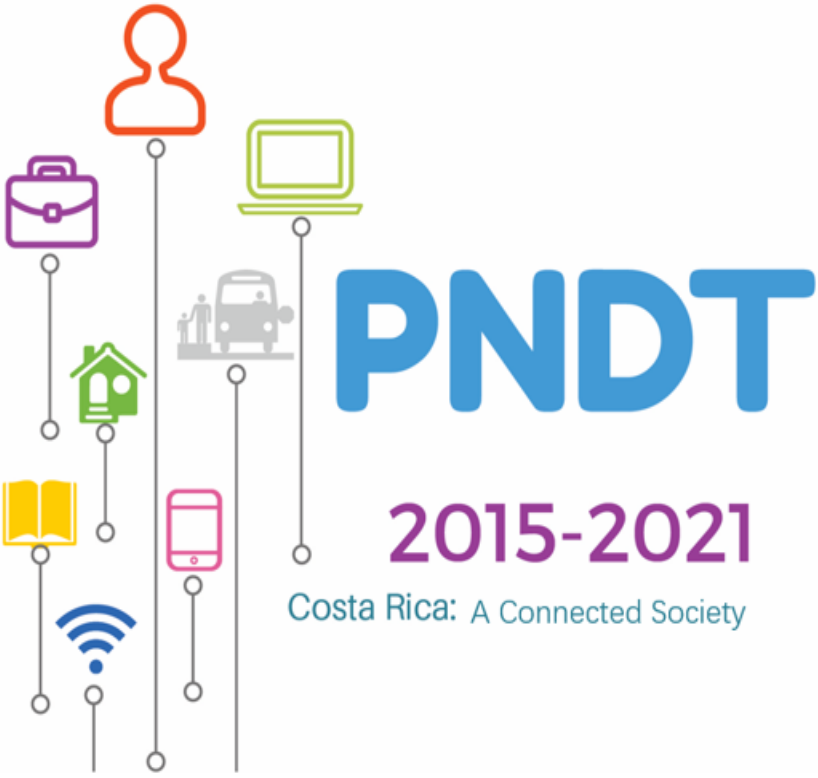
COSTA RICA
GOBIERNO DE LA REPÚBLICA

micitt
Viceministerio de Telecomunicaciones

# National Telecommunications Development Plan




October, 2015

**NATIONAL TELECOMMUNICATIONS DEVELOPMENT PLAN**

October 2015

## INDEX OF FIGURES



## INDEX OF TABLES



## INDEX OF GRAPHS

# Message of the President of the Republic


Throughout its history, our country has obtained and consolidated important gains thanks to its ability and talent in generating comparative advantage, and to the dedicated, enterprising, and talented spirit in each and every Costa Rican.

Communication and Information Technologies (ICT) are the pivotal point of the productive revolution of our times. The evolution of telecommunications becomes of vital importance in finding the levels of human development to which we aspire as a society, which is based on the exchange and processing of data and on the consequent generation of knowledge and wealth.

Costa Rica takes advantage of the challenges and opportunities of the digital age. The promotion of ICTs is a crucial point for the country we want: inclusive and supportive, where technology contributes to improve our global profile and to ensure benefits for vulnerable populations.

Our efforts in favour of competitiveness based on innovation and human talent, the modernization of the institutions of the sector, and the reduction in the digital divide help attract increased high value investment, underpin the efficiency in providing more and better services, and increase the levels of government transparency through open government policies.

Our commitment to present and future generations is reflected in the National Telecommunications Development Plan 2015-2021 "Costa Rica: A Connected Society," which seeks to boost growth and access to ICTs and to make way for the creation of an enabling environment for equitable social and economic development, characteristic of

democratic societies. Therefore, a strategic path is the reduction of the digital divide, the efficient use of the radio spectrum, and the universal and affordable access to broadband.

I welcome the efforts of institutions, companies, and individuals that, through this Plan, provide the light for our best performance in the knowledge society.

**LUIS GUILLERMO SOLÍS RIVERA**

## Message from the Minister of Science, Technology, and Telecommunications


The Ministry of Science, Technology, and Telecommunications (MICITT) through its specialized technical arm, the Vice-Ministry of Telecommunications, is pleased to present the second National Telecommunications Development Plan (PNDT) 2015-2021 "Costa Rica: A Connected Society." This Plan promotes broadband, social inclusion, and empowerment of the people, as well as an open, near, and transparent electronic government. These elements are crucial in modern society as binding factors and enhancers of individual and collective capabilities, productive transformation of different sectors on which the Costa Rican economy rests within an international context and, even more, as cornerstones in the constant search for a fairer, more equitable, and more prosperous society.

Costa Rica has managed to transform radically thanks to the intensive and extensive social appropriation of telecommunications following the opening of the domestic market, efforts made by different government and industry academic actors to achieve increased levels of digitalization and market consolidation of information technologies and communication as one of the most important elements in the country's commercial balance. However, the Costa Rican goal should be to achieve global leadership in the use of telecommunications at various levels of society to redefine development. Clearly, along the approach outlined in the Plan, Telecommunications and ICTs are emerging as the new backbone of the economy of nations in their quest to generate more wealth and improve its distribution: from education to agriculture, society and economy of knowledge are founded on the pillars placed by digital agendas.

In the above sense, we have tried to find integrity in the approach of the PNDT. International measurements of several decades show a direct link between increased availability, use, and ownership of telecommunications and ICTs, together with

substantial increases in the various components of the human development index. To free from the shackles of time and space through the use of Internet-connected devices allows those who need it most (the most vulnerable populations) to overcome adverse conditions to improve their future and that of their own. This requires constant innovation to meet the challenges presented by the incorporation of Information and Communication Technologies in the daily work of individuals, companies, and institutions.

I want to thank, on behalf of the Ministry of Science, Technology, and Telecommunications all institutions, organizations, and companies, which contributed in different ways to this Plan, for their support, and particularly for their willingness throughout the days of work. This is what has allowed us to concretely articulate the main aspirations of the Costa Rican government for the coming years. The duty of MICITT is to ensure that the country makes Telecommunications and Information and Communications Technology one of the pillars of economic growth and social welfare for its inhabitants.

Finally, I want to acknowledge the entire staff of the Vice Ministry of Telecommunications, who with methodological rigor and technical capability has allowed this plan to become a reality and have charted the course for the telecommunications sector in the coming years.

**Marcelo Jenkins Coronas**

**MINISTER OF SCIENCE, TECHNOLOGY, AND TELECOMMUNICATIONS**

# Message from the Vice-Minister of Telecommunications

**Message from the Vice-Minister of Telecommunications**

The responsible, safe, and productive use of telecommunications and technological advances has proven to be an effective tool for growth and development of countries with an inclusive society. These tools converge in sectors like health, education, culture, public safety, economy, transportation, industry, environment, government, among others, maintaining as a focus the generation of more opportunities and competitive advantages globally.

Costa Rica seeks to maximize the benefits offered by Telecommunications and ICTs, to impact the lives of its inhabitants, reaching higher levels of social welfare, economic prosperity and empowerment of technological tools, creating more equal opportunities as well as the enjoyment of benefits that comes with being part of a connected and digitally literate society.

From the Vice Ministry of Telecommunications, specialized technical arm of MICITT, the National Telecommunications Development Plan was planned and prepared. It is an instrument that articulates and prioritizes projects with country brand that will be executed for the next years for the development of the telecommunications sector. This will be achieved only through an active, strong, and responsible involvement of each of the stakeholders that make up or are involved in this sector.

For the Vice-Ministry of Telecommunications, it is gratifying to present the 2015-2021 National Telecommunications Development Plan *"Costa Rica: A Connected Society,"* which as part of its essence and objectives, complies with the regime of universal access, universal service and solidarity, and the reduction of the digital divide, an element that without any doubt, positively impacts on the reduction of poverty. This will be achieved by promoting access to telecommunications services that are of quality, timely, efficient, competitive, and affordable, specifically for the people who do not have

sufficient resources to access them and who live in financially unprofitable areas, and for people who due to their vulnerability, live in social inequality.

As part of this strategy, we also seek to create more opportunities for economic wellbeing from the development of products, services, digital content, efficient use of the radio spectrum, and the promotion of the use of digital media.

Also, we move towards a near and open relationship between citizens and the state, providing access to innovative public services, actions to promote transparency that allow a glimpse of the interaction and active participation of a Society of Information and Knowledge. This is a firm step towards strengthening the electronic government as an engine of development.

Our aspiration for the Telecommunications Sector is only achievable through hard work in the social, public, private, and academic sectors, hand in hand with citizens. Likewise, we require that operators, suppliers, regulators, local governments, organizations promoting telecommunications, the Legislative Power and other stakeholders in the sector will help provide more and better services, developing programs for the empowerment of people, updating the regulatory framework where required, facilitating the deployment of infrastructure, and meeting the obligations under the law in areas such as access and universal service, optimal use of infrastructure, rights of users, service quality, and environmental sustainability, among others.

This is our role, to be a sector that generates opportunities for social development, to encourage entrepreneurship, and to build the foundations of an inclusive country, connected and in solidarity, which allows us to all together take the step towards development.

**Emilio Arias Rodríguez**

**VICE-MINISTER OF TELECOMMUNICATIONS**

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ANE | Non-Exclusive Assignment |
| ARESEP | Public Services Regulatory Authority |
| ASD | Digital Solidarity Agenda |
| BB | Broadband |
| BCCR | Central Bank of Costa Rica |
| CAF | Development Bank for Latin America |
| CAMTIC | Chamber of Information and Communication Technologies |
| CECI | Smart Community Centres |
| CEN-CINAI | Education and Nutrition Centres - Children's Comprehensive Care Centres |
| CICR | Chamber of Industries of Costa Rica |
| CITEL | Inter-American Telecommunications Commission |
| COMEX | Ministry of Foreign Trade |
| CONAPDIS | National Council of People with Disabilities |
| CPC | Commission to Promote Competition |
| CPSP | Centre for Public Service Delivery |
| CTP | Public Transportation Council |
| DiDix | Digital Divide Index |
| ICE | Costa Rican Electricity Institute |
| ECLAC | United Nations Economic Commission for Latin America and the Caribbean |
| EGDI | Electronic Government Development Index |
| ENAHO | National Household Survey |
| FONATEL | National Telecommunications Fund |
| G3ict | Global Initiative for Inclusive Information and Communication Technologies |
| GDP | Gross Domestic Product |
| HD | High definition |
| ICT | Information and Communications Technology |
| IDB | Inter-American Development Bank |
| IDB | Broadband Development Index |
| IDT | ICT Development Index |
| IFAM | Institute of Municipal Promotion and Advisory |
| IMT | International Mobile Telecommunications |
| INA | National Learning Institute |
| INCOFER | Costa Rican Railroad Institute |
| INEC | National Institute of Statistics and Census |
| INFOCOM | Chamber of Information and Technology |
| IoT | Internet of Things |
| ISDB-Tb | Integrated Services Digital Broadcasting-Terrestrial Brazil Digital TV Japanese standard, Brazilian version |

| | |
|---|---|
| ITCR | Costa Rica Institute of Technology |
| ITU | International Telecommunication Union |
| IXP | Internet Exchange Point |
| LAC | Latin America and the Caribbean |
| LANAMME | National Laboratory of Materials and Structural Models |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diodes |
| LFMEPST | Law for the Strengthening and Modernization of Public Entities of the Telecommunications Sector |
| LGAP | General Law on Public Administration |
| LGT | General Telecommunications Law |
| Mbps | Megabits per second |
| MEIC | Ministry of Economy, Industry, and Commerce |
| MEP | Ministry of Public Education |
| MHz | Megahertz |
| MICITT | Ministry of Science, Technology, and Telecommunications |
| MIDEPLAN | Ministry of National Planning and Economic Policy |
| MINAET | Ministry of Environment, Energy, and Telecommunications |
| MOPT | Ministry of Public Works and Transportation |
| MS | Ministry of Health |
| MTSS | Ministry of Labour and Social Security |
| NRI | Networked Readiness Index |
| NFAP | National Frequency Allocation Plan |
| OECD | Organisation for Economic Co-operation and Development |
| PND | National Development Plan |
| PNDT | National Telecommunications Development Plan |
| PROCOMER | Foreign Trade Promoter |
| RATIC | District Ranking of ICT Access |
| SD | Standard Definition |
| SIAC | Identification System, Agendas, and Appointments |
| SIEC | Costa Rican Business Information System |
| SIES | Integrated Health Record System |
| SIFF | Family Record System |
| SINART | National Radio and Television System |
| SMEs | Small and Medium Enterprise |
| SUPRES | Single Electronic Payment System |
| SUTEL | Telecommunications Superintendence |
| TDT | Terrestrial Digital Television |
| TVD | Digital TV |
| UCCAEP | Costa Rican Union of Chambers and Associates of the Private Business Sector |
| UHF | Ultra-High Frequency |
| UN | United Nations Organization |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |

| | |
|---|---|
| USA | United States of America |
| VHF | Very High Frequency |
| VoIP | Voice over Internet Protocol, or Voice over IP |
| W3C | World Wide Web Consortium |
| WEF | World Economic Forum |
| WTDC | World Telecommunication Development Conference |

# 1. INTRODUCTION

After the paradigm shift occurred with the opening of the telecommunications market in 2007, this sector was invigorated[1], allowing the participation of private operators and broadening the choice for telecommunications services consumers in the country.

This scheme is regulated by Law No. 8642, General Telecommunications Law, and Law No. 8660, Law on Strengthening and Modernization of Public Sector Entities of the Telecommunications Sector. The latter formally creates the sector and defines three different roles in the same state: Rector[2] Regulator[3], and Operator[4].

In this context, the second 2015-2021 National Telecommunications Development Plan, which presents the main actions that the state will promote for the coming years to further develop Telecommunications and Information and Communications Technology in Costa Rica is being developed, through a Digital Agenda and the Digital Solidarity Agenda according to the GTL.

Thus, Article 33 of the General Telecommunications Law stipulates that the National Development Plan should contain a Digital Telecommunications Agenda[5] *"as a strategic approach for generating opportunities, increasing national competitiveness, and enjoyment of the benefits of the information and knowledge society, which in turn contains a digital solidarity agenda that guarantees these benefits to vulnerable populations and reduces the digital divide."*

The Digital Solidarity Agenda (DSA) is an integral part of the Digital Agenda, with the particularity that the first is aimed at ensuring the benefits of information society to populations in vulnerable situations, increasing inclusion, and promoting access to information and knowledge society.

In compliance with the principle of universality of telecommunications services (in the dimensions of access and use), national priorities set forth in the PNDT should involve

---

[1] For more details, consult the Statistics Sector Report 2014, prepared by the Telecommunications Superintendence.

[2]Currently, it is comprised by the Minister of Science, Technology, and Telecommunications, which has officials specialized in the terms set out in Article 39 of the LFMEPST.

[3] This role was legally assigned to the Telecommunications Superintendence,

[4] Understood as ICE and its companies.

[5] In Article 6, paragraph 3) of the GTL, Digital Agenda is defined as "a *set of actions in the short, medium, and long term aimed at accelerating the country's human development through access, use, and exploitation of Communication and Information Technologies (ICT)."* Subparagraph 4) of the same numeral conceptualizes the Digital Solidarity Agenda *as "the set of actions in the short, medium, and long term that tend to guarantee human development of economically vulnerable populations by providing access to ICTs."*

projects and the overall goals and programs that enable vulnerable populations to access and reap the benefits of telecommunications/ICT, without any discrimination and in optimum conditions of quality and affordability (Articles 3 and 6 of the GTL).

Running a Digital Agenda, as provided by law and the resolutions adopted at international level, constitutes the framework from which the plan to set goals and achieve projects for the coming years arises. In the field of Telecommunications/ICT, the State must turn the mandates of industry standards into a reality in terms of efficient use of the spectrum, reducing the digital divide, promoting the use and appropriation of ICT, technological modernization, and quality of services, among others.

However, even more important is that the state action is directed to the creation of an environment that enables equitable social and economic development that recognizes the changing conditions of reality and a way for all social stakeholders to find in digital technologies response to their legitimate aspirations for growth, achievement, and well-being, both individually and collectively.

The definition of a time horizon of the Plan to 2021, with a first stage to run in four years, seeks, on one hand, to give space so that after this phase continuity of the program goals or the possibility of raising new ones can be valued, taking into account changes in the environment.

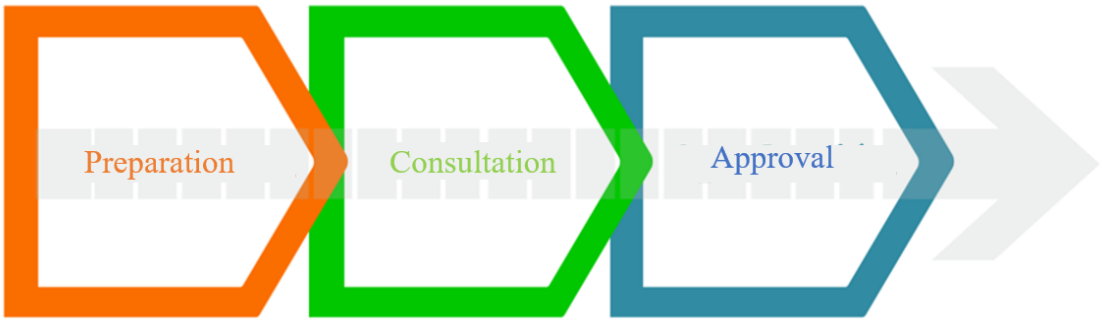
On the other hand, 2021 is seen as the horizon for meeting the target set by the country to achieve carbon neutrality, which will only be possible with the use of digital technologies and telecommunications; also, it represents a symbolic date to celebrate the bicentennial of our independence. That is why it is the right time to launch a planning effort for the short and medium term, which will result in an improvement f the country's situation to the benefit of society as a whole.

At the end of 2021, all that has been proposed and actions taken should result in a country that shows a new phase in its development, one where people, companies, organizations, and the state have made a quantum leap in performance and wellbeing as result of the more widespread use of telecommunications.

# 2. METHODOLOGY FOR THE CONSTRUCTION OF THE PNDT

The process followed for formulating the Plan has passed through various stages. The 2015-2021 PNDT is a prioritization response at the country level to the needs identified by the Sector and to the global trends on the subject and is linked to the 2015-2018 "Alberto Cañas Escalante" National Development Plan.

**Figure 1. Stages of the construction of PNDT**




**Source:** Produced internally, 2015.

PREPARATION CONSULTATION APPROVAL

### a. Preparation[6]:

- **Diagnosis of the Telecommunications Sector:** Its baseline is the last PNDT 2009-2014 Monitoring Report. In addition, case studies aligned with major global trends were developed in the fields of: health, education, broadband, social development, e-government, and trends.

- **Inputs of key stakeholders:** A previous consultation was done with institutions linked to the current PNDT, and work sessions and interviews with various stakeholders were conducted.

- **Joint efforts:** Workshops in groups formed by public entities, operators, suppliers, and organized Telecommunications industry representatives were held. During the sessions, the necessary inputs for the formulation of goals for each of the pillars (Digital Inclusion, Electronic and Transparent Government, and Digital Economy) were collected.

[6] The information for this process is collected in the files of the process to prepare the 2015-2021 PNDT, available for consultation.

- **County consultation:** During the month of October 2014, a consultation process was held with the County Interagency Coordination Councils, with the support of the Office of the First Lady of the Republic, the National Union of Local Governments, and the National Association of Mayors, in order to obtain updated information required for a map on ICTs at the county and district level.

- **General consultation on proposals:** The space was opened for people to submit proposals to look at the PNDT through a public online consultation called "Information Technology Projects" held from 11 September 2014 until 30 September of the same year.

- **Sectorial Consultation:** Priority goals with key players in the industry, such as the Internet Advisory Board, chambers, and other public and private entities were disclosed.

b. Non-binding public consultation:

- The new PNDT was openly consulted twice, both times through the Official Journal La Gaceta. The first one was held on 12 December 2014 to 9 January 2015. The second consultation was held from 02 September to 17 September 2015.

c. Approval:

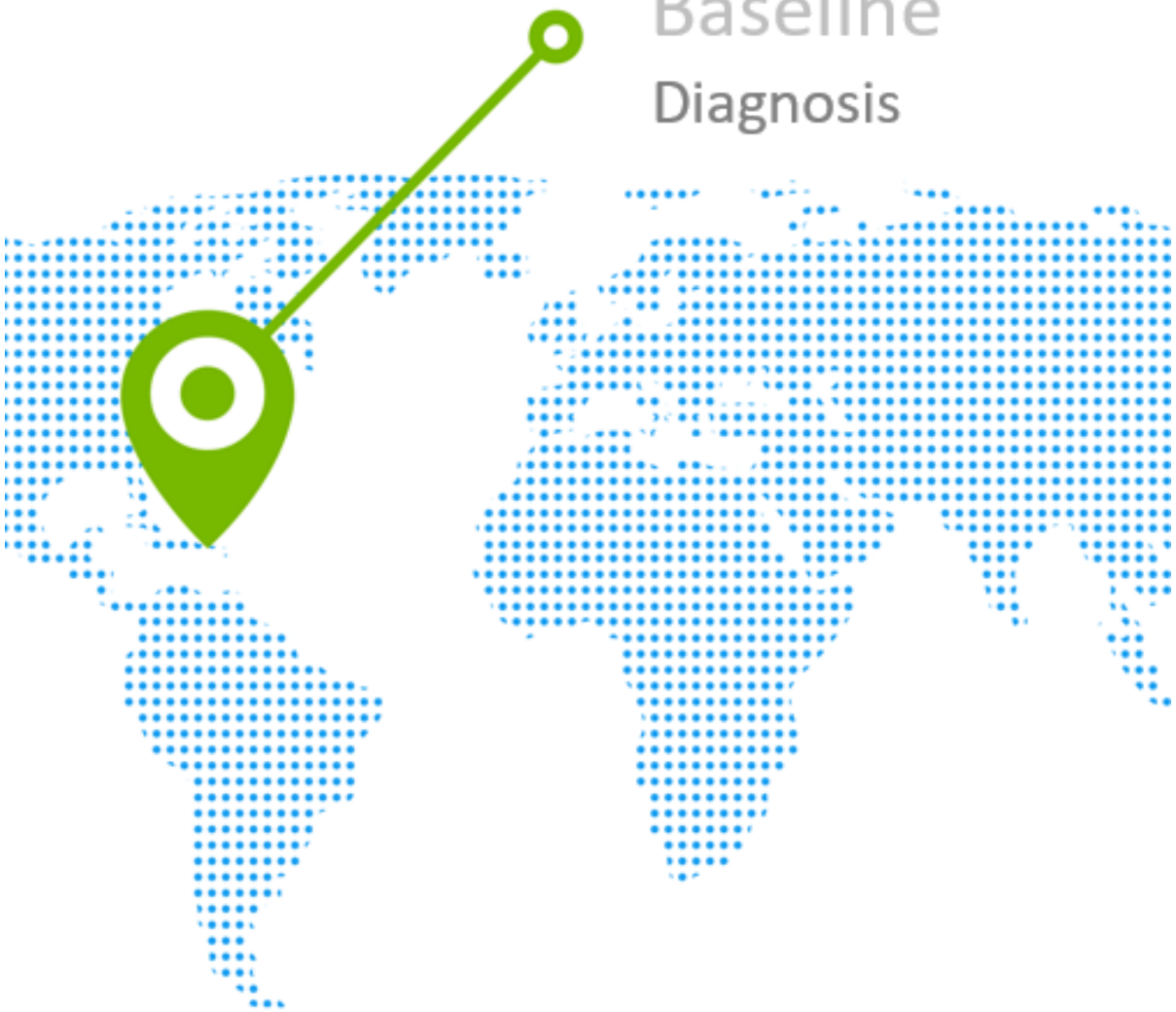
Once the development stage is completed, the respective consultations have been held and prior coordination with the Ministry of National Planning and Economic Policy has been performed, the Plan is subject to two levels of approval, namely:

- **Approval by the Head of MICITT.**
- **Presidential approval.**

PNDT
2015-2021
Costa Rica: Una Sociedad Conectada

# Baseline

## Diagnosis

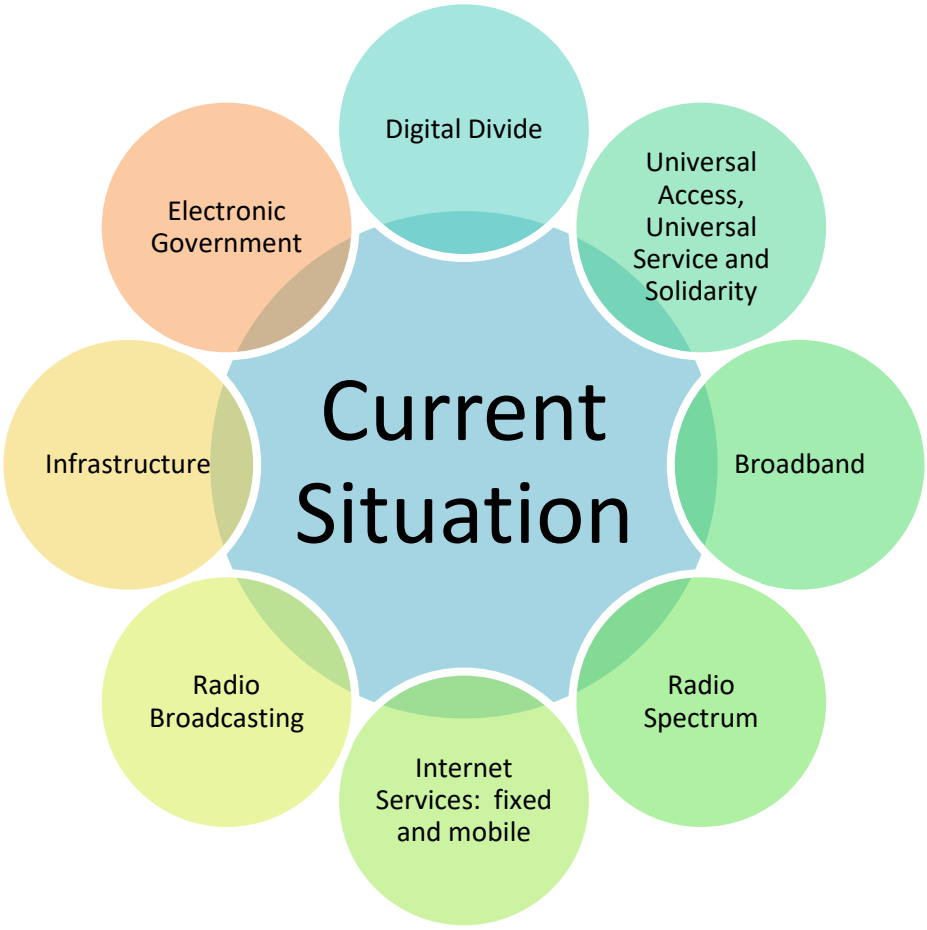


# 3. BASELINE: DIAGNOSIS

Once the information was collected and systematized, an analysis of the results of the consultative and research processes was made, of which a current picture of the evolution of key issues in telecommunications was obtained, considering also, international trends reflected in case studies that have set patterns at the worldwide level on the role of telecommunications/ICTs in developing nations.

The topics listed below were considered essential for the strategic approach of a roadmap to 2021, in terms of supply and demand for telecommunications services, providing follow up to thematic areas that have been developed on the 2009-2014 Plan and addressing new trends identified in this construction process.

**Figure 2. Key issues**




**Source:** Prepared internally, 2015.

## 3.1. International Telecommunication Indicators

One of the aspects to consider when formulating public policy in telecommunications is the comparison of the country with other nations. Following are the main results of a series of measurements of interest.

### 3.1.1. Connectivity Index

The Networked Readiness Index[7] (NRI), provides an overview of the current status of ICT development in the world, allowing *"[...]decision-makers a useful tool for assessing the impact of Information and Communication Technologies (ICTs) on a global level and a comparative assessment of the preparation for ICTs and the use of their economies."* [8]

Following are the results for the 2015 NRI, particularly for the countries occupying the top five positions and those of Latin America and the Caribbean (LAC):

[7]*The Networked Readiness Index* is the Connectivity Index. It measures the propensity for countries to exploit the opportunities offered by communication and information technologies. It is published annually and seeks to better understand the impact of ICT on the competitiveness of nations.

[8]Global Report on Information Technology 2013, p. 3. World Economic Forum.

**Table 1. NRI ranking, top five positions and LAC, 2015**

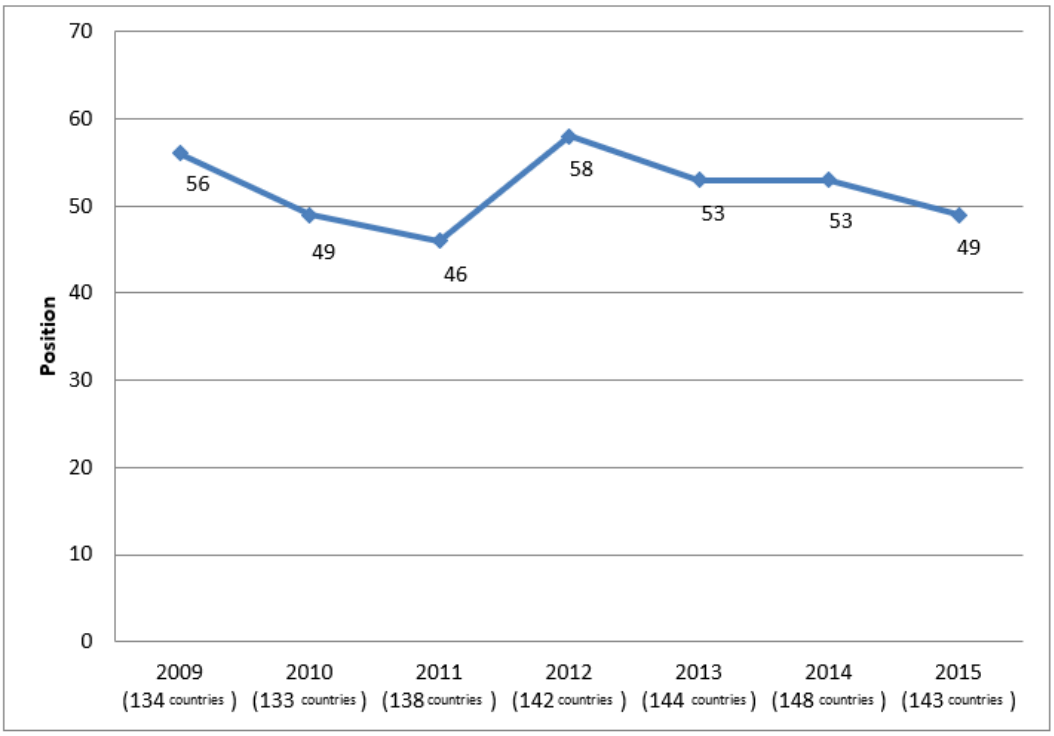
| Country | Position | Country | Position |
|---|---|---|---|
| Singapore | 1 | Jamaica | 82 |
| Finland | 2 | Brazil | 84 |
| Sweden | 3 | Peru | 90 |
| The Netherlands | 4 | Argentina | 91 |
| Norway | 5 | Guyana | 93 |
| … | … | Dominican Republic | 95 |
| Chile | 38 | Honduras | 100 |
| Puerto Rico | 44 | Venezuela | 103 |
| Uruguay | 46 | Paraguay | 105 |
| **Costa Rica** | **49** | Guatemala | 107 |
| Panama | 51 | Bolivia | 111 |
| Colombia | 64 | Suriname | 113 |
| Mexico | 69 | Nicaragua | 128 |
| Trinidad and Tobago | 70 | Haiti | 137 |
| El Salvador | 80 | | |

**Source:** Prepared internally based on data from FEM.

With respect to the LAC region, only Chile, Puerto Rico, and Uruguay surpass our country, and regarding Central American countries, Costa Rica is the best positioned in this ranking.

By referring to the evolution in the ranking, from 2009 to 2015, the top five positions have been occupied by Singapore, Finland, Sweden, Denmark, USA, Switzerland, the Netherlands, and Norway. Regarding Costa Rica, the following chart shows the positions occupied in the same period. It was in 2011 when the best position (46) was reached.

**Graph 1. Position of Costa Rica in the NRI 2009-2015**




(Number of Countries)

**Source:** Prepared internally based on data from FEM.

To understand the determining factors of the position held by Costa Rica in the NRI, it is convenient to analyse the values and positions obtained in each of the components of the Index. Following is the breakdown for 2015:

**Table 2. Values and positions obtained by Costa Rica**

| Components | Value | Position in Ranking |
|---|---|---|
| **Environment** | **4.0** | **66** |
| Political and regulatory environment | 3.8 | 63 |
| Innovation and business environment | 4.1 | 78 |
| **Preparation** | **5.2** | **51** |
| Infrastructure | 3.3 | 91 |
| Affordability | 6.4 | 16 |
| Skills | 5.7 | 26 |
| **Use** | **4.3** | **44** |
| Individual | 4.6 | 56 |
| Business | 4.0 | 39 |
| Governmental | 4.3 | 54 |
| **Impact** | **4.1** | **41** |
| Economic | 3.5 | 47 |
| Social | 4.8 | 41 |
| **NRI** | **4.4** | **49** |

**Source:** Prepared internally based on data from FEM.

As shown in the above table, the components that have the highest positions in the ranking are Environment and Preparation. For both, the index score is exceeded. Moreover, the use and impact components are those with lower scores in the general ranking.

### 3.1.2 Electronic Government Development Index

The Development Index of the UN E-Government (EGDI) *"assesses a number of issues around e-government in 193 countries. It is the weighted average of three standardized scores of the most important dimensions of e-government: scope and quality of online*

*services, state of development of telecommunications infrastructure, and inherent human capital."*[9]

According to the last measurement (2014), among Latin American countries, Costa Rica is surpassed by Uruguay, Chile, Argentina, and Colombia. When comparing our country in Central America, it is in the first place, followed by Panama.

**Table 3. EGDI, Latin America and Caribbean countries 2014**

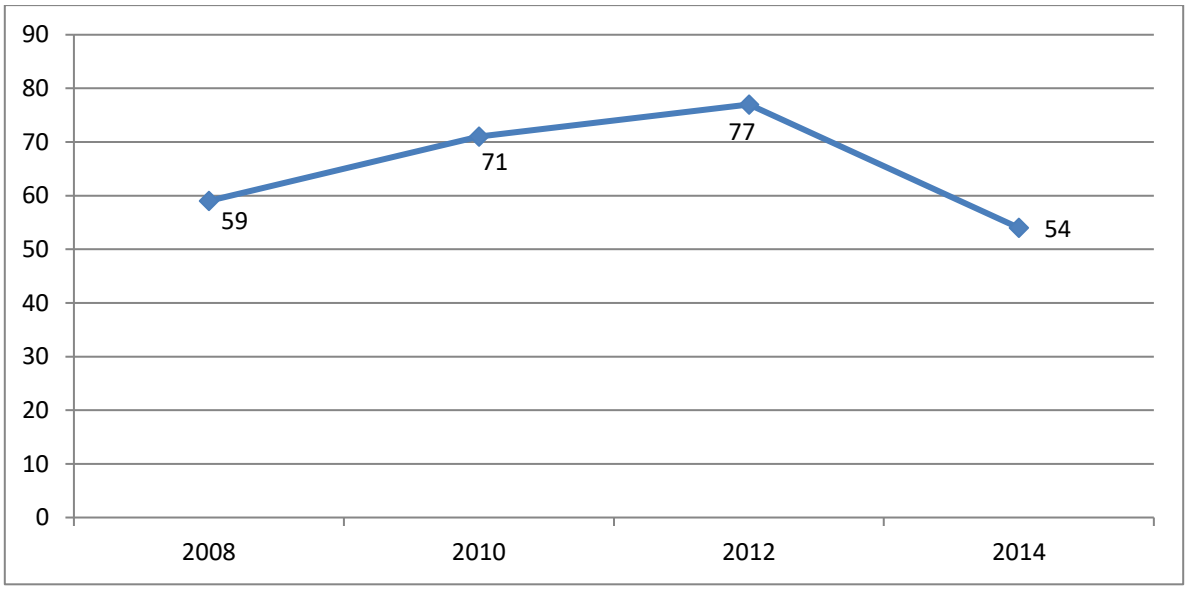
| Country | Position | Country | Position |
|---|---|---|---|
| **Uruguay** | 26 | **Trinidad and Tobago** | 91 |
| **Chile** | 33 | **Bolivia** | 103 |
| **Argentina** | 46 | **Dominican Republic** | 107 |
| **Colombia** | 50 | **Jamaica** | 109 |
| **Costa Rica** | 54 | **Honduras** | 114 |
| **Brazil** | 57 | **Suriname** | 115 |
| **Barbados** | 59 | **Cuba** | 116 |
| **Mexico** | 63 | **Belize** | 120 |
| **Venezuela** | 67 | **Paraguay** | 122 |
| **Peru** | 72 | **Guatemala** | 133 |
| **Panama** | 77 | **Nicaragua** | 147 |
| **Ecuador** | 83 | **Haiti** | 176 |
| **El Salvador** | 88 | | |

**Source:** Prepared internally based on UN data.

As shown in the graph below, in 2008, Costa Rica was in the 59th place in the ranking. In 2010 and 2012, its relative position worsened as it occupied the places 71 and 77, respectively. Finally, by 2014, the country held the 54th place in the ranking, which responds to an improvement in the ratings of the subcomponents of telecommunications infrastructure and online services.

[9] UN Study on Electronic Government, 2012, p.p.148.

**Graph 2. Position of Costa Rica in the EGDI, 2008-2014**




**Source:** Prepared internally based on UN data.

### 3.1.3 ICT Development Index (IDI)

ITU prepares the IDI, which seeks to measure three main objectives:

> *"The level and the chronological evolution of ICTs in the country and compared with other countries; the progress of ICT development in developed and developing countries; the digital divide, i.e. the differences between countries with different levels of development of ICTs. "* (Measurement of the Information Society, 2013, p.7)

The IDT is composed of three sub-indices: access, use, and capabilities, which correspond to different aspects and components of the development process of ICTs. According to the 2013 Measurement Report of the Information Society, the country ranked at position 55 out of 166 countries that make up the IDI ranking. Costa Rica ranked sixth among American continent countries included in the index, with the sub-index "Utilisation" as the one that most contributed to its rating, followed by capacity and finally, Access.

According to the 2013 Measurement Report of the Information Society, Costa Rica is located at position 55 out of 166 countries that make up the IDI ranking, showing an average level in the development of ICTs.

**Table 4. Costa Rica according to IDI sub-indices, 2013**

| IDI sub-index | Ranking position in 2013 |
|---|---|
| **Access** | 69 |
| **Utilization** | 51 |
| **Capabilities** | 54 |

Source: Prepared internally based on ITU data.

### 3.1.4 Broadband Development Index (IDBA)[10]

The Inter-American Development Bank (IDB) is in charge of the calculation of the IDBA, which shows the status of broadband for Latin America and the Caribbean, along with OECD (IDB, 2012).

The BPI has a range between 1 and 8, with 8 being the best score. It considers 37 key variables for the development of broadband, grouped into four pillars:

- Public Policy and Strategic Vision
- Strategic regulation
- Infrastructure
- Applications and Training

Following are the results for the first five countries, for the best positioned one in Latin America, and for Costa Rica´s position.

**Table 5. IDBA ranking in selected countries, 2012**

| Position | Country | Score |
|---|---|---|
| 1 | Sweden | 7,28 |
| 2 | Korea | 7,18 |
| 3 | Luxembourg | 6,98 |
| 4 | Finland | 6,90 |
| 5 | Britain | 6,90 |

[10] The IDBA does not define broadband as a certain speed, but provides different variables.

| | | |
|---|---|---|
| 8 | Chile | 5,57 |
| 19 | Costa Rica | 4,23 |

**Source:** Prepared internally based on data from IDB.

## 3.2 Telecommunications in Costa Rica

The main statistics available for the Costa Rican telecommunications market after the opening, which serve as the starting point of this Plan, are collected below.

### 3.2.1 Services

From the services perspective, statistics show the following:

- The increase in the number of authorized operators and service providers reflects the growth of the sector, a figure that in the last 4 years has increased by 13%.

**Table 6. Authorized telecommunications operators and service providers, 2011-2014**

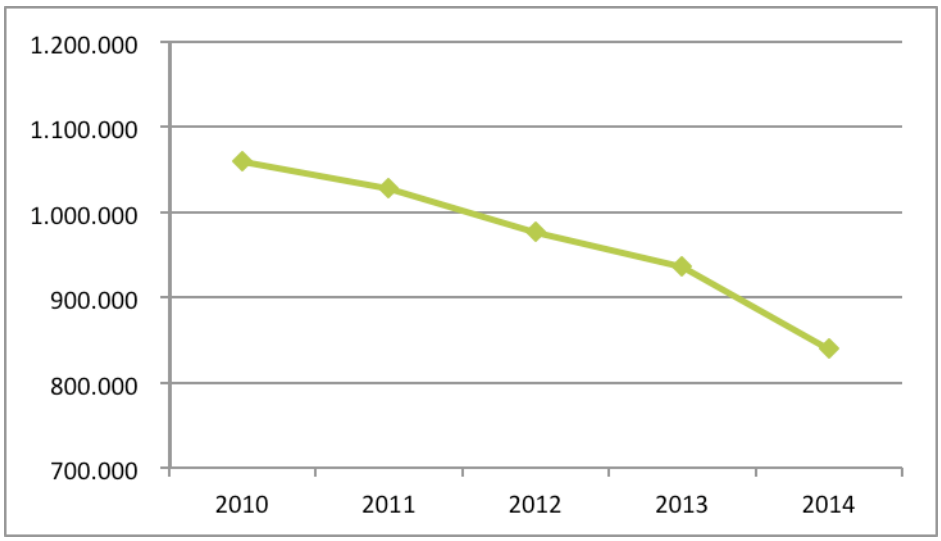
| Year | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| **Total** | 108 | 118 | 117 | 122 |
| **Growth** | n.d. | 9.3% | -0.8% | 4.3% |

**Source:** Prepared internally based on data from SUTEL.

#### *3.2.1.1Land lines*

Traditional land line connections have been declining, influenced by factors such as the increase in mobile telephony and Internet. According to figures from SUTEL, in 2010, there were 1,060,361 traditional land line connections, while in 2014, there were 839,968, representing a decrease of 21% compared to 2010.

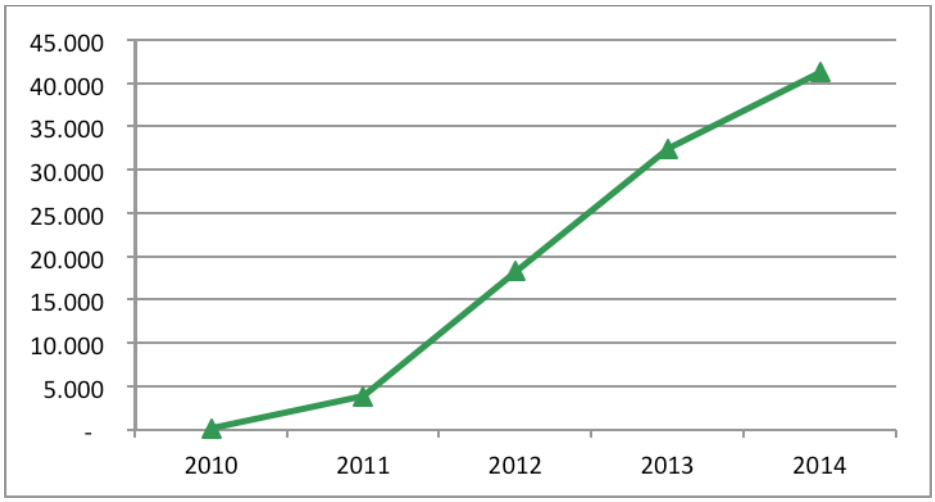
**Graph 3. Subscriptions to fixed land line services**




**Source:** Prepared internally based on data from SUTEL.

By contrast, voice over IP (*VoIP*) services have had an increasing trend in the last 4 years. In 2010, there were only 105 subscriptions, and by 2014, these rose to 41,249.

**Graph 4. Subscriptions to VoIP telephone services, 2010-2014**



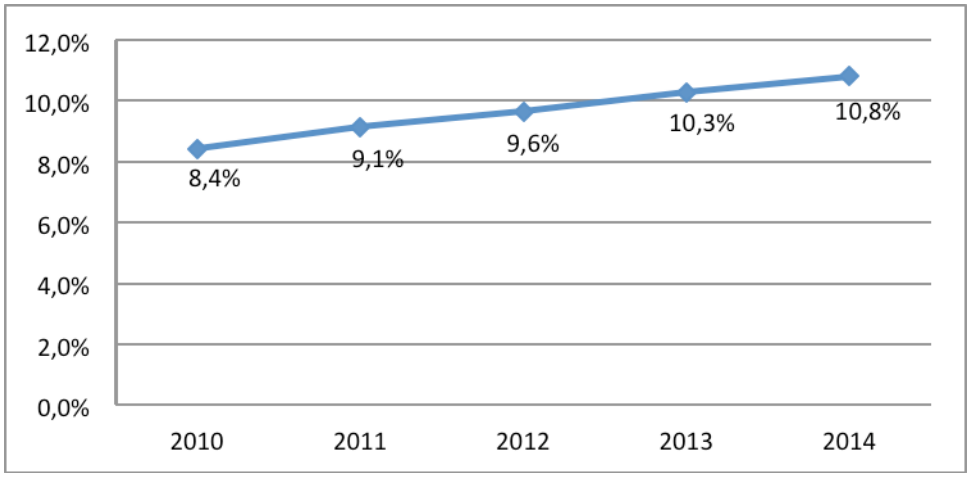

**Source:** Prepared internally based on data from SUTEL.

#### *1.1.1.1. Fixed Internet*

According to the report "Telecommunications Sector Statistics 2014" from SUTEL, fixed Internet has grown, from a penetration of 8.4% in 2010 to 10.8% in 2014.

Based on a survey conducted by the Vice-Ministry of Telecommunications to operators and telecommunications service providers, it is estimated that by 2014 the penetration of fixed Internet service subscriptions equal or greater than 2 Mbps is higher than 6%.

**Graph 5. Fixed Internet service penetration per 100 inhabitants, 2010-2014**




**Source:** Prepared internally based on data from SUTEL.

#### *1.1.1.1. Mobile Telephony*

Mobile telephony had strong growth during the period after the opening, increasing by 60% between 2009 and 2010. From 2010 to 2014, the increase was 127%, outpacing growth in Latin America[11].

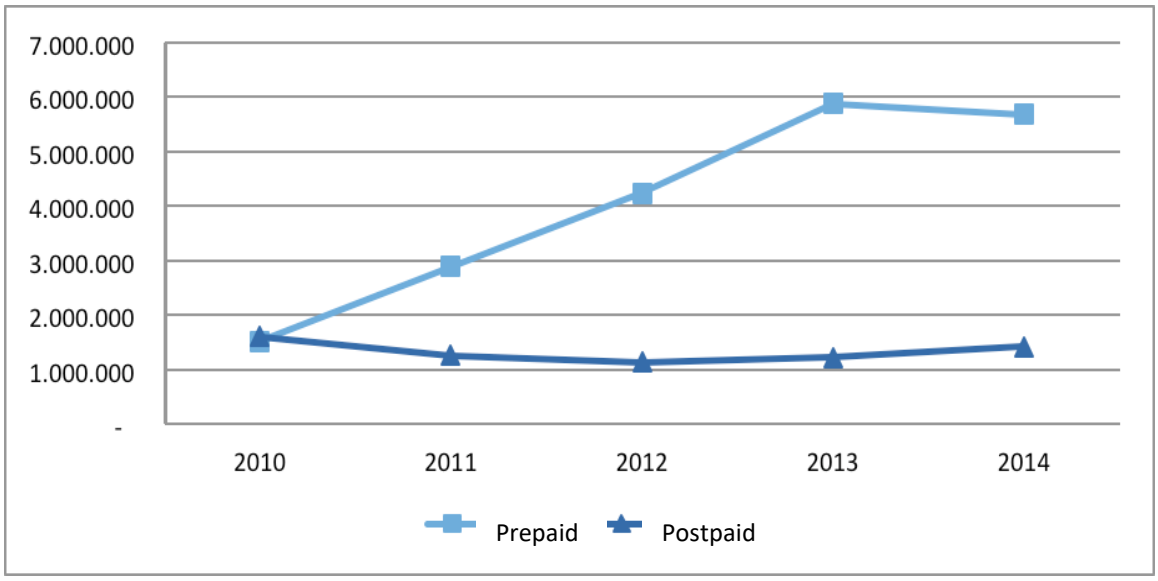
[11] The 2009 data is extracted from the ITU statistics and from the 2010 Statistics Report of the Telecommunications Sector 2014 from SUTEL.

The emergence of the prepaid service in 2009 was the main cause of increased demand for mobile voice service, which in 2014 represented about 80% of total connections (increase of 274% between 2010 and 2014). In addition, there is the entry of new mobile operators, which began operations in 2011.

The number of post-paid service subscriptions decreased by 12% between 2010 and 2014. Despite the decrease, the post-paid plans allow access to mobile devices of superior technology such as smartphones, financed during the contract period (the device is not required to be paid in a single tract).

The development of mobile telephony services as a result of opening up the sector has allowed reaching a penetration level of 149% for 2014, much higher than in 2008, prior to the opening, which was of 43%.

**Graph 6. Subscriptions to mobile telephony services**

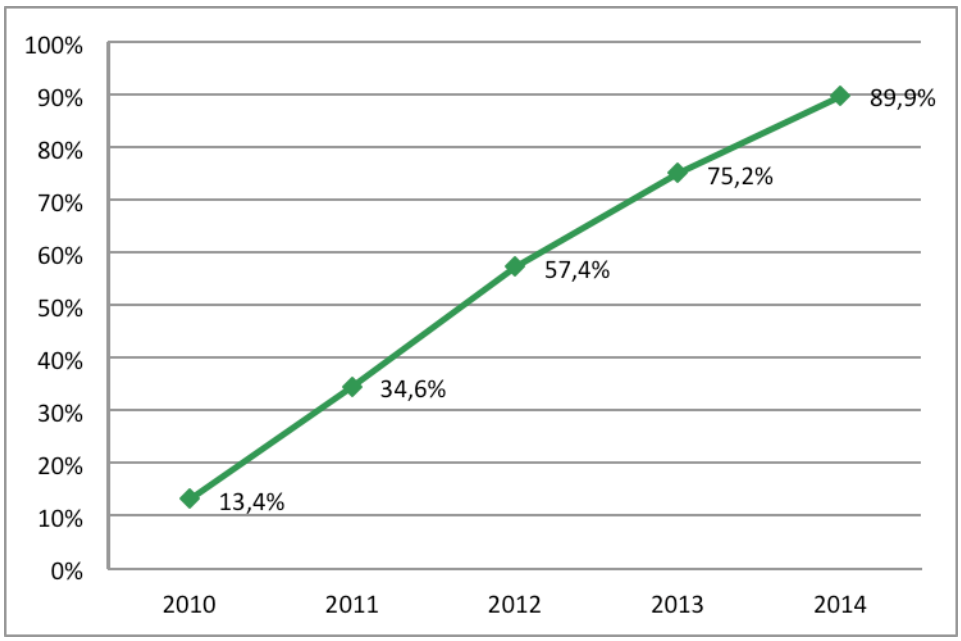



**Source:** Prepared internally based on data from SUTEL.

#### *1.1.1.1. Mobile Internet*

Between 2010 and 2014, Mobile Internet had an increase of 608%, with an average growth rate of over 100% between 2010 and 2012. As of 2013, the average growth rate was of 27%, seeming to indicate that the effect of market opening, although still present, has already begun to stabilize.

**Graph 7. Penetration of mobile Internet service per 100 inhabitants, 2010-2014**




**Source:** Prepared internally based on data from SUTEL.

Based on a survey conducted by the Vice-Ministry of Telecommunications to operators and telecommunications service providers, it is estimated that penetration of mobile Internet subscriptions with speeds equal to or greater than 2 Mbps is greater than 24%.

### 3.2.2 Radio and television broadcasting

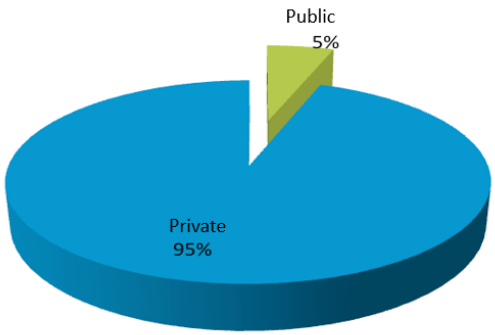
Given the wide coverage and penetration of the television service in Costa Rica, its evolution is more static as compared to other telecommunications services. According to data from ENAHO-INEC, in 2010 the percentage of households with colour television was 96%. Out of these, 41% had subscription TV, and the remaining 59% had public-access television. On the other hand, by 2014 the percentage of households with colour television was 97.4%, while the percentage of homes with subscription TV was 117% as compared to 2008, as it reached 64%, and only 36% had public-access television.

**Graph 8. Relationship between public-access and subscription television in Costa Rican households, 2010-2014**


**Source:** Prepared internally based on data from INEC.

By 2015, 95% of television broadcasting channels belong to the private sector (69 of 73), while the remaining 5% belong to the public sector (4 of 73).

**Graph 9. Sectorial distribution of television broadcasting, 2014**




**Source:** Prepared internally, 2015.

- **Efficient use of the radio spectrum for TV service**

Currently, channels 2 through 69 have been allocated to provide terrestrial television service (equivalent to 402 MHz in the VHF and UHF bands, in view of the different allocation of frequencies corresponding to channel 37). By Executive Decree No. 36774-MINAE and its amendments, the use of channels 14 to 51 for digital television was devised during the transition period, equivalent to 222 MHz in the UHF band, in view of the different allocation of frequencies corresponding to channel 37.

If maintained after the cessation of transmission of signals from analogue television, frequencies corresponding to channels 2 to 13 (VHF) and 52 to 69 (UHF) will be free. Thus, the State must optimize its use according to the needs and the possibilities offered by today's technology, aside from what has been established by the ITU.

In the country, analogue TV uses channels with a bandwidth of 6 MHz per physical channel to transmit in what today is called public-access television. Due to technical limitations of the NTSC/M standard analogue terrestrial TV and in order to avoid interference between adjacent channels, the NFAP only allows using 34 analogue channels in the Central Valley for each to provide unique programming. Currently there are 73 concessions to provide this service in the country.

The implementation of the new digital terrestrial standard (ISDB-Tb), does not present such limitations, allowing the use of adjacent channels and enabling the use of 37 channels for digital systems in the range of 14 to 51 channels. In addition, several programs can be provided on the same channel through multiprogramming. In other words, in the same 6 MHz space used in analogue TV to transmit single programming, digital television can transmit multiple programs simultaneously in standard definition (SD) or high definition (HD), or combinations thereof.

As an example, after the analogue switch-off, a total of approximately 37 channels in the Central Valley and 185 channels (concessions) can be allocated in several regions of the country (North Zone, South, Central Pacific, Guanacaste, and Atlantic), using the standard terrestrial digital TV (ISDB-Tb), because it is possible to use adjacent channels (continuous).

- **Reutilization of the digital dividend for television**

The technological possibility of having new programs can provide the necessary space to develop distance education programs, both in basic education and in specialized subjects for the different regions of the country.

Considering that from the digitalization of terrestrial television services in the country a digital dividend is obtained, the State has the possibility of reserving some spectrum to meet local and national needs, such as:

- Promotion to the transmission of cultural and educational content.
- Space for TV stations.
- Electronic government (interactivity).
- Access for people with visual or hearing disability.

- **Non-exclusive spectrum allocation**

Non-Exclusive Allocation (NEA) is a technique that allows having multiple users at the same time for frequencies intended for use as links in various areas throughout the entire country, as long as harmful interference is not generated.

The NEA arises as an alternative as a result of the relentless pursuit of spectrum constantly made by countries in order to solve the frequency shortage. Thus it seeks not only to further accommodate current grantees, but also new users of the spectrum. This helps to promote the development and deployment of both radio services and telecommunications systems that positively impact the population.

This opens a wide array of possibilities to strengthen State broadcasting, by converting exclusive use links to non-exclusive allocation links, pursuant to the legislation.

### 3.2.3 Digital divide

The digital divide is derived from the interlinking of elements such as socioeconomic, geographic, and age. To know the current status of access and use of telecommunications services by the population, different tools have been used in order to have inputs in the formulation of public policy and to support decision-making at the national level, mainly to achieve a reduction of the digital divide resulting from the socio-economic status and area of residence, thus enabling the fulfilment of the objectives of universal access, universal service, and solidarity contained in the General Telecommunications Law. The main tools that have been used to determine the target populations of the programs and projects that are included in this plan are detailed below.

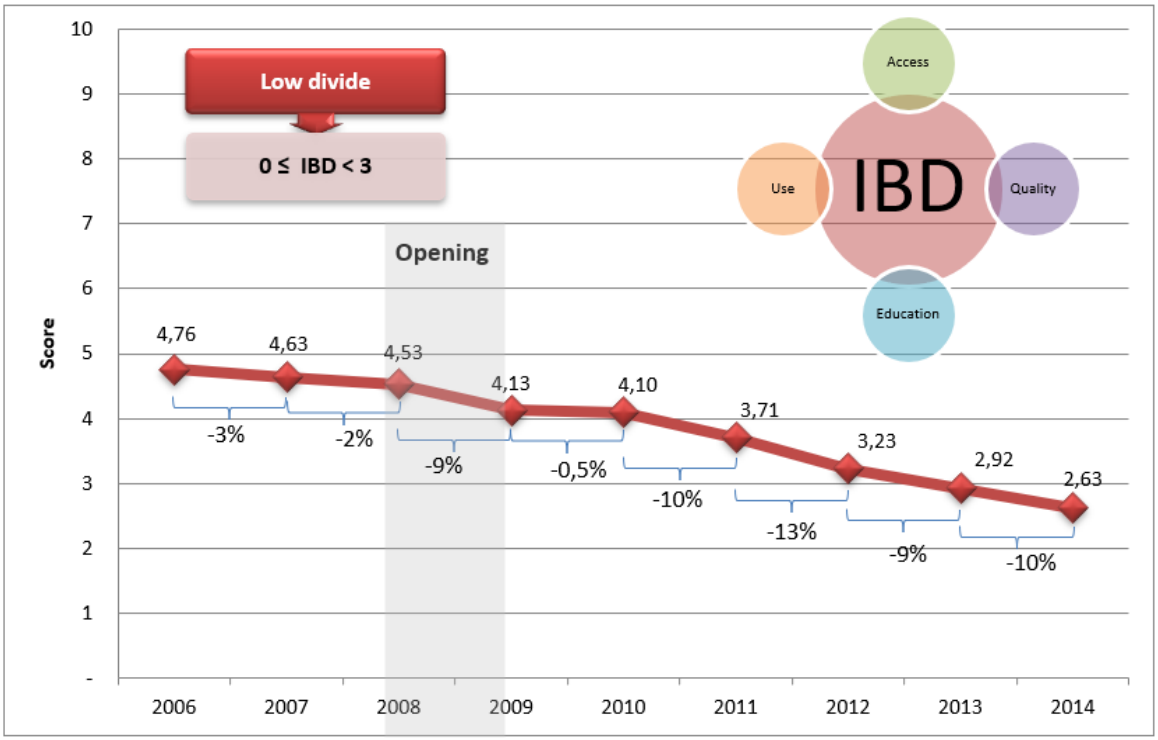
- **Digital Divide Index**

It measures *"[...] the difference between those with access to Information and Communication Technologies and those without access to these, and between those who have access but do not know how to use them and those who use them but receive different*

*levels of quality"* (DiDix, 2014)[12] . The DiDix ranges from zero to ten, where 0 is the minimum value of digital divide and 10 is the highest value of digital divide.

Before the opening of the telecommunications market, the DiDix, showed levels of 4.76 and 4.63 score for the years 2006 and 2007, respectively. During the 2008-2014 period, the DiDix was reduced by approximately 42%, from a score of 4.53 to 2.63, reaching the limit of the category of Low Digital Divide (0≤DiDix <3). The greatest effect in reducing the value in the DiDix coincides with the entry of new mobile telephone operators into the telecommunications market in Costa Rica in 2011.

**Graph 10. Digital Divide Index Costa Rica, 2006-2013**




**Source**: Prepared internally, 2015.

- **District Ranking of ICT Access**

Prepared by MICITT in 2013 (with data from the 2011 census), the ranking was intended to identify those districts that have the highest percentages of people living in homes without

[12] The Digital Divide Index is developed and monitored by the Vice-Ministry of Telecommunications.

access to technologies (land lines, mobile telephony, subscription television, plasma, LCD or LED screens, and desktop computers).

- **Social Maps:**

As part of its strategy to combat poverty, the Government of the Republic through the Social Presidential Council, managed that through the joint work of the Institute for Social Assistance and the National Institute of Statistics and Census to develop the Social Map platform, which identifies where the largest concentrations of poverty and extreme poverty in the country are found.

With the tool, the 75 districts which account for 65% of extreme poverty and 51% of poverty, according to the Poverty Line, were identified. With the digital tool, it is possible to identify in virtual maps specifically where this population is based on the 2011 Census data at the Geostatistical Unit level; i.e. at the block level. It displays variables such as total households, individuals, age structure, access to basic services, health, education, and employment, among others. This information will be used to address priority needs of the people who need it most.

- **Social Development Index**

The index, developed by MIDEPLAN, seeks to be an instrument for classifying districts and counties according to their level of social development, so that the formulation of projects, programs, policies, and plans is supported by the data shed by this index, giving priority to the most disadvantaged areas in order to reduce the gaps that affect their population.

The SDI is conceptualized so that people have opportunities to access and enjoy basic rights, which are grouped in four dimensions (economic, social participation, health, and education), and it is constructed from a set of 11 socioeconomic indices, with the administrative statistics of public institutions as the main source of data.

Regarding the challenges that the country faces to reduce the digital divide, the following can be listed:

- Overcome the gaps in access and use of quality telecommunication services of the populations that have unmet technological needs, either because of their age, economic status, geographical location, or level of digital literacy.

- Position Costa Rica as an international benchmark regarding its progress in access, use, and exploitation of ICT.

- To take a qualitative leap in Internet, from availability and access to a bandwidth that meets the needs of the various sectors of the country and the growing demand for data.

### 3.2.4 Broadband

Connectivity has come to enable access to government services by citizens living in remote communities, transforming the methods used in education, improving production processes of enterprises, and in general, positively impacting the quality of life of citizens and the economy of the countries.

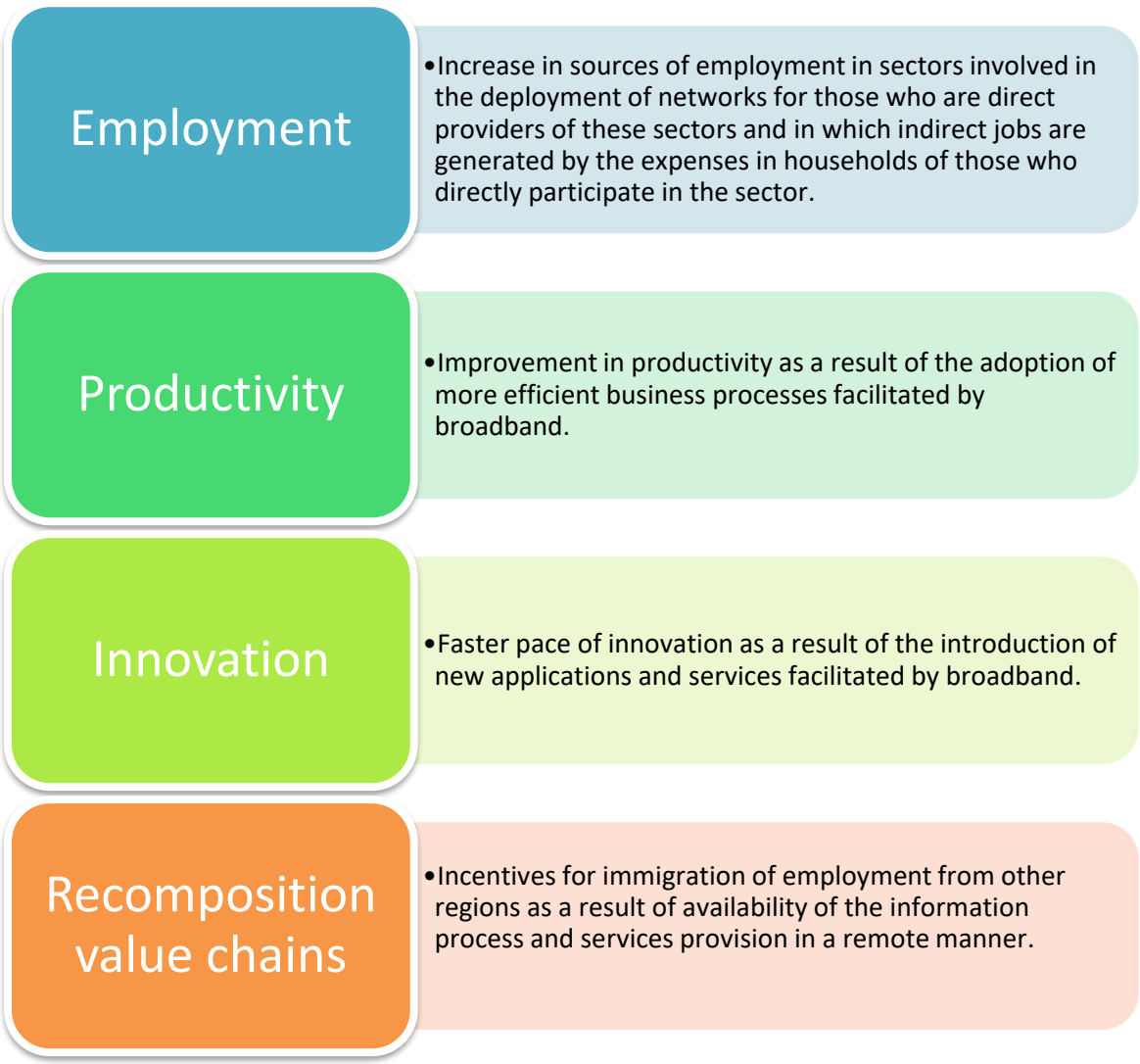
Moreover, to encourage the purchase of services that allow access to telecommunication/ICT by citizens, it is convenient to ensure that broadband connectivity is an instrument at the service of the people, both to bring the State close to the people and to empower people through digital literacy.

In today´s globalized economy, ICTs act as a catalyst for the economic and social development of nations. Empirical evidence has shown how ICTs, particularly broadband (BB) impact the economy, generating increases in production (GDP), productivity, and employment.

In accordance with the above, there are studies that indicate that an increase in broadband has multiple effects[13], among them:

[13] Katz, R. and Ávila, J. (2011).

**Figure 3. Effects of Broadband**




**Source:** Prepared internally, based on Katz, R., and Avila, J. (2011).

As outlined by various authors, an increase of 10% in BB penetration generates up to an increase of 3.2% in GDP and 2.6% in productivity. In turn, a measurement of the World Bank shows that a 10% increase in BB penetration can produce a GDP growth between 0.43% and 1.38%. Another study is carried out by Katz and Callorda, who analysed the Colombian case and found that an increase of 10% in BB could lead to GDP growth of 0,037%. Finally,

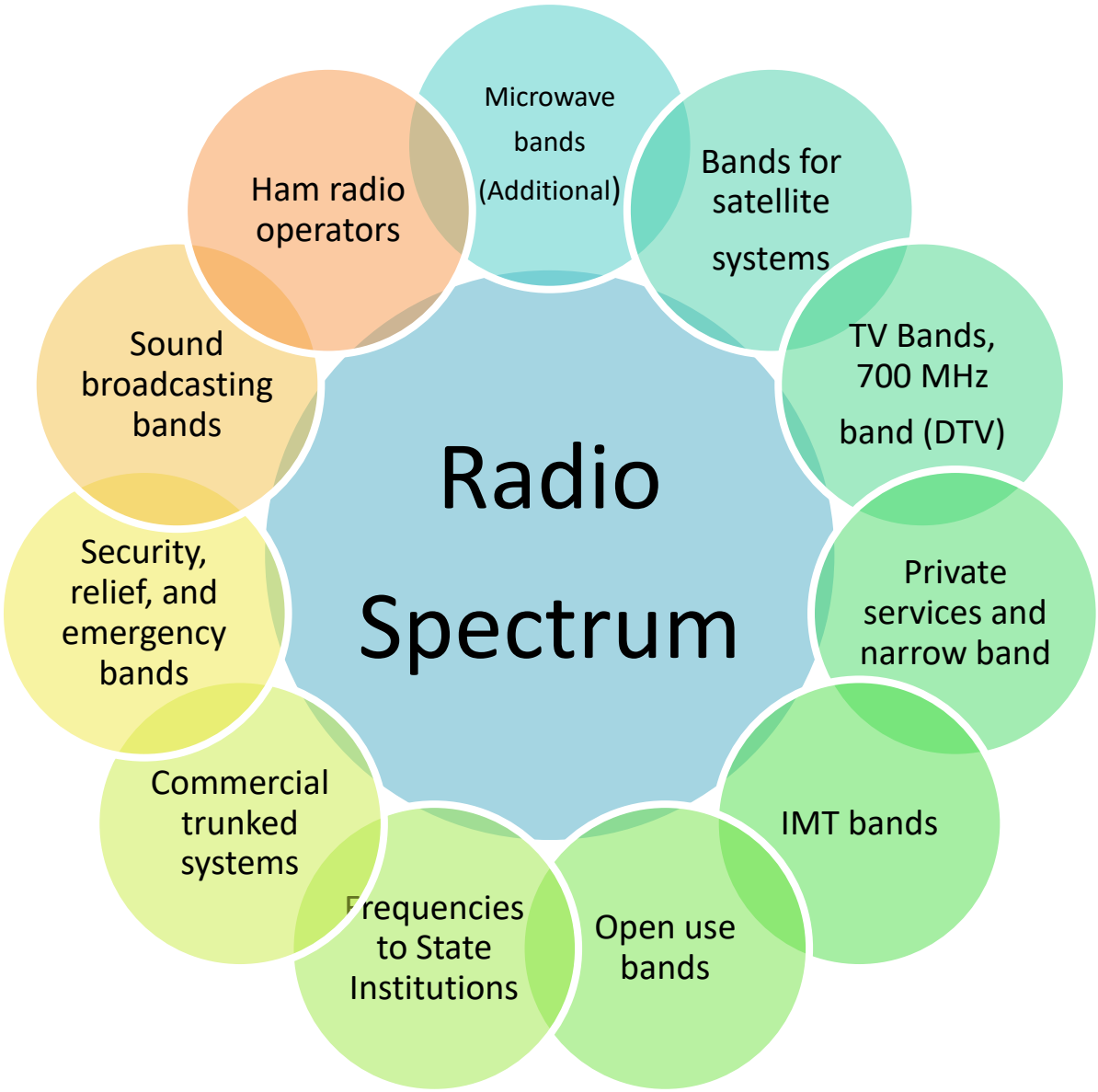
a work performed by Katz shows that a 10% increase in BB penetration is associated with an increase in the employment rate of 0.018%.

### 3.2.5 Radio spectrum

Until the opening of the telecommunications market and the establishment of the new institutional framework for the sector, the management of the radio spectrum was made according to arising needs, with little planning, leaving the scene of the radio spectrum with much room for improvement in efficiency, optimization services, and introduction of new technologies for the benefit of the country, and in some cases even with outdated uses with respect to the provisions of the Radio-communications Regulations of ITU.

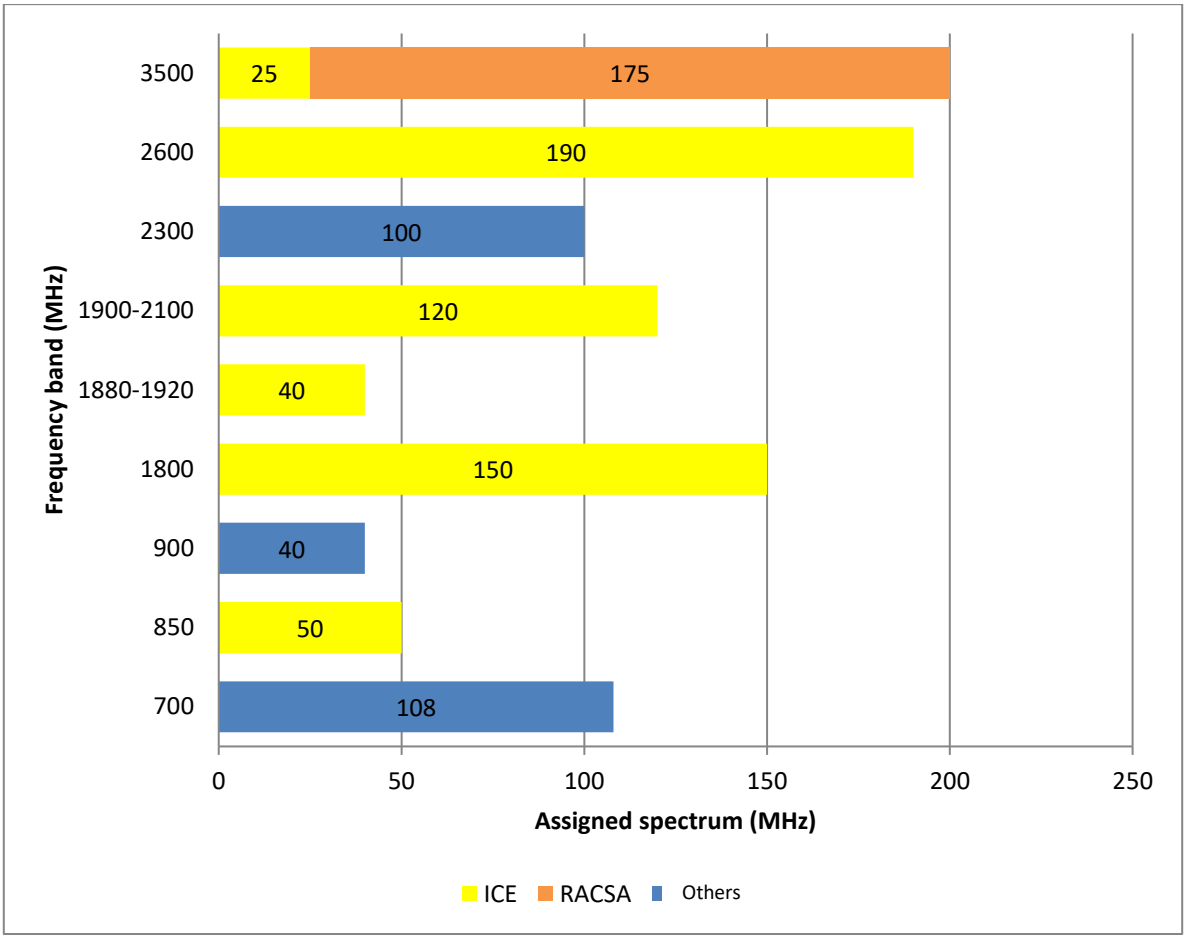
The required radio spectrum covers the entire frequency range. It includes issues related to the allocation of microwave frequencies and the non-exclusive allocation for the mobile service, non-exclusive allocation of frequencies for fixed satellite services, resolution of cases of spectrum use in relation to Temporary Provision I of the General Telecommunications Law, the provision of frequency bands for use in narrowband communications, planning and generation of rules for the transition to digital terrestrial television, the rules on ham radio, regulations for free bands, and planning in the granting and use of frequency bands for advanced mobile services (IMT systems), among others.

**Figure 4. Areas for management of the radio spectrum**




**Source:** Prepared internally, Vice Ministry of Telecommunications

**Graph 11. Spectrum attributed and used for IMT before opening to the Telecommunications Market**




**Source:** Prepared internally, based on data obtained from the 890-SUTEL-DGC-2013 Report.

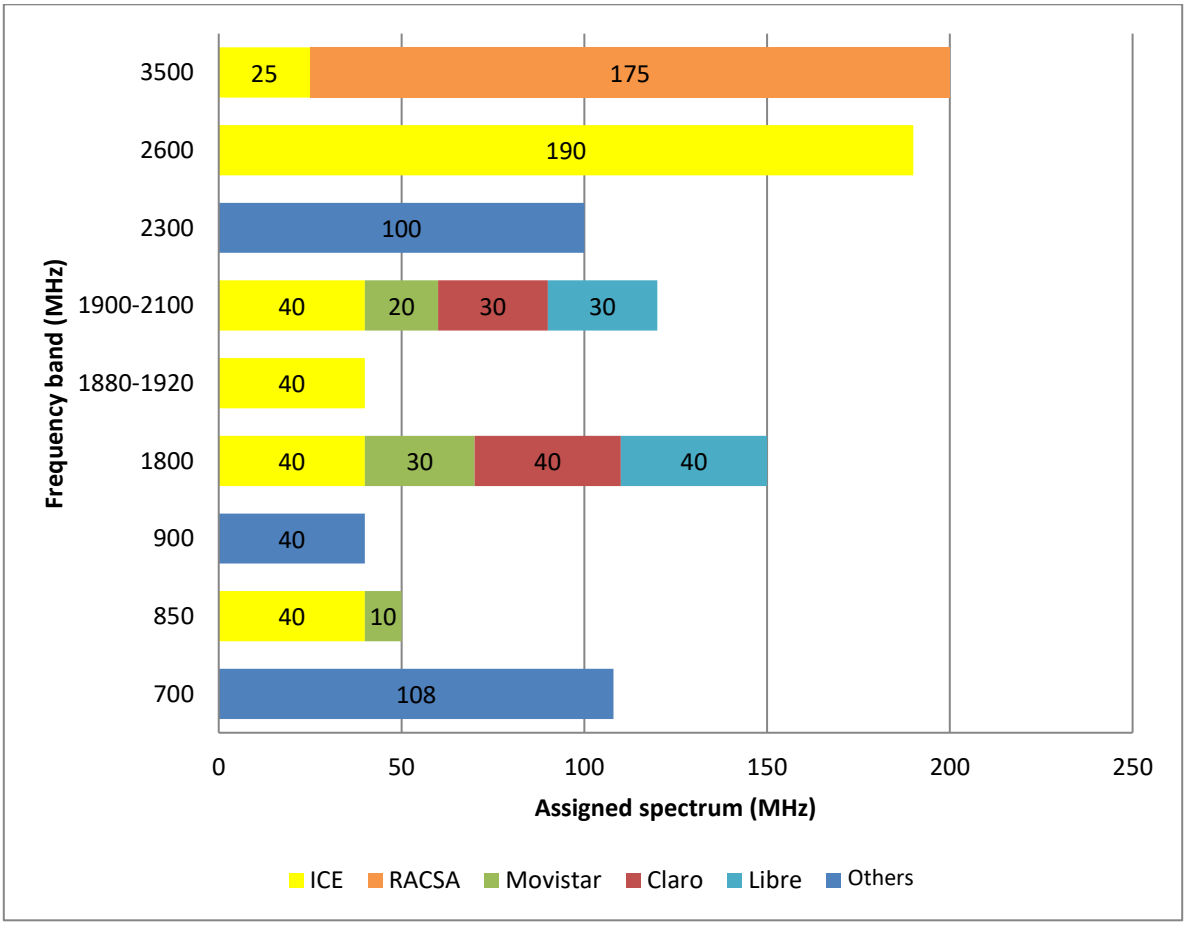
For the proper management of each of these issues by the Executive Branch, there must be a number of inputs that allow fulfilling the guidelines, which ultimately allow the implementation of public policies that guide the work in the sector.

As for IMT systems, they are a pillar upon which to develop many of the broadband goals for the country, providing services with scalable capabilities for the convergence of multiple services for the end user. The additional burden on existing networks generated by the consolidation of the global trend involving the Internet of Things (IoT*)* will be largely fulfilled with the development of IMT systems and other wireless networks.

Recent trends in adoption of new technologies at the international level indicate that bands such as 700 MHz (digital dividend of the process of digitalization of television), 900 MHz, and 2600 MHz are the most widely adopted mobile broadband, and each segment offers different characteristics regarding propagation (coverage) and capacity.

Prior to the opening of the Telecommunications sector, in Costa Rica the distribution of the bands identified by the ITU for IMT systems focused on the State operator, and the spectrum actually used for mobile telecommunications (2G and 3G at the time) was only 140 MHz. As of today, the distribution has changed as a result of the initial band range for IMT systems, and the competition in the sector has changed with the entry of two new operators. The total spectrum effectively in use for these systems overcomes 250 MHz.

**Graph 12. Spectrum allocated to IMT after opening the Telecommunications Market**

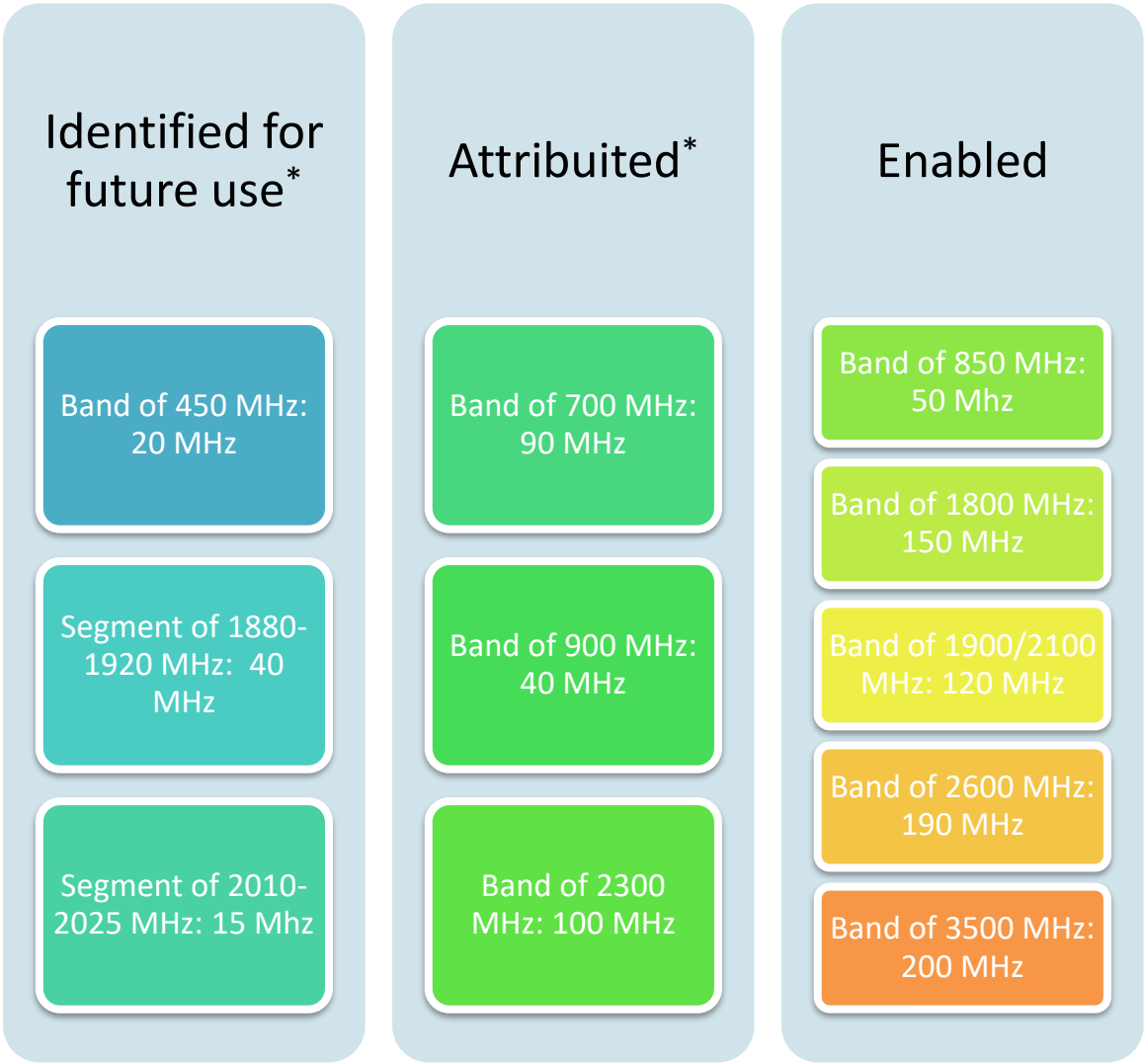



**Source:** Prepared internally with data from Report 890-SUTEL-DGC-2013.

The ITU, through its Recommendation ITU-R M.2078, *"Estimation of spectrum bandwidth requirements for the future of IMT-2000 and IMT-Advanced,"* establishes a series of projections on spectrum requirements for IMT systems in developing countries under

different market assumptions. Based on this information, the projected requirement for Costa Rica has been estimated at 890 MHz by 2020, and the use of the frequency bands needed to reach this goal has been established[14].

**Figure 5. Organization of the IMT spectrum (2014–2020)**




**Source:** Prepared internally, MICITT 2015.

* Spectrum identified for future or allocated use by means of Executive Decree 39057-MICITT, which amends the NFAP, published in Alcance Digital Nº 50 of the Official Journal La Gaceta on 1 July 2015.

Among the most significant challenges in this area, the following can be found:

- Specifically, it is essential to issue the set of technical recommendations through the National Plan of Frequency Allocations (NFAP), and to keep it updated regarding the

[14] Reports No. 890-SUTEL-DGC-2013 and No. MICITT GAER-IT-140-2013.

needs of the country with respect to the Radio Regulations of the ITU, ensuring the harmonized use of frequencies internationally.

- Since the country currently uses a value close to 250 MHz for IMT systems, it is clear that there is an important challenge to face, which should be addressed immediately.
- Despite these advances, the demand for more and better services, added to the consumption projections, clearly show that this spectrum used for IMT systems will be insufficient in the short term.
- It is clear that search for the spectrum for IMT systems is a task to be executed in advance. Its execution requires that those involved in the process implement their best qualities to visualize the future spectrum requirements, even though the technologies that such spectrum will require are under development.

### 3.2.6 Electronic government

Regarding Electronic Government, the country has not been able to consolidate the Rectory of this field under a single entity. In addition to this, the existence of multiple committees with objectives that have not materialized in time hinder joint actions and limit the state's capability to guide and define public policy regarding Electronic Government. This absence of a Rectory has caused that the proceedings of the Digital Government Technical Secretariat do not reflect a consistent alignment with State priorities and policies.

Considering the above, the design of a strategy that allows articulating public policy under a country vision becomes necessary, so that the various efforts are aimed at achieving social inclusion, boosting economic growth, and improving accountability before citizens. In accordance with this need, we have the challenge of consolidating in a single instance the construction of public policy in the field of digital technologies.

Thus, by Decree No. 38166-MICITT "Rules for the Organization of the Vice-Ministry of Telecommunications" published on 11 February 2014, in the Official Journal La Gaceta, the Department of Digital Technologies was created, with an Electronic Government Department. Its main objective is to develop planning tools in Electronic Government, maintain an updated bank of information on the subject, and monitor recorded progress, to guide in an orderly and coordinated manner the development of policies in this field. However, it is imperative to build a policy to consolidate the Rectory of the Vice-Ministry of Telecommunications in Electronic Government from the definition of policies and standards, and to frame the role of the Technical Secretariat of Digital Government as the executing unit of strategic projects defined by the Government of the Republic. For this purpose, in the short term, the Government of the Republic must restructure the decree in effect and then bring a bill before the Legislative Assembly to ensure the consolidation of a permanent and robust structure of Electronic Government in order to meet the challenges of the country in this area.

Consequently, strategic projects defined, should respond to the principle of interoperability, allowing different stakeholders to interact within a framework of cooperation and transparency.

For existing platforms, which support State services, the Vice-Minister of Telecommunications will initiate a process of analysis and diagnosis, at technical, legal, and administrative levels, to determine and request the necessary changes to allow exchange of information without restricting access.

According to the Organisation for Economic Co-operation and Development (OECD), e-government refers to the use of information and communication technologies, particularly the Internet, as a tool to achieve a better government. (ECLAC, 2004)

As part of the process followed for the incorporation of the country to the OECD, it has accepted the guidelines on e-government through the application of tools for the respective assessment of the current state of public policies and initiatives to expand the use of ICTs in the modernization of the State. Moreover, our country was incorporated as an adherent member to the Council of Digital Government Strategies of that body (through official communication AG/2014.704.mg received on 10 December 2014), which achieved an openness to active participation in the discussion forums and policy-making in this area.

This way, a series of actions related to Electronic Government have been initiated to adopt best practices established internationally. This will allow us to generate changes in the design and implementation of public policies and in the regulatory framework required in the public sector to make it more open in the strategic aspect, with more response capability, innovative, and agile. E-government is a crucial element of future changes in the public sector, and the key question for all OECD countries focuses on how to ensure the continuous optimization of the use of ICTs within the public sector for interaction with citizens and businesses. Thus, the various partnerships that will allow promoting open government, innovation of the population, and their entrepreneurship, among others, will become key elements.

In addition to this, the Government of the Republic of Costa Rica, in order to promote accountability and transparency, issued Decree No. 38994-MP-PLAN-MICITT "Promotion of open government in public administration and creation the National Commission for open government," which aims to improve levels of transparency, ensure democratic access to public information, promote and facilitate citizen participation, and promote the creation of opportunities for interagency and citizen collaborative work, by means of innovation and taking full advantage of the facilities offered by Information and Communication Technologies. In this context, the Electronic Government actions are a determining factor for achieving the objectives of the Government of the Republic on Open Government.

# Strategic Framework of PNDT

# 4. STRATEGIC FRAMEWORK OF THE PNDT

Following the opening of the market, the evolution of telecommunications can be visualized in stages. More than six years have gone by after the first phase, which can be defined as *"the initial opening phase,"* in which public policies and strategic objectives emphasized on the creation of the environment to promote the opening of the sector to competition and to expand the coverage of telecommunication services.

At the start of a new PNDT, it is relevant to advance towards a second phase of telecommunications, which will be called: "Social inclusion and strengthening of competition through quality." In this new phase, it is essential to double efforts to turn projects of universal access, universal service, and solidarity into a reality, in order to reduce the digital divide, as an element that will enable, together with other initiatives in the country, that vulnerable populations can advance in improving their living conditions, and in turn, facilitate at the commercial and residential level increased quality of telecommunications services that are provided to the public, including expanding the supply of affordable and innovative services.

It is important to move towards a society where people identify Telecommunication/ICTs as tools to help them grow, to exercise their rights, to promote social inclusion, recognizing diversity and expanding their skills and capabilities to promote employment, generation of new businesses, innovation, and creativity. It is also necessary to create the conditions that allow creating an enabling environment for development and expansion of Internet, consolidating trends such as Internet of Things, smart cities, convergence services, and others.

That is why the PNDT 2015-2021 proposed as a vision:

## 4.1 Vision 2021

To transform Costa Rica into a connected society, based on a comprehensive approach on access, use, and appropriation of information and communication technologies, in a safe, responsible and productive manner.

The roadmap drawn on the PNDT is motivated by the following major aspirations:

1. Realise projects of universal access, universal service, and solidarity of Telecommunications/ICTs.

2. Create an enabling environment that allows innovation of radio and television broadcasting towards digitalization.
3. Build, in a participative manner, the foundation for the Digital Cities Model through an electronic government that is close to citizens and participative.

Each of these aspirations is accompanied by a series of lines of action and goals that will allow achieving them over the years, which are explained in detail in this document. Below is a summary of what is to be achieved with each aspiration.

## 1. Realise projects of universal access, universal service, and solidarity of Telecommunications/ICTs.

The digital divide must be understood from different angles: access, which is based on the difference between people who can access and those who cannot access information and communication technologies; utilization, based on the people who know how to use these technologies and those that do not; and quality of utilization, based on differences in use given by the same users to different technologies.[15]

These gaps limit the access to the benefits of the Information and Knowledge Society, so it is necessary to implement actions to improve the conditions of access to ICT, emphasizing those sectors or groups that are in an environment of vulnerability, in accordance with the provisions of the General Telecommunications Law and the national strategy for reducing poverty, "Bridge to Development."

Through projects of universal access, universal service, and solidarity, it is intended that these populations are able to make a productive and meaningful use of ICT, and thereby increase the empowerment and appropriation of digital technologies for all inhabitants, which affects their quality of life.

That is why legislators, by means of the General Telecommunications Law, established a National Telecommunications Fund (FONATEL) as a tool to bridge the digital divide, promoting equal opportunities for the population regarding access to Information and Communication Technologies, and as an enabler to develop the Information Society, for vulnerable populations.

The projects under FONATEL must be understood as complementary to the actions and measures that from the State and the market are implemented to provide

[15]Source: International Conference, Digital Divide and Social Inclusion. 2005. ITU

telecommunication services to the population. The Digital Solidarity Agenda draws on FONATEL resources that are addressed to care for populations in vulnerable situations for the attention of objectives of universal access, universal service, and solidarity. These resources have a time limit.

FONATEL will finance connectivity in communities where the cost of investment for the installation and maintenance of infrastructure cause that the provision of these services is not financially profitable. In addition, support will be provided to the equipment and the use of tools such as subsidy baskets or application of differentiated tariffs where there is greater concentration of population in vulnerable situations, all according to the provisions of Article 32 of the General Telecommunications Law.

In the development of these projects, universal design standards and accessibility will be ensured so that people with disabilities can access these services. Transparency, broad participation by all potential bidders, quality, accountability, optimization of services, and infrastructure sharing are also ensured.

The State will also ensure constant digital literacy, training, and empowerment of all people, so that through Communication and Information Technologies, they can improve their quality of life and access services hereby provided by the State in areas such as health, education, and environment.

## 2. Create an enabling environment that allows innovation of radio and television broadcasting towards digitalization.

In the past, Costa Rica made great efforts to provide the country with a radio and television service covering the entire national territory. Today, with the advances in technology, new methods have been developed to provide more and better services. That is why in this Plan, it is intended to establish the foundations for creating an enabling environment that allows innovation in this field.

A number of services converge around the new digital television technology that will bring great benefits to viewers and will change the way to watch TV, offering a range of economic, social, and cultural opportunities for various sectors of the country.

One of the benefits of digital television is that several programs can be transmitted simultaneously with a better quality picture and sound and with greater coverage, in addition to exploring the possibilities offered by this television regarding interactivity and digital content.

In order to draw a clear roadmap on the subject, a Reference Model on Digital Television will be designed, which will pave the way for a successful change and lay the foundations for the country's aspirations after the analogue switch-off.

However, given the successful transition to digital TV, it is required to ensure access for all Costa Ricans to that change, especially those in vulnerable sectors. It is for this reason that the state works to have the tools that allow the proliferation of devices required by the population to watch digital TV. It also works to formulate plans to address the problems and needs of public entities as regional broadcasters through the development and implementation of what has been called the Solidarity Plan.

## 3. To build, in a participatory manner, the foundation for the Digital Cities Model through an electronic government that is close to citizens and participative.

A Smart City is a long term aspiration, which should be seen in a phased manner and inter-sectorially built (society, private-business sector, public-institutional sector, and academia), which allows progressing to other scenarios in which dimensions are incorporated, such as environmental sustainability, governance, energy efficiency, social security, urban planning and land use planning, development of spaces for innovative commerce, economic growth, and citizen participation, among other topics. All these are necessary for the establishment and consolidation of cities that offer their inhabitants the opportunity to improve their quality of life.

However, this long term aspiration must have a starting point, and for purposes of PNDT, the project is to build, in a participatory manner, the foundation for a model of digital cities, in the medium term, associating and conceiving these cities as a previous phase for the construction and transformation of smart cities.

From the Telecommunications/ICT perspective, digital cities would be related to the transition and evolution of goods and services that are provided physically towards the digital form, contributing to the digital deployment of everyday services. At this stage, effects of this level on elements such as digital inclusion, citizen participation, transparency, new accountability mechanisms, and expanding technology platforms to strengthen e-government are fundamental.

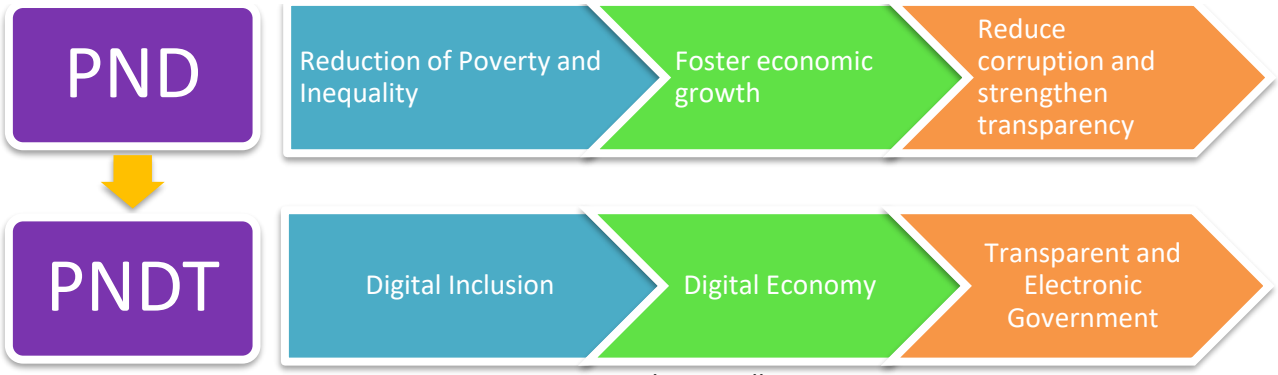
On this basis, it is determined that the PNDT will contribute affirmative short-term actions that are related to digital literacy, broadband connectivity, and e-government, elements that cannot be missing at the start of a phase for digitalization of cities.

The evolution and interdependence of these elements, broadband connectivity, digital literacy, and e-government, become relevant in the PNDT, as they would be integrated into the pillars and lines of action strung together in the Plan. These factors are also crucial to promote and foster transparency, participation, modernization, and innovation of Government to face the demands of the people. It is a close and participatory government that takes advantage of the benefits of telecommunications/ICTs in both directions, and this in turn contributes to building the foundations of the Digital Cities Model.

## 4.2 Linkage with the National Development Plan

It is important to note that the structure of the PNDT, as will be detailed in the next section, arises from the linkage of three pillars: Digital Inclusion, Digital Economy, and Electronic and Transparent Government. All these are aligned with the strategic objectives set by the Executive Branch in the **2015-2018 Alberto Cañas Escalante National Development Plan (NDP)** aimed at reducing poverty and inequality, promoting economic growth, fighting corruption, and strengthening transparency.

**Figure 6. PND-PNDT Linkage**




**Source:** Prepared internally, 2015.

Achieving effective integration of the entire population in the world of Telecommunications/ICTs and reducing the digital divide will open greater opportunities for development, either to generate new business, improve public services, strengthen training

processes, education, and health care, and create new sources of income, which undoubtedly will help in the reduction of poverty and inequality.

As for the digital economy, creating new technologies and measures to boost the State to achieve greater speed in their access and use by businesses, particularly small and medium enterprises, will result in a more dynamic economic activity.

No less important is the contribution that Telecommunications/ICTs represent in the State´s efforts to tackle corruption and strengthen transparency. This is the reason why these are a powerful tool for transformation that at the service of the Public Administration and the inhabitants can help in simplifying procedures, create economies of scale, permanently inform the public of processes and procurement, supervise public action, be accountable, and demand accountability from institutional management, and to open spaces for citizen participation and improved public services.

## 4.3 Critical success factors

For the vision and aspirations proposed in the PNDT to become a reality by 2021, is necessary to overcome some of the weaknesses that still persist in access and use of Telecommunications/ICTs by individuals, the private sector, and the State. At the same time, it is essential to deepen the practical application of Telecommunications/ICTs in areas such as education, health, business management, and electronic commerce. In other words, enabling factors must be created to empower and foster ownership in individuals as agents of change in the Knowledge and Information Society, where new technologies transform the personal environment and become the germ of a digital culture.

**Figure 7. Critical Success Factors**

| CRITICAL SUCCESS FACTORS | | | |
|---|---|---|---|
| Institutionality | Standards | Regulation of the Telecommunications Market | Public Policy Formulation |

**Source**: Prepared internally, 2015.

### 4.3.1. Institutional Structure

It is understood that the institutional framework is a pre-requisite for the proper functioning of the sector, and most importantly, to ensure that the benefits of new technologies are available to each and every one of the country's inhabitants.

During the participatory construction and public consultation phases of the draft of this document, a number of areas or actions that constitute preconditions that need to be executed by public institutions linked to the sector were noted, in order to foster the development of Telecommunications/ICTs. These conditions, for methodological purposes, have been framed in the "Institutional Structure" section.

Specifically, a number of elements are identified to improve performance and establish accountability of public entities with direct involvement in the goals of this PNDT, through joint efforts, accountability, and dissemination of results, and the delimitation of the roles of stakeholders in the sector, specifically the Rector and regulator in the exercise of the functions authorized by law.

Following this scheme, work will be done in the following areas:

- ***Strengthening of the coordination among Rector-Regulator-Industry in telecommunications.***
- ***Strengthening the Vice-Ministry of Telecommunications and of its specialized organizational structure.***
- ***Strengthening of the performance of the Government of the Republic in Electronic Government and defining rules of overall performance for the entire public sector.***
- ***Coordination for project definition and implementation of resources from the National Telecommunications Fund.***

- ***Partnerships and coordination with citizens and institutions of different nature for the management of issues such as accessibility and environmental sustainability.***
- ***Interagency coordination for defining counterparties and responsibilities for implementation, monitoring, and control of PNDT goals.***

### 4.3.2. Standard:

In a rapidly changing environment such as that of Telecommunications/ICTs, standards must be visionary, in order to assume the rapid evolution of technology so as to have a modern legal framework, which is also consistent with the Open Government conceptualization, promoting transparency, accountability, and participation of a greater number of actors and efficiently exploiting state resources.

This is the case of:

- ***Reviewing and updating the public procurement regulation of institutions.***
- ***Reviewing and updating the standard regulations of the Telecommunications Sector in harmonization with the international legal human rights framework, including people with disabilities and adaptation according to the present and future needs.***
- ***Reviewing and updating the regulation of electronic commerce.***
- ***Issuance of new regulations regarding radio spectrum, infrastructure, applications, TV, and mobile telephony, among others.***

### 4.3.3. Regulation of the telecommunications market

After six years of opening the telecommunications market, there is a clear need for the Telecommunications Superintendence to pay close attention to the acceleration of actions which, within its competencies, contributes to boost and improve the market. This includes the necessary studies and the issuance of the corresponding resolution to strengthen the development of the provision of services, promotion and innovation of competition, and commercial innovation, so that the following actions are established:

- ***Review and, where appropriate, update the regulations*** **under which Telecommunications Sector operates:**
  - Universal Access, Universal Service, and Solidarity.
  - Provision and Quality of Services.
  - Access and Interconnection of Telecommunication Networks.
  - Telecommunications Infrastructure Regulations.
- ***Studies for the declaration of competitive markets.***

- ***Issuance of a reasoned decision to determine whether or not there are sufficient conditions to ensure effective competition, under the terms established in Article 50 of the GTL.***

### 4.3.4. Public Policy Formulation

The Executive Power has the responsibility to promote the development of telecommunications, by designing public policies with a focus of universality, accessibility, and solidarity, in accordance with international trends and regulations and efficient use of the radio spectrum, as well as boosting the offer of more and better telecommunications services to the population and the deployment of modern infrastructure.

In this line, coordination with other public and private entities for the development or upgrade of the following public policies has been foreseen:

- ***National Frequency Allocation Plan (NFAP).***
- ***Policy on Telecommunications Infrastructure.***
- ***Reference Model for Digital Television.***
- ***Policy for active participation in the Internet Governance Model.***
- ***Policy to guide the development of Costa Rica's digital ecosystem based on three pillars: social progress, business productivity, and effectiveness of the state.***
- ***Policy to promote the accessibility of Telecommunications/ICTs.***

Each of the policies to be developed is listed below:

**Table 7. List of policies to be developed**

| Policy | Current state | Term | Strategic partners |
|---|---|---|---|
| **National Policy on Telecommunications Infrastructure.** | There is currently no public policy on this matter.<br><br>The current Building Regulations need to be updated to required technical parameters.<br><br>In public works projects, there is no policy for sharing telecommunications infrastructure.<br><br>A series of executive decrees that were issued on | 2016 | Commission for the Coordination for the Installation or Expansion of the Telecommunications Infrastructure (MICITT, SUTEL, MEIC, IFAM)<br>MS<br>MOPT<br>INCOFER<br>LANAMME |

| Policy | Current state | Term | Strategic partners |
|---|---|---|---|
| | installation of telecommunications infrastructure must be updated. | | |
| **Updated National Frequency Allocation Plan.** | The Frequency Allocation Plan regarding the latest version of the ITU Radio Regulations is outdated. | 2015 and every 4 years. | SUTEL/MICITT |
| **Policy for active participation in the Internet Governance Model (Critical path to consolidate the Internet Governance model).** | Costa Rica was among the signatories of the Declaration on Principles for Internet Governance, and since then works in various committees, coalitions, and advocacy sessions of Internet access policies. | 2015-2018 | MICITT and all interested parties: Academia, businesses, and civil society. |
| **Policy to guide the development of Costa Rica's digital ecosystem based on three pillars: social progress, business productivity, and state effectiveness.** | There is an interagency commission for analysis and promotion of projects to be developed in each of the topics. | 2016 (second semester) | CICR, UCCAEP, INFOCOM, CAMTIC, MEIC, MICITT, COMEX, PROCOMER, CPC, ITCR |
| **Digital Television Reference Model**<br><br>**Components:**<br>**-Solidarity Plan.**<br>**-Information and Disclosure Campaign.**<br>**-International Cooperation Program.**<br>**-Management of electronic and technological waste.**<br>**-Update and adjustment of rules and regulations in DTV.**<br>**-Channelling plan** | To choose the standard for transmitting digital TV in the country, Executive Decree No. 35657-MP-MINAE of 5 November 2009, created *"The Special Joint Commission to analyse and report to the Executive Branch possible standards applicable to the country and the technological, industrial, commercial, and social implications of the transition from analogue to digital television."*<br><br>Technical tests were run in the first quarter of 2010, | 2016 | Joint Digital Television Commission |

| Policy | Current state | Term | Strategic partners |
|---|---|---|---|
| **- Interactivity program under the ISDB-Tb standard.**<br>**-Standard for attention of national disasters.** | according to three rules or existing standards for digital terrestrial television broadcasting. Results showed that the Japanese-Brazilian standard best suits the country, *Integrated Services Digital Broadcasting* (ISDB-Tb).<br><br>Subsequently, a Joint Commission prepared the document "Opinion for the implementation of Digital TV in Costa Rica," with the general guidelines for the Radio Spectrum, Social/Commercial, and Interactivity and Applications. The deadline for the analogue blackout was set for December 2017. The report was approved on 11 November 2010, by the Executive Branch. | | |
| **Policy for the promotion of access to Telecommunications/ ICTs for persons with a disability:**<br><br>**-Drive and encourage the adoption of W3C[16] standards on** | Report entitled “Television Accessibility,” issued by the International Telecommunications Union and G3ict.[17]<br><br>Resolution N° 70-2012 “Telecommunication/ information and | 2017 | MICITT.<br>National Council of persons with Disabilities (CONAPDIS). |

[16] W3C: Refers to the *World Wide Web Consortium*, an international community that will develop open standards to ensure long-term growth of the *web*. (Source: Web page: www.w3.org).

[17] G3ict: Refers to the *Global Initiative for Inclusive Information and Communication Technologies*; the G3ict is a promotion initiative launched in December 2006 by the United Nations Global Alliance for ICT and Development, in collaboration with the Secretariat of the Convention on the Rights of Persons with Disabilities of the UN DESA (United Nations Department of Economic and Social Affairs). Likewise, G3ict promotes the rights of persons with disabilities in the Digital Age. (Source: Web page: www.g3ict.com).

| Policy | Current state | Term | Strategic partners |
|---|---|---|---|
| **government web pages. (Executive Decree)**<br>**-Project "Annual Accessible ICT Award" for the public and private sector, aimed at promoting accessibility to Telecommunications/ ICTs for persons with disabilities.**<br>**-Pilot Plan on universal access at CECIs.**<br>**-Issuance of technical regulations on accessibility in matters fo digital technologies.**<br>**-Digital literacy.**<br>**-Pilot plan digital TV channel with audio description lines.** | communication technology accessibility for persons with disabilities," issued by the International Telecommunications Union.<br><br>No public policies exist regarding accessibility to telecommunications.<br><br>Costa Rica has not adopted any standard for the design and evaluation of accessibility of websites.<br><br>Convention on the Rights of Persons with Disabilities, Law N° 8661. | | |

## 4.4 Expected Results

Aligned with the strategic approach explained above and considering the fulfilment of goals, objectives, critical factors, actions, and policies that are being incorporated in this Plan, the achievement of the following results at the macro-country level is sought. Its satisfactory progress will depend not only on the State's efforts, but also of all stakeholders and strategic partners who are directly and indirectly linked with the Telecommunications industry.

Methodologically, each of the results is associated with the three pillars of PNDT. However, on the grounds that the telecommunications sector is unique and dynamic, and unites a number of factors of diverse nature, each pillar and each outcome are closely linked together; hence, the success will depend on the overall progress of the Plan.

We proceed to expose each of the expected results:

As to the Pillar on Digital Inclusion, once projects on universal access, universal service, and solidarity become a reality by 2021, the expectations are:

-Increase the use and appropriation of Internet by the population, so that it reaches, at least, the percentage of Internet users of the mean of OECD countries.

With respect to the Pillar on Digital Economy, once all the public and private efforts aimed at the modernization of broadcasting in Costa Rica [18]:

-100% of houses with Digital Television by 2017.

From the perspective of the Pillar of Electronic and Transparent Government, as one of the requirements to aspire to the construction of digital cities, by 2021 the following would be expected:

-Improve the quality of broadband connection so that 80% of the population has broadband availability according to the average of OECD countries.

With respect to this last result, it is important to make a distinction between the aspiration of speed of broadband (as reliable network infrastructure capable of offering various convergent services through a high capacity access with a combination of technologies) and other connectivity services being proposed in this PNDT.

[18] Results could present some modification if so recommended by the International Telecommunication Union (ITU) in its report to the country as a roadmap to be followed during the technological change from analogue TV to Digital TV, as a result of the cooperation provided by the International Telecommunication Union (ITU) and the Development Bank of Latin America (CAF).

As noted above, since Costa Rica is conducting the bidding process to join the OECD, the state hopes that by 2021 the median broadband speed of OECD will be achieved. According to international trends, it is expected to increase, which is a constantly growing aspiration for the country.

This does not exclude the possibility of considering higher bandwidths according to the needs of each sector, particularly of large companies, and as future projects that are being considered by public institutions.

On the other hand, there is the ***universal service speed, to be financed with resources from the National Telecommunications Fund.*** It is understood as connectivity for populations defined by the regulation for telecommunications as vulnerable (digital divide), when referring to the fulfilment of the objectives of universal access, universal service, and solidarity.

Under no circumstances must the concept of universality be interpreted as the service to be commercially provided to all persons or businesses, regardless of the sector concerned.[19]

With resources from FONATEL, connectivity of public agencies that serve vulnerable populations is also being considered, as well as other initiatives that are not aimed at households. In these cases, connectivity must be ensured that meets the specific technical needs of the target population.[20]

[19] Connectivity speed of the universal service in vulnerable households is set at least at 2 Mbps, scalable and revisable every 18 months.

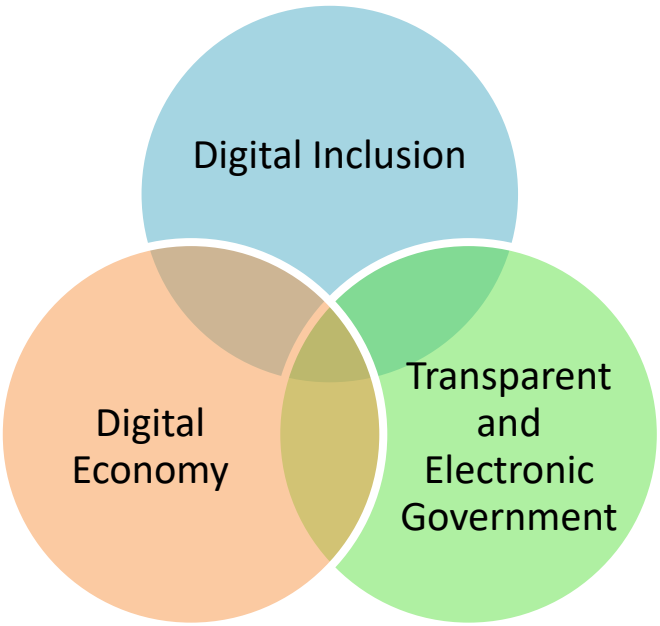
[20] Generally speaking, in the case of public entities, the Internet speed will have, as baseline, at least 6 Mbps, scalable and revisable every 18 months.

# Pillars of PNDT

# 5. PILLARS OF THE NATIONAL TELECOMMUNICATIONS DEVELOPMENT PLAN (PNDT)

Information gathered during the process of construction (with participation of the sector and stakeholders) and its subsequent analysis, and consideration of the three strategic objectives of the Government of the Republic as established in the abovementioned PND, served to conclude that any effort to produce a significant impact on national development, particularly in the telecommunications sector, needed to form three pillars:

**Figure 8. PNDT Pillars 2015-2021**




**Source**: Prepared internally, 2015.

The programmes and initiatives considered in each PNDT pillar must take into account the direct needs of their users, i.e. the target population, in order to ensure a correct alignment between their needs and the project profile scope and content.

Below is a breakdown of each pillar, explaining their objectives and the guidelines for the development of programmes, projects and initiatives to reach the corresponding goals which, in turn, are divided into specific lines of action for each pillar.

## 5.1. Digital Inclusion

This pillar comes from the identification of two key requirements for the Costa Rican population to access the benefits of the Information and Knowledge Society:

- The limitations that certain sectors face to access telecommunications services, reason why special attention must be paid to vulnerable groups through focalized actions to improve their chances to access telecommunications/ICTs.
- The need to encourage building abilities, knowledge and skills that will allow different groups of society to utilise these tools in a productive and significant manner.

In line with this, the Digital Inclusion pillar contains the Digital Solidarity Agenda which, according to the LGT, is the tool to prioritise short-, medium- and long-term actions that aim to foster the development of the more vulnerable populations, giving them access to telecommunications and ICTs and, in other words, meeting the specific goals of solidary and universal service and access.

The efforts and initiatives outlined in this PNDT are aligned with national strategies to fight poverty from different angles. Undoubtedly, the Telecommunications/ICT sector can contribute to directly close the gap, working in coordination with other institutions, particularly FONATEL, which is precisely the State mechanism to promote closing the digital divide and guarantee access and universal use of Telecommunications/ICTs.

As part of these initiatives, the Presidential Social Council developed the national poverty reduction strategy called “Puente al Desarrollo” (Bridge to Development), with the aim to provide the necessary tools for families to develop their capacities. Efficient and articulated efforts at multi-sectorial and interinstitutional levels will guarantee access, among others, to a social protection system, capacity development, and links to jobs and technological advances for the country´s vulnerable population.

“Puente al Desarrollo” sees access to information and communication technologies as a basic tool to improve educational processes and access to services such as education, health, labour, as well as to knowledge and information to better appreciate and tap opportunities in all areas of personal development and growth.

Down these lines, the work done by the Presidential Social Commission, headed by the Second Vice President of the Republic, is essential to identify the needs of the less advantaged population. Through the articulation and active participation of FONATEL, and

the efficient use of its resources, the goal is to guarantee universal service and access to telecommunications.

The execution of such strategic actions encompasses three inter-related levels: guarantee access and connectivity in terms of telecommunications quality, develop skills to enable a sense of ownership over digital technologies, and promote innovation through the design of digital content and applications.

In the strategic planning realm, the objective of this pillar is:

### 5.1.1. Objective

*To close the digital gap of access, use and ownership of digital technologies in order for the vulnerable population to enjoy the benefits of Telecommunications/ICTs as a tool for their growth, personal improvement and exercise of their rights.*

A series of guidelines that serve to frame the actions under the Digital Inclusion pillar of the Plan are listed below.

### 5.1.2. Guidelines for Digital Inclusion

The main objective of digital literacy projects will be to promote the development of skills and capacities for the population to learn, create, participate in, and utilise digital technologies in a safe and significant manner, with special emphasis on the populations in conditions of vulnerability, as defined in the National Poverty Strategy.

These literacy projects must also be inclusive, targeting the general population, particularly the more vulnerable populations that are at an economic disadvantage, and, even more specifically, persons with disabilities, children and youth, elderly persons, indigenous peoples, women heads of households, micro-entrepreneurial women, and the institutions that assist them[21].

[21] See Articles 32 and subsequent and Transitory Article VI of the General Law of Telecommunications, Law N° 8642 and Directive Nº 6- MIDEPLAN.

### 5.1.3. FONATEL Guidelines: Universal Access, Universal Service and Solidarity Projects

The principal objective of FONATEL resources will be to promote access to, and use of, the Internet as a tool to reduce poverty, generate employment and social inclusion, and to foster citizen participation, especially the vulnerable populations as defined in the National Poverty Strategy.

Vulnerable populations are understood as those persons at an economic disadvantage, particularly persons with disabilities, children and youth, elderly persons, indigenous peoples, women heads of households, micro-entrepreneurial women, and the institutions that assist them [22].

When considering linkages to geographical locations as one criterion to prioritise populations in conditions of vulnerability, it is imperative to use the Social Development Index of the Ministry of National Planning and Economic Policy (MIDEPLAN), the District Ranking developed by the Vice Ministry of Telecommunications of the MICITT, and the poverty maps, without excluding the possibility of consulting other sources of accurate, relevant and verifiable information.

Additionally, priority must be given to projects that provide access and universal service to communities that lack connectivity or only have residual connectivity, as determined by technical studies carried out by SUTEL or the MICITT, and where there is a greater concentration of people in vulnerable conditions.

Considering that Transitory Article VI of the General Law of Telecommunications mandates that subsequent National Telecommunications Development Plans must include technological enhancements, any strategic action and project developed and implemented together with FONATEL must provide for both technological innovations and state-of-the-art technologies that enable scalability and a better utilization of these benefits in the future. Additionally, the direct needs of users or target populations must be congruent with the scope and contents of project profiles.

As provided in Article 8 of Law N° 7600, Law on Equal Opportunities for Persons with Disabilities, any programme or service to be partially or totally funded with public resources must be fully compliant with the norms contained therein. Therefore, projects executed under FONATEL must be designed for universal access to ensure that persons with any type of disability can fully exercise their rights.

The development of FONATEL-financed projects is understood to complement State and market actions and measures to provide telecommunications services to the population at

[22]See Articles 32 and subsequent and Transitory Article VI of the General Law of Telecommunications, Law N° 8642 and Directive Nº 6- MIDEPLAN.

large. This explains the need to bring together the resources and efforts of all participating public institutions to ensure the future sustainability of these projects.

In order to promote the complete digital ecosystem cycle, and as one key element to fully utilise the benefits of implementing projects of universal access, universal service and solidarity, it is necessary for public entities that benefit from the projects to complement these efforts with digital literacy programmes (access to content, applications, training, among others).

The use of FONATEL resources is limited in time and will serve as an initial investment for a specific term depending on the nature of each project and programme to be developed. Beneficiary institutions must take the necessary measures to ensure project sustainability once the support from the Fund finalises.

No FONATEL resources will be used to meet the contractual obligations of telecommunications operators or providers in virtue of commitments previously agreed with the State.

During the design, formulation and execution of projects and programmes financed by FONATEL, it is fundamental to ensure transparency, broad participation of possible bidders, quality and accountability, optimisation of public services and new and existing infrastructure, and infrastructure sharing, to satisfaction of beneficiary institutions.

In accordance with the General Law of Telecommunications, FONATEL aims to reduce the digital divide for vulnerable populations in projects of universal service executed through the Fund.[23]

For public service delivery centres (CPSP), Internet connectivity must address the needs of each institution and target population[24]. Connectivity speed, as defined in the National Telecommunications Development Plan, in response to the universal service and access objectives, will be updated every eighteen months.

[23] It is necessary to guarantee residential access at no less than 2 Mbps.

[24] It is necessary to ensure an initial speed, scalable to 6 Mbps. This speed will be reviewed every 18 months.

### 5.1.4. Lines of Action under the Digital Inclusion Pillar

| *Universal Access, Universal Service and Solidarity* | *Digital Literacy* |
|---|---|
| • This line of action includes the goals in the scope of action of FONATEL, that is, the Digital Solidarity Agenda. | • This line of action contains the planned initiatives to foster empowerment of Telecommunications/ICTs with inter-institutional participation. |

### 5.1.5. Programmes/Projects of the Digital Inclusion Pilar[25]

*Universal Access, Universal Service and Solidarity*

- Connected Communities
- Connected Homes
- Equipped Public Centres
- Connected Public Spaces
- Solidary Broadband Network

*Digital Literacy*

- Empowerment of Population in ICTs
- National Programme for teacher training in ICTs
- TECNO@PRENDER Technological Platform

[25] The goals of each programme or project are described in Annex 1 to this document, entitled "Matrix of PNDT Goals 2015-2021."

## 5.2. TRANSPARENT AND ELECTRONIC GOVERNMENT

E-Government platforms are essential to advance individuals as agents of change, fostering their participation in matters of national interest and, therefore, strengthening transparency and ensuring their empowerment as overseers of the healthy administration of public resources, in order to comply with the objectives of these government entities.

Not only can public resources be optimised by turning the State into a virtual space to exchange information, carry out procedures, make shared public investments and favour information system interoperability, for example, but also the government can be brought closer to the population.

That is why new technologies in public administration must aim at modernisation and transformation while also opening spaces for new types of processes. This requires:

- Public policies to promote individuals as protagonists and agents of change.
- Digital technologies and accessible applications to allow people to interact with Public Administration, thus ensuring access to public information, accountability of policies that impact the surroundings, and active participation.

With this, telecommunications offer the possibility to articulate actions that impact all State undertakings, starting with common platforms, technologies, devices or contents, and promoting a transparent and electronic government.

### 5.2.1. Objective

*Advance towards a closer and more open relationship between public administration and the inhabitants, enhancing state efficiency, facilitating access to innovative public services, promoting transparency, strengthening State decision-making, and fostering active participation of civil society.*

### 5.2.2. Guidelines for the Pillar of Transparent and Electronic Government

The guidelines that establish the framework of action for the Plan contents, such as goals, projects, programmes and initiatives, for the pillar of Transparent and Electronic Government are described below.

The general population must have access to public digital services, preferably through mobile E-Government platforms. It is also necessary to ensure transparency and access to public information, promote accountability and citizen participation in the design of all electronic government applications, and guarantee access to information and digital services under equal, safe and understandable conditions, with emphasis on widespread access and adjustment to multiple supports, channels and environments.

Industry standards are a priority in order for public technological platforms to communicate with each other, and to optimise the use of public resources and improve State efficiency. Also of utmost importance is to protect private and sensitive user data and State IT platforms against cyber-attacks while ensuring freedom of choice of technologies. E-government platforms must not be limited to one specific technology so that users can have different means of access depending on their needs and possibilities.

Any information technology developed to serve as a link between people and services providers must consider the needs of persons in vulnerable situations or persons with disabilities so as to not become an obstacle to access State-promoted technological facilities, information and communications.

Any project, development or implementation of E-Government communication or information systems must allow for user access, regardless of the operating system or search engine used.

Telecommunications/ICT projects, including those related to universal access and services, must be designed using modern, innovative and efficient technologies.

For projects executed by third parties, including E- Government, the State must guarantee the open participation and concurrence of bidders to achieve the best technical, economic and service conditions for public entities and users.

Network operators and telecommunications services providers must be allowed to choose technologies, provided that they fulfil public objectives and goals, have common and guaranteed standards, and ensure the best quality and pricing conditions for users.

Institutional documents must be stored in a standard, known and open format that allows opening and modifying such documents without depending on one exclusive technology platform.

ICT tools will help simplify procedures, computerize public services and streamline teleworking, and, thus, reduce the use of paper, and save fuel and energy, among others.

Another objective of the E-Government is to sensitise registered and qualified operators and service providers to implement carbon-neutral practices.

Legal obligations exist for the integrated management of technological and electronic wastes so as to increase the number of telecommunications enforcement units in the country, and to encourage the Central Government to implement the Institutional Environmental Management Plan, through which ministries manage their own electronic and technological wastes, serving as example to the private sector.

### 5.2.3. Lines of Action for the Pillar of Transparent and Electronic Government

| Close Government | Environmental Sustainability |
| --- | --- |
| • Include goals related to the digitalisation of Government procedures and services, through technological terminals or platforms which in turn are related to telework. | • Determine actions that help reduce the impact of telecommunications on the environment and achieve sustainable development of digital technologies, as seen from different angles. |

### 5.2.4. Programmes/Projects of the Pillar of Transparent and Electronic Government[26]

**Close Government**

- Single Digital Health Record (EDUS)
- Programme to promote Electronic Government
- Computerisation of processes
- Project to offer shared technological services in the State
- Promote Telework in the Public Sector
- Accessibility in Information and Communication Technologies

**Environmental Sustainability**

- Project on innovation and utilisation of information and communication technologies (ICT) in benefit of the environment
- C-Neutrality of telecommunications operators and providers

## 5.3. DIGITAL ECONOMY

Modern day information and communication technologies are indispensable for continuous business improvement. They help raise productivity, increase efficiency, reach new markets and keep abreast of any changes in the surroundings of the productive sector. For small and medium enterprises, these tools gain even greater relevance, as they foster greater interaction with the domestic as well as the international market.

For this to occur, telecommunications systems need to have the capacity and quality to meet user requirements, either companies or individuals. The availability, variety and quality of services resulting from effective competition among telecommunications operators and providers encourage companies to make more significant investments in the country. And lastly, for society to maximise the benefits of Telecommunications/ICTs, economic limitations cannot be an obstacle for individuals and SME to access them.

[26] The goals of each programme or project are listed in Annex 1 to this document, called "Matrix of PNDT Goals 2015-2021."

### 5.3.1. Objective

*To create more opportunities of social and economic wellbeing for the population by expanding access to digital technologies that may enable new business based on the develpment of products, goods, services, digital content and innovative ideas.*

### 5.3.2. Guidelines for the Pilar of Digital Economy

The guidelines that establish the framework of action for the Plan and its contents, such as goals, projects, programmes and initiatives, for the pillar of Digital Economy are described below.

An enabling environment will ensure access to telecommunications services, radio spectrum availability, sustainable and orderly deployment of infrastructure, and clear market rules.

All operators must receive non-discriminatory treatment when offering their services to possible users, public or private, in compliance with the procedures, principles and objectives in the telecommunications legal framework.

Small and medium enterprises must have access to connectivity, at affordable prices and with the quality required for their growth and development, especially broadband. It is important to gauge the perspective of users regarding the quality of telecommunications services. Global trends in content and digital applications must be continuously adopted, considering the particular needs of the population.

The market environment must attract further investments and effective competition through sound telecommunications regulations and public policies.

The radio spectrum must be distributed based on its efficient use and observing plurality to address both national as well as local needs.

The whole population (including persons with disabilities) will have access to quality broadcasting services, in the sense of technical quality, equal conditions and non-discrimination. Software production and applications and content development will be encouraged, in order to offer innovative products and services.

And lastly, decisions regarding the digitalization of broadcasting services will be based on prior technical studies.

### 5.3.3. Lines of Action of the Pillar of Digital Economy

| Digital Broadcasting | Radio Spectrum and Networks | E-Commerce |
|---|---|---|
| • Actions aimed at democratising the radio spectrum for the transition to Digital TV and Digital Radio, and developing interactive applications. | • Actions aimed at utilising IMT, neutral interchange point, and the IPv6 protocol. | • Goals to utilise the convergence between Telecommunications and ICTs in the banking and card world using proximity payments as well as electronic transactions. |

### 5.3.4. Programmes/Projects of the Pillar of Digital Economy[27]

**Digital Broadcasting**

- Democratisation of Radio Spectrum for Digital TV
- Digital Television for all
- Interactive applications of E-Government for Open Digital TV

**Radio Spectrum and Networks**

- Plan to use IMT frequency bands in Costa Rica
- Consolidation of Neutral Interchange Point for Traffic
- Drive adoption of Internet IPv6 Protocol for Public Services
- Drive adoption of Internet IPv6 Protocol in Central Government

**E-Commerce**

- Smart mass transit
- Banking
- Web Banking - Digital Treasure (Tesoro Digital) for Administrative and School Boards of MEP
- Single Electronic Payment System to beneficiaries of social programmes
- Electronic Invoice system

[27] The goals of each programme or project are listed in Annex 1 to this document, called "Matrix of PNDT Goals 2015-2021."

PNDT
2015-2021
Costa Rica: Una Sociedad Conectada

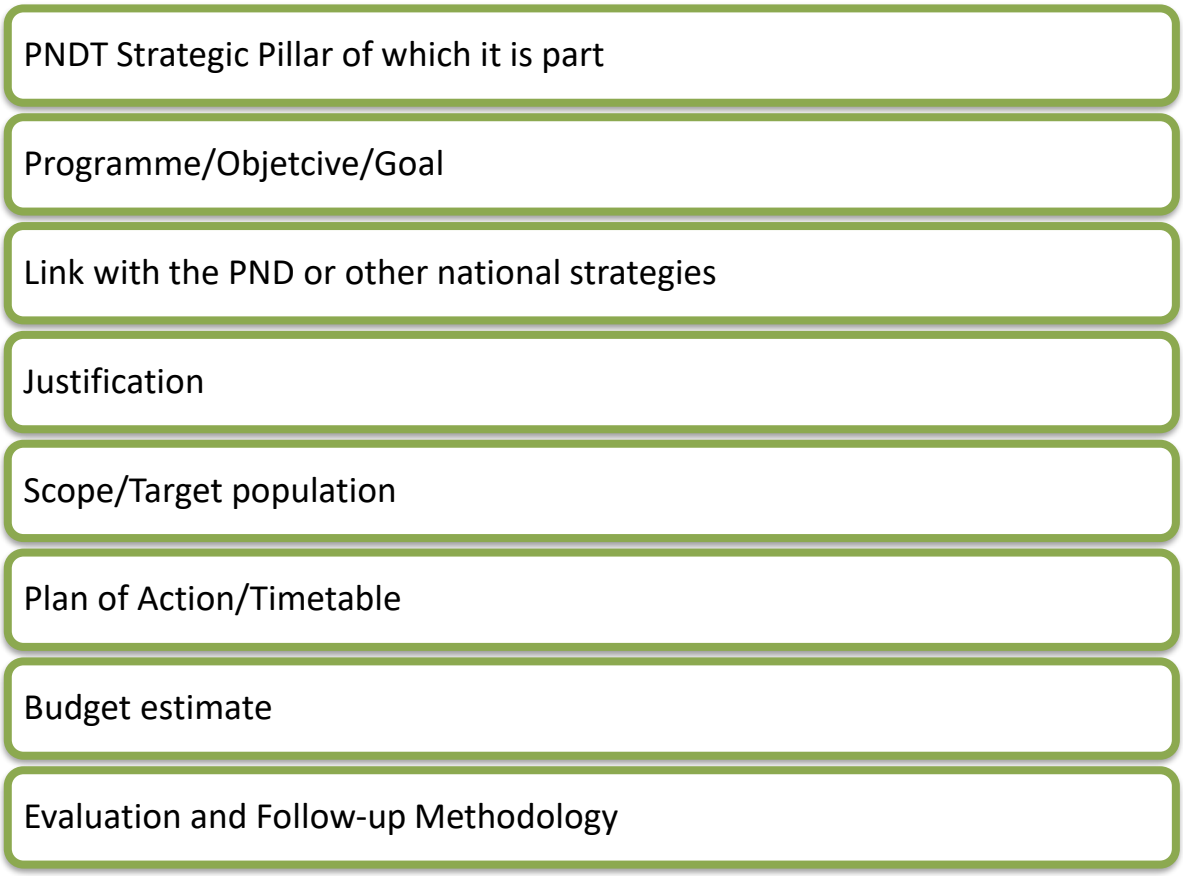
# Plan Management Model of PNDT

## 6. PLAN MANAGEMENT MODEL

In order to implement, coordinate and enforce public policy, the relevant institutions will develop, together with the Vice Ministry of Telecommunications, project profiles that will serve to systematise, classify and define the goals that will contribute to the articulated fulfilment of the three major Strategic Pillars of the Plan.

Once the formal Plan is developed, and under the coordination of the Vice Ministry of Telecommunications, project profiles will be drawn up in a period of **four months** and will contain, as minimum:

**Figure 9. Components of PNDT Management Model**




**Source:** Prepared internally, 2015.

## 6.1. PNDT Evaluation Process

Article 39 of the Law on the Strengthening and Modernisation of Public Entities in the Telecommunications Sector reads:

> *"The sector will be headed by the Minister of Science, Technology and Telecommunications (MICITT), with the following functions:*
>
> *(…)*
>
> *c) Ensure that State policies are implemented by public and private entities that participate in the telecommunications sector."*

Therefore, the Directorate of Telecommunications, through the Vice Minister of Telecommunications, will monitor and evaluate the goals in the PNDT, following the methodology determined by the Vice Ministry of Telecommunications, whereas the compliance and tools to measure compliance with the goals with be the responsibility of the relevant entity.

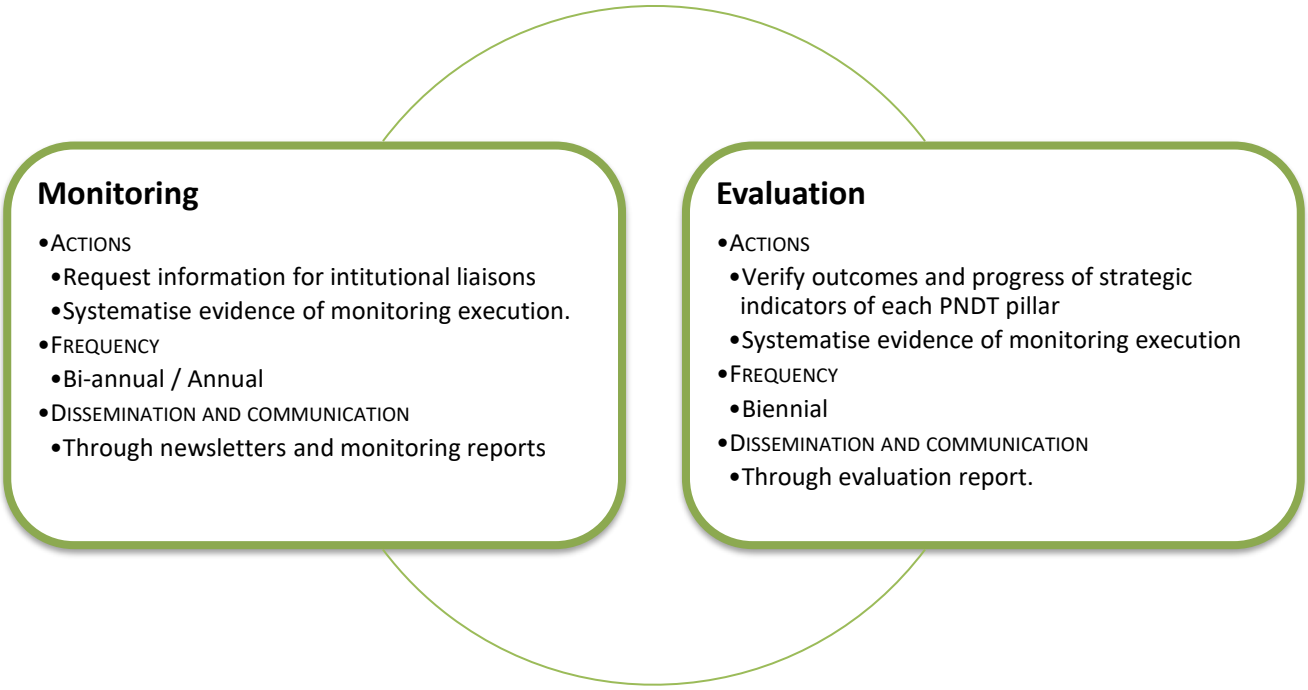
Besides, for the goals in the Digital Solidarity Agenda programmes funded by FONATEL in the Digital Inclusion pillar, the Superintendence of Telecommunications develops a Bi-Annual National Telecommunications Fund Management Report, pursuant to Article 40 of the General Law of Telecommunications, with specific details on the progress of the goals set out in the PNDT.

The Directorate monitors the programmes and consults with the institutions responsible for the different goals, striving for a more successful implementation.

The PNDT 2015-2021 is a living document which will evolve as it is executed. Is evaluation will imply assessing priorities, the scope and contents of objectives, outcomes, goals and their indicators, as well as their relevant guidelines and policies to ensure compatibility with changes in the legal, policy, economic, technical and social changes environment, among others.

Below is a general diagram illustrating how the Plan is evaluated.

**Figure 10. Monitoring and Evaluation Methodology**




**Source:** Prepared internally, 2015.

# 7. BIBLIOGRAPHY


World Bank (2009). *World Bank ICT 4 Development Report 2009*. Columbia, United States: World Bank, WB.

World Economic Forum (2014). The Global Information Technology Report 2014. Geneva: WEF.

Instituto Mixto de Ayuda Social. (2015). *Puente al Desarrollo. Estrategia Nacional para la Reducción de la Pobreza.* San José: Presidency of the Republic of Costa Rica.

Instituto Nacional de Estadísticas y Censos. (2015) Household Surveys 2009-2014 Retrieved from: http://www.inec.go.cr/enaho/aspGen/aspmeto.aspx.

Katz, R. (2010). "The Contribution of Broadband to Economic Development," in V. Jordan, H. Galperin and W. Peres, Accelerating the Digital Revolution: Broadband for Latin America and the Caribbean, Santiago: ECLAC.

Katz, R. and Callorda, F. (2011). Medición de Impacto del Plan Vive Digital en Colombia y de la Masificación de Internet en la Estrategia de Gobierno en Línea. Bogotá: CINTEL.

Katz, R. and Ávila, J. (February, 2011) El impacto económico de la Banda Ancha y desafíos para superar la brecha Digital. Ponencia presentada en el Seminario sobre los aspectos económicos y financieros de las telecomunicaciones. San Salvador, El Salvador. Columbia Business School. Session 10.

Kayser, O., Klarsfeld, L. and Brossad S. (2014). The Broadband Effect: Enhancing Market-Based solution for the base of the Pyramid. Washington: IDB.

Ley Fortalecimiento y Modernización de las Entidades Públicas del Sector Telecomunicaciones, N° 8660 (2008). Alcance N° 31 of Official Newspaper La Gaceta, dated 13 August 2008, and its reforms.

Ley General de Telecomunicaciones N° 8642 (2008). Alcance N° 125 of Official Newspaper La Gaceta, dated 30 June 2008, and its reforms.

Ley sobre el Traslado del Sector Telecomunicaciones del Ministerio de Ambiente, Energía y Telecomunicaciones al Ministerio de Ciencia y Tecnología, N° 9046 (2012). Alcance N° 104 of Official Newspaper La Gaceta, dated 30 July 2012.

Ministerio de Ambiente, Energía y Telecomunicaciones (2011). Reglamento para la transición a la Televisión Digital Terrestre en Costa Rica. Executive Decree Nº 36774-MINAET. Official Newspaper La Gaceta: Nº 185, dated 27 September 2011.

Ministerio de Ambiente, Energía y Telecomunicaciones (2009) Plan Nacional de Desarrollo de Telecomunicaciones 2009-2014. Costa Rica: un país en la senda Digital. San José: MINAET.

Ministerio de Ciencia, Tecnología y Telecomunicaciones (2013). Ranking Distrital de Acceso de Tecnologías de Información y Comunicación, San José: MICITT.

Ministerio de Ciencia, Tecnología y Telecomunicaciones (2013). Report N° MICITT-GAER-IT-140-2013, San José: MICITT.

Ministerio de Planificación Nacional y Política Económica (2014). Plan Nacional de Desarrollo 2015-2018 “Alberto Cañas Escalante.” San José: MIDEPLAN.

United Nations Organisation (2012). United Nations E-Government Survey, 2012 E-Government for the People. New York: UN.

Superintendencia de las Telecomunicaciones (2013). Report N° 890-SUTEL-DGC-2013. San José: SUTEL.

Superintendencia de las Telecomunicaciones (2015) Estadísticas del Sector de Telecomunicaciones, Report 2014. Costa Rica San José: SUTEL.

Unión Internacional de Telecomunicaciones (2013). Measuring the Information Society 2013. Ginebra: UIT.

International Telecommunications Union (2014) Trends in Telecommunication Reforms: Getting Ready for the Digital Economy. Geneva: ITU.

International Telecommunications Union and United Nations Educational, Scientific and Cultural Organisation (2014) The State of Broadband, Broadband for All. Geneva, Switzerland.

International Telecommunications Union (s.f.) (ITU) "International Mobile Telecommunications." Retrieved from: http//www.itu.int/rec/T-REC-Y.2281-201101-I/en

Viceministerio de Telecomunicaciones (2013) Compendio Estadístico 2013. Retrieved from: http://www.telecom.go.cr/index.php/en-contacto-con-el-usuario/todos-los-documentos/telecom/novedades/Compendio%20Estadistico%20Sector%20Telecomunicaciones%202013_4.xlsx/detail

# 8. ANNEXES

## 8.1. Annex: "Matrix of PNDT Goals 2015-2021"

**Pillar 1: Digital Inclusion**

**Line of Action 1: Universal Access, Universal Service and Solidarity**

**Programme 1: Connected Communities**

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Communities | | | |
| **Programme Objective:** | To provide universal access to telecommunications services in districts where, for costs reasons, it is not profitable to set up and maintain infrastructure. | | | |
| **Outcome:** | Access to fixed voice services[28] and Internet for communities with connectivity gap (non-existent or partial) and CPSP[29] that assist vulnerable populations. | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[30]:** |
| 1. 184 districts in geographic areas with no or partial connectivity, or | 2016: 125 Districts<br>2017: 184 Districts | Number of districts with geographic areas with no or partial connectivity, or | 0% | SUTEL/FONATEL |

[28] According to Transitory Article VI, this refers to a connection to the public telephone network from a fixed location.
[29] This refers to service delivery centres that assist the vulnerable population, as provided in Article 32 and Transitory Article VI of the General Law of Telecommunications.
[30] This refers to the person or entity responsible for reporting progress towards a goal; the institutions working towards goals with FONATEL funding must provide their inputs to the Superintendence of Telecommunications, as required.

| | |
|---|---|
| **Pillar:** | Digital Inclusion |
| **Line of Action:** | Universal Access, Universal Service and Solidarity |
| **Programme:** | Connected Communities |
| **Programme Objective:** | To provide universal access to telecommunications services in districts where, for costs reasons, it is not profitable to set up and maintain infrastructure. |
| **Outcome:** | Access to fixed voice services[28] and Internet for communities with connectivity gap (non-existent or partial) and CPSP[29] that assist vulnerable populations. |

| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible[30]: |
|---|---|---|---|---|
| expanded partial connectivity with access to data and voice services, by 2017.[31] | Budget: The disbursement of FONATEL is estimated at $167 million. | expanded partial with access to data and voice services | | |
| 2. 100% of the population in indigenous territories without connectivity, with partial coverage or partial extended coverage with access to voice and Internet services, by 2021. | 2016: 12.5%<br>2017: 25.0%<br>2018: 42.0%<br>2019: 60.0%<br>2020: 83.0%<br>2021: 100.0%<br><br>Budget: The estimated FONATEL subsidy is $12 million. | Percentage of indigenous territories without connectivity, with partial coverage or partial extended coverage of the country with access to voice and Internet services. | 0% | SUTEL/FONATEL |

[31] When a district or geographic region no longer meets the conditions established in Article 32 of the General Law of Telecommunications, it will cease to be under this goal.

| | |
|---|---|
| **Pillar:** | Digital Inclusion |
| **Line of Action:** | Universal Access, Universal Service and Solidarity |
| **Programme:** | Connected Communities |
| **Programme Objective:** | To provide universal access to telecommunications services in districts where, for costs reasons, it is not profitable to set up and maintain infrastructure. |
| **Outcome:** | Access to fixed voice services[28] and Internet for communities with connectivity gap (non-existent or partial) and CPSP[29] that assist vulnerable populations. |

| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible[30]: |
|---|---|---|---|---|
| 3. 100% of annual housing projects in the Housing Financial System located in geographic areas without connectivity, with partial coverage or partial extended coverage with access to voice and data services, by 2021. | 2016: 100%<br>2017: 100%<br>2018: 100%<br>2019: 100%<br>2020: 100%<br>2021: 100%<br><br>Budget: Estimated subsidy not available.[32] | Percentage of annual housing projects in the Housing Financial System located in geographic areas without connectivity, with partial coverage or partial extended coverage with access to voice and data services. | 0% | SUTEL/FONATEL |

[32] The Superintendence of Telecommunications will determine project subsidy costs based on the inputs of the Ministry of Housing and Human Settlements.

| | |
|---|---|
| **Pillar:** | Digital Inclusion |
| **Line of Action:** | Universal Access, Universal Service and Solidarity |
| **Programme:** | Connected Communities |
| **Programme Objective:** | To provide universal access to telecommunications services in districts where, for costs reasons, it is not profitable to set up and maintain infrastructure. |
| **Outcome:** | Access to fixed voice services[28] and Internet for communities with connectivity gap (non-existent or partial) and CPSP[29] that assist vulnerable populations. |

| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible[30]: |
|---|---|---|---|---|
| 4. 100% of MEP high schools with international baccalaureate applying the TECNOAPRENDER model, with minimum Internet speed of 20 Mbps, by 2021. | 2016: 16%<br>2017: 33%<br>2018: 50%<br>2019: 66%<br>2020: 83%<br>2021: 100%<br><br>Budget: Estimated subsidy not available.[33] | Percentage of MEP high schools with international baccalaureate applying the TECNOAPRENDER model, with minimum Internet speed of 20 Mbps. | 0% | MEP (Directorate of Technological Resources) SUTEL/FONATEL |

[33] The Superintendence of Telecommunications will determine project subsidy costs based on the inputs of the Ministry of Public Education.

**Programme 2: Connected Households**

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Households | | | |
| **Programme Objective:** | Reduce connectivity gap among households in vulnerable socio-economic conditions | | | |
| **Outcome:** | Subsidised Internet service and access device for productive use | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[34]:** |
| 5. 140 496 households throughout the nation with subsidy for Internet service and one usage device, by 2018. | 2016: 56 832<br>2017: 93 365<br>2018: 140 496<br><br>Budget: Estimated subsidy is $100 million from FONATEL. | Number of households with subsidy for Internet service and one device provided by the Programme. | 0% | SUTEL/FONATEL |

[34] This column refers to the person or entity responsible for reporting progress towards the goal; the institutions working towards the goals with FONATEL funding must provide their inputs to the Superintendence of Telecommunications, as required.

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Households | | | |
| **Programme Objective:** | Reduce connectivity gap among households in vulnerable socio-economic conditions | | | |
| **Outcome:** | Subsidised Internet service and access device for productive use | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[34]:** |
| | | | | |
| 6. 100% of households in annual housing projects of social interest, of the Housing Financial System, that meet the criteria of the Connected Households Programme, with subsidised Internet services and connectivity device, by 2021.[35] | 2016: 100%<br>2017: 100%<br>2018: 100%<br>2019: 100%<br>2020: 100%<br>2021: 100%<br><br>Budget: Estimated subsidy not available.[36] | Percentage of households in annual housing projects of social interest, of the Housing Financial System, that meet the criteria of the Connected Households Programme, with subsidised Internet services and connectivity device. | 0% | SUTEL/FONATEL |

[35] These households are included in the universe of Goal 5 of the Connected Households Programme.
[36] The Superintendence of Telecommunications will determine project subsidy costs based on the inputs of the Ministry of Housing and Human Settlement.

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Households | | | |
| **Programme Objective:** | Reduce connectivity gap among households in vulnerable socio-economic conditions | | | |
| **Outcome:** | Subsidised Internet service and access device for productive use | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[34]:** |
| | | | | |
| 7. 450 entrepreneurial and business women, heads of households, registered in SIEC, with subsidy for Internet service and usage device, by 2018.[37] | 2016: 100<br>2017: 250<br>2018: 450<br><br>Budget: Estimated subsidy not available.[38] | Number of entrepreneurial and business women, heads of households, registered in SIEC, with subsidy for Internet service and usage device. | 0% | SUTEL/FONATEL |

[37] The project profile will contain a mechanism through which the Ministry of Economy, Industry and Commerce will transfer the list of beneficiaries to the Instituto Mixto de Ayuda Social.
[38] The Superintendence of Telecommunications will determine the costs to subsidise the goal based on the inputs of the Ministry of Economy Industry and Commerce.

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Households | | | |
| **Programme Objective:** | Reduce connectivity gap among households in vulnerable socio-economic conditions | | | |
| **Outcome:** | Subsidised Internet service and access device for productive use | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[34]:** |
| | | | | |
| 8. 300 entrepreneurial and business women, heads of households, located in priority areas by "Puente al Desarrollo," with subsidy for Internet service and one usage device, by 2018.[39] | 2016: 100<br>2017: 200<br>2018: 300<br><br>Budget: Estimated subsidy not available.[40] | Number of entrepreneurial and business women, heads of households, located in priority areas by "Puente al Desarrollo," with subsidy for Internet service and one usage device, by 2018. | 0% | SUTEL/FONATEL |

[39] The project profile will contain a mechanism through which the Ministry of Economy, Industry and Commerce will transfer the list of beneficiaries to the Instituto Mixto de Ayuda Social.
[40] The Superintendence of Telecommunications will determine the costs to subsidise the goal based on the inputs of the Ministry of Economy Industry and Commerce.

**Programme 3: Equipped Public Centres**

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Equipped Public Centres | | | |
| **Programme Objective:** | Promote the effective use of connectivity services and usage devices at CPSP.[41] | | | |
| **Outcome:** | Internet access devices for users of Public Service Delivery Centres. | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[42]:** |
| 9. 40 000 connectivity devices delivered to CPSP, by 2018. | 2016: 24 000<br>2017: 32 000<br>2018: 40 000<br><br>Budget: The estimated subsidy is $20 million from FONATEL. | Number of access devices provided by the Programme. | 0% | SUTEL/FONATEL |
| 10. 100% of SINABI Public Libraries with an operational Smart Community Centre, by 2019. | 2016: 34%<br>2017: 51%<br>2018: 69%<br>2019: 100%<br><br>Budget: The estimated subsidy is ¢383 million from MICITT. | Percentage of SINABI Public Libraries with an operational Smart Community Centre. | In 2015, a total of 40 libraries with a Smart Community Centre, which will be completely renovated. | MICITT-SINABI |

[41] This refers to service delivery centres that assist the vulnerable population, as provided in Article 32 and Transitory Article VI of the General Law of Telecommunications.
[42] This column refers to the person or entity responsible for reporting progress towards meeting the goal; the institutions working towards the goals with FONATEL funding must provide their inputs to the Superintendence of Telecommunications, as required.

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Equipped Public Centres | | | |
| **Programme Objective:** | Promote the effective use of connectivity services and usage devices at CPSP.[41] | | | |
| **Outcome:** | Internet access devices for users of Public Service Delivery Centres. | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[42]:** |
| 11. 100% of Elderly Day Care Centres with operating Smart Community Centres by 2021. | 2016: 8%<br>2017:25%<br>2018: 50%<br>2019:66%<br>2020:83%<br>2021:100%<br><br>Budget: The estimated subsidy is ¢330 million from MICITT. | Percentage of Elderly Day Care Centres with operating Smart Community Centres and free Internet and broadband connectivity devices. | 0% | MICITT- CONAPAM |
| 12. 100% of CEN-CINAI with Technological Corners by 2021. | 2016: 20%<br>2017: 40%<br>2018: 60%<br>2019: 80%<br>2020: 90%<br>2021: 100%<br><br>The estimated subsidy is ¢450 million from CEN-CINAI. | Percentage of CEN-CINAI with Technological Corners. | 0% | CEN-CINAI |

**Programme 4: Connected Public Spaces**

| | | | | |
|---|---|---|---|---|
| **Pillar:** | Digital Inclusion | | | |
| **Line of Action:** | Universal Access, Universal Service and Solidarity | | | |
| **Programme:** | Connected Public Spaces | | | |
| **Programme Objective:** | Provide free access to Internet service in public community spaces. | | | |
| **Outcome:** | Public access to Internet from select public spaces. | | | |
| **Goal:** | **Progress by Period and Budget:** | **Indicator:** | **Baseline:** | **Responsible[43]:** |
| 13. 240 Internet access points, free of charge, for the population in public spaces by 2017. | 2016: 120<br>2017: 240<br><br>Budget: The estimated subsidy is $10.2 million from FONATEL. | Number of public points of access to Internet installed by the Programme. | 0%<br>No public point of access to Internet installed by the Programme. | SUTEL/FONATEL |

[43] This column refers to the person or entity responsible for reporting progress towards meeting the goal; the institutions working towards the goals with FONATEL funding must provide their inputs to the Superintendence of Telecommunications, as required.

**Programme 5: Solidary Broadband Network**

| Pillar: | Digital Inclusion | | | |
|---|---|---|---|---|
| Line of Action: | Universal Access, Universal Service and Solidarity | | | |
| Programme: | Solidary Broadband Network[44] | | | |
| Programme Objective: | Extend and improve broadband connectivity in communities and public service delivery centres, primarily located in areas where the service is not financially profitable. | | | |
| Outcome: | Increase the number and quality of connections in communities and public service delivery, primarily located in areas where the service is not financially profitable, through a broadband network. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible[45]: |
| 14. 100% execution of the Solidary Broadband Network project by 2021.[46] | 100% execution of the Solidary Broadband Network project by 2021.<br><br>2016: 20%<br>2017: 50%<br>2018: 70% | Percentage progress of Solidary Broadband Network Project<br><br>Phases and weightings:<br><br>1. Diagnosis (Baseline): 20%[48] | 0% | SUTEL/FONATEL |

[44] A virtual network with existing infrastructure that is efficiently utilised by telecommunications operators. Resources and projects will be used in accordance with the Law on Administrative Contracts and the General Law of Telecommunications, thus guaranteeing the adequate use of resources.

[45] This column refers to the person or entity responsible for reporting progress towards meeting the goal; the institutions working towards the goals with FONATEL funding must provide their inputs to the Superintendence of Telecommunications, as required.

[46] Article 36 of the General Law of Telecommunications reads: - Allocation Methods
FONATEL resources shall be allocated by SUTEL in accordance with the National Telecommunications Development Plan to finance:
a) Obligations related to universal service and access imposed on qualified operators and providers. FONATEL shall finance those obligations that may represent a shortfall or competitive disadvantage for the operator or provider, as provided in Article 38 of this Law. The methodology to determine the shortfall, its corresponding calculation and other conditions shall be developed according to regulations. Each operator or provider will be informed of the obligations to be financed by FONATEL.
b) For universal service and access projects, as provided in Article 33 of this Law, SUTEL will publish every year a list of projects related to universal access, universal service and solidarity to be funded by FONATEL. Such announcement will indicate, for each project, the beneficiary sites, minimum service quality required, applicable rate system, specified period, maximum subsidy, estimated service starting date, project term, and any other condition under the tender documents. Projects will be awarded through public contest carried out by SUTEL. The winning operator or provider shall be whoever meets all established conditions and requires the lowest subsidy for project execution. The process must comply with Law N. º7494, Administrative Contracting, dated on 02 May 1995, and its reforms, and the corresponding regulations.

[48] The magnitude of the phases will depend on the Diagnosis.

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Inclusion | | | |
| Line of Action: | Universal Access, Universal Service and Solidarity | | | |
| Programme: | Solidary Broadband Network[44] | | | |
| Programme Objective: | Extend and improve broadband connectivity in communities and public service delivery centres, primarily located in areas where the service is not financially profitable. | | | |
| Outcome: | Increase the number and quality of connections in communities and public service delivery, primarily located in areas where the service is not financially profitable, through a broadband network. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible[45]: |
| | 2019: 80%<br>2020: 90%<br>2021: 100%<br><br>Budget: Estimated subsidy not available.[47] | 2. Planning:<br>a) Scope definition: 10%<br>b) Feasibility study (technical, economic): 10%<br>c) Risk assessment: 10%<br><br>3. Development and approval of final designs: 10%<br><br>4. Execution: 40%<br>a) Contest procedures.<br>b) Implementation.<br>c) Control and follow-up<br>d) Closing (network delivery). | | |

[47] Project profiles must indicate the scope of the diagnosis phase for that goal, in order to determine, along with the outcomes, the costs and scope of subsequent phases.

**Line of Action 2: Digital Literacy**

**Programme 6: Empowerment of Population in ICTs**

| Pillar: | Digital Inclusion | | | |
|---|---|---|---|---|
| Line of Action: | Digital Literacy | | | |
| Programme: | Empowerment of Population in ICTs | | | |
| Programme Objective: | Increase use and responsible, safe and productive ownership of digital technologies among the population at large. | | | |
| Outcome: | Close gap in use of digital technologies to attain responsible and safe use and foster social innovation. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 15. 62 267 persons certified in INA modules through use of ICTs, by 2018. | 2015: 15 110<br>2016: 30 522<br>2017: 46 242<br>2018: 62 267<br><br>Budget: The estimated cost is ₡3.16 billion from INA. | Number of persons certified in INA modules through use of ICTs. | 6858 persons trained by 2013. | INA (Directorate of Professional Training and Education Services) |

| Pillar: | Digital Inclusion | | | |
|---|---|---|---|---|
| Line of Action: | Digital Literacy | | | |
| Programme: | Empowerment of Population in ICTs | | | |
| Programme Objective: | Increase use and responsible, safe and productive ownership of digital technologies among the population at large. | | | |
| Outcome: | Close gap in use of digital technologies to attain responsible and safe use and foster social innovation. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 16. 100% execution of components in the Programme for the Empowerment of the Population in Digital Technologies by 2018. | Communications Strategy:<br>2016: 35%<br>2017: 65%<br>2018: 100%<br><br>Literacy Strategy:<br>2016: 35%<br>2017: 65%<br>2018: 100%<br><br>Budget: The estimated cost is ₡201 million from MICITT. | Percentage execution of components in the Programme for the Empowerment of the Population in Digital Technologies. Components: Communications Strategy (50%), Digital Literacy (50%). | 2015: 2% | MICITT[49] |

[49] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Programme 7: National Programme for Teacher Training in ICTs**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Inclusion | | | |
| Line of Action: | Digital Literacy | | | |
| Programme: | National Programme for Teacher Training in ICTs | | | |
| Programme Objective: | Strengthen the capacities of teachers involved in the Tecno @prender programme in the use of communication and information technologies to implement classroom teaching technologies. | | | |
| Outcome: | Enhance the skills of teachers involved in the Tecno @prender programme in the application of ICTs in classroom teaching technologies | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 17. 100% of teachers of the Ministry of Public Education, involved in the Tecno @prender programme, trained in the use of ICTs incorporated in teaching methodologies, by 2018. | 2016: 40%<br>2017: 70%<br>2018: 100%<br><br>Budget: The estimated cost is ¢400 million for the National Programme for Teacher Training in ICTs of the Ministry of Public Education. | Percentage of teachers of the Ministry of Public Education, involved in the Tecno @prender programme, trained in the use of ICTs incorporated in teaching methodologies, by 2018. | 0% | MEP (Directorate of Technological Resources) |

**Programme 8: TECNO@PRENDER Technological Platform**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Inclusion | | | |
| Line of Action: | Digital Literacy | | | |
| Programme:: | TECNO@PRENDER Technological Platform | | | |
| Programme Objective: | Foster digital inclusion in the classroom by implementing the educational technology platform | | | |
| Outcome: | Increase the use of digital technologies among children and youth in the classroom | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 18. 100% of the educational technology platform implemented in 317 education centres of the Ministry of Public Education by 2018. | 2016: 40% progress: design, management and development of platform<br>2017: 70% progress: platform implementation<br>2018: 100% progress: platform implementation<br><br>Budget: The estimated cost is ¢1 billion, of the Ministry of Public Education. | Percentage of progress in implementation of educational technology platform. | 0% | MEP (Directorate of Technological Resources) |

**Pillar 2: Transparent and Electronic Government**

**Line of Action 3: Close Government**

**Programme 9: Single Digital Health Record (EDUS)**

| Pillar: | Transparent and Electronic Government | | | |
|---|---|---|---|---|
| Line of Action: | Close Government | | | |
| Programme: | Single Digital Health Record (EDUS) | | | |
| Programme Objective: | Health promotion through the use of a technological platform (EDUS) at primary health care centres of the CCSS. | | | |
| Outcome: | Users receiving best quality public health care through the use of technological platforms. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 19. 100% of EBAIS implementing all services of the Single Digital Health Record (EDUS), to 2018.[50] | 2015: 50%<br>2016: 80%<br>2017: 90%<br>2018: 100%<br><br>Budget: The estimated cost is ₡17 687.2 million from the CCSS. | Percentage of EBAIS implementing all services of the Single Digital Health Record (EDUS). | To 2014 the process covers 1 550 000 persons, that is, about 33% of the population.<br><br>Overall progress in EDUS implementation to date is 34%.<br><br>442 EBAIS with the Identification, Agenda and Appointment System.<br><br>308 EBAIS with the Family Data Sheet System.<br><br>298 EBAIS with the | CCSS |

[50] These services correspond to the three information systems: Identification, Agenda and Appointment System (SIAC), Family Data Sheet System (SIFF) and Integrated Health Record System (SIES).

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Single Digital Health Record (EDUS) | | | |
| Programme Objective: | Health promotion through the use of a technological platform (EDUS) at primary health care centres of the CCSS. | | | |
| Outcome: | Users receiving best quality public health care through the use of technological platforms. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| | | | Integrated Health Record System. | |

**Programme 10: Programme to Promote E-Government**

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Programme to Promote E-Government | | | |
| Programme Objective: | Achieve an open, interconnected e-government to provide quality interactive services and foster civil society participation and empowerment. | | | |
| Outcome: | Develop applications using Information and Communication Technologies (ICTs) to achieve an e-government platform within the reach of the population, fostering citizen participation and accountability. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 20. 50% compliance with Phase 1 to 2018: 18 Ministries with a Cyber Security Protocol in place. (Weighted average, 60%)<br><br>40% compliance with Phase 2 to 2018: 2 major public entity services automated (Weighted average, 40%) | 2015:<br>Phase I: 10%<br>Phase II: 5%<br><br>2016:<br>Phase I: 25%<br>Phase II: 15%<br>2017:<br>Phase I: 35%<br>Phase II: 25%<br>2018:<br>Phase I: 50%<br>Phase II: 40%<br>Budget: The estimated cost is ¢1 billion from MICITT. | Percentage execution of Phases 1 and 2 of the E-Government programme. | 0% Ministry with cyber security plan implemented.<br><br>No baseline on major public services of public institutions. | MICITT[51] |

[51] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

## Programme 11: Process Computerisation

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Process Computerisation | | | |
| Programme Objective: | Achieve an open, interconnected e-government to provide quality interactive services and foster civil society participation and empowerment. | | | |
| Outcome: | Develop applications using Information and Communication Technologies (ICTs) to achieve an e-government platform within the reach of the population, fostering citizen participation and accountability. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 21. 10% of Central Government processes with mobile access by 2021. | 2015: 2.5%<br>2016: 3.0%<br>2017: 4.5%<br>2018: 6.0%<br>2019: 7.0%<br>2020: 9.0%<br>2021: 10.0%<br><br>Budget: Estimated cost not available.[52] | Percentage of Executive Branch processes with mobile access. | 2% of processes with access through mobile platforms. | MICITT[53] |

[52] The Vice Ministry of Telecommunications is in the process of estimating project costs.
[53] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Programme 12: Project for the Creation of an Offering of Shared Technological Services in the State.**

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Project Creation of an Offering of Shared Technological Services in the State | | | |
| Programme Objective: | Get institutions to integrate a set of technological services in order to enhance interoperability, reduce costs and achieve greater efficiency in the quality and uniformity of public service delivery. | | | |
| Outcome: | Optimise available public resources and deliver constant, good quality public services to users. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 22. 100% of the Project for the Creation of an Offering of Shared Technological Services in the State implemented by 2021. | 2016: 10%<br>2017: 20%<br>2018: 50%<br>2019: 65%<br>2020: 85%<br>2021: 100%<br><br>Budget: Estimated cost not available.[54] | Percentage of the Project for the Creation of an Offering of Shared Technological Services in the State implemented.<br><br>Phases and Weights:<br><br>1. Diagnosis (Baseline): 20%<br>2. Formulation: 20%<br>a) Scope definition: 10%<br>b) Feasibility study (technical, economic and risks): 10%<br>3. Final designs: 20%<br>4. Execution: 40% | 0% | MICITT[55] |

[54] The Vice Ministry of Telecommunications is in the process of estimating project costs.
[55] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Project Creation of an Offering of Shared Technological Services in the State | | | |
| Programme Objective: | Get institutions to integrate a set of technological services in order to enhance interoperability, reduce costs and achieve greater efficiency in the quality and uniformity of public service delivery. | | | |
| Outcome: | Optimise available public resources and deliver constant, good quality public services to users. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 23. 100% of Central Government institutions implementing the Integrated Public Procurement System to 2016.[56] | 2016: 100%<br><br>Budget: Estimated cost of ₡1 billion from MICITT and Ministry of Finance. | Percentage of Central Government institutions (Ministries and associated bodies) with Integrated Government Procurement System. | Zero percent of public institutions with an integrated procurement system. | MICITT[57]<br>Ministry of Finance |

[56] Different procurement systems exist currently: CompraRed, Merlink and others. Executive Decree N° 38830-H-MICITT created the Integrated Government Procurement System as the mandatory technological platform for the Central Administration to process administrative contracts; therefore, the term for this goal is subject to the provisions of said Decree.

[57] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Programme 13: Promotion of Telework in the Public Sector**

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Promotion of Telework in the Public Sector | | | |
| Programme Objective: | Significantly increase the use of ICTs aimed at utilising telework, optimising public resources and reducing the contribution of carbon emissions by the public sector | | | |
| Outcome: | Better quality of life for public institution employees, greater efficiency and lower costs in Public Administration. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 24. 50% of Ministries and associated bodies executing a Telework Plan by 2018. | 2016: 20%<br>2017: 35%<br>2018: 50%<br><br>Budget: The estimated cost is ₡1.18 billion from the Ministry of Labour and Social Security. | Percentage of Ministries and associated bodies executing a Telework Plan. | 3% of public institutions Implement telework.[58]<br><br>7% of public institutions in the process of implementing telework. | MTSS[59] |

[58] The public institutions currently offering telework are Contraloría General de la República, Legislative Assembly, Compañía Nacional de Fuerza y Luz, Banco Nacional de Costa Rica, Judicial Branch, Consejo de Seguridad Vial, and Instituto Costarricense de Electricidad.

[59] The MTSS in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Promotion of Telework in the Public Sector | | | |
| Programme Objective: | Significantly increase the use of ICTs aimed at utilising telework, optimising public resources and reducing the contribution of carbon emissions by the public sector | | | |
| Outcome: | Better quality of life for public institution employees, greater efficiency and lower costs in Public Administration. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| | | | | |

**Programme 14: Accessibility to Communications and Information Technology**

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Accessibility to Communications and Information Technology | | | |
| Programme Objective: | Promote the application of universal design and accessibility criteria for persons with disabilities to use technological platforms and access communications and information in Central Government institutions. | | | |
| Outcome: | Central Government institutions with technological platforms accessible to all users. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 25. 100% of the strategy for the application of universal design and accessibility criteria in information and communication technologies | 2016: 20%<br>2017: 40%<br>2018: 60%<br>2019: 80%<br>2020: 90%<br>2021: 100% | Percentage of strategy implemented in Government institutions. | 0% | CONAPDIS |

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Close Government | | | |
| Programme: | Accessibility to Communications and Information Technology | | | |
| Programme Objective: | Promote the application of universal design and accessibility criteria for persons with disabilities to use technological platforms and access communications and information in Central Government institutions. | | | |
| Outcome: | Central Government institutions with technological platforms accessible to all users. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| implemented in Central Government institutions to 2021.[60] | Budget: The estimated cost is ₡100 million from CONAPDIS. | | | |

**Line of Action 4: Environmental Sustainability**

**Programme 15: Project on Innovation and Utilisation of Information and Communication Technologies (ICTs) in favour of the environment.**

[60] Strategy Components: 1) Data Collection and Systematisation; 2) Design; 3) Consultation and validation; 4) Communication, training, advice; 5) Implementation; 6) Final Evaluation and 7) Final Report.

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Environmental Sustainability | | | |
| Programme: | Project on innovation and utilisation of Information and Communication Technologies (ICTs) in benefit of the environment | | | |
| Programme Objective: | Crete a general framework to promote the development of skills and innovation in ICT for environmental sustainability | | | |
| Outcome: | Mechanism for dialogue[61], articulation and follow-up of matters related to the application of technology in benefit of the environment. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 26. 18 Ministries with an ICT innovation and utilisation project in benefit of the environment adopted by 2018.[62] | 2016: 8<br>2017: 13<br>2018: 18<br><br>Budget: Estimated cost not available.[63] | Number of Ministries with an ICT innovation and utilisation project in benefit of the environment adopted. | 0% | MICITT[64] |

**Programme 16: C-Neutrality of Telecommunications Operators and Providers**

[61] This mechanism aims to shorten distances between CIT experts, environment, energy and climate.
[62] The project profile will contain the scope of the goal.
[63] The Vice Ministry of Telecommunications will determine the project cost estimate.
[64] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

| | | | | |
|---|---|---|---|---|
| Pillar: | Transparent and Electronic Government | | | |
| Line of Action: | Environmental Sustainability | | | |
| Programme: | C-Neutrality of Telecommunications Operators and Providers | | | |
| Programme Objective: | Encourage telecommunications operators and providers to take actions to reduce carbon emissions in the country. | | | |
| Outcome: | Reduce the environmental impact of the telecommunications sector | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 27. 30 companies in the telecommunications sector implementing the INTECO environmental management standard (INTE.12-01-07), to 2021. | 2016: 5<br>2017: 10<br>2018: 15<br>2019: 20<br>2020: 25<br>2021: 30<br><br>Budget: The estimated cost is ¢3.4 million from MICITT. | Number of companies in the telecommunications sector implementing the INTECO environmental management standard (INTE 12-01-07-2011). | 0<br><br>None are implementing the C-Neutrality Programme or the standard (INTE 12-01-07-2011). | MICITT[65] |

[65] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Pillar 3: Digital Economy**

**Line of Action 5: Digital Radio Broadcasting**

**Programme 17: Democratization of the Radio Spectrum for Digital TV[66]**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Digital Broadcasting | | | |
| Programme: | Democratisation of use of radio spectrum for Digital TV | | | |
| Programme Objective: | Expand access of new actors to digital TV broadcasting services by reserving the radio spectrum to meet local and national information and communication needs. | | | |
| Outcome: | Expanded offering of broadcasting services to inhabitants in Costa Rica, in matters related to community development, education, transparency, culture, and informational government, among others. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 28. 24 MHz of television broadcasting reserved by the State to meet local and national needs, by 2018. | 2016: 0 MHz<br>2017: 0 MHz<br>2018: 24 MHz<br><br>Budget: The estimated cost is ₡193 million from MICITT. | Number of MHz of the radio spectrum, liberated and assigned to DTV, after analogous blackout[67], assigned to meet local and national needs. | Zero MHz of radio spectrum for television broadcasting liberated after the analogous blackout. | MICITT<br>Presidency of the Republic |

[66] The term "democratisation" must be understood as access to the radio spectrum as provided in the objectives, principles and procedures for the assignment of this resource, as considered in the Political Constitution and in the General Law of Telecommunications.

[67] This goal will enter into force once the analogous TV blackout has ended, which, according to Executive Decree Nº 36774-MINAET, will occur beginning 15 December 2017. It also requires the corresponding prior technical studies and the recovery of the corresponding radio spectrum.

**Programme 18: Digital Television for everyone**

| Pillar: | Digital Economy | | | |
|---|---|---|---|---|
| Line of Action: | Digital Broadcasting | | | |
| Programme: | Digital Television for everyone | | | |
| Programme Objective: | Guarantee greater access to digital TV services | | | |
| Outcome: | Population receiving open and free digital television service | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 29. 100% households with open television have Digital Terrestrial TV, to 2017. [68] | 2016: 0<br>2017: 100%<br><br>Budget: The estimated cost is ₡3.16 million from MICITT. | Percentage of households with open and free digital television. | 0%<br><br>To 2014, 97.3% of households have TV service. Of these, 43% have open analogous television. | MICITT |

[68] The scope of this goal may change, as recommended by the International Telecommunications Union (ITU) in the report to be submitted to the country, as well as the roadmap to switch from analogous to digital television, as result of the cooperation provided by the International Telecommunications Union (ITU) and the Development Bank for Latin America (CAF).

**Programme 19: Interactive applications of E-Government for open Digital TV**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Digital Broadcasting | | | |
| Programme: | Interactive applications of E-Government for open Digital TV | | | |
| Programme Objective: | Promote innovation and access to the State by developing accessible E-government interactive applications that foster the use of DTV in the country. | | | |
| Outcome: | Innovation in the DTV sector (ISDB-Tb standard) and a transparent electronic government close to the population, including persons with disabilities. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 30. 3 interactive Digital Terrestrial TV applications under the ISDB-Tb standard by 2019, in production, in the framework of Transparent and Electronic Government. | 2016: 0 applications<br>2017: 0 applications<br>2018: 0 applications<br>2019: 3 applications<br><br>Budget: The estimated cost is ₡14.9 million from MICITT. | Number of interactive applications developed for open Terrestrial Digital Television functioning on TV devices that comply with the ISDB-Tb standard by 2017, in the framework of the Transparent and Electronic Government. | No interactive open digital TV application in production.<br><br>The University of Costa Rica has a laboratory called BETA LAB, which is developing applications to utilise the ISDB-Tb standard.<br>Currently no interactive applications function on TV devices that comply with the ISDB-Tb standard, in the framework of E-Government. | MICITT[69] |

[69] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Digital Broadcasting | | | |
| Programme: | Interactive applications of E-Government for open Digital TV | | | |
| Programme Objective: | Promote innovation and access to the State by developing accessible E-government interactive applications that foster the use of DTV in the country. | | | |
| Outcome: | Innovation in the DTV sector (ISDB-Tb standard) and a transparent electronic government close to the population, including persons with disabilities. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 31. 1 interactive Digital Terrestrial TV using the ISDB-Tb standard, by 2017, in the framework of the Transparent E-Government with universal design accessible to persons with disabilities | 2016: 0 applications<br>2017: 1 application<br><br>Budget: The estimated cost is ₡5 million from MICITT. | Number of interactive Digital Terrestrial TVs using the ISDB-Tb standard, by 2017, in the framework of the Transparent E-Government with universal design accessible to persons with disabilities. | No interactive open digital TV application in production.<br><br>The University of Costa Rica has a laboratory called BETA LAB, which is developing applications to utilise the ISDB-Tb standard.<br>Currently no interactive applications function on TV devices that comply with the ISDB-Tb standard, in the framework of E-Government. | MICITT[70] |

[70] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Line of Action: 6. Radio Spectrum and Networks**

**Programme 20: Plan for Utilisation of IMT Frequencies in Costa Rica**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Radio Spectrum and Networks | | | |
| Programme: | Plan for utilisation of IMT Frequencies in Costa Rica | | | |
| Programme Objective: | Guarantee access and use of mobile services for the population in view of the growing demand for data traffic | | | |
| Outcome: | Reduce the digital divide in connectivity and use of mobile services and optimise the use of the radio spectrum | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 32. 890 MHz of the Radio Spectrum assigned for IMT services, by 2021. | 2016: 360 MHz<br>2018: 515 MHz<br>2021: 890 MHz<br><br>Budget: The estimated cost is ¢6.96 million from MICITT. | Portion of radio spectrum assigned for IMT. | To 2013, the country had assigned approximately 250 MHz of the spectrum for IMT services. | MICITT<br>Presidency of the Republic |

**Programme 21: Consolidation of Neutral Internet Exchange Point**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Radio Spectrum and Networks | | | |
| Programme: | Consolidation of Neutral Internet Exchange Point | | | |
| Programme Objective: | Guarantee that local traffic occurs only on national links | | | |
| Outcome: | Reduce the amount of traffic on international Internet links, reducing Internet costs for users | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 33. 5 major traffic operators connected to the Neutral Internet Exchange Point by 2016. | 2016: 5 operators<br><br>Budget: The estimated cost is ₡2.8 million from MICITT. | Number of major traffic operators connected to the Neutral Internet Exchange Point. | To 2014, the country had one neutral exchange point, with 14 network operators connected. | MICITT |

**Programme 22: Driving Adoption of the IPv6 Internet Protocol in publicly available services**

| Pillar: | Digital Economy | | | |
|---|---|---|---|---|
| Line of Action: | Radio Spectrum and Networks | | | |
| Programme: | Driving Adoption of the IPv6 Internet Protocol in Public Services | | | |
| Programme Objective: | Promote technological innovation in Central Government networks through the adoption of IPv6 which guarantees modern services and quality to citizens | | | |
| Outcome: | Government services available through modern, innovative and scalable networks in benefit of citizens, fostering, in turn, the growth of the Internet | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 34. 18 Ministries with Internet Protocol Version 6 (IPv6) implemented in services available to the public, by 2016. | 2016: 18 Ministries<br><br>Budget: Estimated cost not available.[71] | Number of Ministries with Internet Protocol Version 6 (IPv6) implemented in services available to the public. | MICITT, MP, MTSS, MIVAH with website available on IPv6. | MICITT[72] |

[71] The Vice Ministry of Telecommunications will determine the project cost estimate.
[72] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Programme 23: Driving Adoption of the IPv6 Internet Protocol in the Central Government**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | Radio Spectrum and Networks | | | |
| Programme: | Driving Adoption of the IPv6 Internet Protocol in the Central Government | | | |
| Programme Objective: | Allow public employees to access contents and services offered on IP Protocol version 6 | | | |
| Outcome: | A safe, orderly and successful transition to the IPv6 protocol keeping government networks at the forefront of technology | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 35. 18 Ministries with Internet Protocol version 6 (IPv6) available to their internal users, by 2019. | 2016: 0 Ministries<br>2017: 6 Ministries<br>2018: 12 Ministries<br>2019: 18 Ministries<br><br>Budget: Estimated cost not available.[73] | Number of Ministries with Internet Protocol version 6 (IPv6) available to their internal networks. | 0 | MICITT[74] |

[73] The Vice Ministry of Telecommunications will determine the project cost estimate.
[74] The Ministry of Science and Technology will be in charge of collecting information and reporting progress regarding each goal, but each institution participating in the literacy programmes will be responsible for providing its information.

**Line of Action 7: E-Commerce**
**Programme 24: Smart Mass Transit Service**

| Pillar: | Digital Economy | | | |
|---|---|---|---|---|
| Line of Action: | E-Commerce | | | |
| Programme: | Smart Mass Transit Service | | | |
| Programme Objective: | Implement the use of ICTs for mass transit in order to provide a more efficient and innovative service | | | |
| Outcome: | Users of mass transit services receive better, smarter and more efficient services | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 36. 70% of mass transit concession holders (bus modality) for regular national routes implementing a smart transit service, by 2018. | 2015: 15%<br>2016: 30%<br>2017: 50%<br>2018: 70%<br><br>Budget: The estimated cost is ¢11 billion[75]. | Percentage of mass transit concession holders (bus modality) for regular national routes implementing a smart transit service. | No concession holder has implemented the smart mass transit service to date.<br><br>Currently 140 concession holders and 369 permit holders are applying to become concession holders.<br><br>Some pilot plans have been executed, such as the Periférica route with e-payment, and some *apps* have been developed. | Consejo de Transporte Público (CTP)<br><br>ARESEP (Transportation sector)<br><br>BCCR |

[75] This estimated budget was prepared by the Ministry of Public Works and Transportation.

**Programme 25: Banking**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | E-Commerce | | | |
| Programme: | Banking | | | |
| Programme Objective: | Foster banking among the population over the age of 15 years utilising innovative digital means | | | |
| Outcome: | Increase the access of persons over the age of 15 years to banking services, especially those related to electronic payment of mass transit services (bus modality) and funds transfer via cellular technology, promoting greater transparency, legal certainty and reduced transactional costs for the population. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 37. 3 749 150 persons over the age of 15 years with access to banking services, through the distribution of proximity cards and access to the SINPE Móvil service, by 2019. | 2016: 2 646 904<br>2017: 3 071 206<br>2018: 3 502 543<br>2019: 3 749 150<br><br>Budget: Estimated cost not available.[76] | Number of persons over the age of 15 years with proximity cards and access to the SINPE Móvil service. | 2014: 2 361 278 persons over the age of 15 years with access to the banking system.<br><br>None of the bank access components (cards with proximity payment technology and SINPE Móvil service) had active users at the end of 2014. | BCCR |

[76] The Banco Central de Costa Rica is currently estimating the cost of this goal.

**Programme 26: Web Banking - Tesoro Digital for Education and Administration Boards of MEP**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | E-Commerce | | | |
| Programme: | *Web Banking* - Tesoro Digital (Digital Treasure) for Education and Administration Boards of MEP | | | |
| Programme Objective: | Bring Education and Administration Boards of MEP into the technological platform of Web Banking - Tesoro Digital. | | | |
| Outcome: | Foster financial education of Education Boards and Administration Boards of the MEP through the efficient use of technologies to make payments and control administrative resources. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 38. 340 Education and Administration Boards managing at least 50% of their resources through the technological platform of Web Banking de Tesoro Digital, by 2018. | 2015: 40 Education and Administration Boards<br><br>2016: 140 Boards<br>2017: 240 Boards<br>2018: 340 Boards<br>Budget: The estimated cost is ₡100 million per year from the National Treasury and the Ministry of Finance. | Number of Education and Administration Boards managing at least 50% of their resources in General Fund, through Web Banking - Tesoro Digital. | 0<br><br>Currently no resources of the Education and Administration Boards are managed through the technological platform of Web Banking of Tesoro Digital. | National Treasury, Ministry of Finance |

**Programme 27: Single Electronic Payment System for Beneficiaries of Social Programmes**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | E-Commerce | | | |
| Programme: | Single Electronic Payment System for beneficiaries of social programmes | | | |
| Programme Objective: | Create a Single Electronic Payment System (SUPRES) to transfer liquid resources to beneficiaries of social programmes | | | |
| Outcome: | Contribute to fight poverty through the identification, control, follow-up and allocation of public resources aimed at beneficiaries of social programmes. | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 39. 100% of public institutions managing most resources from social programmes implementing 75% of the Single Electronic Payment System, by 2018. | 2015: 0%<br>2016: 0%<br>2017: 50% of public institutions managing most social resources in SUPRES.<br>2018: 100% of public institutions managing most social resources in SUPRES.<br><br>Budget: The estimated cost is ₡100 million in the first year to design and implement SUPRES (2016) and ₡50 million each subsequent year for preventive and corrective maintenance and system enhancements (2017-2018) for National Treasury. | Percentage of State institutions managing 75% of the social programme resources in the SUPRES System. | 0%<br><br>Currently no liquid public resources are transferred to beneficiaries of social programmes through SUPRES. | National Treasury, Ministry of Finance |

**Programme 28: Electronic Invoice System**

| | | | | |
|---|---|---|---|---|
| Pillar: | Digital Economy | | | |
| Line of Action: | E-Commerce | | | |
| Programme: | Electronic Invoice System | | | |
| Programme Objective: | Implement an Electronic Invoice System for more effective tax control and tax cycle completion | | | |
| Outcome: | Improve effectiveness of tax control through an integrated crosscutting strategy that includes closing the tax cycle | | | |
| Goal: | Progress by Period and Budget: | Indicator: | Baseline: | Responsible: |
| 40. 100% of the Electronic Invoice System implemented, by 2017. | 2015: 10% conceptual model and development of work plan<br>2016: 30% Development of functional specifications, analyses and adjustments to regulations and IT development<br>2017: 60% IT development<br><br>Budget: The estimated cost is ₡33 million from the General Tax Directorate. | Percentage of progress of Electronic Invoice System implemented. | 0% | General Tax Direction in coordination with the Direction of Communication and Information Technologies of the Ministry of Finance. |

En fe de lo anterior que es de nuestra plena satisfacción, los representantes firman dos ejemplares de un mismo tenor y efecto a los cinco días del mes de octubre de dos mil quince.

**LUIS GUILLERMO SOLÍS RIVERA**

**PRESIDENTE DE LA REPÚBLICA**

**Ana Helena Chacón Echeverría**

**VICEPRESIDENTA DE LA REPÚBLICA**

**PRESIDENTA DEL CONSEJO DE INNOVACIÓN Y TALENTO HUMANO**

**Marcelo Jenkins Coronas**

**MINISTRO DE CIENCIA Y TECNOLOGÍA**

**Emilio Arias Rodríguez**

**VICEMINISTRO DE TELECOMUNICACIONES**

In witness whereof, and to our satisfaction, the representatives sign two original documents with the same validity and effect on the fifth day of the month of October of the year two thousand and fifteen.

(signed)

LUIS GUILLERMO SOLIS RIVERA

PRESIDENT OF THE REPUBLIC

(signed)

Ana Helena Chacón Echeverría

VICE PRESIDENT OF THE REPUBLIC

PRESIDENT OF THE INNOVATION AND HUMAN TALENT COUNCIL

(signed)

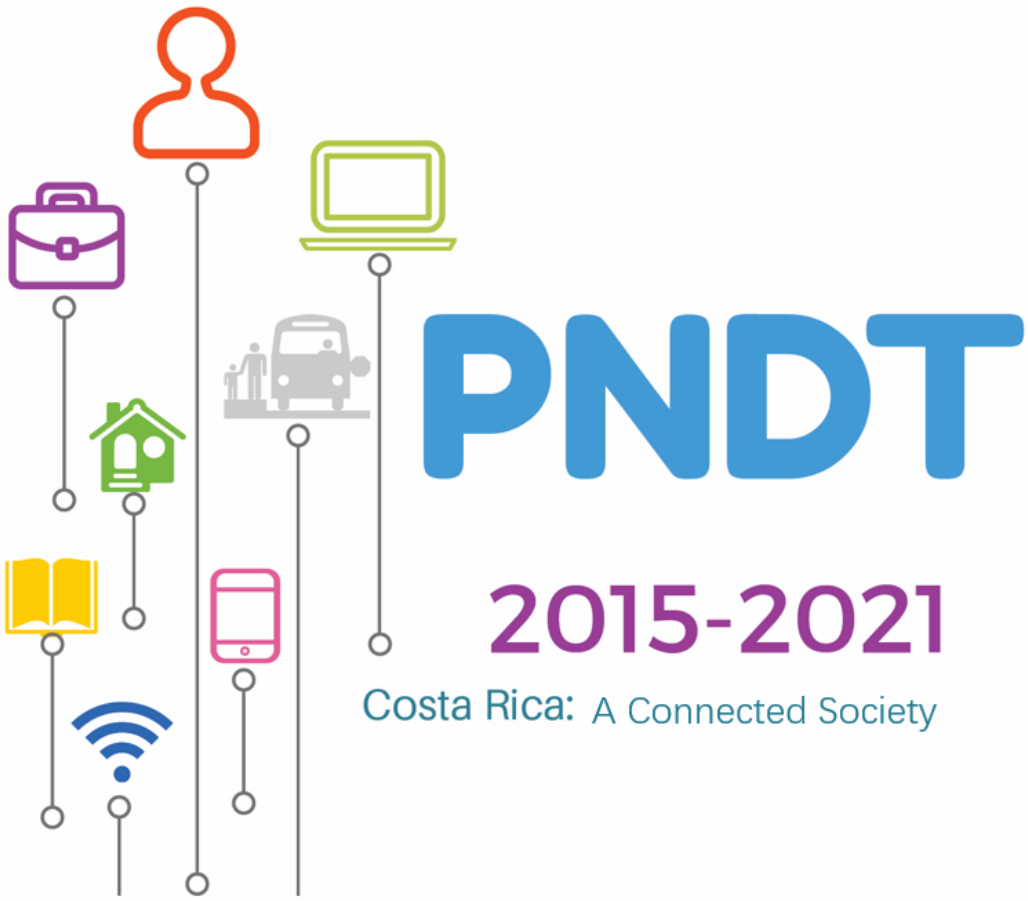
Marcelo Jenkins Coronas

MINISTER OF SCIENCE AND TECHNOLOGY

(signed)

Emilio Arias Rodríguez

VICE MINISTER OF TELECOMMUNICATIONS


PNDT
2015-2021
Costa Rica: A Connected Society