



# CRAN

Communications Regulatory Authority of Namibia



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**Strategy  
in respect of  
Implementation of IMT-2020 (5G)  
in the  
Republic of Namibia**

**PURSUANT TO  
CABINET RESOLUTION NO. 10<sup>TH</sup>/21.07.20/006**

**By Ronel le Grange  
Head: Electronic Communications  
Public Consultation  
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# **CABINET RESOLUTION**

## **NO. 10<sup>TH</sup>/21.07.20/006**

**Directed the Ministry of Information and Communications Technology to instruct the Communications Regulatory Authority of Namibia (CRAN) to expedite the development of 5G strategy for Namibia for submission to Cabinet.**

**The strategy was developed with input from-**

- The National Radiation Protection Authority**
- Ministry of Environment, Forestry and Tourism**
- Ministry of Information and Communication Technology**

# Potential Socio-Economic Impact

- ❑ ICT plays an essential role and serves as an enabler for achieving the Sustainable Development Goals (SDGs)
- ❑ 5 Functional drivers-
  - **Enhanced Mobile Broadband (eMBB)** - human centric use cases – access to multimedia content, services and data
  - **Ultra-reliable low latency communications (uRLLC)** – time sensitive connections – wireless control of manufacturing processes, remote medical surgery, automation of electricity distribution
  - **Massive machine type communications (mMTC)** – large number of devices, data intensive applications transmitting low volumes of data
  - **Energy Efficiency** - measured quantity of information transmitted/received per unit of power consumption of the radio access network and/or communications device
  - **Security** – central driver to adoption of IMT-2020 – networks, platforms and applications

# Technical Standards

- ITU published the final technical specifications for IMT-2020 (Rel.16) on 3 February 2021.
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) published its Guidelines for limiting exposure to Electromagnetic Fields (100 kHz to 300 GHz on 31 March 2020).
- Namibia has enacted the Non-Ionising Radiation Regulations under the Atomic Energy and Radiation Protection Act (Act No 5 of 2005).
- Adopted the ICNIRP Guidelines for Limiting Exposure to Electromagnetic Fields (100 kHz to 300 GHz) as the relevant non-ionising radiation exposure limits for the purposes of protecting members of the public adverse health effects arising from exposure to non-ionising radiation in the living or working environment

# 5G Core Network Deployment

## 2 standardised approaches

- ❑ **Non-standalone – 5G radio access network connects to the 4G core network, software and hardware of legacy 4G network to be upgraded to support 5G spectrum and antenna systems.**
- ❑ **Standalone – 5G radio access and core network. 5G core network integrates with 4G core network. Full utilisation of 5G network equipment and new 5G features e.g. network slicing, virtualisation, etc.**

# Backhaul Transmission for 5G

- ❑ **Fibre backhaul**
  - Higher cost, stable connections , high interference immunity.
  - Suitable for outdoor sites, access network and core network implementation
  - Telecom and Paratus with their existing fibre assets have a cost advantage in this area when considering 5G deployment
- ❑ **Microwave backhaul**
  - lower cost, spectrum bands 7-40 GHz, 75-110 GHz and 110-170 GHz.
  - Suitable for outdoor sites utilizing point-to-point to multipoint or daisy changing multiple small sites to a fibre connect sites.
  - Faster time to market

# Site deployment for 5G

As listed in Government *Gazette* No. 4878, General Notice No. 29 published on 6 February 2012, the following activities may not be undertaken without an environmental clearance certificate-

- Communications networks including towers, telecommunications and marine telecommunications lines and cables; and
- Masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding-
  - Flag poles; and
  - Lightning conductor poles



# Use Cases

- ❑ 5G is a user-centric technology.
- ❑ Opportunity to provide more services than just voice, SMS and broadband data to the mass market.
- ❑ This is the opportunity to use ICT to improve operational effectiveness and safety in the workplace, to use artificial intelligence and robotics, etc.
- ❑ ICT is to provide support through underlying network-
  - Continuity of voice services
  - eMBB products and services with low latency and more capacity
  - Enterprise products with quality of service differentiation and network slicing
  - Application and service tailor made to niche markets
- ❑ The communications, agriculture, health, education, manufacturing, mining, public safety and disaster response sectors stands to benefit.

# Devices

- More than 1,060+ devices already available including routers, gateways, modems, hot spots, laptops, tablets and phones.
- Cost of user equipment e.g. mobile handset is a critical element to implement 5G mobile services.
- Determined by availability and affordability.
- Need to introduce 5G capable devices in lower, mid and higher market segments.

# Spectrum Requirements

## Requirements

- Low band below 1 GHz, Mid band between 2-5 GHz, High band above 24 GHz

## Challenges-

- Require 80-100 MHz contiguous spectrum in mid band per licensee
  - Existing spectrum licences in 2300 MHz, 2600 MHz and 3400-3600 MHz issued for fixed (WiMAX) and 4G
  - Insufficient vacant spectrum to meet spectrum requirements
- CRAN has set out a roadmap for assignment of spectrum until 2024 available on CRAN's website

# Dynamic spectrum sharing

- ❑ With dynamic spectrum sharing between 4G and 5G it is possible to implement 5G in the same band as the existing 4G network.
- ❑ Such deployment allows for the allocation of spectrum resources on demand in that the device will connect to the network on 4G spectrum in the lower band and 5G spectrum in the mid band.
- ❑ The network then has the capability to schedule uplink user data on the 4G network and the downlink user data on the 5G network thereby allowing the utilisation of the entire assignment improving spectral efficiency and transmission speed for 5G services

# Security

## ❑ Critical infrastructure and Critical Information infrastructure

### ❑ 4 main areas

- Disruption of networks having a negative impact on services and equipment
- Network espionage through malicious acquisition, modification or use of data (personal and business data) stored by licensees on behalf of the customer
- National-scale supplier dependence – licensees are dependent on the same external supplier for effective operation of their network – Telecom, MTC and MTN is reliant on the same supplier
- Network pre-positioning attackers obtaining access or position themselves in a network with the aim of future exploitation

# Strategic Context

**Introduction of new technologies requires the assessment of the business context in which this technology will be utilised and the readiness of different stakeholders to support introduction and sustainable operation of the new technology.**

# Regulatory Readiness

In addition to spectrum, regulatory frameworks and measures need to be in place to ensure equal opportunities for industry players and/new entrants:

- Service Licensing
- Numbering management
- Infrastructure sharing
- Type approval
- Cyber security

# Legislative Framework

- Finalisation of legislation in respect of cyber security and data protection.
- Enabling of Chapters 4 & 5 and section 20 of the Electronic Transactions Act (Act No. 6 of 2019).



# **Vision**

**An enabling ICT sector for digital transformation in Namibia**

# **Mission**

**To utilise advanced ICT technologies in fostering socio-economic development**

# Strategic Objectives

**Strategic  
Objective 1**

**An enabling  
legislative  
and  
regulatory  
environment**

**Strategic  
Objective 2**

**Development  
and  
Research**

**Strategic  
Objective 3**

**Safeguarding  
the  
environment  
and  
public health**

**Strategic  
Objective 4**

**Establishing  
a secure  
digital  
ICT  
environment**

# An enabling legislative and regulatory framework

Creating a legislative framework that promotes the implementation of IMT technologies to support digital transformation within all economic sectors. That this framework is further amplified by a regulatory framework that provide investment certainty and supports innovation and expansion of service offerings by the ICT sector

Commencement of Chapters 4 and 5 as well as section 20 of the Electronic Transactions Act to create an enabling environment for digital transactions and services to progress towards a digital economy

Availing of spectrum resources as necessary for deployment of IMT-2020 (5G) networks and services as per the mandate of the Authority

Review of the regulatory framework to support digital transformation of the ICT sector

# Development and research

**Building skills and fostering innovation to promote optimal utilisation of new technologies through provision of services and applications to address consumer needs and foster economic development in the government, agriculture, education, health, trade and industry sectors**

**Incorporation of coding into curricula for secondary schools to empower the youth to participate actively in a digital economy**

**Availing necessary financial resources to invest in research and development to harness IMT-2020 technologies to provide applications for commerce, mining, agriculture, health and education sectors**

# Safeguarding the environment and public health

**Assessing environmental impact associated with deployment of ICT infrastructure and addressing public health concerns**

**Ensuring compliance to the provisions of the Environmental Management Act the Environmental Impact Assessment Regulations by all telecommunication s service licensees**

**Obtaining type approval from the Authority for all telecommunications equipment prior to importation**

**Enforcement of infrastructure sharing to limit environmental impact**

**The National Radiation Protection Authority to invest in human resources, training, information technology devices and equipment relevant for measurement of radiofrequency EMF radiation if required**

# Establishing a secure digital ICT environment

**Building trust and improving security measures within the ICT sector to foster confidence in utilisation of ICT services and digital applications in support of socio-economic development**

**Finalisation of Cyber Crime and Data Protection legislation to promote a safe a secure environment to use the latest technologies, services and applications;**

**Establish the national Cyber and Security Incidence Response team**

**Ensure protection of critical infrastructure through restriction of utilisation of a single vendor by dominant telecommunications service licensees to address associated security risks**

# Monitoring and Evaluation

- ❑ Implementation of this strategy will be monitored on a bi-annual basis by the Authority.
- ❑ the Authority will submit a report to the Ministry of Information and Communication Technology for consideration.
- ❑ This report is to consist of-
  - A progress report on implementation of activities identified under each strategic initiative in the Implementation Action Plan on a bi-annual basis;
  - An evaluation report based on the following criteria-
    - ✓ Effectiveness of the strategic initiatives in attaining the strategic objective;
    - ✓ The impact of implementation of the strategic initiatives on socio-economic development and digital transformation
  - Identification of challenges encountered in implementation of the strategic initiatives; and
  - Identification of any strategic initiatives that is no longer relevant and propose changes or new initiatives as may be required.

**Thank you!**