0
SURINAME	100	70,7	29,2	0,0
REPÚBLICA DOMINICANA	100	48,8	51,1	0,0
AFEGANISTÃO	100	56,0	43,9	0,0
CAMARÕES	100	60,4	39,5	0,0
TURQUIA	100	81,9	17,5	0,4
OUTROS	100	68,4	31,3	0,1

Source: Refuge in Numbers Yearbook 2024 - CONARE

From these data, the final considerations present in the annual publication of the National Committee for Refugees (Conare) are cited:

The year 2023 also reaffirms a scenario of transformations from the point of view of the demographic characterization of the refugee panorama in Brazil. The latest editions of the Refuge in Numbers yearbook have drawn attention to the changes in the demographic profile of asylum seekers in Brazil from a process of feminization and rejuvenation of the population requesting recognition of refugee status, as well as refugees recognized in the country. As observed for the year 2022, when the 8th edition of the yearbook devoted greater attention to these aspects, the data analyzed in



this report corroborate that there is an increase in the volume of asylum requests by women and also by children and adolescents.

With the demographic transformations that are taking place, it is urgent to reassess and/or redirect public policies to a reality structured from the greater presence of women, as well as children and adolescents in the composition of asylum seekers and refugees. Thus, there is renewed urgency to improve public policies in order to ensure broad access to information and basic social protection instruments.

Women, in general, face historical and structural gender inequalities that limit their access to fundamental rights, such as education, employment, and health. The data reinforce the fact that this imbalance can be even more pronounced for women in vulnerable situations, especially those who suffer gender-based violence or are in a refugee situation. Their social and economic exclusion is fueled by a set of interrelated factors, including gender discrimination, lack of opportunities, and absence of support networks.

It is notable that women in situations of violence face more difficulty in accessing support services and entering the workforce. On the other hand, women in refugee situations deal with the additional challenge of xenophobia and the difficulty of recognizing their qualifications. Given this scenario, which justifies the prioritization of specific policies for this public, the promotion of qualification programs aimed at these groups can be a decisive tool for inclusion and breaking these cycles of vulnerability.

On October 11, 2024, the G20 Women's Empowerment Working Group ended its activities under the Brazilian presidency. The meeting resulted in a Chair Statement on Gender Equality and Women's Empowerment, recognizing that girls and women around the world face gender-specific inequalities. In addition, it highlighted that they were agents of change and played a significant role in decision-making, leadership, and addressing global challenges. According to a note



published on the website of the Ministry of Women, the recommendations brought in the document guided the leaders' statement discussed by the presidents of the G20 members, at the summit meeting that took place on November 18 and 19, 2024, in the city of Rio de Janeiro.

Particularly in the area of gender equality and economic autonomy, there was a commitment to:

- a)** ensure equal opportunities and treatment in the workplace to reduce the gender pay gap;
- b)** recognize the entrepreneurial potential of all women;
- c)** promote the role of quality, inclusive and gender-responsive education in achieving gender equality;
- d)** to highlight the importance of women's access to digital technologies;
- e)** the insertion of women in international trade;
- f)** care as unpaid work, which mainly burdens women and must be shared by people from all sectors of society; and
- g)** develop policies that promote greater entry, tenure, advancement, and leadership of women and girls in professions and career trajectories in which women remain underrepresented, such as in the fields of Science, Technology, Engineering, and Mathematics (STEM) and Economics.

In this context, the conversion of a fining sanction into a commitment to training women in vulnerable situations, including those facing violence and refugees, is a strategic action that combines regulatory responsibility with a significant social intervention, fully aligned with the SDGs of the 2030 Agenda, particularly the following:





Training and access to technologies emerge as some of the most effective instruments to transform realities, allowing women to achieve financial autonomy, greater dignity and future prospects, in line with the conclusions of the G20 Women's Empowerment Working Group and the SDGs of the 2030 Agenda.

Another aspect to be highlighted on this topic is that, by exercising its role as a regulatory body, Anatel promotes and ensures that the telecommunications sector is democratic. Thus, it is through the development and empowerment of digital skills that people can effectively benefit from meaningful connectivity. This allows them to take advantage of all the facilities to look for a job, develop new business chains, achieve autonomy and support for their children's school development, among other benefits.

2.3. The actions of the telecommunications companies in Brazil

Brazilian companies seem to be committed to following the premises of the 2030 Agenda widely and transparently, disclosing the various actions and measures they have performed.

Telecommunications providers, as is well known, have been playing a fundamental role in contemporary society by offering services of an essential nature, such as fixed and mobile telephony, broadband internet, pay TV, among other services that require data transmission. On the other hand, its performance is closely linked to sustainability issues, and it is certain that these companies face

challenges related to the use of natural resources, the environmental impact of their operations and the need for innovation to meet an increasingly critical and growing demand for connectivity.

It is essential to highlight some companies in the sector and their initiatives aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda. For the selection of the examples presented, objective criteria were adopted that reflect both their impact and their relevance in the telecommunications sector, especially in the promotion of SDGs.

First, the scale and representativeness of the companies was considered, prioritizing those with a large market share and a significant customer base, since their sustainable practices tend to generate broader impacts both in the sector and in society. In addition, concrete and verifiable initiatives were considered, that is, structured and well-documented programs aimed at the SDGs, allowing a consistent analysis of their contributions. Finally, it sought to ensure the diversity of approaches, including different strategies and models of action in sustainability, in order to offer a broad view of the practices adopted in the sector.

It is worth noting that this is not an exhaustive list. As new initiatives are implemented, and more information becomes available, other companies in the sector can and should be considered in future editions of this document. In this way, the White Paper aims to be a dynamic and inclusive instrument, continuously monitoring advances and best practices in promoting sustainability in the telecommunications sector.

In this regard, some sectoral companies stand out along with their measures and actions related to the SDGs of the 2030 Agenda.



The service provider Vivo has a website ¹³ presenting its various initiatives that seek sustainability in its various businesses.

In particular, there are actions directed at raising awareness among its consumers for the practice and adherence to more sustainable measures, such as the use of digitalization of its business to bring customers closer and educate them to promote responsible consumption.

The provider has participated in the UN global compact in Brazil since 2015, with the SDGs of the 2030 Agenda being one of the sustainability strategies. To this end, in 2023, based on an impact study related to the aforementioned Agenda, the company updated the SDGs, dividing them into Very High, High, and Medium impact categories, precisely to prioritize its actions in this area.

Consumer education is another measure with a relevant impact, making the digital environment increasingly safer for its consumers. Through educational campaigns, videos with simple language and various campaigns, this consumer education has been disseminating accessible knowledge to consumers.

In the name of transparency, the provider has published annual reports on its actions and measures related to sustainability since 2015. Another measure is the production of an educational campaign demonstrating that several actions can be avoided to reduce carbon emissions, such as, for example, videoconferencing instead of physical travel to a personal meeting.

¹³VIVO. *Sustentabilidade*. Disponível em: <https://vivo.com.br/a-vivo/sustentabilidade>. Acesso em: 7 jan. 2025.



The provider also presents its sustainability actions on its website ¹⁴. It highlights that it has sustainability as a value, being committed to the balance of economic, environmental and social interests.

In the environmental aspect, Claro develops projects such as "Claro recicla", "electric bikes" and "paperless". In the social aspect, it operates through the Claro Institute, which promotes actions aimed at diversity and inclusion, voluntary connection, innovation and social transparency. In the governance aspect, compliance, the code of ethics, the LGPD, anti-corruption initiatives and a whistleblowing portal stand out.

The role of Instituto Claro, whose mission is to connect people and create relevant impacts through social investments aligned with the services provided by the Group, is noteworthy. Examples of this include initiatives in the area of education, promotion of citizenship, development of lesson plans, and promotion of connection for specific areas, localities, or groups.

In addition, its strategic partners are worth mentioning, aligning themselves with SDG 17 – Partnerships and means of implementation:

- a) UN Global Compact Rede Brasil: signatory;
- b) UNICEF: partnership in a project that produces and tests educational technologies for the development of specific curricula aimed at adolescents who are behind in school in vulnerable regions in Brazil;
- c) UN: recognized by the Department of Global Communications (DGC).

¹⁴ CLARO. *Sustentabilidade*. Disponível em: <https://www.claro.com.br/institucional/sustentabilidade>. Acesso em: 6 jan. 2025.



Regarding the TIM group, it is observed that it promotes several initiatives to highlight the sustainability of its business¹⁵.

The provider has Instituto TIM, founded in 2013, whose mission is to act in the democratization of knowledge, science and technology, using innovation as a lever for transformation.

The performance is based on four premises: teaching, inclusion, technological applications and work. The institute aims to strengthen TIM's investment in the Company's social aspect, promoting human development and contributing to the corporate ESG strategy.

Tim works on its sustainability agenda by promoting initiatives such as the possibility of disposing of electronic waste in its stores. In the environmental axis, it stimulates the environmental awareness of its employees and customers, developing actions to optimize the use of natural resources.

Like other companies in the sector, TIM is a signatory to the Global Compact, committing to the promotion of human rights, labor, the environment and the fight against corruption.



Algar¹⁶ stands out for its commitment to sustainable development, integrating practices aimed at environmental protection and the responsible use of natural resources in its operating model.

One of the pillars of this action is the preservation and sustainable use of native forests, including initiatives in the Amazon. In addition, the group constantly

¹⁵ **TIM BRASIL.** *Sustentabilidade.* <https://www.tim.com.br/sobre-a-tim/sustentabilidade>. Acesso em: 12 jan. 2025.

¹⁶ **ALGAR TELECOM.** *Sustentabilidade.* Disponível em: <https://algartelecom.com.br/sustentabilidade>. Acesso em: 2 fev. 2025.

seeks to modernize its management and strengthen its governance, considering the social, cultural, environmental and financial dimensions.

In the social aspect, Algar invests in programs that generate a positive impact on society, encouraging its employees to participate in volunteer activities. The company values diversity and maintains a genuine commitment to the well-being of its associates, customers, and communities.

In the sphere of governance, transparency is a differential, reflected in the group's recognition with four ABRASCA awards for the best annual sustainability report. This document, available on the provider's website since 2008, reinforces the commitment to accountability and socio-environmental responsibility.

To consolidate and expand its sustainable initiatives, Algar has a specialized sustainability advisory, responsible for coordinating socio-environmental actions and aligning with external entities, such as the UN, CDP and CHG. This team also manages certifications and promotes an organizational culture focused on engagement and sustainability.



The provider Brisanet¹⁷ plays a very important role in the universalization of telecommunications in the Northeast Region

of Brazil. To this end, it has acted in line with ESG principles, highlighting its transition to renewable energy sources, presenting savings of R\$ 1.8 million with the salvaging of electronic equipment and continuous mapping of indicators to reduce environmental impact.

Another point of great relevance is the practice of equal pay, in compliance with Law No. 14,611, of July 4, 2023, in addition to the adoption of inclusion and diversity practices. Brisanet released its 2023 sustainability report on its website,

¹⁷ **BRISANET.** *Sustentabilidade.* Disponível em: <https://ri.brisanet.com.br/a-companhia/sustentabilidade>. Acesso em: 5 jan. 2025.

transparently presenting topics such as governance, economic performance, social aspects, and the environment.

Specifically on the environment, it presents data and information on topics such as sustainable future, energy management, water management, greenhouse gas (GHG) emissions, and material and waste management.



Ligga points out that since 2000 it has been a signatory to the United Nations Global Compact and since 2016 it has joined the national SDG movement, We Can.

Based on these initiatives, Ligga promotes economic growth with a focus on its social responsibility, investing in actions that promote sustainability, respect for the environment, labor relations and human rights. All of this is in line with the principles established in the Global Compact.

Several articles related to sustainability can be observed on the provider's website¹⁸, such as: Clean and affordable energy: what is it and how does it work? Women's Entrepreneurship Day: importance and challenges in Brazil; Ligga Energy: what it is and how to save up to 20% on your electricity bill.

As seen, sector providers in Brazil are focused on developing and practicing sustainability actions, with the goal of reducing the carbon footprint, promoting the circular economy, energy efficiency in infrastructure, developing technologies for sustainability, and social responsibility.

It is interesting to note that these companies have been working on actions to raise the awareness of their consumers regarding the use of digital platforms, seeking to mitigate the risks inherent to the business itself. Another important

¹⁸ **LIGGA TELECOM.** *O pacto global na Ligga.* <https://liggavc.com.br/blog/ligga/o-pacto-global-na-ligga/>. Acesso em 4 de jan. 2025

aspect is the concern with transparency, evidenced by the availability of sustainability reports accessible to the general public.

In summary, telecommunications providers play a strategic role in building a more sustainable future, not only in the environmental sense, but also in supporting inclusion and social and economic development through technological innovation and the promotion of low-impact solutions.

The challenge now is to create indicators that can be used to further encourage the sector in this task. And Anatel has been working on it.

In January 2024, the Agency established a Working Group (WG) to monitor the measures adopted by providers related to the ESG agenda. The objective of this group will be to define performance indices and criteria for promoting a classification among telecommunications providers according to the actions taken regarding ESG commitments. The measure was provided for in the new General Regulation of Consumer Rights of Telecommunications Services (RGC), which will come into force in September 2025.

The introduction of the ESG theme by Anatel, proposed by counselor Alexandre Freire, highlights the need for the Agency to align with the SDGs of the UN 2030 Agenda. The UN 2030 Agenda serves as a global reference in the formulation and implementation of public policies and the promotion of social rights. To boost this alignment, Anatel should seek to define performance indices and criteria to promote classification among providers according to the actions taken regarding environmental, social and corporate governance commitments.

In addition, the Agency recently established a partnership with the Inter-American Development Bank (IDB) to promote green investments and good environmental practices, in line with the Environmental, Social and Governance (ESG) agenda in the telecommunications sector.



The aforementioned initiative, which will be addressed later in this White Paper, seeks to offer input for the creation of the ESG index of the telecommunications sector, as already discussed. The Bank will offer support to the Brazilian regulatory agency to conduct a diagnosis and design actions to encourage sustainable climate investment in the telecommunications sector, through the hiring of a specialized consulting firm.

2.4. Anatel's actions and initiatives

In addition to the initiatives already reported, Anatel carried out others that contributed to the implementation of the 2030 Agenda in Brazil and that can serve as an example for public and private organizations around the world.

2.4.1. Regulation on the use and sharing of poles

In 2023, Anatel approved the regulation on pole sharing between electricity distributors and telecommunications service providers. The approval of this regulation promoted an evolution in the adherence of the Agency's actions to the SDGs, the idea of resilient cities and the Sendai Framework of Actions, developed within the scope of the United Nations.

The proposal was presented to the Agency's Board of Directors by Councilor Alexandre Freire, who pointed out that the regulation aimed to deal with the precarious use of inputs (poles) of critical infrastructures – energy distribution networks and telecommunications networks – which end up being more compromised in this state of irrationality, to which must be added the worsening in the quality of the urban environment and the various accidents that injure, or, even, fatally harm several people, due to their disorderly use.

General rules for sharing poles between electricity distributors and telecommunications service providers were also established, with criteria to be

obeyed when installing equipment, such as limits and minimum distances, pointing out the need to identify this equipment.

Thus, the approved regulation was a necessary step in reversing the historical distance between the reality experienced by Brazilians and the values and principles promoted by the UN in the actions mentioned here to promote their dignity as citizens, consumers and users of regulated services.

2.4.2. Connectivity in the Amazon region

Laying of sub fluvial optical cable through riverbeds in the Amazon region, with the goal of fully integrating the Connected Amazon Project (PAC) into the Integrated and Sustainable Amazon Program (PAIS). Such initiative is providing the installation of access and metropolitan networks, delivering high-speed internet access to the population and institutions in that region.



Connectivity can offer new economic opportunities, especially for the riverine population and rural areas of the region, by allowing access to information, markets, and financial services. The expansion of telecommunications infrastructure is essential to

integrate these populations into the digital economy.

Regarding this initiative, it is worth mentioning the active role of the director Alexandre Freire, who proposed to Anatel's Board of Directors that compliance with the SDGs of the UN 2030 Agenda to be included as the basis for the decision, since the implementation of optical fibers in the Amazon would contribute significantly to several of these objectives, especially those related to Industry, Innovation and Infrastructure (SDG 9), Poverty Eradication (SDG 1), Quality Education

(SDG 4), Sustainable Economic Development (SDG 8), Life on Land (SDG 15), Reduced Inequalities (SDG 10) and Health and Well-Being (SDG 3).

In his statement, fully welcomed by Counselor Vicente Aquino, he recalled that the Agency's decisions need to be guided by the SDGs, aligned with the objectives of the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) – COP28 and the guidelines of the Sendai Framework to strengthen global resilience against extreme events, which should be observed in the deployment of fiber optics in the Amazon.

For these reasons, it proposed that the entity responsible for the implementation of the cables should engage in a dialogue with IBAMA, ICMBio, IPHAN and related state and municipal agencies, in order to strengthen compliance with the



objectives of the 2030 Agenda in the subsequent phases of the project's implementation. This is because dialogue with the competent environmental agencies would reinforce the importance of compliance with the 2030 Agenda, especially with regard to target 17.7, which aims to promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing

countries, under favorable conditions, including concessional and preferential conditions, as mutually agreed, and target 17.17, which aims to encourage and promote effective public, public-private and civil society partnerships, based on the experience of the resource mobilization strategies of these partnerships.

Thus, Anatel began to direct its path to the objectives of COP28, since they are intrinsically related to environmental, social and technological issues related to climate change and sustainability.

2.4.3. Sharing information with other institutions

Still within the scope of these initiatives, one that goes beyond connectivity is mentioned: the exchange of information between Anatel and the Ministry of Health for use in the Research of the Surveillance System of Risk and Protective Factors for Chronic Diseases by Telephone Survey (Vigitel). This system is an important instrument for monitoring health indicators in Brazil, allowing us to know the health situation of the population and plan actions and programs that reduce the occurrence and severity of certain diseases, thus improving the health of the population.

2.4.4. Expansion of internet access in schools in vulnerable regions

It is important to emphasize that initiatives in the telecommunications sector also provide the fulfilment of Goal 4 - Quality Education, since connectivity is essential to ensure access to quality education. E-learning platforms and digital educational resources are, for example, essential to reduce the educational gap in remote and underserved communities.

Anatel, for example, has been working on expanding internet access in schools in less favored regions through the Monitoring Group for the Funding of School Connectivity Projects (GAPE). The objective of the group is to enable the accomplishment of connectivity projects for public schools of basic education, ensuring the quality and speed necessary for the pedagogical use of Information and Communication Technologies (ICTs). In the pilot project, 177 schools in 10 municipalities were connected, benefiting more than 30 thousand students with a connectivity package.

In addition, in response to the environmental catastrophe that devastated the State of Rio Grande do Sul in Brazil in early 2024, the Agency, after the action of Counselor Alexandre Freire, approved a strategic measure to prioritize and anticipate the connection of schools in municipalities affected by the calamity, in line

with the SDGs. Faced with a devastating scenario, with hundreds of municipalities facing interruptions in essential services, there was a need to adapt the project's resources and schedules, prioritizing the service of the state's public schools.

This decision included the anticipation of 170 public schools in municipalities in a situation of calamity and another 404 schools in other stages of the project, totaling an investment of more than 70 million reais (US\$ 12 million). This emergency action ensures access to education and technology for the most affected communities, without compromising the national project schedule.

Thus, Anatel strengthened the capacity of communities to face and recover from natural disasters, reaffirming Brazil's commitment to building a more resilient and sustainable future for all.

The action sought to reestablish educational activities in the affected areas and create socioeconomic opportunities, in addition to reducing inequalities and promoting sustainable development in the affected region.

2.4.5. Investment obligations in underserved areas

Another recent initiative was the conversion of fines in the total amount of R\$ 15,938,030.45, applied to a certain provider by Anatel within the scope of two sanctioning processes into investment obligations in unassisted areas. The obligations consisted of the installation of 4G base stations in locations still devoid of this technology and the expansion of high-capacity fiber optic networks in locations outside the headquarters of the municipalities, which did not yet have this technology, preferably in indigenous and quilombola communities, with the objective of providing this infrastructure.



The connectivity promoted by the Agency's decision will allow the economic insertion of communities and will contribute to the registration and dissemination of local traditions to the world. In addition, it will serve as a tool to combat aggression to the environment in preservation areas. In this regard, the scope of the SDGs of the 2030 Agenda is expanded, collaborating directly with Goal 10 – Reduction of Inequalities, as the digital inclusion promoted by these obligations has the effect of empowering and promoting the social, economic, and political inclusion of those communities, in addition to cooperating for the eradication of poverty in all its forms.

2.4.6. Gender equality

Also noteworthy are initiatives focused on contributing to Goal 5 – Gender Equality. Anatel recognizes the importance of promoting a safe environment, aligning itself with the Convention on the Elimination of All Forms of Discrimination against Women, and is committed to supporting the defense of women against violence. The Agency's actions are focused on gender equality, with an emphasis on female empowerment measures.



The first measure to be referenced is the inclusion of a woman in two of the three replacement lists for consideration by the President of the Republic for the formation of the definitive triple list for choosing replacements for a position on Anatel's Board of Directors.

Initially, the superintendents were chosen in order of seniority in the office. However, Commissioner Alexandre Freire, based on paragraph 2 of article 10 of Law No. 9,986, of July 18, 2000 (Provides for the management of human resources

of Regulatory Agencies) and precedents within the constitutional court in Brazil, proposed that the name of superintendent Cristiana Camarate should also be present in the last position on the list. In his reasoning, the Counselor mentioned a publication by the Organization for Economic Cooperation and Development (OECD), regarding the need to promote gender equality, as well as target 5.5 of Sustainable Development Goal 5 of the United Nations (UN) 2030 Agenda, related to ensuring the full and effective participation of women and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

With this, Anatel sought to be a source of inspiration for other bodies of the Federal Public Administration, causing a cultural transformation in sectors and areas in which female leadership should thrive. For the Counselor, it is important to evolve in the treatment of the topic so that, in the future, Anatel approaches the standards established in Resolution No. 525/2023, of the National Council of Justice (an entity of the Brazilian Judiciary), which created a policy of gender alternation for gauging merit for the promotion of magistrates and access to 2nd degree Courts.

Thus, based on this example, it is possible to develop a more inclusive interpretation in institutions so that a certain number of leadership positions are composed exclusively of women, significantly increasing the level of adherence to the SDGs of the 2030 Agenda.

Another measure worth mentioning was the formatting of the Anatel Program for Academic Exchange in Digital Ecosystem (P@ed) by the Center for Advanced Studies in Digital Communications and Technological Innovations (Cead), whose president is Counselor Alexandre Freire.

The Program was focused at undergraduate or graduate students in Administration, Computer Science, Political Science, Law, Economics, Electrical

Engineering, Mathematics and Probability and Statistics, and included participation in lectures and guided immersion activities with the various areas of the Agency, which took place in July 2024.

The Program selected 20 students. Of the total, 25% of these positions were intended to mitigate chronic vulnerabilities in Brazilian society. In addition to the distribution by region, specific selection criteria by race, gender and other specific conditions will be considered. There were three positions for black or pardo people, one position for people with disabilities and one position for a woman head of a single-parent household with at least one child under six years of age on the date of publication of the Notice; indigenous; or victim of domestic or sexual violence.

In addition to observing these aspects, the selection of candidates observed gender equality and, as a novelty, all recommended bibliographic references had female authorial participation. According to the president of Ceadi, the inclusion of bibliographic references of women in public selection processes was relevant to promote a more equitable and comprehensive perspective on knowledge, valuing women's intellectual production. Thus, by highlighting the relevance of women's intellectual production, the Agency can serve as a model for similar initiatives, reflecting the richness of the diversity of perspectives.

Other measures on this topic can be mentioned, such as:

- a)** Gender parity actions in the composition of participants in cultural and educational events held by CEADI;
- b)** The confirmation, by the Board of Directors, of a fine to a telecommunications service provider for having acted in an insidious manner in the service and provision of information to police and judicial authorities, necessary for the protection of women at risk;

- c) Anatel's partnership in the Americas Girls Can Code marathon, an initiative of the International Telecommunication Union (ITU), with the objective of arousing the interest of girls and women for the study and careers in technologies;
- d) Approval, at the 2023 annual ordinary session of the ITU Council, of a proposal by Brazil together with other countries to improve actions aimed at addressing issues of women's empowerment and inclusion;
- e) The execution of the Women's Leadership Program, which seeks to promote discussions about invisible barriers and cultural beliefs that hinder female ascension and diversity in the executive body;

The existence of a Diversity, Equity and Inclusion Forum within the Agency, with the objective of making Anatel a space with more representativeness for the various ways of being of a person in the world.

2.4.7. Emergency alert system

Of note is the implementation of the Cell Broadcast technology, in partnership with the Ministry of Communications (MCom) and the Ministry of Integration and Regional Development (MIDR), which has already been in operation in states in the South and Southeast of Brazil since December 4, 2024.

The new alert system of the National Civil Defense of Brazil is a tool intended to send emergency alerts to people located in areas with imminent risk. These alerts are georeferenced based on the polygons defined by the Base Radio Stations (RBS) and overlap on the cell phone with any other function that is being used when it is sent.

Anatel's action is adhering to and implementing the Sendai Framework, the broadest international agreement on disaster risk reduction, also observing the

SDGs related to making cities safe and resilient and aimed at the urgent adoption of combating climate change and its impacts.



The pilot project was presented by Councilor Alexandre Freire in the panel "Digital Connectivity and Technologies for the Early Warnings for All Initiative", structured by the World Meteorological Organization, during COP28, which was attended by the Deputy Secretary General of the International Telecommunication Union (ITU), Tomas Lamanauskas, the Director General of the Global Association of Satellite Operators (GSOA) and representatives of various actors in the technology and environment sector.

2.4.8. Inclusion of ESG criteria in radio frequency public notices

At the end of 2024, the Agency approved the inclusion of ESG criteria as mandatory requirements in radio frequency notices, strengthening its commitment to sustainability and responsible governance in the telecommunications sector. The initiative was led by Commissioner Alexandre Freire, who proposed the incorporation of these requirements to Anatel's Board of Directors based on a constructive and collaborative dialogue with the regulated sector and with the Agency's internal areas.

Thus, aligning Anatel's regulatory processes with international standards of sustainability, digital inclusion and technological innovation, it included in the 2025-2026 Regulatory Agenda and the Plan for the Allocation, Allocation and Distribution of Frequency Bands (PDFF) the provision of ESG criteria. As an example, the incorporation of these requirements in the public notice for the 6425-7125 MHz band is cited, reinforcing the Agency's commitment to sustainable development and modernization of the sector.

This initiative, in particular, can serve as an example of a joint construction to achieve a series of SDG goals, aligned with a specific normative direction.

Observing this and the other initiatives, it can be said that they were shaped based on the demands of the population and the rapid innovations of the telecommunications sector. Technological or not, they emerged from initial projects and, over time, have gained or may gain scale.

In this way, they have the potential to serve as a model for other sectors, given their ability to replicate and adapt to different needs and scenarios, ensuring continuous adaptation to achieve the SDGs of the 2030 Agenda.

3

Inter-institutional collaboration: interaction with other sectors and institutions

Inter-institutional collaboration has proven to be an indispensable strategy to address the complex global and local challenges of the 21st century, especially in the context of the UN 2030 Agenda. Sustainable Development Goal (SDG) 17, which deals with strengthening partnerships for the implementation of the other SDGs, highlights the importance of cooperation between governments, international organizations, the private sector, academia, and civil society to achieve sustainable development.



The articulation between different sectors and institutions makes it possible to expand the capacity to formulate and execute public policies and also promotes the exchange of knowledge, resources and experiences. Inter-institutional partnerships are, therefore, essential to build innovative and sustainable solutions, capable of meeting so-

cial, economic and environmental demands in an integrated manner.



This section presents experiences of strategic partnerships established by Anatel with institutions such as the Inter-American Development Bank (IDB), the National Land Transport Agency (ANTT), the Federal University of Santa Catarina (UFSC) and Unesco. These initiatives exemplify how the synergy between different actors can enhance the results of actions in favor of sustainable development, with a focus on strengthening institutional capacities, technological innovation, and social inclusion. It is expected to highlight the transformative role of institutional cooperation in advancing the global goals of the 2030 Agenda.

3.1. Inter-American Development Bank (IDB)

In 2024, Anatel and IDB entered a strategic partnership aimed at promoting green investment and good environmental practices, in line with the Environmental, Social and Governance (ESG) agenda in the telecommunications sector. The initial proposal is for the Bank to support the Agency in the diagnosis and design of actions to encourage sustainable climate investment in the telecommunications sector.

Among other products, the initiative seeks to offer input for the creation of the ESG index for the telecommunications sector. Through the partnership, support will be offered for the diagnosis and design of actions to encourage sustainable climate investment in the telecommunications sector, through the hiring of a specialized consulting company.

In this regard, the IDB will seek to identify those interested in providing consulting services aimed at: i) diagnostic studies of climate investment in Brazil's telecommunications sector; ii) international benchmark of actions to promote climate investment in the telecommunications sector; iii) proposal for an action plan containing a framework of activities to be executed by Anatel to promote climate investment and proposals for regulation and contribution on the subject

to international forums; and iv) support for the implementation of a pilot project of an Anatel IDB Seal and Award for climate investment.

It is not the first time that the IDB and Anatel have partnered. In the Crowdsource for Digital Connectivity in Brazil (C2DB)¹⁹, project, dated 2021, sought to identify unmet demand for fixed and mobile broadband services throughout the Brazilian territory with a granularity that can vary from 30x30 meters to 600x1,200 meters. To this end, data analysis instruments and methodologies combining socioeconomic variables, crowdsourcing data, and technical criteria to identify areas of unmet demand, group them, and finally estimate the cost to connect them.



Source: <https://c2db-idb-gis.hub.arcgis.com/>

By reducing information asymmetry, the platform allows the creation of public policies for internet access and the expansion of connectivity infrastructure, as well as the creation of a more favorable environment for investors interested in expanding their networks and meeting the unmet demand for the service. It is a

¹⁹ **BANCO INTERAMERICANO DE DESENVOLVIMENTO (BID)**. *Crowdsourcing for Digital Connectivity in Brazil (C2DB)*. Disponível em: <https://c2db-idb-gis.hub.arcgis.com/>. Acesso em: 11 dez 2024.

robust tool for thinking about public policies for connectivity through existing data.

3.2. National Land Transport Agency (ANTT)

In March 2024, an unprecedented partnership began between Anatel, through its Center for Advanced Studies in Digital Communications and Technological Innovations (Cead), and the National Land Transport Agency (ANTT), the institution responsible for regulating, supervising and inspecting the provision of services and the exploitation of transport infrastructure in Brazil.

It is the joint realization of the Infraconnect event, which aimed to generate qualified knowledge for the formation of the common regulatory agenda of the agencies on connectivity, infrastructure and sustainability for the development of the sectors and the country.

The joint work between the agencies allowed us to think about how connectivity can be an ally in the proposition and development of large infrastructure projects, with the Sustainable Development Goals of the United Nations 2030 Agenda as a common thread. It serves as a lever for the discussion of the topic with the regulated sector and contributes to the diagnosis to be used in building the connectivity and innovation agenda between ANTT and ANATEL, with a focus on improving the transport sector in Brazil.

As a result, the Infraconnect Award was conceived to value institutions that adopt good telecommunications, infrastructure and connectivity practices. It sought to recognize and promote innovative practices that use connectivity as an essential tool for digital transformation and sustainable socioeconomic development. In addition, it seeks to give visibility to initiatives that propel Brazil at the forefront of technological solutions, with direct impacts on the quality of life of the population and the modernization of public and private services.



The award was divided into three categories:

- a)** Connectivity and infrastructure for Crisis Management: projects and actions aimed at crisis management in which connectivity and infrastructure have enabled improvements and socioeconomic effects.
- b)** Connectivity and infrastructure on highways: projects and actions aimed at transport infrastructure in which connectivity and infrastructure enabled improvements and socioeconomic effects.
- c)** Connectivity and infrastructure for Multimodal Logistics: projects and actions aimed at multimodal logistics in which connectivity and infrastructure have enabled improvements and socioeconomic effects.

In today's world, it is impossible to think of any business model without connectivity. The partnership, therefore, promotes synergy between two important areas: transport infrastructure and connectivity, and can be replicated for other essential areas.

3.3. Federal University of Santa Catarina (UFSC)

In 2024, Anatel celebrated the first partnership with a specific focus on acculturation of the SDGs of the UN 2030 Agenda. Signed with the Federal University of Santa Catarina (UFSC), this agreement aims to design, develop and implement the Anatel-S Program, with the mission of promoting awareness in favor of sustainability in Telecommunications, aligning Anatel's actions with the SDGs.

The partnership will have the following specific objectives:

- a)** Design the Awareness and Acculturation Path: design an organizational awareness and acculturation path with a focus on the telecommunications sector.
- b)** Produce Digital Educational Content: define and develop educational content to be applied in the awareness and acculturation path with a focus on the telecommunications sector.

- c)** Instrumentalize learning about identification and classification of sustainability initiatives in the telecommunications sector: develop an educational tool to be used in the awareness and acculturation path, with the objective of identifying sustainability initiatives in the telecommunications sector and contextualizing them regarding adherence to the SDGs of the 2030 Agenda.
- d)** Implement the Awareness and Acculturation Action: introduce digital education content on Anatel's Moodle Platform and make it available to its employees and collaborators, as well as hold a set of 5 (five) face-to-face seminars at Anatel, including the opening and closing meetings of the project.
- e)** Develop Intellectual Production: based on the technical-scientific research, of a transdisciplinary nature planned for the project, generate bibliographic production items with an emphasis on sustainability in telecommunications.

The expectation is that, in 2025, Anatel's servers will be acculturated to the 2030 Agenda, with the possibility of replicating the model, since the partnership provides for the delivery of the following products:

- a)** Awareness and Acculturation Path in Sustainability in Telecommunications from 2 (two) digital courses and 5 (five) face-to-face seminars;
- b)** R&D products with delivery of bibliographic production and learning objects; and
- c)** Educational Instrument for Identification and Classification of SDG Initiatives in the Telecommunications Sector.

3.4. United Nations Educational, Scientific and Cultural Organization (UNESCO)

2024 marked the celebration of another partnership between Anatel, the Brazilian Cooperation Agency (ABC) of the Ministry of Foreign Affairs of Brazil (MRE) and the United Nations Educational, Scientific and Cultural Organization



(UNESCO). The technical cooperation agreement involves the topic of meaningful connectivity and artificial intelligence.

Regarding meaningful connectivity, the immediate objective of the agreement is to act on vulnerable groups that have difficulties in executing activities on the internet due to a lack of digital skills. It is expected that the initiatives to be adopted within the framework of technical cooperation will result in increasing the capacity and confidence of the elderly and young people to carry out online activities.

With regard to artificial intelligence, the goal is to promote its responsible and productive use by actors in the digital ecosystem. As expected, it is anticipated the dissemination of good AI practices in the digital ecosystem, the establishment of a governance model that ensures the ethical use of this technology, and the development of a regulatory body with high capacities to act in the scenario of interrelationship between AI and telecommunications.

The development of digital skills is a priority for governments, as it is essential for the most vulnerable people to enjoy the benefits that technology can provide. This includes access to services, information, education and the full exercise of citizenship.

The partnership will seek national and international benchmarking, providing a broad view of the themes.

4

Strategic recommendations

4.1. Behavioral sciences for regulatory action

Up to a while ago, studies on how people made decisions - whether as citizens, consumers, entrepreneurs or workers - assumed that these decisions would be properly informed and that they would be able to make choices according to their preferences and well-being. Thus, the person who had the necessary information would already be able to make the best decisions.

In this regard, classical economic theories assume that the person is fully rational, capable of thoroughly evaluating all the future consequences of all available alternatives. And, in this way, people would not be influenced by certain circumstances or by their emotions that present themselves at the time of making the decision.

The behavioral sciences are based on the fact that such premises do not always occur. This is because, even with information, people can present biases and heuristics. Therefore, the mere possession of information would rarely lead to the most appropriate decision for the citizen. (BEN-SHAHAR; SCHNEIDER, 2014, p. 6). In this way, there are studies on how human behavior can be influenced, in a multidisciplinary view, especially sociology, neuroscience, psychology, linguistics, among others.

From this observation, the perspective of the way in which questions and decision-making alternatives are presented is equally important in the citizen's decision-making. (SILONY; HELLERING, 2015, p. 214-218). Behavioral theory argues that people use "mental shortcuts," which can be conscious or not. This fact makes these decisions diverse in many cases, since each one decides in a way that maximizes its own well-being.

For this reason, according to behavioral theory, it is essential that state institutions think creatively about how they can create architectures of choice that, without restricting people's freedom, allow, as far as possible, them to make choices aligned with their preferences and preserving well-being.

The central idea is to seek a change in behavior based on innovative and effective solutions, preferably easy to implement and low cost.



The implementation of the SEI ODS Module is a practical example of this type of action. As stated in this White Paper, the capillarity of a system used by several public institutions was used to promote the acculturation of the 2030 Agenda and integrating the SDGs into the telecommunications sector.

This action is similar to the term nudge, the title of the book by Richard H. Thaler and Cass R. Sustein (2019). This instrument, in the authors' definition, is a "stimulus, a nudge, a small push", which seeks to change "people's behavior in a predictable way, without prohibiting any option or significantly changing their economic incentives. To be defined as a nudge, the intervention needs to be easy and cheap enough to avoid. Putting fruit at consumers' eye level is a nudge. Prohibiting junk food, it is not."

The nudge is an influence for people to adopt behaviors with positive impacts on society and citizens. The action cannot be an imposition, such as the prohibition of something, as Thaler and Sustein exemplified in the quoted excerpt.

Likewise, government institutions must act to make these choices more intuitive for citizens, since, as seen, people do not have the time or processing capacity to exhaustively evaluate all the information and consequences of their choices. The nudge seeks a change in behavior, whether of the regulator or the regulated, influencing choices in a subtle and positive way.

It is desirable, therefore, cooperation between the public and private sectors (in this case, regulator and regulated) that can develop nudges associated with an intuitive design of the available choices (SUNSTEIN, 2013, p. 209 *et seq.*), aimed at improving the regulatory quality and consumer well-being of regulated services.

Still on the matter, attention is drawn to the fact that the Organization for Economic Cooperation and Development (OECD) has repeatedly recommended the application of behavioral science tools to improve regulatory quality, with an efficient use of regulatory and non-regulatory measures, although it emphasizes that there is still a need for greater dissemination of the culture of using these insights and the provision of cognitive tools in the public and private sectors (OECD, 2017, p. 17-20).

Its applications include areas ranging from consumer protection, market structures, regulation, policy design, etc. (OECD, 2017, p. 20-23), with the purpose of improving institutions in fulfilling their missions, with appropriate interventions, based on evidence, but with the adoption of premises that are not included in the theory of rational choice of economics (OECD, 2017, p. 22 and 48; PAREKH *et alii*, 2024).

At this point, the work of James Drummond, Daniel Shephard and Daniel Trnkai (2021), in the OECD working paper, Behavioral insight and regulatory governance: Opportunities and challenges, is worth mentioning, understanding that in the task of designing a certain regulatory policy, alternatives should be considered, as follows:

Potential of behavior-informed tools

Awareness of these biases can help mitigate their effects – although awareness is no guarantee of such without some change in structure, routines or other intervention. In addition to the awareness of the challenges presented by behavioral biases, behavioral insights can be used to improve the effectiveness of regulatory oversight entities.

(...)

Designing regulatory policy

Given the effects of behavioral insights on regulatory policy and practice, it is advisable for regulatory oversight bodies to expand their capacity building role to include awareness of behavioral biases among regulators and encourage the use of behavioral analytics of regulatory policy proposals. Integrating regulatory policy analysis through the behavioral lens can support policymakers in improving traditional regulatory policy processes and tools, as well as offer alternative logics of intervention that are not usually considered from the perspective of traditional economic analysis that can lead to alternative regulatory or non-regulatory options. For any application, regulatory oversight bodies should encourage this type of behavior-based approach as part of broader efforts to integrate BI across the government. This can be implemented in a variety of ways. At the most basic, there can be training for regulators (and oversight staff) on the role of behavioral barriers and biases in their work. There may also be a mandate to identify behavioral biases and intervention ideas as part of RIA – including to

improve the RIA process to increase its use as an evidence-based policy-making tool and as a method to discover alternative options based on behavior-informed analyses. More behaviorally informed interventions could also be used. For example, instead of a training or process, regulators could be asked to make an assessment of the commitment – or intention to implement – to conduct a behavioral analysis or to consider their own biases. Such commitments, even if not fulfilled, can effectively change behavior (Gollwitzer and Sheeran, 2006[88]); (Thürmer, Wieber, and Gollwitzer, 2015[90])

In this context, the adoption of manuals, recommendations, guidelines, and other similar instruments is desirable as a way to align the actions of institutions with the SDGs of the UN 2030 Agenda.

And this White Paper is such an action. Therefore, within the scope of the telecommunications sector, Anatel has an advocacy role in sponsoring this endeavor, seeking the creation of voluntary adherence instruments for the application of behavioral sciences in the telecommunications sector.

As an example, it is worth mentioning the creation of the Research Group in Behavioral Sciences (Nudge.lab), which will work with the Agency's Center for Advanced Studies in Digital Communications and Technological Innovations (Cead) as a hub for producing information, research, studies and training on the subject.

As already mentioned, the advancement of digital technologies rapidly transforms society, demanding an in-depth understanding of the behavioral factors that influence the adoption and use of these technologies. Nudge.lab aims to integrate knowledge in this area to formulate policies and practices that promote responsible and sustainable use of technological innovations. This project aims to ensure that digital communication and technological innovation policies are based on a robust understanding of human behavior.



Thus, it will have as expected products, the preparation of detailed reports on the impact of technological innovations on user behavior, the creation of policy guidelines to promote safe and responsible digital practices, and the development of tools based on behavioral insights that improve the interaction between humans and computers, facilitating a more intuitive and secure use of digital technologies.



It contributes, in this regard, to SDG 9, by integrating behavioral sciences with digital technology, promoting innovation through applied research. In addition, it collaborates with universities and research centers for joint publications and knowledge exchange.

4.2. Institutional experimentalism

In an ever-changing world, where the complexity of socio-economic and environmental challenges grows rapidly, institutions face a challenging dilemma: how to innovate and adapt in times of rapid change and uncertainty? Institutional experimentalism emerges as a provocative response to this question, proposing a break with rigid and obsolete models and instigating companies, governments, and non-governmental organizations to adopt a flexible and experimental mentality.

In this sense, the creation of controlled testing environments becomes a vital necessity for the survival and effectiveness of institutions, in addition to being an innovation strategy, perfectly aligning with the SDGs of the 2030 Agenda.

With digital transformation redefining our interactions and organizations, the reliance on telecommunications infrastructure intensifies. Considering that, it is

necessary to question: to what extent are we prepared to take risks and experiment in search of solutions that meet the needs of a rapidly evolving society?

Institutional experimentalism is configured as a set of ideas and practices that emphasizes the need for institutions — companies, governments, and non-governmental organizations — to adopt a flexible and receptive posture to experimentation. Rather than restricting themselves to rigid models, these institutions should cultivate controlled testing environments where innovations and solutions can be rigorously tested and improved before their large-scale implementation. This approach promotes innovation and allows for faster adaptation to the demands of an ever-evolving society, ensuring effective responses to contemporary challenges.

It is therefore essential in the search for solutions to the current challenges faced by institutions and countries, especially in regulated sectors, such as telecommunications, in which rapid digital transformation requires more dynamic and adaptive approaches. The aim is to develop solutions that respond to genuine problems that exist in countries.

“The objective is to develop solutions that respond to the genuine problems that exist in countries, with new strategies to achieve the SDGs of the UN 2030 Agenda.”

The demand for new strategies to achieve global goals is becoming more evident when considering the SDGs of the UN 2030 Agenda. As highlighted in this White Paper, the telecommunications sector plays a central role in the execution of these goals, as it connects communities, promotes digital inclusion, and facilitates innovation in various aspects.



Institutional experimentalism is an approach that promotes the continuous testing of new solutions in controlled environments. Its objective is to correct a common flaw in traditional institutions, which tend to maintain the status quo and do not respond with the necessary agility to technological and social changes.

In Brazil, one of its main precursors is Professor Roberto Mangabeira Unger. This approach requires governments, companies, and non-governmental organizations to abandon rigid models and start evolving based on experiments that bring empirical results.

It is essential to address complex challenges, such as those related to the SDGs, which range from poverty eradication to infrastructure innovation. The telecommunications sector, being central to innovation and digital inclusion, is particularly suited to embrace institutional experimentalism, testing new technologies and regulatory solutions on small scales and adapting quickly to emerging needs.

One of the most practical examples of institutional experimentalism is the regulatory sandbox. These are controlled environments in which companies can test technological innovations with the temporary relaxation of certain regulatory rules. These environments allow regulators and innovators to collaborate to understand the impacts of new technologies before their large-scale adoption.

“The regulatory sandbox is a practical example of experimentalism, with the potential to enable solutions for the fulfillment of the UN 2030 Agenda SDGs” – Alexandre Freire

In this regard, sandboxes have the potential to enable and encourage innovations in the regulated market, as they work as a quick and efficient signal to the



market about which rules will be suspended, reducing uncertainties and regulatory obstacles. They create incentives for the private sector to take risks and invest in new products and services that would otherwise not fit into their business plans in the absence of a sandbox.

In Brazil, the National Telecommunications Agency (Anatel) has led initiatives in this area, having approved 3 (three) pilot projects, allowing innovative solutions to be tested.

The first, related to the expansion of mobile service coverage, involves the implementation of radio frequency repeaters and internal signal boosters in municipalities where there is still no coverage, meeting local demands for Personal Mobile Service (SMP) coverage. The second, related to the adoption of direct-to-device (D2D) technology, allows direct communication between satellites and users' mobile devices.

The trials, conducted under the Agency's regulatory oversight, will allow companies to experiment with cutting-edge technologies with considerable potential to extend the reach of digital connectivity in remote areas. In this way, they will be able to contribute to boosting economic development and empowering individuals through the expansion of significant connectivity, making telecommunications services more accessible to a larger portion of the national territory.

The third, on the other hand, is related to the certification and homologation of body scanner equipment for security application in closed environments. This reduces regulatory risk and facilitates the adoption of technologies that can improve the safety and efficiency of sensitive operations, such as those carried out at airports and other high-risk locations.

These initiatives exemplify how Anatel has sought to modernize its regulatory policies, creating a more favorable environment for the implementation of innovations. Such actions can subsidize future improvements in the regulatory

framework for telecommunications in Brazil, aligning it with the needs of the population and contributing directly to the Goals of the 2030 Agenda, especially Goal 9 – Industry, innovation and infrastructure.



In addition, it promotes greater collaboration between regulators, companies and civil society, ensuring that policies are inclusive and reflect the needs of all stakeholders involved, enabling them to be replicated in different contexts and strengthening institutions through mutual cooperation, contributing to the achievement of Goal 17 - Partnerships and means of implementation, which strengthens the means of implementation and revitalizes the global partnership for sustainable development.

This collaboration promotes an increase in confidence in the public policies to be implemented and in the technological innovations that are being evaluated, due to the fact that the process is open and participatory, ensuring the implementation of innovations in an ethical and responsible manner. As an example, the transparency and monitoring measures provided for in the projects of an experimental regulatory environment for the implementation of radio frequency repeaters and internal signal boosters and the adoption of direct-to-device (D2D) technology are mentioned. Such projects seek to provide a new way of providing the signal of the mobile telephony service, based on technological innovation consisting of application on an experimental basis.

However, the solution to specific problems of deficiency of signal carries risks of degradation in other areas due to excessive noise generation, which can make it difficult for providers to properly control the problem. Thus, measures related to follow-up and monitoring should be considered, as well as hypotheses of termination of the pilot project, if there is a high risk of degradation of the personal

mobile service provided, since the absence of follow-up or supervision can result in significant losses for service users.

The inclusion of these diverse actors in the experimental process is essential to ensure that all perspectives are considered, leading to more balanced and effective solutions.

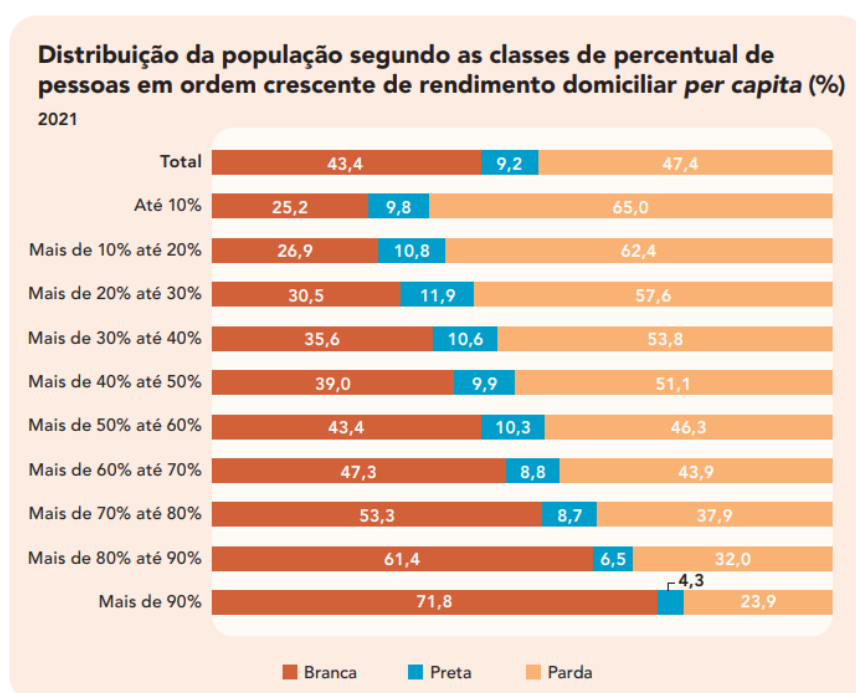


5

SDG 18: A close look at the sustainable future

Studies by the Brazilian Institute of Geography and Statistics (IBGE) show a clear reality in Brazilian society: social inequalities are deeply related to racial inequalities, as they reveal greater socioeconomic vulnerability among black, pardo, and indigenous populations of color or race.

To exemplify these inequalities, we present the data collected regarding the differences in per capita household income by race, in the year 2021.



Fonte: IBGE, Pesquisa Nacional por Amostra de Domicílios Contínua 2021.
Nota: Valores deflacionados para reais médios de 2021.



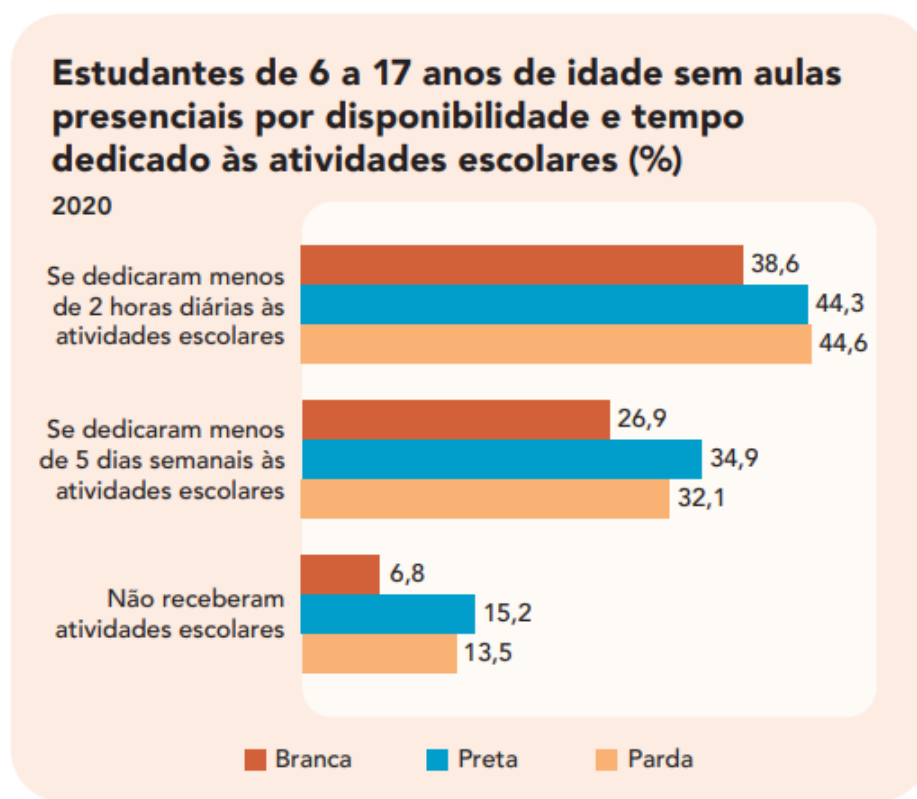
The graph reveals that the black and pardo population is concentrated on the lower income brackets. On the other hand, the white population is positioned in the range with the highest income.

From the IBGE studies and surveys, inequalities by color or race in education also deserve to be highlighted, considering the context of the pandemic and with a view to higher education. It is transcribed:

Despite the considerable expansion and democratization of Brazilian higher education since the 2000s (SÍNTESE..., 2019), inequalities in access related to the socioeconomic characteristics of students remain high, implying inequalities in the labor market and restricting social mobility. The social class, gender and color or race of the individual remain determining factors for a better or worse insertion in the labor market, limiting the favorable effects of expanding access to higher education to generate greater equality among people (RIBEIRO, 2011). The adversities faced during the pandemic seem to have further aggravated this situation, as it generated very unequal conditions for distance learning, causing the most vulnerable students to give up applying for a place in higher education.

In fact, the suspension of in-person classes represented an unprecedented challenge, imposed by the pandemic on the learning process of all students. Data from the National Household Sample Survey - PNAD COVID-196, collected between May and November 2020 (with complementary questions on education, applied in the last month of collection), showed that the unequal conditions of provision of school activities and access to these activities, both due to the time dedicated to activities and the presence of adequate technological infrastructure for study at home, mainly harmed students from the public network, students with lower income, most of whom were black or pardo, residents of rural areas and the North and Northeast regions of the country (SÍNTESE..., 2021). (Emphasis added)

The following graph demonstrates racial inequality in education during the COVID-19 pandemic.



Fonte: IBGE, Pesquisa Nacional por Amostra de Domicílios COVID-19 nov. 2020.
Notas: As atividades escolares disponibilizadas para realização em casa incluem aulas online, deveres, estudo dirigido etc.

This brief contextualization highlights the need for Brazilian society, in all its dimensions, to commit itself and accomplish concrete actions to overcome these historical inequalities that still persist.

Thus, within the scope of the 2030 Agenda, the Brazilian government, in De-



cember 2023, established the Thematic Chamber for the Eighteenth Sustainable Development Goal on Ethnic-Racial Equality. With this initiative, Brazil voluntarily added to the 17 existing goals, SDG 18, a Sustainable Development Goal, which seeks to eliminate racism and ethnic-racial discrimination against

indigenous peoples, Afro-descendants and population groups affected by multiple forms of discrimination.

As demonstrated by IBGE studies and surveys, racism is a structuring element of Brazilian society, and, consequently, the black and indigenous populations have fewer opportunities for social ascension due to discrimination and exclusion.

Thus, it verified that the 2030 Agenda can be adjusted to address racism and its consequences. SDG18 established the following preliminary targets:

1. Eliminate racism in the workplace;
2. Eliminate all forms of violence;
3. Ensure access to justice;
4. Ensure representativeness;
5. Promote reparation, guaranteeing the right to memory, truth and justice;
 - 5a. Protect cultural, artistic and religious heritage;
 - 5b. Preserve the forms of living and coexistence;
6. Ensure adequate housing and housing;
7. Ensure access to quality health care;
8. Ensure quality education, including:
 - 8a. Respect for linguistic diversity;
 - 8b. Anti-racist education and the culture and history of indigenous and Afro-descendant peoples;
9. Ensure autonomy and self-determination;
10. Eliminate xenophobia.

In this context, Anatel, within the scope of its activities, is aware that, in contemporary society, digital inclusion is one of the main pillars for social inclusion.



Therefore, it has been promoting actions that seek to advance the expansion of significant connectivity to unserved urban, rural or remote areas. It thus contributes to the elimination of all forms of discrimination, as well as to promoting social inclusion in the country.

Among the projects supported by the Agency, and already mentioned here, the following stand out: i) the Monitoring Group for the Funding of School Connectivity Projects (Gape); ii) the application of the obligation to do (ODF) in lieu of a pecuniary fine; and iii) community networks, which are collaborative networks, developed in a bottom-up model by groups or individuals who design, develop and manage the new network infrastructure for the common good.

Such projects aim to improve the country's telecommunications infrastructure, installing internet in schools without this service. In addition, seek to implement or expand the digital ecosystem in several locations that are not the municipalities seats. With this, it is expected to improve the quality of telecommunications services and, consequently, enable the offer of various services that depend on this basic infrastructure.

Therefore, the execution of these projects not only expands the telecommunications infrastructure in deprived places and areas, but also fosters inclusion and digital literacy, essential elements for social inclusion and the exercise of citizenship.

It is noteworthy that connectivity plays an essential role in promoting digital inclusion and social development in rural or remote communities, especially in quilombola and indigenous communities, offering a series of benefits that are fundamental for the exercise of rights and the improvement of quality of life.

The positive impact on access to education is highlighted. The possibility of using distance learning platforms, with access to content and video classes, enables the democratization of education, allowing members of these communities

to qualify without the need to migrate to urban areas. This action guarantees the right to education and also promotes the preservation of local cultures by reducing the exodus to urban centers, a situation that often compromises the continuity of local traditions and customs.

In the health area, telemedicine emerges as a tool for inclusion in access to health services, by allowing consultations, diagnoses and medical follow-ups at a distance, benefiting communities located in remote areas. This prevents residents of these locations from having to travel long distances to access specialized medical services, in addition to enabling continuous



monitoring of chronic diseases and remote training of health agents. This is a significant advance towards the realization of the principle of universality of the Unified Health System (SUS) in Brazil, as it facilitates the provision of health services in regions of difficult access.

In the economic sphere, connectivity enables the welcoming of these communities into e-commerce, expanding their participation in broader and more diversified markets. The sale of artisanal and agricultural products over the internet contributes to local economic development, providing increased income and greater financial autonomy. In addition, access to information on market prices, financing programs, and support for entrepreneurship strengthens the economic capacities of communities, facilitating the exercise of productive activities in accordance with the principle of human dignity, provided for in article 1, III, of the Constitution.

Still concerning fundamental rights, connectivity expands access to information, especially in relation to the knowledge of one's own rights and the monitoring of public policies that directly impact the lives of these communities. By

enabling the most effective exercise of the right of access to information, enshrined in article 5 of the Constitution of Brazil, quilombola and indigenous communities can participate in public consultations, remote hearings and legislative debates, strengthening their autonomy and ensuring their active participation in democratic processes. In this sense, connectivity strengthens the principle of citizenship, provided for in article 1, II, of the Constitution, by ensuring greater transparency in relations with the government.

Another point that deserves to be highlighted is the positive impact on the cultural preservation of these communities. Connectivity enables the registration and dissemination of indigenous and quilombola traditions, knowledge and languages, ensuring the preservation and transmission of knowledge to future generations. The creation of digital collections, such as virtual museums, is an important instrument for the realization of the right to culture, as provided for in article 215 of the Federal Constitution, and contributes to the appreciation and dissemination of the cultural heritage of these communities.



In addition, it strengthens the communication and organizing capacity of these communities, allowing them to connect with other communities and social movements in Brazil and abroad, in defense of their rights and territories. This possibility of articulation, which involves both the exchange of experiences and the visibility of their demands, contributes to the construction of more effective support networks, expanding their advocacy capacity on issues of collective interest. Ultimately, this reinforces the right to freedom of association, provided for in Article 5, XVII, of the Constitution, in addition to fostering active participation in the promotion of more inclusive public policies.

Finally, connectivity also contributes to the improvement of the management of public services in remote areas. The possibility of remote monitoring and control of services such as basic sanitation and electricity, through intelligent systems, represents an advance in the fulfillment of the state's duty to guarantee essential public services to the population, according to article 23, IX, of the Constitution. Furthermore, it facilitates environmental monitoring in preservation areas, collaborating for the protection of natural resources and territories occupied by these communities, in compliance with article 225 of the Constitution, which deals with the right to an ecologically balanced environment.



6

Conclusion: future challenges and opportunities

Throughout this White Paper, we explore how the telecommunications sector can play a transformative role in the implementation of the Sustainable Development Goals (SDGs) of the UN 2030 Agenda. From the analysis of international experiences to the deepening of national practices, it has become evident that connectivity is an essential tool and a catalyst for social, economic and environmental advances.

Universal and meaningful connectivity, so highlighted in documents such as the Connect 2030 Agenda and the SDG Digital Acceleration Agenda of the International Telecommunication Union (ITU) and in Brazil's Voluntary National Report to the UN, was recognized as the basis on which other innovations are built. Emerging technologies offer unprecedented opportunities to accelerate digital transformation and promote greater social inclusion. However, achieving this vision requires overcoming structural barriers, fostering strategic partnerships, and adopting innovative regulatory approaches.

While technological advances have the potential to positively impact 70% of SDG targets, persistent challenges such as infrastructure gaps, digital inequalities, and the absence of consistent indicators require a coordinated response. In this context, Brazil, with its particularities and potentialities, is positioned to lead with



creative and integrative solutions. The implementation of SDG 18, aimed at addressing racism and its consequences, demonstrates that Brazil has been adopting concrete measures to eliminate racism in all its dimensions, noting that digital inclusion is one of the fundamental pillars for achieving the goals established by this SDG that is so fundamental in our country.

The following are the main challenges and future opportunities that lie ahead on the path to the full integration of connectivity into the 2030 Agenda.

Main challenges:

- a) Developing consistent local indicators:** Effective monitoring of telecom's impact on the SDGs requires the creation of clear and specific metrics. The absence of well-defined indicators limits the ability to measure progress and adjust strategies based on evidence;
- b) Universalization of connectivity:** Despite significant advances, millions of Brazilians, especially in rural areas and vulnerable regions, remain disconnected. Ensuring meaningful access to the internet is essential to reduce social inequalities and promote inclusion;
- c) Strengthening partnerships:** Collaboration between governments, businesses, academia, and civil society organizations is crucial to overcome financial and technological barriers. Only with joint efforts will it be possible to expand the impact of the actions implemented;
- d) Digital inclusion and empowerment:** The digital skills gap, especially in marginalized and vulnerable populations, remains an obstacle to the full use of technologies. Public policies should prioritize the formation and inclusion of these groups;
- e) Forms of financing:** according to the SDG Digital Acceleration Agenda, it is necessary to identify and leverage forms of financing to cover the annual financing gap of the SDGs, estimated at between 3.7 and 4.2 trillion dollars. The obligations to do and the creation of certain funds or the use of existing funds (such as FUST) can be examples to be followed in this regard.

Despite the challenges, there are great opportunities for meeting the SDGs of the UN 2030 Agenda:

- a) Institutional experimentalism:** Adopting innovative and flexible regulatory approaches allows institutions to adapt quickly to technological changes, fostering an environment conducive to innovation and sustainable development;
- b) Behavioral sciences:** The application of behavioral insights can increase the engagement of the regulated sector with the SDGs, creating an organizational culture more aligned with sustainability;
- c) Technological advances:** Solutions such as big data, IoT, and artificial intelligence offer powerful tools to address global challenges, from mitigating climate change to expanding access to education and healthcare;
- d) Global leadership:** in this regard, Brazil has a unique opportunity to position itself as an international reference, demonstrating how connectivity and innovation can be levers for sustainable development.

From this strategic vision and collaborative approach, it is possible to transform the challenges listed into opportunities, expanding the role of the telecommunications sector as a protagonist in promoting a fairer and more sustainable future.

This is Anatel's commitment and the invitation we extend to all institutions, countries and other stakeholders.

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