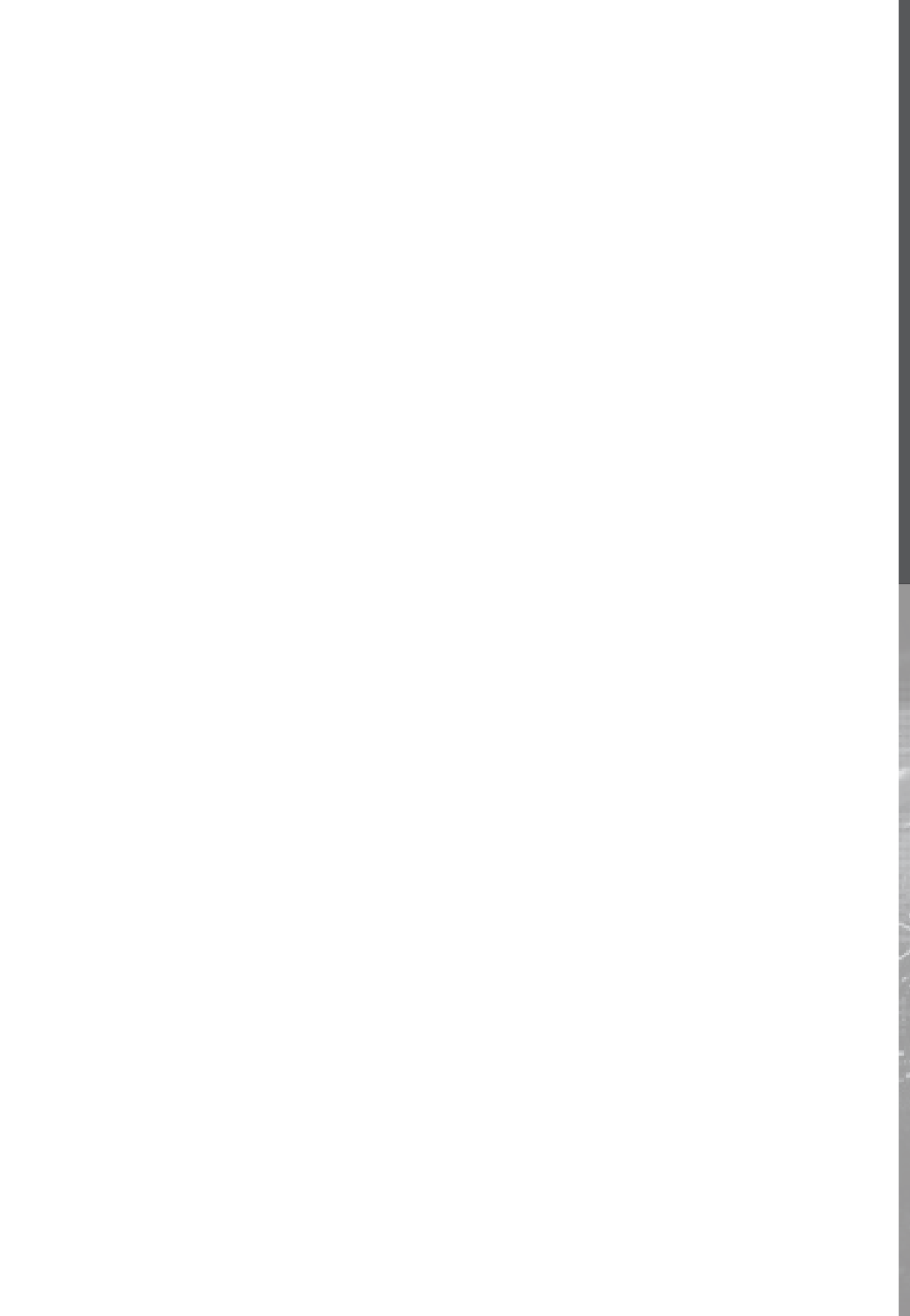


COMMUNICATIONS REGULATION REPORT

2020





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Technical Sheet

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List of Abbreviations

ADV	Vilanculos District Administration.
AICEP	International Association for Portuguese-Speaking Communications.
AFRALT	African Advanced Level Telecommunication Institute.
ARCTEL - CPLP	Association of Communications and Telecommunications Regulators of the Community of Portuguese-Speaking Countries.
BAÚ	One-Stop Shop.
BV	Virtual Counter.
CDMA	Code Division Multiple Access
PC	Postal Code.
CMV	Vilanculos Municipal Council.
COMID	National Committee for the Implementation of Digital Migration.
CRASA	Communications Regulators Association of Southern Africa.
DEPO	Postal Department.
DEFI	Inspection Department.
DPT	Postal and Telecommunications Department.
DRT	Directorate of Radiocommunications and Technology.
DVB - T2	Digital Video Broadcasting - Second Generation Terrestrial.
ECC	Electronic Communications Committee.
ETPAC	Emergency Telecommunications Action Plan.
FM	Frequency modulation
FSAU	Universal Access Service Fund.
GABINFO	Information Office.
ICS	Mass Media Institute.
INCM	National Communications Institute of Mozambique = Mozambique's Communications Regulatory Authority.
INACOM	Angolan Institute of Communications.
INAE	National Inspection of Economic Activities.
INAMAR	National Marine Institute.
INATTER	National Institute for Land Transport.

INGD	National Disaster Management Institute.
INNOQ	National Institute for Standardisation and Quality.
INTIC	National Institute for Information and Communication Technology.
ITSO	International Telecommunications Satellite Organisation.
ITU - UIT	International Telecommunication Union.
IoT	Internet of Things.
MADER	Ministry of Agriculture and Rural Development.
MAEFP	Ministry of State Administration and Civil Service.
MOE	Memorandum of Understanding.
MIC	Ministry of Industry and Commerce.
MTA	Ministry of Land and Environment.
MTC	Ministry of Transport and Communication.
SO	Service Order.
OTT	Over The Top.
PGR	Attorney General's Office.
NFAP	National Frequency Allocation Plan.
PR	President of the Republic.
RM	Rádio Moçambique.
ROI	Return On Investment.
SADC	Southern African Development Community.
SIM	Subscriber Identity Module.
SMS	Short Message Service.
LMS	
IT	Information Technology.
ICT	Information and Communication Technologies.
TVM	Televisão de Moçambique.
UCTT	Telecommunications Traffic Control Unit.
UEM	Eduardo Mondlane University.
UHF	Ultra High Frequency
UPU	Universal Postal Union.
WRC	World Radiocommunications Conference.

*Message from the Chairperson of the
Board of Directors*



DR. AMÉRICO MUCHANGA



Dear Reader,

You have in your hands the 6th Edition of the Communications Regulation Report. It has been 6 (six) years in which the Communications Regulator provides information of public interest regarding the communications markets.

2020 was an unusual year due to the Covid-19 pandemic. However, the INCM made every effort to ensure the communications market continued to function in a secure environment and did everything to protect its customers as well as the population in general. To this end, the INCM consolidated the use of the Virtual Desk, making telework its first option as a protection measure for its staff, while maintaining its duty to serve the public. In the regulatory field, it produced several legal instruments complying with Presidential Decree No. 11/2020 of the 31st of March of the State of Emergency Statement, approved by the Assembly of the Republic through Act No. 1 /2020 of the 31st of March, which in its sub-paragraph e) of the Article 7 enshrines and defines a set of essential public and private activities and services to be kept in operation, which include Mail and Telecommunications services. Thus, the INCM proposed a set of exceptional measures to protect telecommunications services customers, the most important being the prevention of interruption of telecommunications services, exemption from payment of certain fees and other penalties, and the application of a legal regime of an exceptional and temporary nature. These measures were carried out through the approval and publication of 3 (three) resolutions.

Resolution No. 3/CA/INCM/2020 of the 8th of June;

Resolution No. 2/CA/INCM/2020 of the 20th of May;

Resolution No. 1/CA/INCM/2020 of the 20th of May.

The obligation to maintain the TVM signal on an open channel

by television operators as a way to allow the dissemination of information from health institutions is an example of these exceptional measures.

The pandemic crisis triggered several crises: social crisis, economic crisis, employment crisis and others. However, the world and the country should continue to move on in some way. Hence why we bring below the achievements of the INCM in the year of difficulties.

In 2020, the INCM launched the foundation stone for the construction of the INCM delegation in Niassa Province, Lichinga City. The Provincial Delegation of Niassa will be the fifth after those of Nampula, Tete, Sofala and Zambézia. The creation of provincial delegations is part of the INCM's strategy of being represented throughout the country to oversee the use of the radio spectrum. According to No. 1 of Article 23 of the Telecommunications Act, the radio frequency spectrum is a natural, scarce resource and constitutes the State's public domain.

Another one of the achievements of 2020 was the official launch of the digital television broadcast in Mozambique, held on the 8th of October, in the city of Beira, capital of Sofala Province. This event took place at the Mozambique Television (TVM) Delegation with the inauguration of the broadcast studio by the President of the Republic. With this activation, the stage of double lighting began, that is, the phase in which analogue and digital transmissions will take place simultaneously, towards the definitive transition that is expected to occur with the *switch off* of analogue television transmission within a year. This significant growth in terms of telecommunications infrastructure and information and communication technologies brings a new reality that improves productivity, competitiveness, innovation and the expansion of the community radio and television network in rural areas, as well as the expansion of territorial coverage of public and private radio and television signals. With TMT entering the market, by the end of July 2020, digital terrestrial TV coverage was achieved in approximately 70% of the national territory in a network with a capacity of 60 (sixty) channels, 53 (fifty-three) channels being already available.

The Regulator, in its duty to lead digital transformation, through the promotion of policies and actions that encourage national

operators to adhere to this phenomenon, developed and implemented the Virtual Desk which, after its consolidation, extended to 13 (thirteen) government institutions: MTC, MAEFP, INATTER, MADER, MTA, PGR, ADV, INAE, INNOQ, BAU and CMV. These actions show the Regulator's commitment to promoting the digitization of the country, along with other initiatives such as the study and implementation of TV White Spaces.

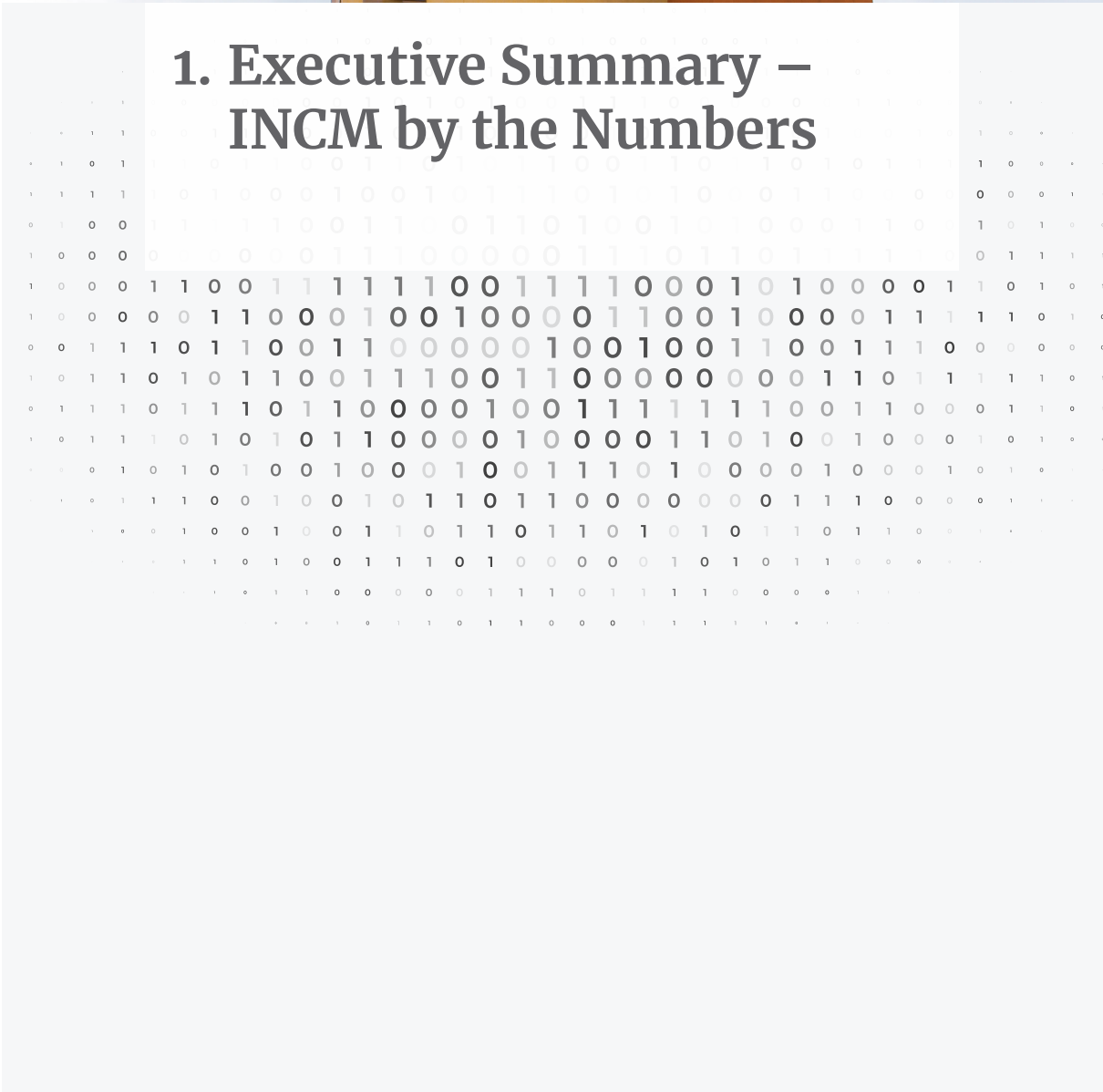
The Universal Access Service Fund (FSAU) has developed several activities whose purpose is digital inclusion, that is, to increase the number of accesses and the use of digital services through the development of software solutions that facilitate access to information and, in this way, increase the connectivity of the population in rural areas. This is the case of projects of Digital Squares, rural connectivity and the extension of cellular mobile telephony. As a result of these activities, 14 (fourteen) Digital Squares were installed in Maputo City (Maxaquene D), Namaacha, Xilembene, Manjacaze, Quissico, Gondola, Sussundenga, Tsangano, Gilé, Nacala, Ibo Island, Mecúfi, Marrupa and Cuamba; 30 (thirty) mobile telephone base stations (BTS) benefiting approximately 26,000 (twenty six thousand) inhabitants in rural areas, which in this way can develop applications and content relevant to the digital economy, thus promoting employment and self-employment initiatives, especially for the youth, through electronic platforms.

The richness of this report cannot be exhausted in this introduction, which is why we invite the reader to take a trip to the world of communications in 2020.

The fight continues!



1. Executive Summary – INCM by the Numbers





INCM

Instituto Nacional das Comunicações de Moçambique
Autoridade Reguladora dos Sectores Postal e de Telecomunicações

28 Years



*National
footprint in 7
capitals of the
Country.*

SECTORAL OVERVIEW

Telecommunications in Mozambique.
+ 17.1 Million accesses in all Telecommunications in
Mozambique



Mobile Phone
+ 14 Million of
mobile accesses
in operation.



**Fixed
Broadband**



**Digital
Television**
+1.1 Million
accesses



**Landline
Telephony**

Interactive systems and channels

for the demonstration of records and to get closer to the community, INCM has the following channels available:

- INCM's Portal (Virtual Counter), where it is possible to register and follow up complaints, claims, information requests and suggestions regarding the operators and INCM.
- Call Centre, available at +21 227 100.
- Social networks, through which the citizen can access news related to the telecommunications sector and the actions carried out by INCM:

Facebook



LinkedIn



Instagram



The list of interactive systems, through which INCM makes its services available on the Internet, can be accessed at <https://www.arecom.gov.mz/>.



2. INCM Mission and Activities

2.1. INCM Mission

The National Communications Institute of Mozambique (INCM) is a legal person under public law, operating as an administrative entity, with administrative, financial and management autonomy, as well as its own assets, and is subject to the oversight or supervision of the Minister of Transport and Communications.

The Articles of Association of INCM, approved by Decree-Law 32/2001, of 6 November, establish this Authority as an independent administrative entity, additionally to being the National Regulatory Authority within the communications sector, for the purposes set out in national legislation.

In order to pursue this mission, INCM has a vast set of competencies, inter alia: promote the offer of networks and services; ensure the access to networks, infrastructure and services; ensure the freedom of offer; ensure the access to the universal service of electronic and postal communications; and protect the rights and interests of consumers and other end users. It is also responsible for the efficient management of the radioelectric spectrum, its supervision and coordination between civil, military and paramilitary radiocommunications, as well as the management of the National Numbering Plan - NNP.

In accordance with its Articles of Association, the regulator is also responsible for promoting the out-of-court settlement of disputes between the regulated entities and consumers and other end users, in simple, expedited and free-of-charge terms, and for resolving disputes between the entities subject to its regulation.

INCM's competencies also include monitoring the activity of other regulatory bodies and foreign regulatory experiences, establishing relationships with other regulatory and international bodies relevant to its activity and participating actively in the activities and decisions of regulatory bodies at regional level.

In order to fulfil its mission, INCM has regulatory, supervisory, inspection and sanctioning powers, and is responsible for imposing obligations on companies with significant market power and universal service providers, issuing statements and titles for the exercise of activity, providing information,

guidance and support to consumers and other users, assessing complaints and claims from consumers and other users when it is responsible for supervising compliance with the rules, in which case it may issue recommendations or determine corrective measures.

Implement communications laws and regulations and verify compliance of said laws and regulations as well as its own norms and guidelines, are also powers of INCM.

Besides promoting public consultations, INCM may issue orders, instructions, decisions and recommendations, publish studies and reports and disclose statistical information on the complaints received.

2.2. INCM Activities

In the year under review, the planned activities in the several areas of intervention of the regulator were approved, namely, the protection of consumers' rights and interests; market analysis and access to networks, infrastructure and services; spectrum management; market supervision and inspection; sanctioning activity; and international representation. In addition to these activities, INCM's actions had to include measures arising from the situations of the state of emergency and calamity originated by the pandemic caused by Covid 19 - Corona Virus December 2019 disease, which required the addition of interventions in its 2020 activity plan, without prejudice to its compliance under the terms explained in this report.

In addition to strengthening the protection of the rights and interests of consumers and other end users in order to mitigate the enormous economic and social impact of Covid-19, INCM's actions were marked by the creation of the Telecommunications Traffic Control Unit- UCTT, production of regulatory instruments and supervision of the services regulated by INCM.

Thus, in 2020, given the state of emergency and calamity situations arising from the epidemiological situation caused by Covid-19, INCM proposed a set of exceptional measures to protect customers of electronic communications services, namely regarding: flexibility in contractual termination or amendment; prevention of interruption of electronic communications services; exemption and other penalties;

application of a legal regime of exceptional and temporary nature.

In 2020, INCM approved and published three (3) resolutions:

- a) Resolution No. 3/CA/INCM/2020 of June 8th ;
- b) Resolution No. 2/CA/INCM/2020; and
- c) Resolution No. 1/CA/INCM/2020 of May 20th.

In addition to the resolutions, the Amateur Radio Regulations have been submitted to the Technical Council of the Ministry of Transport and Communications (MTC) for approval.

Resolution No.3/CA/INCM/2020 of June 8th has as its object the creation of the Telecommunications Traffic Control Unit - UCTT, with responsibilities of controlling telecommunications traffic, management of SIM card registration and protection and security of telecommunications networks. This unit's competences include, among others: monitoring and supervising compliance with the regulations on the Registration and Activation of Mobile Telephone Service Subscriber Identity Modules (SIM cards), Security of Telecommunications Networks and Telecommunications Traffic Control.

Resolution No. 2/CA/INCM/2020 of May 20th arises from the need to increase preventive measures against the spread of Covid-19 in the country during the State of Emergency enacted by Presidential Decree No. 11-2020 of March 31st 2020, ratified by the Assembly of the Republic through Law No. 1 / 2020 of March 31st 2020, which in its paragraph e) of Article 7 enshrines and defines a set of activities and essential public and private services to be kept in operation, which include services of Mail and Telecommunications.

Resolution No. 1/CA/INCM/2020 of May 20th determines the updating of the lists of categories I, II and III of the telecommunications and radiocommunications equipment contained in Annexure II of the Regulation on the Approval of Telecommunications and Radiocommunications Equipment, approved by Decree No. 66/2018, of November 9th.

The Amateur Radio Regulations have been submitted for approval by the Technical Council of the MTC and higher levels, its purpose is to define the rules applicable to amateur radio and amateur satellite radio activities, as well as to define the regime for the attribution of certificates, special authorisations and the licensing of amateur radio stations for common use

within the national territory and applies to amateur radio operators and stations throughout the national territory that are duly authorised for the exercise of private, non-profit research activities.

Finally, despite the impact of the Covid-19 pandemic on operating methods, INCM maintained its regular activity in the areas of spectrum monitoring and market surveillance, litigation and administrative infractions, publication of statistics, and collaboration and dialogue, both nationally and internationally.

2.3. Internal Efficiency and Sustainability

In 2020, INCM pursued the commitment to establish a more efficient, effective and sustainable organisation through digital means. This strategic option proved to be of utmost importance in 2020 to face the shock caused by the Covid-19 pandemic, with INCM continuing to carry out its mission despite all the contingencies brought by the disease. It is worth noting that, in the year under review, the adequacy of the entire management and use strategy, which in addition to continuing the remote service process started in 2019, gave rise to a paradigm shift, incorporating the significant use of bureaucratic paperwork (greater adherence to the Virtual Counter – VC).

In order to support the management of the change necessary to extend the telework paradigm to the entire organisation, arising from the implications of Covid-19, an extensive programme to increase digital skills and a strong investment in the digital transformation of the INCM were developed, highlighting a specific orientation to the means of support, both in terms of infrastructure, software instruments, and also in support devices for mobility. As a complement to this considerable additional effort, and within the same scope of digital improvement, actions were promoted that focused on the work processes of the organisation and on the necessary cultural change inherent to a new reality of global adoption of remote work.

In the area of solutions aimed at improving the services provided to the market and to consumers, several initiatives have been developed, with emphasis on those aimed at improving the services provided by INCM, namely:

a) Temporary Exemption from radio spectrum acquisition fee

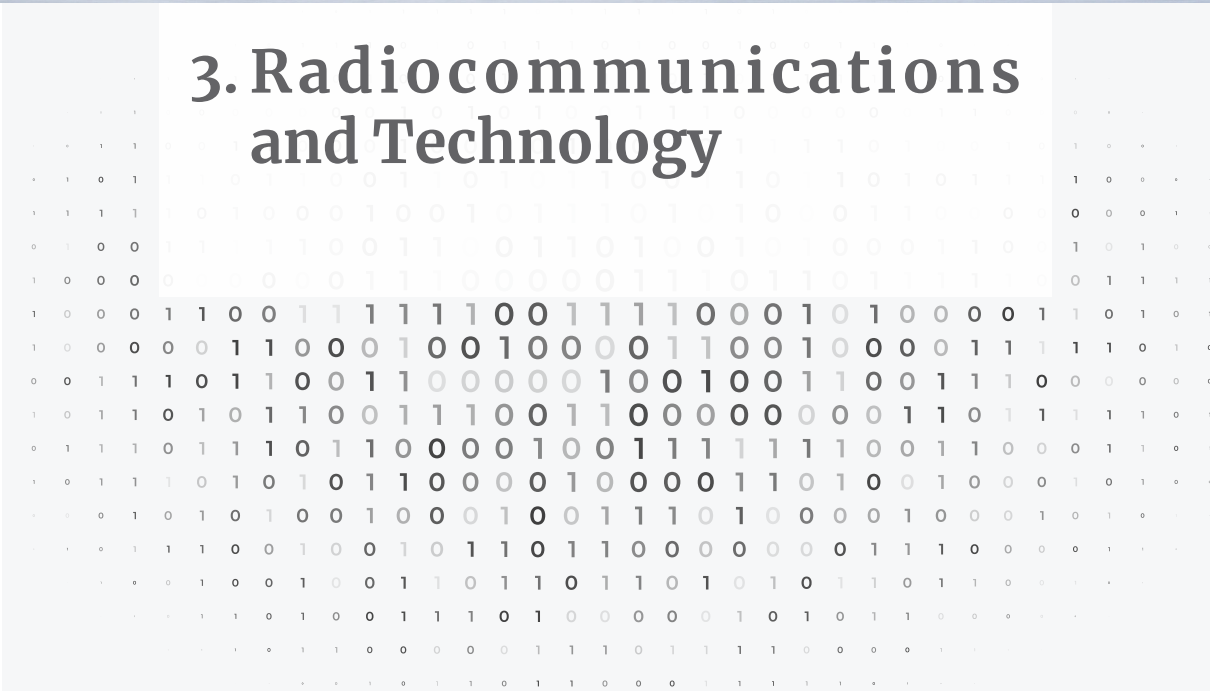
- during the emergency period;
- b) Exemption from approval fees for telecommunications and radiocommunications equipment, without prejudice to approval under the law;
- c) Awarding and waiving the acquisition fee for short numbers whose purpose is to disseminate Covid-19 prevention.

In the field of solutions aimed at the internal improvement and efficiency of services, the following initiatives stand out:

- a) Adoption of remote working models through the use of digital platforms that provide dynamics between employees of the organisation and better functioning of the sector in the market;
- b) Approval of the method of rotation between employees in the same department/office;
- c) Better use and efficiency of the VC.



3. Radiocommunications and Technology



The Directorate of Radiocommunications and Technology, commonly known as DRT, is responsible for matters relating to radio communications, namely: preparation, coordination and dissemination of matters dealt with at World Radiocommunications Conferences - WRC; coordination of procedures and regulation of various radiocommunications services such as maritime and aeronautical mobile services, as well as monitoring of the radio frequency spectrum.

It is within this context that INCM sent, in 2020, the report of participation in the WRC-19 to Stakeholders for the awareness of the decisions taken and positions defended by Mozambique and SADC. Furthermore, INCM interacted with INAMAR for the regulation of the maritime mobile service and the census of maritime mobile stations, having met with the officer in charge of the Port of Nacala and integrated a technician from this institution in the survey of 27 (twenty-seven) maritime mobile service stations, and in the Southern Zone 174 (one hundred and seventy-four) aeronautical mobile service stations.

3.1. Radio Spectrum Monitoring

Radio spectrum monitoring comprises the scanning of certain frequency bands to assess their degree of occupation and use and cross-checking with the Regulator's database to correct inconsistencies and discrepancies. It also includes the measurement of technical parameters of radio stations and the resolution of interferences between emitted signals.

Radio Spectrum Monitoring in 2020		Checks	Findings
Regions	Provinces		
South Zone	Maputo; Gaza; Inhambane.	LMS spectrum in VHF/UHF was checked in Maputo City, where 99 frequencies were detected operating, but without registration in the Regulator's database. To solve this problem, the process to clarify the anomalies was initiated in July 2020. On the other hand, frequencies were detected operating in the cities of Maputo and Matola, registered in other provinces: Niassa, Zambézia and others. These situations are examples of anomalies occurring in the radio space that justify the constant monitoring of the radio spectrum at national level.	<ol style="list-style-type: none"> 1. At Maputo Province level it was found that 3 (three) radio stations were broadcasting with excessive modulation deviation. The entities broadcasting outside technical parameters were recommended to adjust the modulation to below 77 KHz. 2. In Gaza Province four (4) community radio stations were found offline in: Mabalane, Macia, Chibuto and Chilembene. Also in this province, 3 (three) stations were detected broadcasting with excessive modulation deviation. 3. In Inhambane Province, specifically in the District of Homoíne, a radio was detected broadcasting with over-modulation and Tmcel was transmitting outside its assigned CDMA band.
		In the 450 MHz band there are two frequency blocks with deviations: the first 463.295 MHz - 464.665 MHz starts before the assigned band with a deviation of 355 kHz. The second 465,825 MHz - 467,125 MHz ends after the assigned band with an offset of 850 kHz.	
		In the 800 MHz band, two frequency blocks were found which are not in the Regulator's database, namely: 870.38 MHz - 871.835 MHz and 872.825 MHz - 874.33 MHz.	
		In the 1800 MHz band, Movitel is using unallocated spectrum in the 1838.2-1844 MHz band and Vodacom also uses unallocated spectrum in the 1870 MHz - 1875 MHz band.	

<p>Central Region</p>	<p>Sofala; Tete; Zambeze.</p>	<p>In Sofala Province, spectrum monitoring was carried out in the districts of Nhamatanda and Dondo, in the frequency bands of the Land Mobile Service, and some legally occupied frequencies were identified.</p>	<p>1. In Sofala, from the monitoring of the LMS - Land Mobile Service - frequency bands in UHF, 3 (three) pairs of occupied frequencies and 1 (one) free pair were identified.</p>
		<p>In Tete Province, the monitoring took place in the Cities of Tete and Moatize, the Town of Songo, in the districts of Changara, Mágoè, Chiuta, Chifunde, Angónia, Tsangano, Doa, Mutarara, Marávia, Macanga and the Administrative Post of Domué.</p>	<p>2. In the City of Tete and District of Changara, in the 800 MHz CDMA band, the operator Tmcel was found to be transmitting outside the assigned band, so it was notified to adjust its signal in that band. In the same locations, the GSM 900,1800, UMTS and LTE spectrum</p>
		<p>In Zambézia Province, radio spectrum monitoring took place in 15 (fifteen) districts: Quelimane City, Derre, Gurué, Ile, Inhassunge, Luabo, Lugela, Milange, Mocuba, Molumbo, Mopeia, Morrumbala, Mulevala, Namacurra and Nicoadala.</p>	<p>were observed in order to assess the level of spectrum occupation by the operators Tmcel, Vodacom and Movitel, where it was found that the 3 (three) operators transmit within the assigned bands.</p> <p>3. As a result of this monitoring some illegal frequencies were detected which resulted in 2 (two) licensing and one extension of the network.</p>

North Region	Nampula; Cabo Delgado.	In Nampula Province, the occupation of radioelectric spectrum frequencies in the LMS bands - VHF (137-174) MHz and UHF (400-470) MHz - were checked, where several occupied frequencies were detected.	1. After checking the database, it was verified that in Nacala-Porto, the frequencies used by the entity Indico Apart Hotel (463.0223 MHz and 463.2247 MHz) are not licenced. Consequently, the entity was notified to provide the licence to use these frequencies. 2. In Cabo Delgado Province, Pemba City, from the checks carried out we verified the occupation of VHF and UHF frequencies, and the process of confrontation with the Regulator's database is underway.
		In Nampula City, the frequencies 452.9375 MHz, 453.6875 MHz, 453.7000 MHz, 453.7125 MHz and 457.9375 MHz are occupied, with investigation required in order to find out their occupants.	

Table 1: Radioelectric Spectrum Monitoring in 2020.

3.2. Measurement of Technical Parameters of Radio and Television Stations

The measurement of the technical parameters of the radio and television stations in 2020 took place in 6 (six) provinces of the country, namely, Maputo (Maputo City and Matola); Sofala (Beira City); Tete; Zambeze, Nampula and Cabo Delgado.

From the Inspections carried out, it was possible to identify a set of anomalies that were duly pursued by the regulator, in order to formalise the operation of the country's stations for the correct standardisation of the technical parameters required by law in the Radio Communication Regulation.

The anomalies detected during the inspection include:

- a) Operation outside the permitted tolerances;
- b) Excess of modulation;
- c) Transmission frequency deviation;
- d) Incompatibility of frequency transmission with the National Frequency Allocation Plan - NFAP;
- e) Unlawful broadcasting;
- f) Excessive bandwidth;
- g) Very low transmission power [of 70 (seventy) watts], making propagation difficult;

- h) Lack of sound insulation in the broadcast studios; and
- i) Lack of on-air signalling.

Meanwhile, radio and television stations operating within the parameters required by law were also inspected, and they were encouraged to improve the quality of their services for the sustainable development of the sector.

3.3. Interference Resolution

The International Telecommunications Union - ITU defines 3 (three) types of interference:

- a) Permissible interference;
- b) Acceptable interference; and
- c) Harmful interference.

Harmful interference is interference that interferes with radionavigation, security services or seriously affects other services in a harmful way.

There are several causes of harmful interference of which we highlight out-of-band operation; operation on uncoordinated frequencies; operation with technical parameters other than those notified.

This is why operating on systems outside the Regulator's knowledge is a crime punishable by fines of up to 3.000.000,00 MT (three million meticaï) in addition to the seizure of equipment.

Comparing the level of complaints received in 2020 with 2019 we found that the level of complaints received decreased, as shown in the chart below.

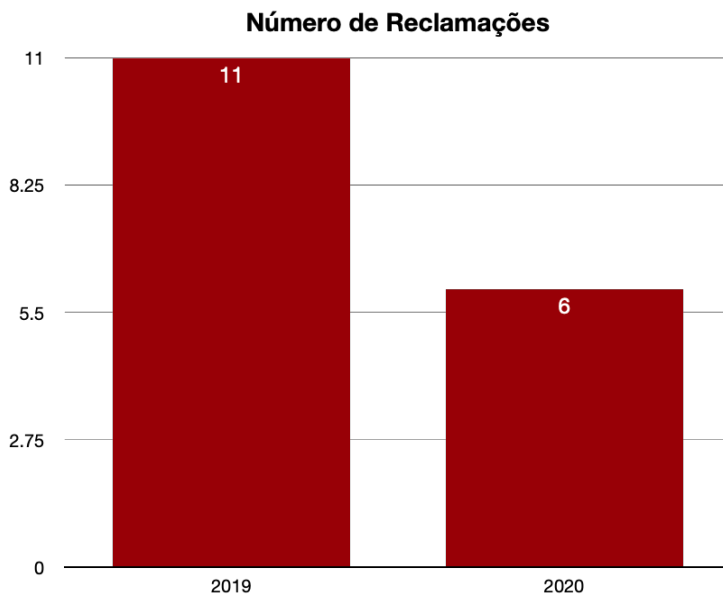


Chart 1: Number of Complaints due to Interference.

The interference complaints notified in 2020 are detailed as follows:

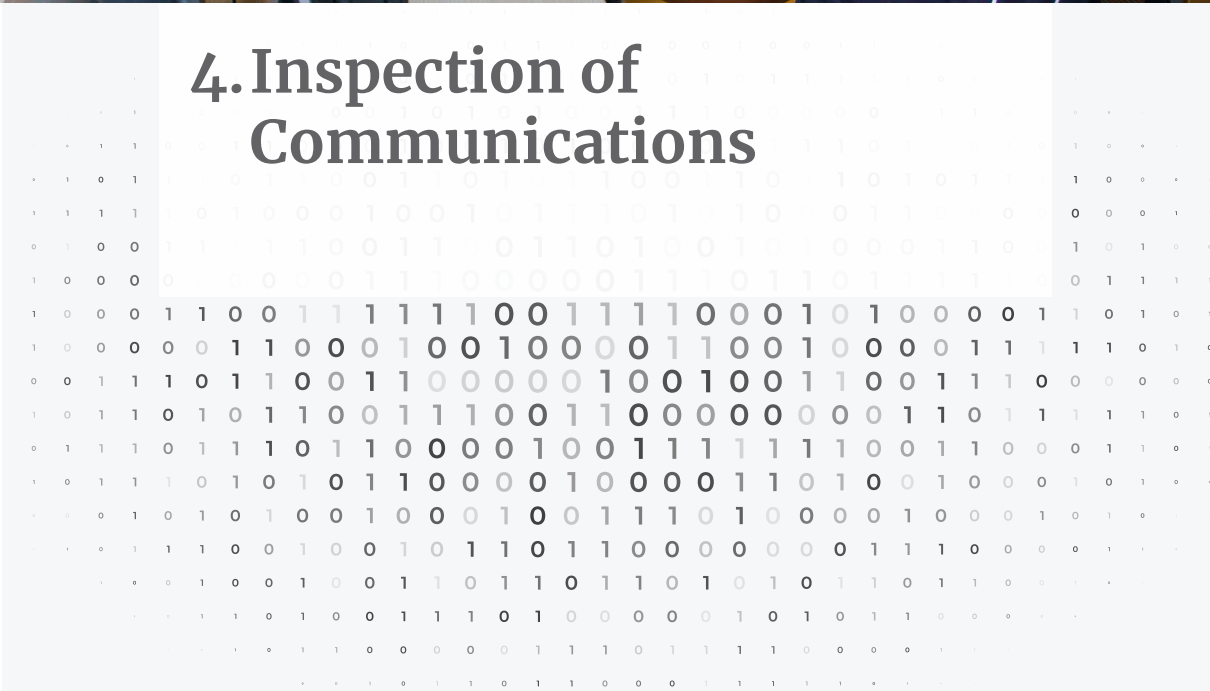
#	Claimed by	Band	State	Status
1	Movitel	3G	In Monapo Downlink 2130 MHz to 2135 MHz.	The interfered band was switched off and it was found that there were signals/carriers from sites close to this operator. By switching off these sites, the interference levels reported improved.
2	Movitel	3G	In Nampula City: Downlink 2130 MHz to 2135 MHz.	The Teledata link that was causing this interference was disconnected due to a malfunction, so this entity changed the position of the link and the interference stopped.

3	Paratus	3704-3724 MHz.	Use of unassigned frequencies (11 MHz), for which it was warned to adjust its equipment to the assigned bands (3694-3734) MHz.	After the correction, the problem was solved.
4	MSTAR (Zap)	.	The interfering signal was coming from one of the microwaves installed by WEBMASTER in building PH1.	After the switching off of the microwave the interference stopped. Having analysed the database, it was found that these microwave frequencies were not licenced, so the process was sent to the Legal Office for the application of a fine in the amount of 300,000.00 MT, for harmful interference and illegal use of spectrum.
5	Homens Segurança	Frequency pair RX: 442.4375 MHz and TX: 447.4375 MHz.	Interference from an adjacent signal was confirmed, with a deviation of more than 25 kHz.	The equipment of Homens Segurança does not have good shielding, so it receives signals outside its channel and creates disturbances in its communications.
6	Maputo Provincial Directorate of Transport and Communications	.	Namaacha village enters roaming constantly.	A technical team went to the site to assess spillover levels. After monitoring, it was confirmed that MTN-Eswatini signal penetrates the national territory up to a distance of 3.33 km which, according to the ITU, is allowed.

Table 2: Complaints of Interference in 2020.



4. Inspection of Communications



4.1. Licensing

The operation of mail services and telecommunications and radiocommunications services, in the Mozambican market, require licensing and this is the sole responsibility of INCM. Mail and telecommunication services are managed by the Postal and Telecommunication Department - DPT and radio communication services by the Radio and Technology Department - DRT. In this session we present information on licensing that occurred in 2020 in the Postal and Telecommunications sectors.

4.1.1. Postal Licensing

Postal service licensing is applied to public and private entities that provide this service whether at: provincial, interprovincial, national or international level. Two of the rights of licenced operators are: access to the public postal network under transparent and non-discriminatory conditions to be agreed with the public operator and the free pricing of the services provided, taking into account operational costs, provided they are not speculative.

In 2020, the Postal Department - DEPO received 7 (seven) requests for licences, of which 5 (five) were new and 2 (two) were for renewal.

#	Company	Licence Number	Location	Remarks
1	Emmanuel Company, Sociedade Unipessoal	66/SP/INCM/2020	Maputo	Licensing
2	Rapidex, Limitada	37/SP/INCM/2020	Nampula	Licensing
3	Atlas Express, Limitada	37/SP/INCM/2020	Maputo	Licensing
4	Good Delivers - Sociedade Unipessoal, Lda	68/SP/INCM/2020	Maputo	Licensing
5	DHL Moçambique, Lda	03/SP/INCM/2020	Maputo	Renewal
6	SALAMA - Serviços e Consultoria, Sociedade Unipessoal Limitada	34/SP/INCM/2020	Maputo	Renewal
7	FRM - Logística e Serviço, Limitada	69/SP/INCM/2020	Maputo	Licensing

Table 3: Postal Licensing.

Out of this total of 7 (seven) applications received, 5 (five) postal licences are indicated as new and 2 (two) as renewals. Of the requests for renewals only 1 (one) is still in progress. Therefore, 6 (six) of the postal licences are already concluded.

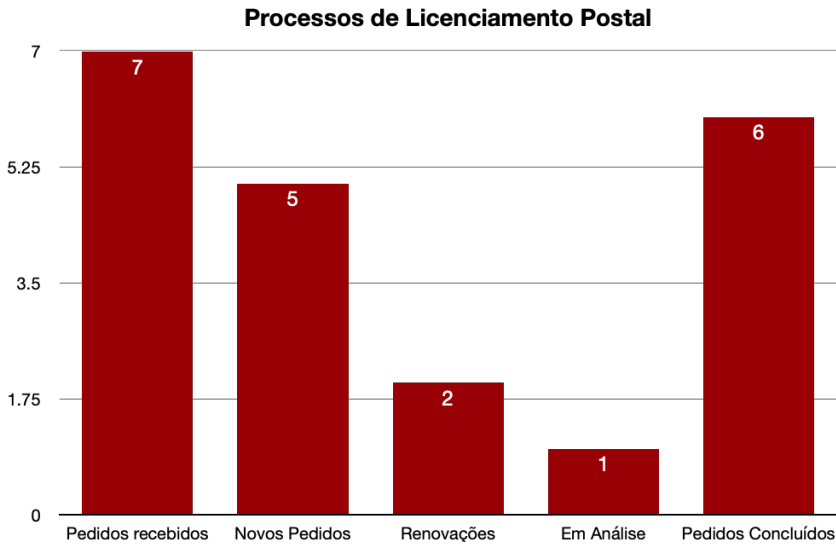


Chart 2: Postal Licensing Processes.

4.1.2. Telecommunications Licensing

With regard to telecommunications services, seventy-eight (78) requests for licences were received, of which seventy-one (71) are new and seven (7) are renewals. Out of the 78 (seventy-eight) submitted, 73 (seventy-three) processes were concluded and 5 (five) are under analysis.

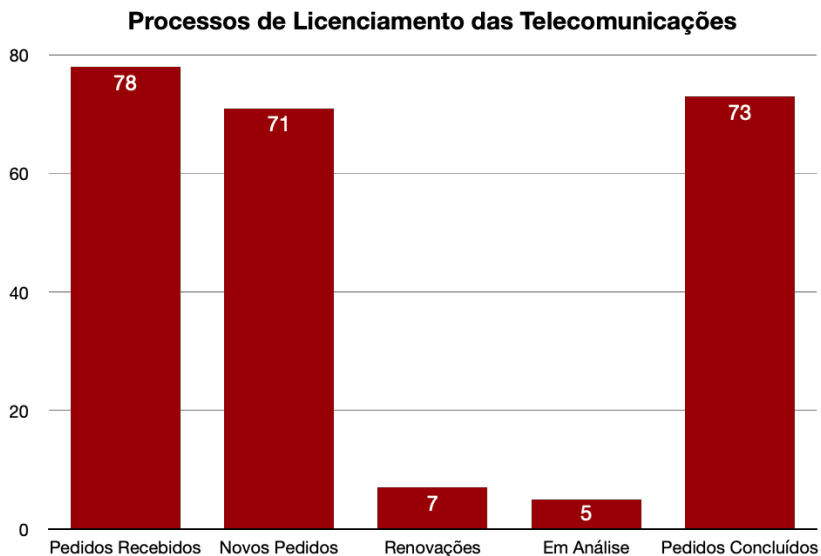


Chart 3: Telecommunications Licensing Processes.

As Chart 4 illustrates, in terms of the allocation of numbering resources, ninety-three (93) numbers were allocated.

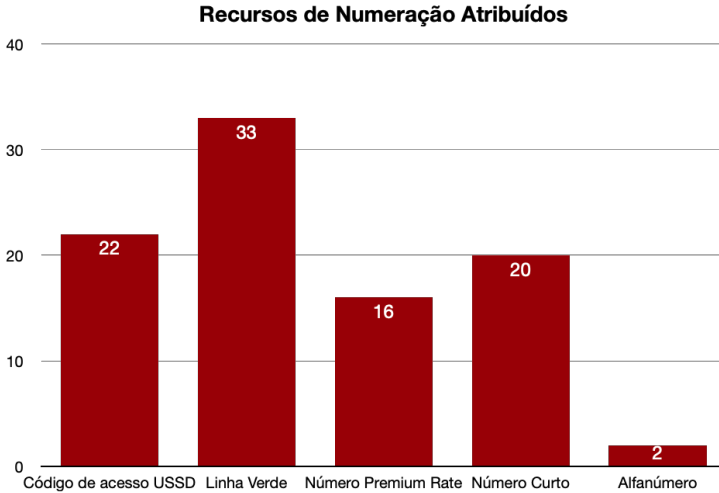
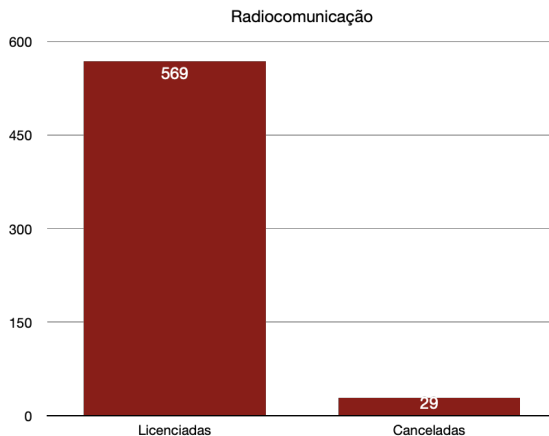


Chart 4: Assigned Numbering Resources.

4.1.3. Radiocommunications Licensing

In 2020, a total of 569 (five hundred and sixty-nine) stations were received and licenced, distributed by 73 (seventy-three) entities. Meanwhile, 29 (twenty-nine) stations belonging to 5 (five) entities were cancelled, related to radiocommunications. As for radio broadcasting, 12 (twelve) requests were received, of which only 9 (nine) were accepted and 3 (three) were returned due to unavailability of FM spectrum in Macia Village, Beira City and Nampula City.



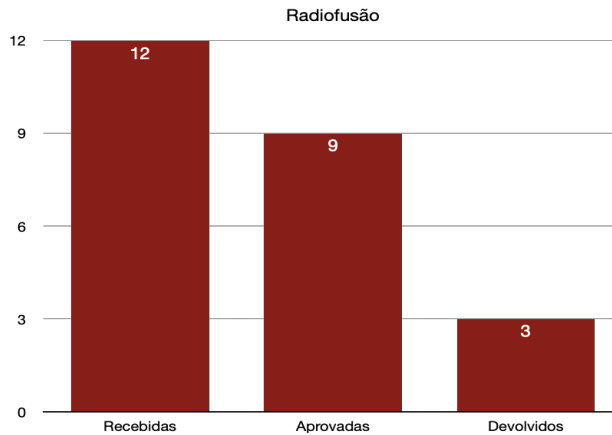


Chart 5: Radiocommunication Licensing.

4.2. Approval

The purpose of the approval of telecommunications and radiocommunications equipment is, among others, to ensure the protection of public telecommunications and radiocommunications networks from any damage or harmful interference caused by the connection of non-compatible equipment; to ensure the interoperability, reliability and electromagnetic compatibility of networks supporting telecommunications, radiocommunications and electric safety services. The application for approval of telecommunications and radiocommunications equipment begins by filling in the application form or model supplied by the Regulatory Authority, to which the following documents should be attached:

- d) Report on laboratory tests carried out by an internationally recognised laboratory;
- e) Technical specifications of the equipment and equipment user guide in Portuguese or English - Article 12 of the Regulation for Approval of Telecommunications and Radio Equipment.

During 2020, a total of 516 (five hundred and sixteen) approval certificates were issued, of which 332 (three hundred and thirty-two) are radiocommunication equipment and 184 (one hundred and eighty-four) telecommunications equipment.

4.3. Fines

Recidivism in the legal system is defined as committing the same offence several times before the expiry of a period of one year after its enforcement. In the communications regulations this is sanctioned with the payment of double fines and in other cases with the seizure of equipment and suspension of the licence to operate. For example, in the installation and fraudulent use of telecommunications systems, which constitutes the illegal use of radioelectric spectrum, the fine can reach up to 2,000,000.00 MT (two million meticaís); 200,000.00 MT (two hundred thousand meticaís) for not presenting the approval certificate of updated equipment for commercialisation and use of type I, II and III equipment and 100,000.00 MT (one hundred thousand meticaís) for not providing the quality mail service.

This is why INCM constantly advises the communications operators to comply with the law in order to avoid further losses. However, the infringements constantly reported by INCM's inspection teams show that there is still a lot of work to be done in the dissemination and compliance with the law.

In 2020, a total of 546 (five hundred and forty-six) entities were inspected and 98 (ninety-eight) entities were notified, corresponding to 18% of the total. Seven (7) operators were fined, corresponding analogously to 1.2% in the total amount of 3.703.465,00 MT (three million, seven hundred and three thousand, four hundred and sixty-five meticaís).



5. Communication in Mozambique

This chapter outlines the analysis of the postal, telecommunications and digital television markets. With regard to the postal market, postal addressing is addressed, with an analysis of how it works at a national and international level. In telecommunications, landline and mobile telephony and SIM card registration are analysed. In the digital market, the market share and revenues are analysed.

5.1. Postal Sector

Two activities were registered in the Postal Sector for the period under review: Implementation of the Postal Addressing Project and Postal Market Monitoring.

5.1.1. Postal Addressing

The Postal Code - PC, is a tool for the precise location of places using standard geographic references defined at international level by the Universal Postal Union - UPU.

The UPU advises all countries to implement the PC so that every citizen has an address towards the migration from the formal, traditional economy to a digital economy. For its implementation in Mozambique, the regulatory instrument used is Decree No. 28/2019 of April 12th, approved by the Government.

The PC aims to render the movement of people and goods easier, specifically in the handling of mail and parcels, financial services, health services, rescue and others, thus improving the quality of life of citizens and promoting the development of the country's economy. The implementation of PC in Mozambique included two phases: pilot project and effective implementation.

The pilot project of the new PC was launched in Maputo Province, in Manhiça District - specifically in Municipal Village of Manhiça on the 20th of September 2019 as a result of the joint work between INCM and the Ministry of State Administration and Public Service - MAEFP. The success in the implementation of the pilot project which resulted in the coverage of more than 1,200 (one thousand and two hundred) streets and more than 1,500 (one thousand and five hundred) doors, among residences and business infrastructure, allowed the official launch of the PC on July 22nd, 2020, in the same Municipal Village of Manhiça.

The lessons learned from the success of this implementation served as a secure basis for the effective introduction of the PC throughout the country, starting with the city of Chimoio.

Effectively, on September 18th, 2020, there was the official opening ceremony of the Launching Seminar of the PC Implementation Project in the Municipality of Chimoio. This phase was preceded by a meeting with the municipal authorities to explain the phases of the project with community leaders to explain the need and benefits of the project in order to ensure their involvement and finally, followed by the design of the coding maps of the roads and access gates.

In addition to this place, the implementation of the PC is planned at government level in the cities of: Matola, Beira, Quelimane, Nampula and Nacala, by 2024.

5.1.1.1. Analysis of the Operation of the National Postal Service

In this chapter we will analyse the postal sector during 2020, a crucial sector due to the important role it has played during the period of Covid-19. The analysis of this sector is based on the Index of processing of postal documents and objects at the national level by the providers of these services.

According to the Universal Postal Union (UPU,2020) postal development can be defined as reflecting the ability of a country's postal network to perform a wide range of activities enabling socio-economic development. Postal networks can be considered high performing if they offer a reliable connectivity service, and resilient to external shocks.

The UPU released the 2020 postal ranking which covers 170 (one hundred and seventy) countries, where Mozambique is in the 168th (one hundred and sixty-eighth) position. Switzerland, Austria and Germany top the list, followed by Netherlands and Japan. The African continent is in a challenging situation, the point average fell slightly in 2020 and remains quite unstable. During the Covid-19 pandemic the level of reliability of postal services was tested to the limit. The incumbent operators found themselves beset by the growing emergence of micro postal operators, with high logistical capacity to make home deliveries. This is one of the cases of improved quality of service during the months of traffic restrictions in Africa, during which

traditional postal services were plunged into growing revenue losses as most of them survived on the delivery of parcels from abroad.

Reliability is undoubtedly one of the areas that was the most affected by Covid-19 in the short term. In fact, there were several blocks to international cargo access, these blocks were rapidly imposed around the world since March 2020- Delivery transactions suddenly had to stop or be performed with a greater number of steps and sanitisation.

However, as restrictions for international travel eased and in the fourth quarter of 2020, postal operators in Mozambique began to find alternatives to rebuild severed supply chains, which resulted in the proportion of stranded mail being stabilised once again.

Meanwhile, regardless of the differences between postal operators, there is one common factor that will most likely play a significant role in the coming years: it will be one of the most promising segments for future growth, the segment that is the most connected to the e-commerce destination, i.e. parcels and logistics, is also more competitive and less profitable and has much more demanding customers than postal operators have historically been accustomed to - and that's why we have seen the exponential growth of small and micro operators mostly operating in large urban centres.

In such a challenging environment, one may ask how a country can effectively promote developed postal services. The answer will very much depend on each specific case and will require careful analysis. Institutions like Deutch (DHL) and Portador Diário have quickly changed their business model by looking at the e-commerce segment as an additional endeavour, but that makes customer and brand loyalty more reliable.

The data presented below result from an analysis of the data provided by the Reports and Accounts of the operators, which after compilation and analysis, explain the real situation of the postal services in Mozambique. Thus, the following indicators are analysed:

- a) Collected revenues - result from the flows that organisations collect through the sale of their goods and/or services;
- b) Staff costs - the total amount that organisations spend on all the costs inherent to their human resources, from

- remuneration, to tax deductions;
- c) Traffic of Items - is the volume of items that are sent and received domestically and internationally by postal operators;
- d) Vehicle Fleet - the quantity of means of transport that each operator has, that enables the movement of objects within the national territory.

The results of the indicators described above of the operators that throughout the years have provided the Regulator with their Report and Account of their activities, are presented below.

The postal market is composed of several operators, however, in this study only 4 (four) are analysed, namely Correios de Moçambique - CdM, Corre, Pantherra Expresso and Rangel Logistics.

5.1.1.1.1. Staff Costs

In 2018, Staff costs amounted to a total of 61,111,722.00 MT (sixty-one million, one hundred and eleven thousand, seven hundred and twenty-two meticais), of which Rangel Logistics added a total of 28,798,933.00 MT (twenty-eight million, seven hundred and ninety-eight thousand, nine hundred and thirty-three meticais), Corre with 20,672,524.00 MT (twenty million, six hundred and seventy-two thousand, five hundred and twenty-four meticais), Pantherra Expresso with 11,640,265.00 MT (eleven million, six hundred and forty thousand, two hundred and sixty-five meticais).

In 2019, Pantherra Expresso disbursed 12,986,880.00 MT (twelve million, nine hundred and eighty-six thousand, eight hundred and eighty meticais), having grown 10% when compared to the previous year. Corre also grew having reached 26,327,937.00 MT (twenty-six million, three hundred and twenty-seven thousand, nine hundred and thirty-seven meticais).

5.1.2. Postal Market Monitoring

The monitoring of the postal sector is a study to evaluate and understand the how the sector works and to assess the quality of postal services, representing the northern, central and southern regions of the country.

In early 2021, three provinces of the country were visited, namely: Nampula, Sofala and Gaza, where quantitative and

qualitative interviews were conducted with the branches of CdM, DHL and Portador Diário.

The interviews took place between the months of March and April 2021, where it could be verified that in all postal service providers, the main decisions and strategic plans are made by their central offices based in Maputo.

Due to the COVID-19 pandemic and the adoption of prevention measures, physical contact with the largest number of people was avoided. This constraint made it impossible for the postal sector barometer to cover consumers of these services. Meanwhile, to ensure the reliability of the answers obtained from the monitoring, the Regulator simulated the forwarding and receipt of parcels at a national and international level, respectively. It was found that with the constraints faced by the pandemic and the uncertainty of the virus transmission methods, the exchange of items by postal and similar means took longer to arrive at their destinations.

The interviews were primarily aimed at measuring the pulse of the sector and assessing in detail:

- a) the prices by type of service;
- b) the availability of operational means for the delivery of parcels - vehicle fleet;
- c) the number of service stations and the number of staff employed.

5.1.2.1. Obtained Results

The monitoring of the postal sector was carried out using a script containing an average of 15 (fifteen) questions, of which 5 (five) will be analysed and presented below.

5.1.2.2. Prices Charged

At national level, the postal service provider that offers the most affordable rates is CdM, with rates varying from 235.00MT (two hundred and thirty-five meticaís) to 584.00MT (five hundred and eighty-four meticaís) for postal items weighing up to 1 (one) kilogram.

Portador Diário charges prices varying from 300.00MT (three hundred meticaís) to 1,060.00MT (one thousand and sixty meticaís) for postal items weighing from 250 (two hundred and fifty) grams to 1 (one) kilogram.

For the same weight range of cargo applied by the above-mentioned providers, DHL charges the highest rates that vary from 895.78MT (eight hundred and ninety-five meticaís, and seventy-eight cents) to 1,153.09MT (one thousand one hundred and fifty three meticaís, and nine cents).

5.1.2.3. Vehicle Fleet

Portador Diário has a fleet of two (2) motorbikes and one (1) car representing the smallest fleet of vehicles compared with the other postal service providers. DHL has three (3) motorbikes, one (1) car and two (2) pick-ups. CdM owns seven (7) motorbikes and four (4) cars. These figures refer to the total vehicle fleet in the three provinces visited.

Frota de Veículos








Provedores	Motorizadas	Veículos Automóveis	Carrinhas Caixa Aberta
CdM			
DHL			
Portador Diário			

Table 4: Vehicle Fleet of Postal Operators in Service Monitoring.

5.1.2.4. Human Resources and Infrastructure

The quantity of CdM employees can be justified because it is the company that has the largest number of service stations, that is, they have seventeen (17) stations, thus counting on ninety-five (95) employees, of whom 4 (four) in Gaza Province are awaiting retirement.

DHL has a total of 15 (fifteen) employees in 3 (three) stations.

Portador Diário is the operator with the least number of employees, that is, there are seven (7) employees distributed in the three (3) stations.

These figures are due to the number of forwarding stations that each one of the companies has.

5.2. Telecommunications

This chapter analyses the telecommunications sector between 2016 and 2020, with a main focus on the exhaustive analysis of the last year, halfway through the outbreak of Covid-19. The

indicators used in the analysis reflect the scenario experienced in the landline and mobile telecommunications market, based on voice, SMS and data services at a national level and international roaming, via telephone operators in Mozambique. The Landline service, previously known as Telecomunicações de Moçambique - TDM, experienced a break in services, which is why it was merged with the former Moçambique Celular - Mcel, forming the current Moçambique Telecom, SA – Tmcel, with competencies to act in the landline and mobile telephony sector.

Mobile telephony, composed of 3 (three) operators, is analysed on the basis of the following indicators - number of subscribers, volume of traffic, collected revenues and staff costs, which come from the description of the scenario witnessed in recent years in the telecommunications market in Mozambique, in view of the changes imposed by the Covid- 19 pandemic and the challenges posed to the country to improve the services provided.

The reduction in the number of subscribers is a fact verified in the landline telephony service. However, in the mobile telephony service, this indicator has shown an upward trend, with some impact in some years under analysis.

Voice traffic has grown in the Mobile telephony service, with shares being divided between the operators according to their occurrence, that is, on-net or off-net, called On - Net and Off - Net. In landline telephony, the scenario is antagonistic, since, despite the existence of a single provider of this service, the decrease in the volume of voice traffic is evident.

In landline telephony, collected revenues are inversely proportional to Staff costs, while in mobile telephony both indicators show an upward trend, with the difference in the operators' share. The revenues collected from the landline telephony service tend to decrease, while staff costs increase. In the mobile telephony service, both collected revenues and staff costs grow, with the distinctive feature that collected revenues are headed by Vodacom and staff costs by Tmcel.

Next, the revenues are presented in a detailed, sequential and disaggregated manner, for better presentation.

5.2.1. Landline Service

The landline telephony service is provided by Tmcel and its coverage is mainly in large urban centres or provincial capitals of Mozambique. Over the last few years, the number of landline telephony subscribers has tended to decrease due to the emergence of new mobile technologies and the high coverage index of mobile telephony.

In this chapter, the indicators inherent to the landline telephony service, evolution and outreach in the national market will be analysed. The number of active subscribers, traffic volume and revenues collected in the voice and Internet segments were used as analysis indicators.

The number of subscribers of landline telephone service has been decreasing from 2016 to present, and consequently the volume of revenue from this service shows the same trend. An inverse action is noted in staff costs. Since 2016, the staff cost has shown an accentuated growth.

The high technological advances registered in technologies are considered premises for the decrease in the growth of the landline telephony market. However, it is still an adequate product and service for organisations with a relatively large human resources network and a high need for internal communication.

5.2.1.1. Voice Service Subscribers

The number of voice subscribers in the landline telephony service, has shown a downward trend in the total number of active lines. In 2019, there were 32,615 (thirty-two thousand, six hundred and fifteen) active lines. A sharp decrease in lines is noted in 2019 when compared to the decrease recorded in 2018 and 2017. Comparing the years 2017 to 2018, the decrease in active lines was 1%.

It should be noted, that in 2017 mobile services such as 4G Technology that allows the combination of voice, data and multimedia under a single communication channel were introduced in the Telecommunications sector (triple play).

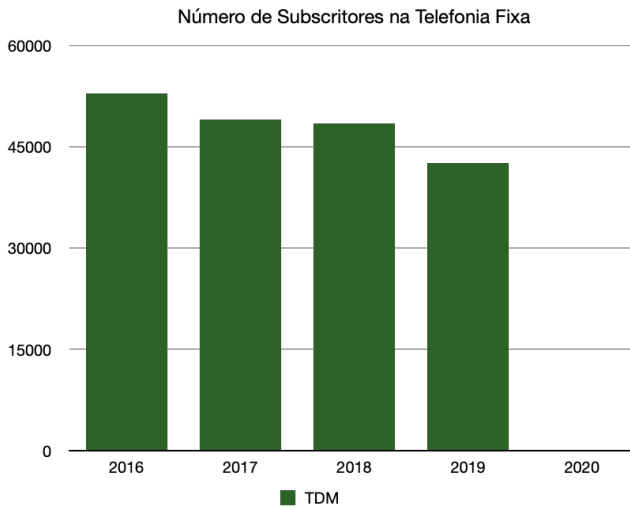


Chart 6: Number of Landline Telephony Subscribers.

5.2.1.2. Voice Service Traffic Volume

To better illustrate the voice traffic in landline telephony, comparisons and verifications were made at national and international level, where, as a priority, it was possible to ascertain that national voice traffic is greater than international voice traffic.

In 2016, national traffic totalled 58,354,000 (fifty-eight million, three hundred and fifty-four thousand) minutes, with a 40% decrease in national traffic in 2017. International traffic represents the smallest share of the volume of voice traffic in landline telephony, and in 2017 it was consumed with a total of 9,439,126 (nine million, four hundred and thirty-nine thousand, one hundred and twenty-six) minutes. When compared to 2016, there was a 61% increase in international voice traffic. However, for 2018 international voice traffic decreased by 36% compared to the previous year.

With the growth of the mobile telephony market, the landline network was predominantly terminated, causing a reduction in the use of services linked to the voice segment. This fact is justified by the deprivation of mobility, functionalism and portability of the landline telephony service.

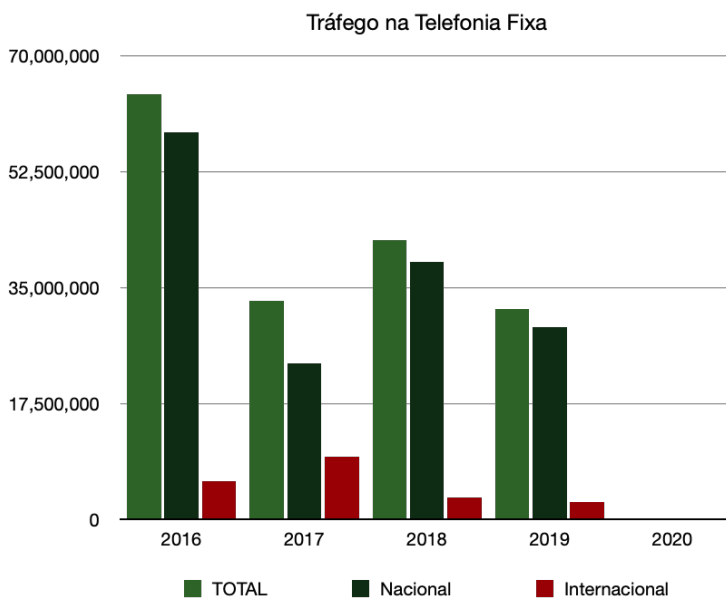


Chart 7: Landline Telephony Traffic.

5.2.1.3. Collected Revenues in Landline Telephony

Revenues from landline telephony services show a downward trend over the period from 2016 to 2020. The highest amount of revenue collected in this segment was 3,139,094,377.00MT (three billion, one hundred and thirty-nine million, ninety-four thousand, three hundred and seventy-seven meticaís) in 2016.

In 2018, the year in which revenue reached 2,440,893,145.00 MT (two billion, four hundred and forty million, eight hundred and ninety-three thousand, one hundred and forty-five meticaís), was the year whose revenue reduction reached levels greater than 15% when compared to 2017.

5.2.1.4. Staff Costs

The ratio between staff costs and collected revenues is inverse, as the chart below shows: Staff Costs in Landline Telephony. In the years under review there was a notable growth. From 2016 to 2017, the growth was more retracted standing at 3%, when compared with the growth from 2017 to 2018 which stood at 7% growth.

In 2018, around 1,093,070,285.00 MT (one billion, ninety-three million, seventy thousand, two hundred and eighty-five meticaís)

were spent, which represents an increase of 111,422,488.00 MT (one hundred and eleven million, four hundred and twenty-two thousand, four hundred and eighty-eight meticaís) when compared to 2017.

5.2.2. Mobile Telephony Service

The mobile sector in Mozambique continues to be represented as in previous years, by three (3) mobile phone service providers.

- a) Tmcel, a state-owned company, resulting from a merger between the former Telecomunicações de Moçambique - TDM which was also a state-owned company and monopolist of landline services and Mcel which was the first company to cover the market needs inherent to mobile telephony. After a decision taken by the Council of Ministers in 2016, the merger between the two entities was finalised in 2018, taking a new form and designation, the current Moçambique Telecom - Tmcel. In this chapter, only the part referring to mobile telephony will be analysed.
- b) Vodacom was the second company to break into the national market in 2003, with private ownership.
- c) Movitel is the third and last mobile company to enter the market in 2012, also privately held.

According to the results of the analysis, it can be seen that with regard to the indicators considered for the study, Vodacom has the largest share of subscribers and revenues collected from the mobile telephony service.

Regarding On - Net call traffic, Vodacom recorded a higher incidence over the other operators in the period between the years 2016 to 2017. From 2018 to 2020, Movitel leads this market segment.

Staff costs are mainly dominated by Tmcel, followed by Movitel and lastly Vodacom.

5.2.2.1. Subscribers of the Mobile Telephony Service

The number of subscribers to the mobile telephony service showed an upward trend, with the exception of 2017, when the process of SIM card registration began. After the start of SIM card registration in 2017 there was a 21% decrease in the number of active subscribers compared to 2016 in which

the number of active subscribers was 15,025,598 (fifteen million, twenty-five thousand, five hundred and ninety-eight). In subsequent years, the volume of subscribers has grown again, and in 2020 the total number of active subscribers grew to 14,996,900 (fourteen million, nine hundred and ninety-six thousand, nine hundred).

In 2018, Vodacom held 48% of the total subscriber share, followed by Movitel with 30% and finally Tmcel with 22%. This trend continued in 2019 in which Vodacom recorded a growth of 53% and Movitel slightly decreased its subscriber share to 27%, while Tmcel had a decrease to 20%.

In 2020, the trend in the number of subscribers continued, with Vodacom having 52% of the share of subscribers, and Movitel keeping the second largest share of subscribers with 27% and Tmcel keeping the remaining 21%.

Vodacom has the largest share of mobile telephony operators in all the years analysed.

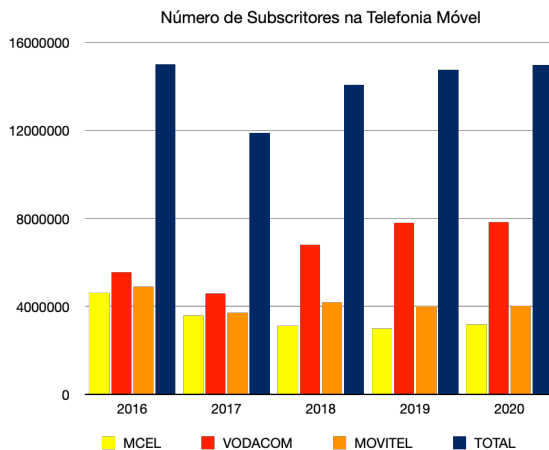


Chart 8: Number of Subscribers in Mobile Telephony.

5.2.2.2. Traffic Volume

On - Net voice traffic, which represents the volume of calls made within the network, showed continuous growth in the period under review, with the exception of 2020, which decreased by 33.5% when compared to 2019. In 2020 the sector recorded a total of 15,034,926,517 (fifteen billion, thirty-four million, nine hundred and twenty-six thousand, five hundred and seventeen) minutes, of which 8,109,866,032 (eight billion, one hundred and

nine million, eight hundred and sixty-six thousand, thirty-two) minutes were made by Vodacom and 6,412,479,797 (six billion, four hundred and twelve million, four hundred and seventy-nine thousand, seven hundred and ninety-seven) minutes were made by Movitel and the remaining 512,580,688 (five hundred and twelve million, five hundred and eighty thousand, six hundred and eighty-eight) minutes were made by Tmcel.

In 2016, Vodacom had the highest volume of voice traffic among mobile operators, with a 54% share of total On-Net traffic, followed by Movitel with 37% and Tmcel with 9%. In 2017 the trend continued, with Vodacom having increased its volume of traffic, although the share reduced by 1% compared to 2016 standing at 53%. Movitel increased its On-Net traffic from 37% in 2016 to 44% in 2017, while Tmcel recorded a traffic decrease of 3% of the total 14,947,615,799 (fourteen billion, nine hundred and forty-seven million, six hundred and fifteen thousand, seven hundred and ninety-nine) minutes of traffic generated in 2017.

In 2018, Movitel experienced a rise in its share of On-Net voice traffic, holding 50% of total traffic, followed by Vodacom with 47% and finally Tmcel with 3%. This growth is the result of a bonus strategy, strategic pricing war, aimed at attracting customers located in large urban centres.

In 2020, Movitel held the highest On-Net voice traffic when compared to Vodacom and Tmcel. Meanwhile it should be noted that Tmcel for the first time in the last four (4) years increased its On-Net traffic share volume from 3% to 4%. While Movitel and Vodacom also held 48% share of On-Net calls. The reduction in Movitel's On-Net traffic is mainly due to the growing use of Over the Top – OTT services, which allows voice calls, in applications such as WhatsApp, Skype, Zoom, Facebook and others.

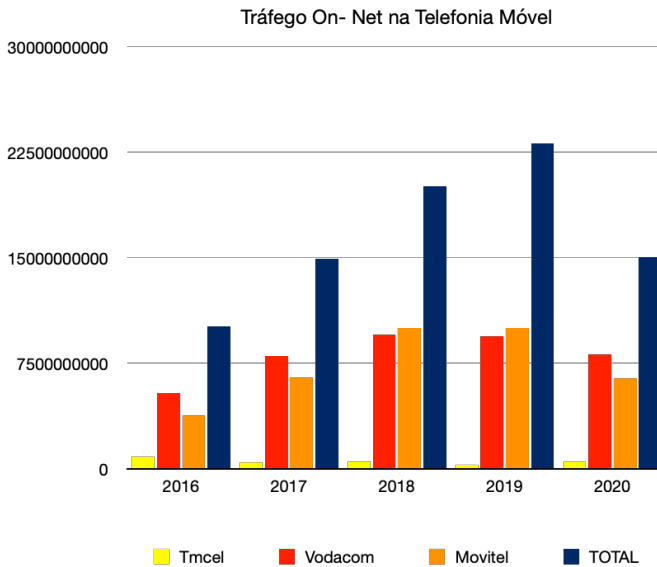


Chart 9: On - Net Traffic in Mobile Telephony.

Off - Net traffic in mobile telephony grew, throughout the period under review. In 2016 off-net voice traffic amounted to a total of 1,650,896,147 (one billion, six hundred and fifty million, eight hundred and ninety-six thousand, one hundred and forty-seven) minutes, with Tmcel having 58% of the total minutes spoken, Vodacom with 31% and Movitel with 1%.

In subsequent years, the volume of off-net traffic grew, with emphasis in 2019 and 2020, where a total of 4,461,697,943 (four billion, four hundred and sixty-one million, six hundred and ninety-seven thousand, nine hundred and forty-three) minutes, and 4,723,050,634 (four billion, seven hundred and twenty-three million, fifty thousand, six hundred and thirty-four) minutes, respectively, was reached. Meanwhile, in 2019, the quota distribution was the following: Vodacom with a 49% share, Movitel with 28% and Tmcel with 23%. For 2020, Tmcel had a share of 44%, Vodacom and Movitel with 28% equally.

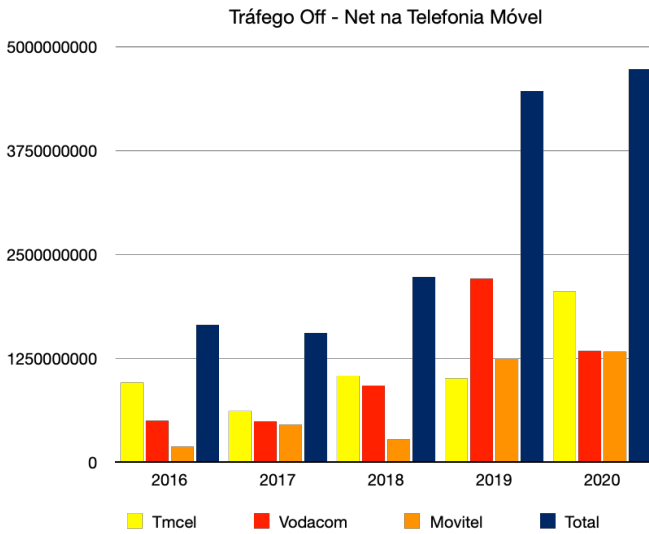


Chart 10: Off-Net Traffic in Mobile Telephony.

5.2.2.3. Revenues Collected in Mobile Telephony

Ensuring a positive and growing increase in collected revenues in mobile telephony services is a challenge that operators have been facing, due to the high costs that repairing infrastructure entail. This damage is caused by unpredictable occurrences of unforeseen natural disasters on one hand, and man-made disasters on the other.

The chart below illustrates the growth of revenue in the mobile telephony sector over the years under review (2016-2020).

In 2018, 25,413,324,356.00 MT (twenty-five billion, four hundred and thirteen million, three hundred and twenty-four thousand, three hundred and fifty-six meticais) were recorded, Vodacom with a total of 16,937,508,000.00 MT (sixteen billion, nine hundred and thirty-seven million, five hundred and eight thousand meticais), successively Movitel with 5,475,357,189.00 MT (five billion, four hundred and seventy-five million, three hundred and fifty-seven thousand, one hundred and eighty-nine meticais) and Tmcel with 3,018,459,167.00 MT (three billion, eighteen million, four hundred and fifty-nine thousand, one hundred and sixty-seven meticais).

In 2019, revenues increased with Vodacom collecting a total of 19,510,522,000.00 MT (nineteen billion, five hundred and ten million, five hundred and twenty-two thousand meticais),

Movitel with a total of 6,557,217,283.00 MT (six billion, five hundred and fifty-seven million, two hundred and seventeen thousand, two hundred and eighty-three thousand meticaís) and Tmcel with 3,286,678,017.00 MT (three billion, two hundred and eighty-six million, six hundred and seventy eight thousand seventeen meticaís). As such, there has been a 13% growth in total revenue for 2019 when compared to 2018.

In 2020 Vodacom reached 21,708,091,000.00 MT (twenty-one billion, seven hundred and eight million, ninety-one thousand meticaís), followed by Movitel with 7,951,452,859.00 MT (seven billion, nine hundred and fifty-one million, four hundred and fifty-two thousand, eight hundred and fifty-nine meticaís) and finally Tmcel.

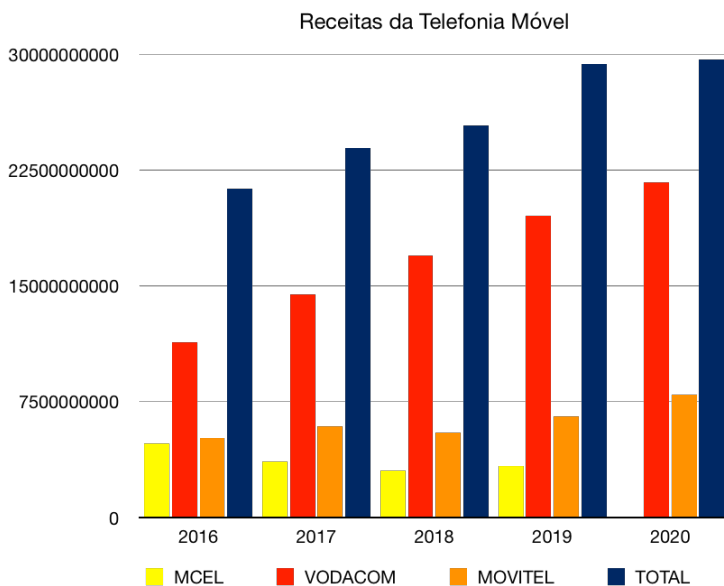


Chart 11: Revenues Collected in Mobile Telephony.

5.2.2.4. Staff Costs

Staff costs in mobile telephony have shown an upward trend over the period under review.

In 2017, this indicator reached a total of 1,522,536,813.00 MT (one billion, five hundred and twenty-two million, five hundred and thirty-six thousand, eight hundred and thirteen meticaís), with Tmcel employing a margin of 850,026,968.00 MT (eight hundred and fifty million, twenty-six thousand, nine hundred

and sixty-eight meticaís) that represents 55.8% of the total costs, Movitel 508,775,524.00 MT (five hundred and eight million, seven hundred and seventy-five thousand, five hundred and twenty-four meticaís) representing 33.4%, and Vodacom with the remaining 10.8%.

In 2019, there was an increase in staff costs, Tmcel with a total cost of 2,205,970,524.00 MT (two billion, two hundred and five million, nine hundred and seventy thousand, five hundred and twenty-four meticaís). This increase when compared with previous years, is justified by the merger that occurred between the old TDM and Mcel, to the current designated and known as Tmcel. However, Movitel and Vodacom also registered an increase in this variable, counting on 701,571,021.00 MT (seven hundred and one million, five hundred and seventy-one thousand, twenty-one meticaís) and 1,695,923.00 MT (one million, six hundred and ninety-five thousand, nine hundred and twenty-three meticaís), respectively.

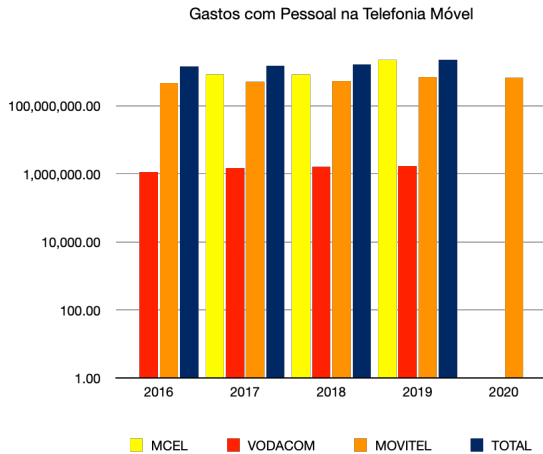


Chart 12: Staff Costs in Mobile Telephony.

5.2.3. Telecommunications in a Pandemic Year

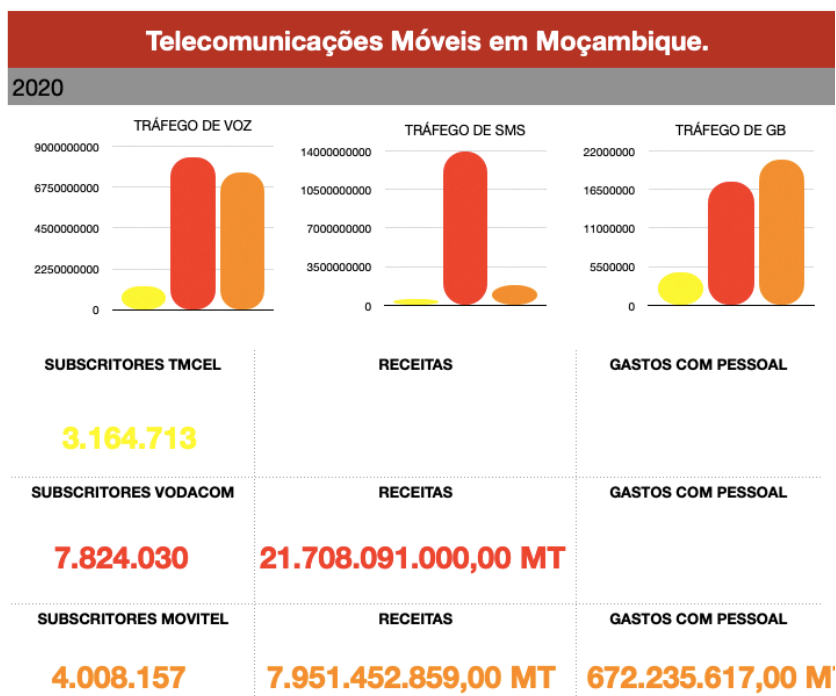


Figure 1: Summary of Telecommunications in the pandemic year of 2020

On-net voice traffic reflects the volume of calls made within the same network. In 2020, voice traffic peaked in April with 1,544,907,006 (one billion, five hundred and forty-four million, nine hundred and seven thousand, six) minutes of traffic within the network. However, as the following chart shows, **Chart 17: National On-Net Voice Traffic in 2020**, call traffic did not follow a continuous trend, and February experienced less traffic, with 1,113,194,689 (one billion, one hundred and thirteen million, one hundred and ninety-four thousand, six hundred and eighty-nine) minutes. It represents a decrease of 28% compared to April.

Throughout 2020, Vodacom had the largest share in national On-Net voice traffic, with special attention to January, which had a total of 868,452,497 (eight hundred and sixty-eight million, four hundred and fifty-two thousand, four hundred and ninety-seven) minutes. Movitel had 345,308,081 (three hundred and forty-five million, three hundred and eight thousand, eighty-one) minutes and Tmcel had 34,818,241 (thirty-four million,

eight hundred and eighteen thousand, two hundred and forty-one) minutes.

However, Movitel’s continuous growth during the first and last quarter of 2020 is remarkable, with greater incidence in December, with 960,509,430 (nine hundred and sixty million, five hundred and nine thousand, four hundred and thirty) minutes, which is represents a growth of 36% when compared to January.

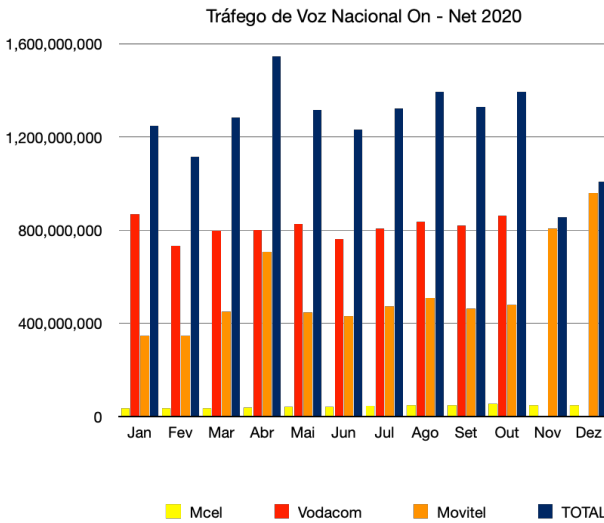


Chart 13: National On-Net Voice Traffic in 2020.

Off-Net voice traffic reflects the volume of calls made from one network to another. In this segment, the volume of voice is lower when compared to on-net calls. The year of 2020 presented, in general, an increasing trend; however, the first quarter presented minor growth with the peak in March. The second quarter had a decrease in the volume of Off-Net voice traffic. The fourth quarter was growing with the peak in December which represents the highest volume of voice traffic of the year, a total of 272,228,890 (two hundred and seventy-two million, two hundred and twenty-eight thousand, eight hundred and ninety) minutes.

Movitel had the highest volume of Off-Net voice traffic in 2020. However, in October, Tmcel outweighed Movitel, with a total of 78,081,707 (seventy-eight million, eighty-one thousand, seven hundred and seven) minutes for both operators and Vodacom with 20,539,452 (twenty million, five hundred and thirty-nine

thousand, four hundred and fifty-two) minutes. In the following months, Movitel led, closing the year with a total of 182,565,703 (one hundred and eighty-two million, five hundred and sixty-five thousand, seven hundred and three) minutes.

Vodacom maintained its Off-Net traffic, with greater emphasis on the month of December with 25,141,602 (twenty-five million, one hundred and forty-one thousand, six hundred and two) minutes.

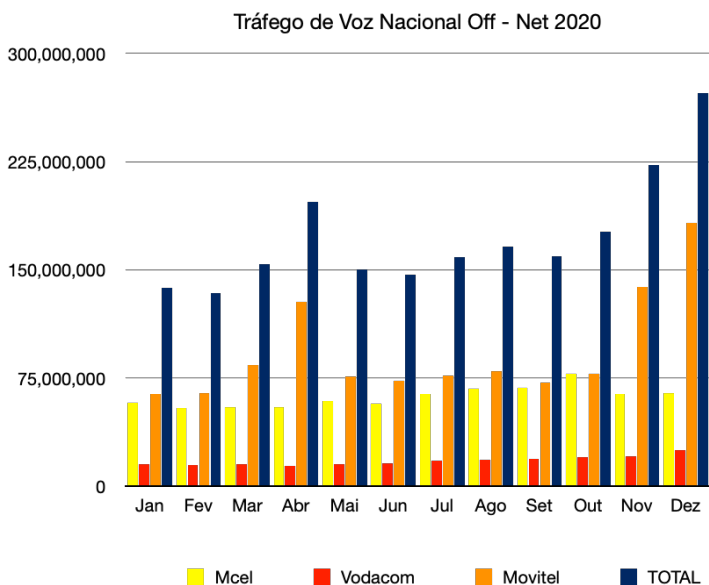


Chart 14: National Off-Net Voice Traffic in 2020.

International incoming voice traffic was higher in the first quarter, particularly in March, which had a total of 9,249,093 (nine million, two hundred and forty-nine thousand, ninety-three) minutes. However, in the following months, voice traffic decreased to an average of 6,852,327 (six million, eight hundred and fifty-two thousand, three hundred and twenty-seven) minutes. In the last quarter, a steady growth was noticed, with the volume of traffic reaching 8,675,609 (eight million, six hundred and seventy-five thousand, six hundred and nine) minutes in December, 6% less than that noticed in March.

Vodacom has the largest share of incoming voice traffic volume for international calls, the first quarter being the highest one, with March adding up to a total of 5,650,740 (five million, six hundred and fifty thousand, seven hundred and forty) minutes,

followed by Movitel with 3,016,899 (three million, sixteen thousand, eight hundred and ninety-nine) minutes and Tmcel with 581,454 (five hundred and eighty-one thousand, four hundred and fifty-four) minutes.

Movitel managed to increase 7% compared to March, with a total of 3,255,816 (three million, two hundred and fifty-five thousand, eight hundred and sixteen) minutes. Nevertheless, Vodacom exceeded with 4,996,670 (four million, nine hundred and ninety-six thousand, six hundred and seventy) minutes and Tmcel with 427,123 (four hundred and twenty-seven thousand, one hundred and twenty-three) minutes.



Chart 15: International Incoming Voice Traffic in 2020.

For International voice traffic carried out, January had a total of 5,150,884 (five million, one hundred and fifty thousand, eight hundred and eighty-four) minutes. However, in the following months they failed to reach this figure, and in December they only reached a total volume of 5,050,386 (five million, fifty thousand, three hundred and eighty-six) minutes.

The scenario equates to incoming calls, regarding Vodacom’s control in the majority of the volume of calls made internationally in 2020. The first quarter presented the best result.

However, December also stands out because there was an increase in the volume of outgoing traffic from Vodacom and

Movitel, when compared with previous months. Vodacom had a total of 3,457,907 (three million, four hundred and fifty-seven thousand, nine hundred and seven) minutes, Movitel with 767,454 (seven hundred and sixty-seven thousand, four hundred and fifty-four) minutes and Tmcel with 388,306 (three hundred and eighty-eight thousand, three hundred and six) minutes.

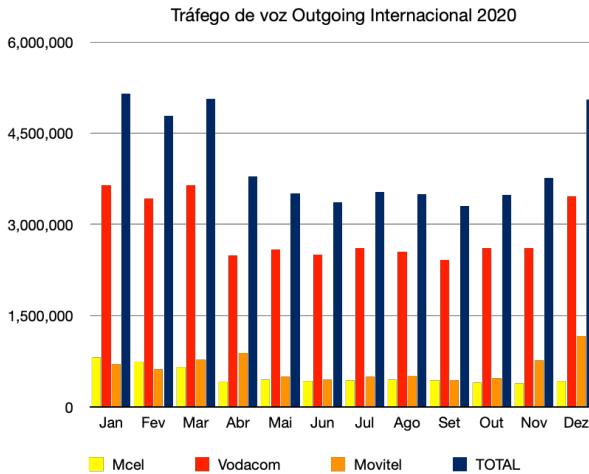


Chart 16: International Outgoing Voice Traffic in 2020.

On-Net SMS traffic in 2020 was mostly provided by one of the mobile operators. January and December had the highest flows of SMSs, with a total of 1,190,155,314 (one billion, one hundred and ninety million, one hundred and fifty-five thousand, three hundred and fourteen) messages, and 1,157,507,280 (one billion, one hundred and fifty-seven million, five hundred and seven thousand, two hundred and eighty) SMSs, respectively.

In these months, Vodacom had the highest volume of SMS traffic among the operators, with a total of 1,127,774,156 (one billion, one hundred and twenty-seven million, seven hundred and seventy-four thousand, one hundred and fifty-six) SMSs in January, followed by Movitel with a total of 53,295,135 (fifty-three million, two hundred and ninety-five thousand, one hundred and thirty-five) SMSs and Tmcel with a total of 9,086,023 (nine million, eighty-six thousand, twenty-three) SMSs.

In October 2020, Tmcel had the highest volume of SMS traffic with a total of 12,992,550 (twelve million, nine hundred and ninety-two thousand, five hundred and fifty) SMSs exchanged, when compared to the remaining months. Meanwhile, Vodacom

had a total of 1,066,164,300 (one billion, six hundred and sixty-six million, one hundred and sixty-four thousand, three hundred) SMSs and Tmcel with a total of 68,956,088 (sixty-eight million, nine hundred and fifty-six thousand, eighty-eight) SMSs in October.

Movitel reached its peak in December with a total of 135,147,254 (one hundred and thirty-five million, one hundred and forty-seven thousand, two hundred and fifty-four) SMSs. Vodacom also counted 1,012,491,526 (one billion, twelve million, four hundred and ninety-one thousand, five hundred and twenty-six) SMSs in December and Tmcel with 9,868,500 (nine million, eight hundred and sixty-eight thousand, five hundred) SMSs.

Tráfego de SMS On - Net 2020

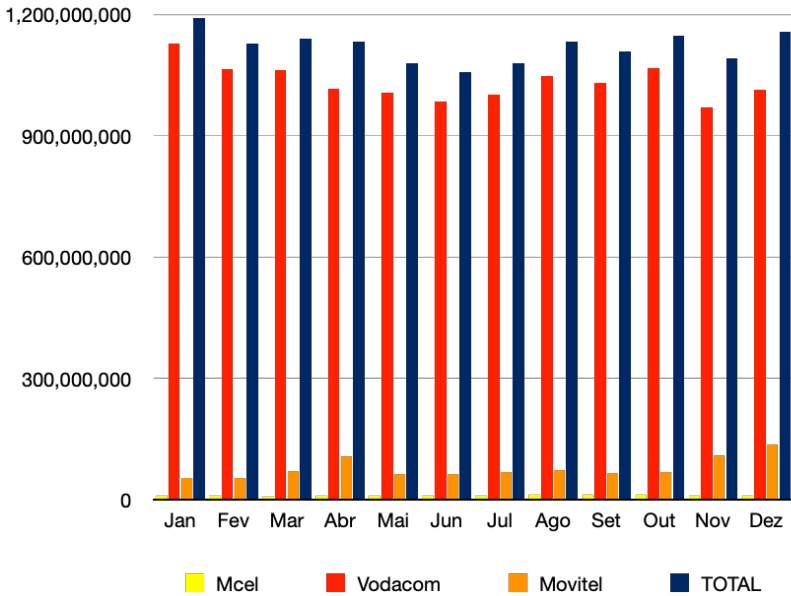


Chart 17: On - Net SMS Traffic in 2020.

SMSs processed outside the network are notably lower when compared to those processed inside the same network. The months of April, November and December had more traffic, as attested in the chart below: **Chart 22: Off-Net SMS Traffic in 2020.**

The last quarter had a more regular growth, with December being the peak month with a total of 333,575,290 (three hundred and thirty-three million, five hundred and seventy-five thousand, two hundred and ninety) SMSs.

Vodacom had the highest Off-Net SMS traffic in 2020 with a traffic of 1,558,073,859 (one billion, five hundred and fifty-eight million, seventy-three thousand eight hundred and fifty-nine) SMSs. In April, Vodacom counted a total of 119,123,688 (one hundred and nineteen million, one hundred and twenty-three thousand, six hundred and eighty-eight) SMSs. Movitel with 110,126,546 (one hundred and ten million, one hundred and twenty-six thousand, five hundred and forty-six) SMSs and Tmcel with 37,566,893 (thirty-seven million, five hundred and sixty-six thousand, eight hundred and ninety-three) SMSs, respectively.

In December, the Off-Net SMS traffic increased by 20% when compared to April. Vodacom had a total of 151,561,635 (one hundred and fifty-one million, five hundred and sixty-one thousand, six hundred and thirty-five) SMSs, Movitel had 143,765,632 (one hundred and forty-three million, seven hundred and sixty-five thousand, six hundred and thirty-two) SMSs and TMcel had a total of 38,248,023 (thirty-eight million, two hundred and forty-eight thousand and twenty-three) SMSs.

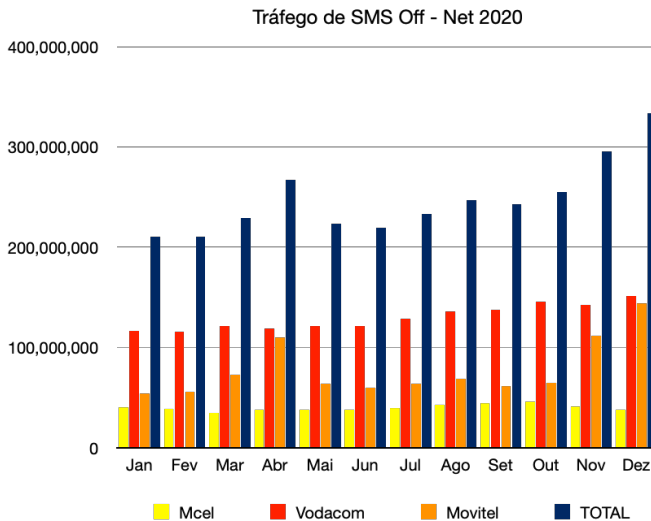


Chart 18: Off-Net SMS Traffic in 2020.

In September 2020, the Telecommunications Traffic Control Unit (UCTT) began monitoring the data traffic of mobile telephony operators. The peak took place in December with a total of 12,746,210 (twelve million, seven hundred and forty-six thousand, two hundred and ten) Gigabytes, compared to

9,624,853 (nine million, six hundred and twenty-four thousand, eight hundred and fifty-three) Gigabytes in November which represents a 24.5% decrease.

In September and October, Movitel had the highest data traffic with emphasis on the month of September with 6,013,053 (six million, thirteen thousand, fifty-three) Gigabytes, Vodacom with 3,856,931 (three million, eight hundred and fifty-six thousand, nine hundred and thirty-one) Gigabytes and Tmcel with 1,152,626 (one million, one hundred and fifty-two thousand, six hundred and twenty-six) Gigabytes.

However, in November, Vodacom reached 4,621,788 (four million, six hundred and twenty-one thousand, seven hundred and eighty-eight) Gigabytes, Movitel reached 3,776,815 (three million, seven hundred and seventy-six thousand, eight hundred and fifteen) Gigabytes and Tmcel reached

1,226,250 (one million, two hundred and twenty-six thousand, two hundred and fifty) Gigabytes. December was headed again by Movitel with 6,552,853 (six million, five hundred and fifty-two thousand, eight hundred and fifty-three) Gigabytes. Vodacom with 5,294,620 (five million, two hundred and ninety-four thousand, six hundred and twenty) Gigabytes and lastly Tmcel with 898,737 (eight hundred and ninety-eight thousand, seven hundred and thirty-seven) Gigabytes.

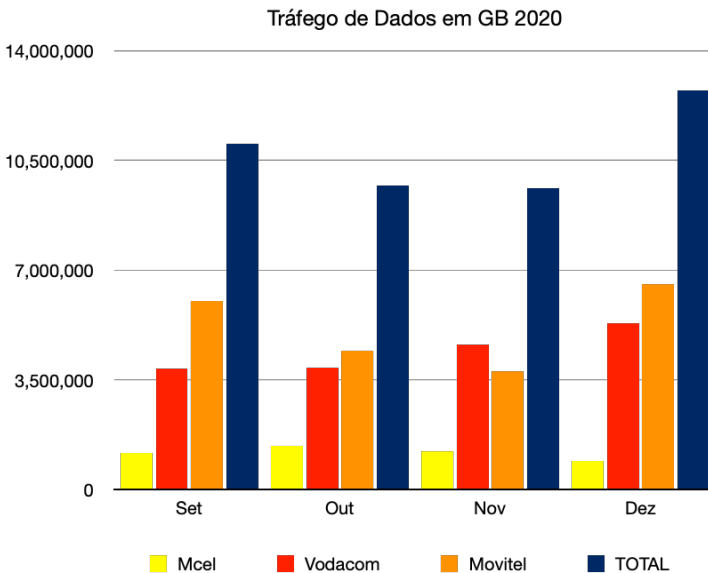


Chart 19: Data traffic in GB in 2020.

The monitoring of the amount of USSD (Unstructured Supplementary Service Data) began in June by UCTT, with a total of 554,102,612 (five hundred and fifty-four million, one hundred and two thousand, six hundred and twelve) units.

Of the months arranged, Vodacom showed the highest amounts of USSD in 2020, followed by Movitel and Tmcel, respectively.

In terms of shares, Vodacom holds 94% of USSD amounts and Movitel and Tmcel hold 3%

separately. The mobile service MPesa is responsible for this percentage of Vodacom.

5.3. Digital Television

The Digital Television sector in Mozambique, in the period from 2018 to 2020, did not present major changes at its structure and composition level in the number of television signal service providers (five providers), distributed among terrestrial transmission (Gotv and Startimes), cable transmission (Tv Cabo) and satellite transmission (Zap and Dstv).

In terms of changes in the number and type of programs transmitted, it is possible to verify some changes, which affected the pricing of each provider's packages, besides other externalities, positive and negative, which caused some oscillations, as is the case of exchange rate variations, national, regional and global macroeconomic environment.

During the analysis, some indicators will be analysed, which both in particular and in aggregate, indicate the dynamics and the trend behaviour of the national Digital Television sector. These indicators are the number of active subscribers and acquired revenues. The indicators for each provider were analysed and, at the end, a comparative analysis will be presented, in order to verify the level of insertion in the Mozambican market, and thus foresee the existing challenges to achieve the desired level of access to Digital Television throughout the national territory and the successful completion of the digital migration process.

5.3.1. Digital Television Service Subscribers

The year of 2018 had a total of 157,542 (one hundred and fifty-seven thousand, five hundred and forty-two) active subscribers.

For 2019, one can see an overall growth in the number of subscribers compared to the previous year, with a total of

11,833,686 (eleven million, eight hundred and thirty-three thousand, six hundred and eighty-six) subscribers. M-Star had a total of 7,139,393 (seven million, one hundred and thirty-nine thousand, three hundred and ninety-three) subscribers, GOtv had a total of 3,102,764 (three million, one hundred and two thousand, seven hundred and sixty-four) subscribers, DSTV had a total of 1,582,662 (one million, five hundred and eighty-two thousand, six hundred and sixty-two) subscribers and Tv Cabo had a total of 29,121 (twenty-nine thousand, one hundred and twenty-one) subscribers.

In 2020, in terms of performance, the number of active subscribers decreased in general. This fact may be justified by the global environment that has been negatively affecting the performance of economies, in some activity sectors. With the outbreak of Covid-19, scenarios such as the increase in the level of unemployment, decrease in salary levels, adjustment of primary needs, contributed to the significant variation and readjustment of the number of active subscribers among different TV signal transmission providers. Relevant factors are also the exchange rate level that drove the price changes of some providers' television packages, justified by the increase in the operationalisation costs of their products/services. A total of 4,172,840 (four million, one hundred and seventy-two thousand, eight hundred and forty) subscribers were checked.

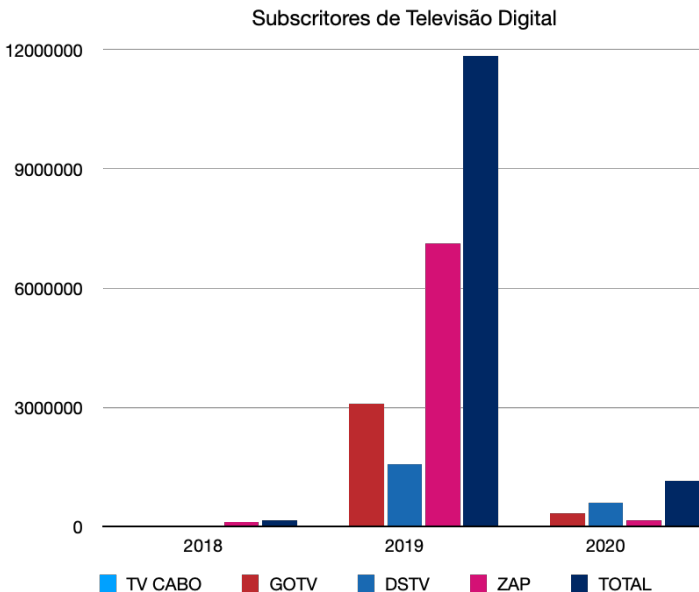


Chart 20: Number of Digital Television Subscribers

5.3.2. Staff Costs

In the digital television sector, the staff costs showed an increasing trend.

In 2018, staff costs totalled 442,800,426.00 MT (four hundred and forty-two million, eight hundred thousand, four hundred and twenty-six meticaís). DStv disbursed a total of 175,923,590.00 MT (one hundred and seventy-five million, nine hundred and twenty-three thousand, five hundred and ninety meticaís), and TV Cabo with 89,855,873.00 MT (eighty-nine million, eight hundred and fifty-five meticaís, eight hundred and seventy-three meticaís), M-Star with 111,796,463.00 MT (one hundred and eleven million, seven hundred and ninety-six thousand, four hundred and sixty-three meticaís), StarTimes with 34,099,675.00 MT (thirty-four million, ninety-nine thousand, six hundred and seventy-five meticaís) and GOtv with 31,124,825.00 MT (thirty-one million, one hundred and twenty-four thousand, eight hundred and twenty-five meticaís).

The year of 2019 collected a total of MZN 454,692,606.00 (four hundred and fifty-four million, six hundred and ninety-two thousand, six hundred and six meticaís). Dstv counted a total of MZN 22,662,381.00 (twenty-two million, six hundred and sixty-two thousand, three hundred and eighty-one meticaís), TV Cabo with 97,753,445.00 MT (ninety-seven million, seven hundred and fifty-three thousand, and four hundred and forty-five meticaís), StarTimes with 29,442,856.00 MT (twenty-nine million, four hundred and forty-two thousand, eight hundred and fifty-six meticaís).

The year 2020 ended with a total of 461,627,671.30 MT (four hundred and sixty-one million, six hundred and twenty-seven thousand, six hundred and seventy-one meticaís and thirty cents).

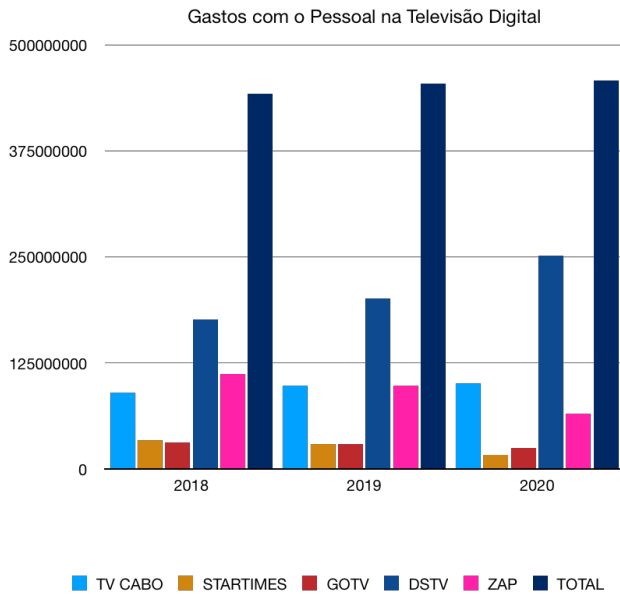


Chart 21: Staff Costs in Digital Television

5.4. Studies

5.4.1. Telecommunications Big Data in Response to Natural Disasters

In recent years (2018 to 2020), the coastal region of Mozambique has been experiencing several types of natural phenomena such as floods, droughts, cyclones and strong winds. These phenomena, caused by the environmental changes that affect the world, have caused a negative impact on the infrastructural, economic and security development of society.

Usually, when there is an occurrence of severe climate changes, such as heavy rains or cyclones, communication among residents of a given area is so greatly affected that, in some cases, it becomes impossible. In order to mitigate the constraints caused by the interruption of communications in cases of natural disasters, the Communications Regulatory Authority in Mozambique - INCM, identified the need to create prevention and control mechanisms to mitigate damages caused by natural disasters in Mozambique.

Through the use of Telecommunications big data, as a way to contribute to the mitigation of the huge and irreversible human and material damages that occur in some parts of the

country, the INCM established a partnership with the Digital Impact Alliance - DIAL and Flowminder that aims to develop a system that alerts the population. This partnership was made at the end of 2019, with the signing of an agreement among the institutions involved.

Through this partnership, the project - Telecommunications Big Data in response to Natural Disasters – was created, which consists of analysing and obtaining information from a set of Call Detail Record - CDR data, to be analysed by conventional systems.

The CDRs are the detailed records of all telephone calls that pass through a switchboard or any other telecommunications equipment, which contain data such as time of call, duration, source and destination number, call completion status, and other details.

The project intends to identify the foreseeable vulnerable locations, with the support of data from the National Statistics Institute- INE. Through a mathematical algorithmic calculation, it will be possible to identify and quantify the humanitarian support needed to support the people affected by the disaster, that is, in real time, through the forecast provided by the National Meteorology Institute - INAM, for the National Disaster Management Institute - INGD to take the measures of preparation and prevention against the loss of lives that is a consequence of the occurrence of natural disasters.

After the establishment of the partnership between INCM, DIAL and Flowminder, a series of activities started, the first of which was the conference to present the project to the different stakeholders involved in the project.

At this conference, the next steps to be followed were defined, and from this conference, the activities schedule to be implemented were planned.

Phase I: Flowkit installation and maintenance

From the conference until the beginning of 2020, the activities were focused on the installation and maintenance of Flowkit which basically consisted of i) hardware installation; ii) live data connection and iii) testing phase.

Data Flow

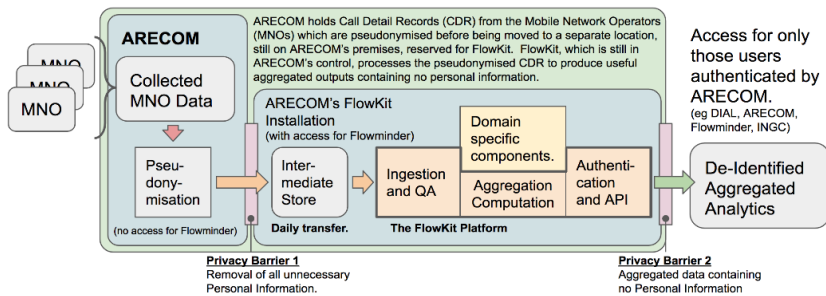


Figure 2: FlowKit diagram for the Big Data Project.

The data in INCM’s possession consists of call detail records - CDRs, pseudonymized (coded with different names) and other data such as cell phone tower information. As stated in the purpose, the data required are to support understanding the population movements from certain demographic segments in Mozambique.

It is important to mention that the data obey the principle of confidentiality, to be followed by all who hold this information, being safeguarded in the legal provisions governing the fulfilment of agreement signed by the partners of this project.

Phase II: Implementation and development

Later, in 2020, the implementation and development phase began, with regard to i) customisation of the platform; ii) integration with the dissemination platform; and iii) beginning the analysis of historical data.

In the same period, tenders were launched for the acquisition of Short Message Service (SMS) and Interactive Voice Response (IVR) systems to be used for emergencies in the domain of the INCM. This system should allow storage of Short Message Service (SMS) and Interactive Voice Response (IVR’s) alerts, registration of government entities (Ministries and institutions under their jurisdiction) so that each one of them can check the IVR’s and SMSs sent, received, pending and failed for each campaign. The systems must also be able to read the CDR’s of a particular region and send SMS’s and IVR’s to all numbers located in that region. The system shall have the capability to perform per operator a minimum of ten (10) IVRs simultaneously and send

twenty (20) SMSs per second on each of the telecommunication operators. SMS costs for this system will be a direct negotiation by the Communications Regulatory Authority.

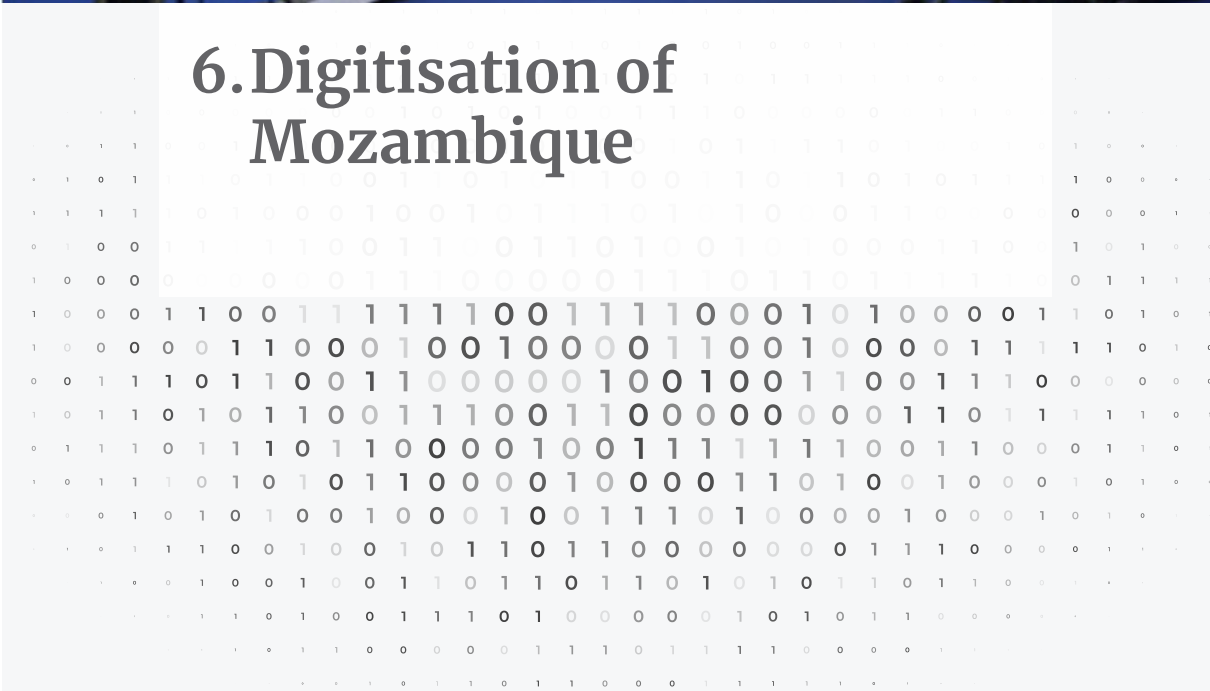
Phase III: Dissemination

After finalizing these analyses, the project moves to the dissemination phase, where the i) application testing; ii) publication of the article and finally, iii) sending mass SMS and IVR's to the selected areas, will be done.

December this year is estimated to be the end of the last phase of project activities, where the project will end by sending mass SMS's and IVR's.



6. Digitisation of Mozambique



The digitisation of Mozambique is an integral part of the global digitisation commonly known as digital transformation. Digital transformation is the process whereby businesses use digital technologies to solve traditional problems such as the need to go to an in-person service counter to pay for manifests, which is then done online. The customs clearance of goods, the cataloguing of services and entities, the replacement of face-to-face service by virtual service, the holding of virtual meetings and others are examples of processes digitalisation. This transformation requires a structural change in organisations.

This chapter deals with digital transformation in Mozambique, namely: the role of the Regulator in digital transformation and the Virtual Counter.

6.1. Digital Transformation

Today, we live in an environment of great change where digitalisation, that is, the increasingly intense use of Information and Communication Technologies - ICT, enables the use of data and technology to improve production processes, business processes and automate data analysis. Technology influences the change in people's behaviour, which in turn influences the emergence of new business models, that is, as society transforms technology, society is also transformed by technology, in a continuous process. In industry, this digital transformation has been referred to as Industry 4.0. The 4th Industrial Revolution, or Industry 4.0, by which name it is increasingly known in industrial and academic circles, emerged at the Hanover Fair in 2011, during the launch of a German government program to increase the competitiveness of German companies, because with the use of the Internet and cyber-physical systems the possibility that equipment on production lines could communicate with each other and with human beings: whether customers, suppliers, production staff, maintenance, or others, sending and receiving data and information arose.

This wide connectivity, made possible by digital technology, generates new possibilities such as the remote control of processes, providing the decentralisation of production control. Therefore, Digital Transformation is the process in which companies make use of technology to improve their performance, increase their reach and ensure better results. It

should be noted that this transformation affects various sectors of society such as: agriculture, health, transport, education, among others. Although digital transformation arrives full of uncertainties, it is loaded with opportunities for all those who can foresee business models that are more suitable to their sector of operation. Digital transformation is not a concept for the future, it is rather, something that today's companies have to give their utmost attention for in order to stay alive. It is a radical change in the structure of organisations, from which technology has a central strategic role, and not just a superficial presence.

Therefore, it is necessary to understand exactly what this transformation means, what is the impact on society and how to apply it in business processes. These facts per se make digital transformation a much more management challenge than just a marketing or technological one.

6.2. The Role of the Regulator in Digital Transformation

The communications regulator should lead the digital transformation, promoting policies and actions that encourage national operators in this market to join. In this context, it should regulate technology and create, in coordination with operators, a roadmap for the development of activities aimed at digital transformation. On the other hand, it should create regulatory platforms that remove uncertainties in the development, investment or implementation of the technology. In the case of 5G technology, it should promote the development of this technology by giving free spectrum for a trial period.

Effective regulation is very important in reducing the time to develop technologies. Thus, the regulator should be the promoter of sandboxes or incubators to facilitate the testing of emerging technologies on a small scale.

Briefly, as follows, we have transformed the challenges of digital transformation into an action framework to serve as a roadmap for the development of this transformation in harmony with national and international industry.

a. Innovation

The lack of initiative is the first problem that companies

face to approach digital transformation. It is clear that it takes more than isolated actions to cause real changes in the company, and this requires initiative from leaders. At the MTC level there must be coordinated actions among the different players and infrastructure sharing. The Regulator should promote innovation by creating an incubator or Sandbox and should spread this initiative to other partners like academies, automobile industry, etc.).

b. Technical Difficulties

the lack of qualified staff is another problem that many companies still face when seeking to implement deep transformation programs. To solve this problem, it is necessary to hire the best professionals and invest in constant training and qualification for those already working in the company. At the government level, there should be knowledge sharing, exchange of experience and mutual help between ICT staff in different ministries.

c. Reputation and Safety

Another big problem many executives and managers have is the fear of losing their companies' reputation and the possible security breaches with the adoption of more robust digital strategies. The risk of tarnishing the reputation of recognized companies - even century-old companies - is a factor that weighs heavily against digital transformation. This is especially the case for large corporations that handle confidential information such as insurance data, financial information, medical histories, etc. A simple smartphone falling into the wrong hands could bring companies down, and that is something no CEO will overlook. Awareness workshops and demonstrating the advantages of going digital are needed. The advantages outweigh the risk.

d. Data Silos

Using all the information obtained from customers in an integrated way and uniting everything in a central data source is one of the biggest challenges of digital transformation, that is, minimize as much as possible the existence of data silos and ensure that the customer experience is optimized. The Government should guide the purchase of its ICT infrastructure

and the MTC should lead the process from institutions such as: UEM, INTIC, INCM and others.

e. Return Guarantee

Companies generally make decisions regarding new initiatives based on Return on Investment -ROI, which is a recommended practice. In the case of a total transformation like this it is difficult to quantify the return on investment, because the benefits will not be felt only in the short term. However, companies should not stop experimenting with digital transformation because of the above reasons.

f. I.T. Problems

The I.T. sector plays a key role in all stages of digital transformation, which means that problems in this department represent a major obstacle to the smooth running of such a program. In this sense, the solution is to train professionals to deal with the new challenges that will arise, in addition to placing them in a more central role within strategic decisions.

g. Corporate Culture

The corporate culture is a determining factor in the type of projects that will be developed or abandoned. In the case of a big change like this, the most common is that the second option comes true. Therefore, it is necessary to make a huge effort to change certain cultural aspects of companies before developing digital transformation programs and putting them into practice. This is one of the most complex challenges to solve, and perhaps the one that will take the longest. The Regulator must raise awareness among operators to motivate their workers. "It is critical to have a motivated human resource. Everyone is important and useful."

6.3. Digital Counter

The Virtual Counter - BV, is an application (software, hardware) or electronic channel that allows the user to have remote assistance, i.e., direct access to the assistance performed by the secretariats of the institutions to obtain information to meet their needs: information consultations, payments, processing

of files, and follow-up without the need for face-to-face assistance. This form of service reduces bureaucracy and makes service more agile.

In an action to de-bureaucratize and make its service to citizens more agile in a secure environment against Covid-19, INCM consolidated the BV launched in 2020. With the installation of the BV, the users of the services of this institution now have direct, remote and immediate access to the secretarial services on a permanent basis. For this reason, on INCM's website (<https://balcaovirtual.incm.gov.mz>) there is a tool that allows immediate contact with the attendance sector during public attendance hours.

These actions are another step in the digital transformation of the State, which seeks innovative solutions to modernize the performance of its activities in order to improve citizen service through the provision of services even at a distance.

6.4. Government Digital Counter

The technological advancement that is witnessed these days all over the world allows organisations to create systems that help to efficiently manage various processes of various branches of activity. On the other hand, the popularisation of social networks requires that public managers update themselves and master the use of ICTs resources. It is in this context that the Government has started with the digitalisation of its institutions with the implementation of the Process Management System called Virtual Counter - BV, developed and implemented by INCM. Initially developed and implemented by INCM, it was extended to other public institutions. Coming into full operation in 2020, this procedural management tool helped to ensure the full operation of the institutions in the face of the new challenges imposed by Covid-19. BV beneficiary institutions, where the system is already in operation and where it is under implementation, are as follows.

6.4.1. Benefited Institutions

In order to digitalize and speed up the processing of cases in public institutions, 13 (thirteen) public institutions have started to operate:

#	Name of Institutions
1	Mozambique National Communications Institute (INCM).
2	Ministry of Transport and Communication (MTC).
3	Ministry of Industry and Commerce (MIC).
4	Ministry of State Administration and Civil Service (MAEFP).
5	National Institute for Land Transport (INATTER).
6	Ministry of Agriculture and Rural Development (MADER).
7	Ministry of Land and Environment (MTA).
8	Attorney General's Office (PGR).
9	Vilanculos District Administration (ADV).
10	National Inspection of Economic Activities (INAE).
11	National Institute for Standardisation and Quality (INNOQ).
12	One-Stop Shop (BAÚ).
13	Vilanculos Municipal Council (CMV).

Table 5: Institutions benefited by the Virtual Counter.

The implementation of the system in each of these institutions consisted of requirements gathering, prototyping, development, testing and user training.

6.4.2. Institutions with a Virtual Counter in Operation

Regarding the benefited Institutions, by the end of 2020 only five were making full use of the system, namely: INCM, MIC, INATTER, ADV and MAEFP.

Institutions	Number of cases processed	Needs met	Ongoing Improvements
INCM	5,795	Process Management; Contract Management; Homologation Module for Telecommunication and Radio Communication equipment.	Development of modules for Radiocommunications Licensing, Telecommunications, Medical Assistance Reimbursement and Telecommunications Fraud Reporting Portal; Introduction of Payment Methods: Entity and Reference; Visa and MasterCard.
MIC	1,125	- Process Management Module.	-

INATTER	24,890	Renewal of Driving Licences; Consultation of Fines.	Introduction of payment methods: Entity and Reference; Visa and MasterCard.
ADV	53	Process Management Module.	-
MAEFP	207	Process Management Module.	-

Table 6: Institutions with a Virtual Counter in operation

6.4.3. Implementing Institutions

In the remaining institutions - MADER, MTC, INAE, MTA, BAU, PGR, MINEC, INNOQ - where the implementation of BV was approved, the following steps are to be followed: requirements gathering, development, parameterisation and user training.

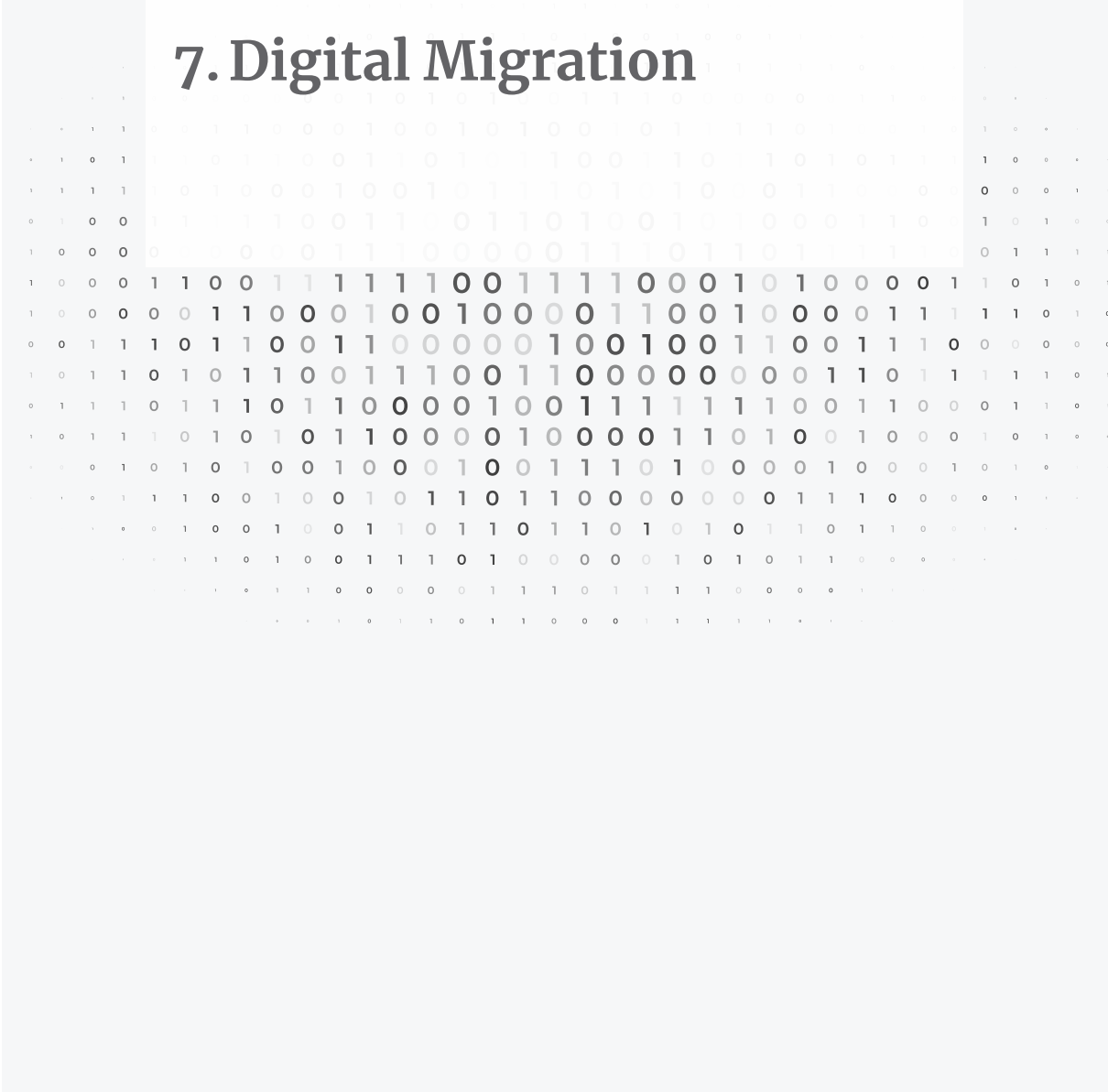
6.4.4. INCM Virtual Counter

The Virtual Counter is a product developed and implemented by INCM. After the consolidation, it was extended to other Government institutions. This development comprised all phases from requirements gathering, development, testing and entry into production. These actions show the commitment that the Regulator has in promoting the digitalisation of the country, along with other initiatives such as the study and implementation of TV White Spaces.

The cases transacted in BV are systematically organized, with 14,193 (fourteen thousand, one hundred and ninety-three) cases in progress, 17,825 (seventeen thousand, eight hundred and twenty-five) cases completed, totalling 32,017 (thirty-two thousand, seventeen) cases, thus moving towards paperless.



7. Digital Migration



7.1. Official Launch of Digital Television

The official launch of digital television transmission in Mozambique was held by the President of the Republic (PR) on October 8th, 2020, in Beira city, capital of Sofala Province. This event took place in the Delegation of Televisão de Moçambique - TVM, which is the Regional Central of the Digital Television Network where there was the inauguration of the broadcast studio.

With this achievement, quoting the speech of the PR, the stage of double lighting begins, that is, the phase in which analogue and digital transmissions will take place simultaneously, towards the definitive transition that is expected to occur with the *switch off*¹ of analogue television transmission within a year.

From the launch program of the digital television transmission, we highlight the activation of the transmission signal at the TVM premises besides the unveiling of the memorial stone and visit to the TMT (Transmission, Multiplexing, Transport) company site.

The digital migration process that culminates with this moment of particular historical importance for the country, in general, and for the communications sector, in particular, began with the adoption, in December 2010, of the digital migration technological standard DVB-T2 (Digital Video Broadcasting - Second Generation Terrestrial), having been followed by: creation of the National Commission for the Implementation of Digital Migration - COMID, led by INCM, the preparation of the Migration Strategy from Analog to Digital Transmission, creation of the company TMT, the public digital television network operator and finally the launch of the international tender for the implementation of the Digital Migration Project.

A digital television network consisting of 60 (sixty) sites was then set up in all provinces; construction of the TVM Production Centre in Maputo and equipping TVM studios in the cities: Nampula, Beira, Maputo, Chimoio, Pemba, Quelimane, Tete, Xai-Xai, Lichinga and Inhambane. This significant growth in terms of telecommunications infrastructure and information and communication technologies, according to the PR, brings a new reality that allows improvement of productivity, competitiveness, innovation and the expansion of the network

1 Switch Off- Term used to refer to the act of switching off.

of community radios and televisions in rural areas, as well as expanding the territorial coverage of public and private radio and television signals.

In 2015, the country had five private companies for the provision of digital television services via terrestrial, satellite and/or cable to a universe of approximately 2% of the Mozambican population. The presence of these private services, particularly those by subscription via digital terrestrial television, contributed to increased competition and diversification of supply.

The discovery and development of analogue television, went through several stages of technological evolution as the transition from black and white to colour television, invention of remote control, transmission of the signal via cable or satellite until the high definition television, which gave rise to the Digital Television System.

Despite all this technological evolution, the digitalisation of television brought better solutions to the problems of the analogue platform because it allowed many technical and economic gains, such as: better image and sound quality - High Definition Television, cost reduction, increased supply of services in terms of quantity and equity by reducing entry barriers.

The Government established COMID in 2011 to guide digital migration in Mozambique. The COMID brought together all the sensitivities of the stakeholders in broadcasting in Mozambique, namely: the Government, regulators, content producers from the Public and Private sectors and Civil Society which had the major task of advising the Government, as well as planning and coordinating and monitoring the process, he stressed, adding that the company Transport, Multiplexing and Transmission - TMT, SA, whose role is to manage the Digital Transmission Network in Mozambique was also created.

With TMT's entry into the market, by the end of July 2020, there will be digital terrestrial TV coverage in about 70% of the national territory. Before TMT's entry, approximately 30% of the Mozambican population had access to Digital Television services.

To enable the migration from analogue to digital broadcasting, in the recovery of established deadlines, the country resorted, in 2016, to financing from EXIM BANK, of the People's Republic of China, in the amount of USD 156,000,000.00 (one hundred and fifty-six million US dollars).

The national digital broadcasting network of 60 (sixty) digital broadcasters distributed throughout all provinces was installed. This network also includes provincial and regional centres and multiplexing centres. The centres allow the reception of television signals from different national and international television providers. Currently, the network has a capacity of about 60 channels, 53 (fifty-three) channels being already available. This investment will only have a return, if entrepreneurs effectively invest in this market to take advantage of the digital dividend due to the change of analogue television services.

The Government's expectation, still quoting the PR, is that the expansion of television access to more Mozambicans will contribute to broaden the debate on the development of Mozambique, particularly in the dissemination of our culture, the strengthening of national unity and identity, the consolidation and deepening of democracy, among other values.

Digital migration ensured the expansion of coverage in the national territory in addition to the improvement of signal quality and broadcast content.

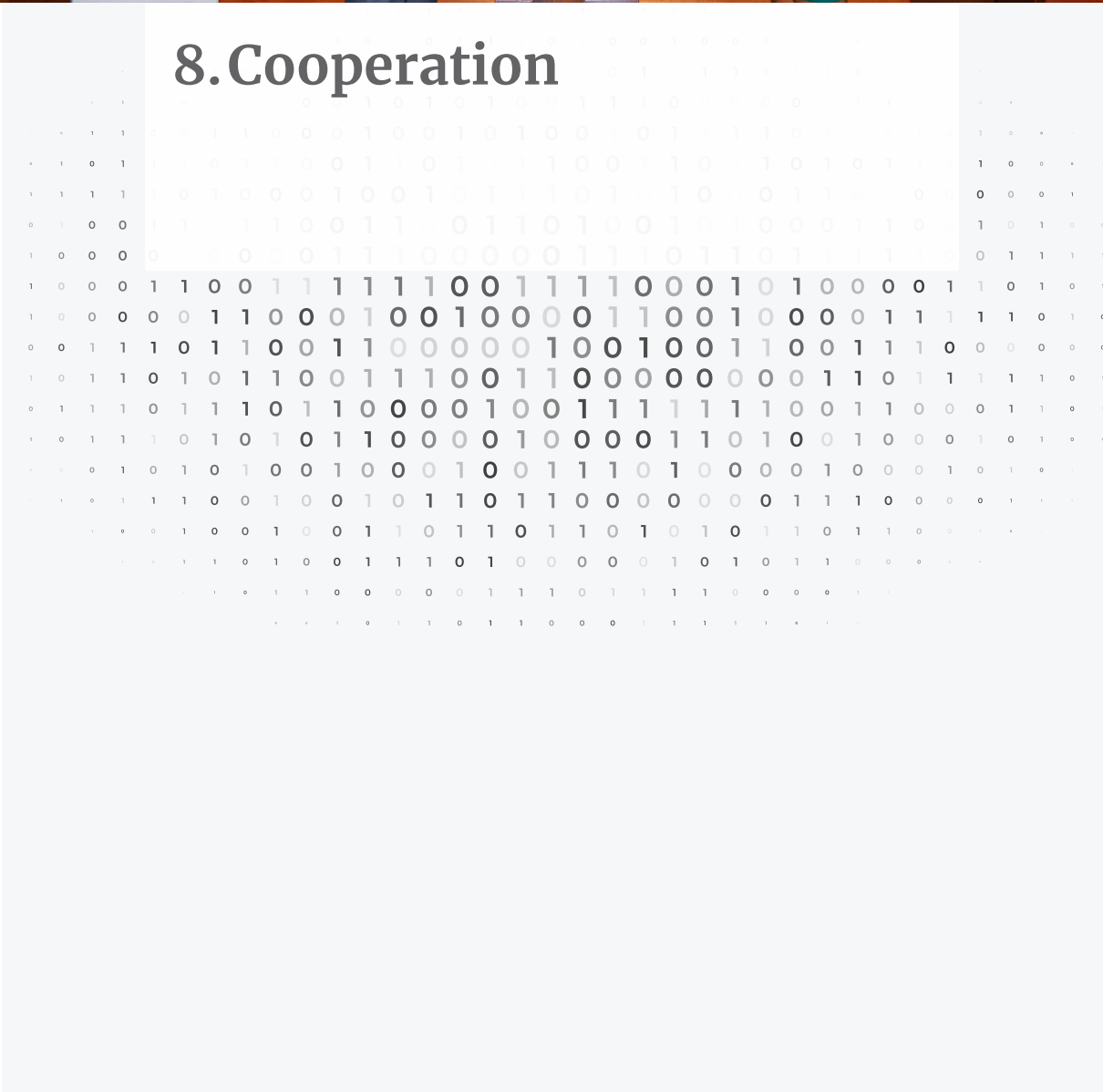
One of the ways used for the reception of digital television signal was the use of set-top-boxes to allow the conversion of digital signal into analogue and thus cover the entire population regardless of their income. Another way found was the implementation of the Project of Access to Satellite Television for 1,000 (one thousand) Mozambican villages which was concluded on December 11th in the locality of Cazuzu, in the Administrative Post of Murrupula. Meanwhile, the goal is to increase territorial coverage to 85% by 2024 and to start preparing the migration of radio broadcasting.



Figure 3: Key moments in Digital Migration.



8. Cooperation



In 2020, the world witnessed the emergence of new ways of carrying out national and international cooperation activities: conferences, workshops, trainings, roundtables, etc. which were done online through Zoom. This was due to the impediment of face-to-face meetings or large audiences due to Covid-19 that affected the world. In fact, many ITU member countries closed their borders to foreigners.

This chapter presents the conferences held at national and international level, highlighting the fact that Mozambique hosted the meeting of the Electronic Communications Committee of CRASA and assumed the presidency of the African Telecommunications Institute - AFRALTI.

8.1. National Cooperation

National cooperation included the articulation with other national institutions where INCM exchanged correspondence with various entities and institutions, producing opinions on the status of cooperation and sending answers to various national, regional and international issues related to the institutions and organisations of which Mozambique is a member both in the postal and telecommunications sectors and ensuring the participation and registration of Mozambican delegations in various events. Of this cooperation, it is important to mention the following:

- a) The sending of the WRC - 19 Results Dissemination Report to radio communications operators as well as mobile telephony operators;
- b) Sending the minutes of the meeting between INCM and INAMAR in the scope of the Coordination of Procedures and Regulation of the Maritime Mobile Service as well as the integration of an INAMAR technician in the maritime mobile stations survey in the South zone;
- c) The preparation of lists for stations survey within the context of National Census of Maritime and Aeronautical Mobile Service Stations;
- d) Coordination meetings and lectures to disseminate the legislation on homologation and importation of telecommunications equipment among Tax Authority, customs brokers and INCM in the cities of Nampula, Nacala and Beira in the scope of examination and customs clearance;

- e) Joint monitoring by Customs and INCM, in customs clearance processes of equipment subject to licensing from 91 (ninety-one) entities, namely: 1,975 (one thousand, nine hundred and seventy-five) radios, 86 (eighty-six) satellite phones and more than 4,000 (four thousand) miscellaneous equipment.

8.2. International Cooperation

a. INACOM and MACRA

The INCM signed a Memorandum of Understanding with the Angolan Communications Regulator - INACOM, aiming to exchange experience in the field of communications regulation. Similarly, it visited the Malawi Regulator (MACRA) to exchange experience in matters of Universal Postal Service and Postal Address Code.

b. CRASA

Mozambique hosted the Technical Meeting of the Electronic Communications Committee - ECC, focusing on the development and validation of the SADC Spectrum Policy Model. It also served to prepare a report on the study on experience exchange on Broadband pricing in the region, as well as the study on international interconnection tariffs and their impact on prices for end consumers.

Another action carried out was the validation of the evaluation reports of the Numbering Plan and Management in SADC.

The ECC has been working on the implementation of the tasks that were approved by the 9th Annual General Assembly of CRASA on the Operational Plan of the organism. In the context of the World Radiocommunication Conference - 2019 (WRC-19), CRASA was recommended to review the SADC Frequency Allocation Plan - FAP.

c. AFRALTI

The National Institute for Communications of Mozambique assumed the presidency of the African Institute for Advanced Level Telecommunications - AFRALTI, for a period of one year.

This fact results from the decision taken at the 59th Meeting of the Board of Directors of this body which was held in Maputo on March 4th and 5th, 2020.

The representation of the Government in Regional and International events was negatively affected by COVID -19, as several meetings were cancelled:

- Mobile World Congress (MWC-GSMA);
- CRASA Annual General Meeting (AGM);
- AICEP General Meeting;
- ITSO Parties Assembly;
- Seventeenth (XVII) World ICT/Telecommunications Indicators Symposium.

Meanwhile, the INCM participated in 17 face-to-face events and in other virtual events as detailed below:

#	Location	Participation	Subject/ Theme	Purpose
1	Angola	INCM	New Orbital Position Assignment Meeting.	Discussion of applications for collecting, coordinating and submitting data to assign coordinates for national illumination in the context of satellite communication.
2	United States of America (Loon)	Mozambican Delegation	Connectivity in remote areas and use of ICTs in emergency situations.	Discussion of strategies and solutions for connectivity in remote areas and use of ICTs in emergency situations through base stations located in atmospheric balloons. This delegation included staff from the INCM, IACM, Defence and Security Forces and Vodacom.
3	Kenya	INCM	Obtaining New Orbital Resource	Discussion of applications of data collection, coordination and submission for consignment of a new orbital position with coordinates favourable to Mozambique.

4	Angola	INCM	XII General Assembly ARCTEL-CPLP.	Roaming; Challenges, Opportunities and New Paradigms of Regulation in a Context of Constant Development of the Mobile Telephony Industry and of the Information and Communication Technologies in the CPLP Space.
5	Virtual	INCM	First Cycle Conference of AICEP "COVID-19: New Challenges for the Communications Sector".	Panellists shared the measures to contain the spread of Covid-19 and emergency plans in the context of Covid-19
6	Virtual	INCM	Cybersecurity Forum - "A Safer World, More Business Activities and More Jobs".	Aiming at information security through better and more secure cyber defence technology, enabling participation in progressive business discussions, interaction between leaders, experts and academics on local, global and societal trends in cyber space and the development and interaction of cyber security experts on a global level platform.

7	Virtual	INCM	First SADC Preparatory Meeting for WRC-23.	To measure the level of implementation of the WRC-19 Recommendations; outcomes of the First Preparatory Meeting of the Conference for WRC-23 (CPM23-1); Institutional framework for SADC Preparatory Process for WRC-23; pointing of SADC Representatives for Leadership Positions in the ATU Working Groups for WRC-23; and the establishment of the SADC Roadmap for WRC-23.
8	Virtual	INCM	First ATU Preparatory Meeting for WRC-23	Establishment of ATU Working Groups for WRC-23; consideration of the Degree of Implementation and Lessons Learned at WRC-19 in Sharm-El-Sheik; endorsement of the Work Plans of ATU, ITU sub-regions and other regional telecommunications organisations in Africa; consideration of the level of implementation of the ATU Strategic Plan related to radio communications and the African Union (AU) Plan of Action in the context of COVID-19.
9	Virtual	INCM	Thirty-ninth (XXXIX) Assembly of the Parties of the International Telecommunications Satellite Organisation (ITSO).	Discussion of the activity and financial implementation reports among other matters, as well as the declaration of INTELSAT's bankruptcy and the future of INTELSAT.

10	Virtual	INCM	<p>Twentieth (XX) Global Symposium of Regulators (GSR -20) - "The Wheel of Regulatory Change: Regulation for Digital Transformation".</p>	<p>Collaborative policy and regulatory approaches to promote connectivity and digital inclusion; Strengthening institutional frameworks: Demystifying the collaborative regulator; Competition in the digital age;</p> <p>Assessment and spectrum allocation mechanisms for new services post WRC-19;</p> <p>Insights from the last mile connectivity lab; Digital safety and security; and Sustainable and inclusive societies: Affordable ICTs leaving no one behind.</p>
11	Virtual	INCM	<p>SADC Workshop on Internet Exchange (XP).</p>	<p>Study and planning of installations of accessible, efficient, reliable, high quality, affordable and fully integrated networks/systems to meet the demand and ensure connectivity among SADC countries; Study and Implementation of Regional Systems that ensure regional economic integration for poverty reduction; Fully integrated broadband communication infrastructure/ networks leading to a single economic space in the SADC region with free movement of goods and services.</p>

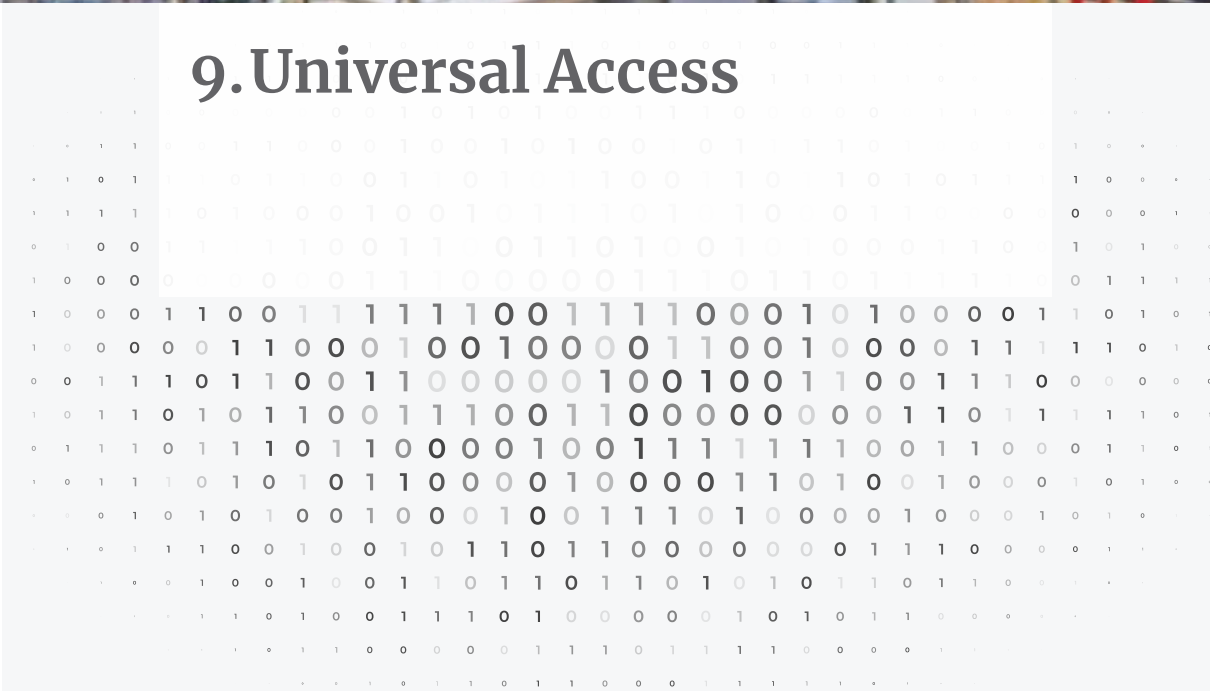
12	Virtual	INCM	ITU Virtual Digital World - "ITU Virtual Digital World 2020" .	<p>Platform for convergence of governments, industry, small and medium-sized enterprises in the ICT sector to address strategies for digital evolution and transformation, as well as knowledge exchange on smart technologies for a better world. Similar to the other editions, this edition integrated a ministerial roundtable discussion on "The role of digital technologies during and post-Covid-19". Another topic covered was the roundtable on the subject: "Cybersecurity and privacy solutions: protecting our digital world".</p>
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13	Virtual	INCM	ITU - African Regional Economic Dialogue (RED-AFR).	Creation of ITU efforts and commitment to universal access to safe and affordable broadband services, having focused on Initiatives for responding to the economic impact, connectivity strategies, business continuity and rebuilding “Digital Africa” in the context of Covid-19; Next generation interconnection in the digital market; Business models and pricing strategies for new services (OTT, IoT and data); It was also a platform for regional and global coordination on economic policies and methods for determining the costs of telecommunications services. There was a roundtable with the subject: Competition and economy in the digital age.
14	Virtual	INCM	Workshop - “Building Disaster Resilience through Emergency Telecom”.	The role of emergency telecommunications in risk reduction and disaster management was addressed, as well as enabling the exchange of experiences on best practices for increasing human and ICTs resilience, limiting the impact of natural and man-made disasters.

Table 7: International Events in 2020.



9. Universal Access



The Universal Access Service Fund - FSAU, is an independent entity from the INCM, responsible for designing and implementing universal access projects. This section discusses the implementation of the Digital Squares, Rural Connectivity, Sustainable Villages for the Development of Mozambique - SV4D-Moz, Extension of Mobile Telephony projects and, finally, the creation of the FSAU Technical Committee.

The purpose of all these activities is digital inclusion, i.e. to increase the number of accesses and use of digital services through the development of software solutions that facilitate access to information and thus increase the connectivity of the population in rural areas.

9.1. Digital Squares

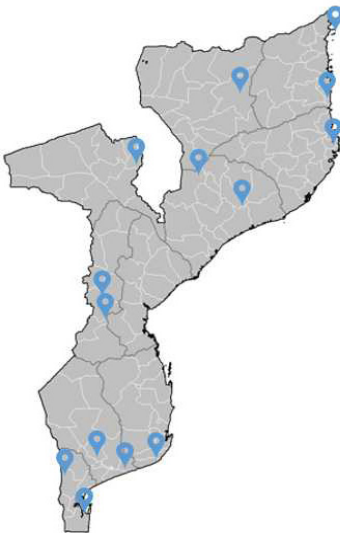


Figure 4: Digital Squares in 2020.

Key for Digital Squares:

- **Southern Region:**
Maxaquene D;
Namaacha;
Manjacaze;
Xilembene;
Quissico.
- **Central Region:**
Gondola; Sussundenga.
- **Northern Region:**
Tsangano;
Gilé;
Nacala;
Ilha do Ibo;
Mecúfi;
Marrupa;
Cuamba.

The digital squares are an ICT infrastructure designed to massify the use of free broadband Internet in public spaces, in compliance with the National Broadband Strategy with regard to the goal of universalizing broadband services.

For this purpose, a minimum speed of 10 Mbps has been defined for each digital square, which can be accessed simultaneously by 180 (one hundred and eighty) users per hour. It is estimated that each digital square will generate more than 3,500,000 (three million, five hundred thousand) accesses per year. The impact of these projects is reflected in the improvement of students' school performance, through support for research, promotion of entrepreneurship, development of Internet applications and services that can generate self-employment.

Movitel was responsible for installing digital squares for the provision of Internet service and this took place in 14 (fourteen) locations namely: Maputo City (Maxaquene D), Namaacha, Xilembene, Manjacaze, Quissico, Gondola, Sussundenga, Tsangano, Gilé, Nacala, Ibo Island, Mecúfi, Marrupa and Cuamba.

9.2. Rural Connectivity

The Rural Connectivity Project in Mozambique started in March 2020. This project is funded by FSAU and was expected to be implemented in 10 (ten) locations in the districts of: Manhica, in Maputo Province, Macia and Chókwé, in Gaza Province, Massinga, in Inhambane Province, Dondo and Gorongosa, in Sofala Province, Nicoadala, in Zambézia Province, Ribáuè and Monapo, in Nampula Province, and finally in Mandimba, in Niassa Province. This is another digital inclusion project whose objective is to provide broadband Internet services at a speed of 20 Mbps for data transmission in rural areas in order to develop applications and content relevant to the digital economy, thus promoting employment and self-employment initiatives, especially among young people, through electronic platforms.

The districts are challenged to take advantage of this initiative in terms of access to information and thus catapult the development of local economies, because the applications to be developed, dedicated to each business sphere, will allow different transactions to be made. It will be possible to explore

local economic potentialities such as commerce, agriculture, tourism, beekeeping, among other areas. These economic agents should expose their products and services through these electronic platforms, thus increasing their visibility at national and international level, which will contribute to the increase of their sales.

The digital transformation is a reality in the country and we must prepare for the great challenges of the future, because being digital is a survival challenge that imposes itself on everyone. Companies that want to increase their productivity, be more sustainable, have motivated human resources and thus generate more value, increase their competitiveness and are visible, both domestically and internationally, should have the necessary preparation and mastery of ICTs.

To elucidate the commitment of the Government in this project, on September 3rd, 2020, the

Minister of Transport and Communications, Janfar Abdulai, accompanied by the Governor of

Zambézia Province, Augusto Pio Matos, conducted another ceremony for the implementation of this project, in the village of Namacurra. At the time, the Minister said that 27 (twenty-seven) digital squares had already been installed in the country, in 10 (ten) districts, under this initiative, which are: Manhiça, in Maputo, Macia and Chókwé, in Gaza, Massinga, in Inhambane, Dondo, in Sofala, Nicoadala and Namacurra, in Zambezia, Ribáue and Monapo, in Nampula and Mandimba, in Niassa.

Meanwhile on January 31st, 2020, the PR visited Chiconono Secondary School, in Muembe District, in Niassa Province, which had been equipped with 30 (thirty) desktop computers, different accessories and internet connection and other furniture, with the financing of more than MZN 2,000,000.00 (two million meticais) from the INCM, through the FSAU.

9.3. Mobile Telephony Extension

The Mobile Telephony Extension Project-Phase V is an FSAU project that aims to provide telephone service and broadband Internet to the population. For this purpose, thirty (30) dual-

band second generation mobile telephone base stations were installed for the telephone service and third generation to provide broadband Internet services. This project is valued at around 400 million meticaís and will benefit approximately 260,000 (twenty-six thousand) inhabitants of 30 (thirty) contemplated localities. This way the country walks firmly towards digitalisation, quoting the Minister of Transport and Communications, Janfar Abdulai, in the act of inauguration of this project, on the 24th of September, in Nambilange, Majune District, Niassa Province.

9.4. FSAU Technical Committee

The Technical Commission of the FSAU consists of members of the FSAU and representatives of the 3 (three) mobile phone operators in Mozambique, namely: Tmcel, Vodacom and Movitel. Its main function is to follow up and monitor the activities funded by the FSAU. It was created in the strategy of transparency of the Regulator in relation to its market operators.

In 2020, the Technical Commission had 2 (two) work sessions via Zoom platform, being one on

9 July and another on 26 August where the following points were analysed:

- a) Status of the FSAU projects in 2020;
- b) Status of the infrastructure transferred to Vodacom;
- c) National Roaming status (Tmcel and Vodacom);
- d) Planning for 2021.

From Vodacom's presentation it became known that of the 22 (twenty-two) crossed sites, 21 (twenty- one) are already operational and the site of Matondovela-Headquarters, in Mecula District, in Niassa, was cancelled due to budgetary problems of broadcasting support.