

ITU Regional Radiocommunication **Seminar** 2021 for Africa (RRS-21-Africa)–  
Online meeting, 5-16 July 2021.

**Forum** Radiocommunications Trends: Opportunities and challenges for the Region,  
Tuesday 13 to Friday 16 July 2021.

key-note, Tuesday 13 July 2021:

This presentation is found at ITU [WEB](#)

# Modern Spectrum Management and Monitoring: new sensors, higher bands

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# Theories and Policies

1. So begins Leo Tolstoy's Anna Karenina : 'All happy families are alike; each unhappy family is unhappy in its own way'
2. Between two points in planar geometry there is only one simple line, but indefinite curves
3. 'Great minds think alike' (Michaelian)
4. 'Stand on the shoulders of giants' (also I. Newton)
5. 'Okham's Razor': 'if you have to choose between competing theories, choose the simplest theory- it is most likely to be true'

# Demand the duty with each one can perform

## Antoine de Saint-Exupéry 'Little Prince'

- "One must require from each one the duty with each one can perform," said the king
- "Accepted authority rests first of all on reason. If you ordered your people to go and throw themselves into the sea, they would rise up in revolution. I have the right to require obedience because my orders are reasonable"

# Strategies

1. Follow RR Allocations
2. Reduce interference: lower-power, lower-altitude Above Sea Level, lower-altitude Above Ground Level
3. No discrimination; Fairness, transparency & efficiency
4. Unused RF is a waste to economy
5. Market-Dynamics: Intervene only when market-failure: lack of competition
6. Do not undermine effective competition
7. Efficient use of spectrum: assign spectrum to those that will generate the greatest socio-economic benefit from its use
8. Promote investment & innovation in the sector
9. For cellular efficient usage, consider to oblige active RF sharing
10. There is available RF: never say I have no time, I have no money, I have no RF
11. New technologies improve b/Hz/second
12. Convergence of mobile, fixed & broadcasting services ; Internet Service Providers mainly use fixed stations
13. Try not to allocate RF when the Transmitter & the Receiver are fixed
14. Put most attention on Short Range Devices
15. Focus on long term policy objectives rather than short term gains (not *Carpe Diem*, seize the day)

Where you sit is where you stand; **auctions** as example

1. Ministry or Agency- QoS, remote areas coverage, investments & better infrastructure
2. Ministry of Finance- max revenue
3. Incumbent Operators may pay for more Spectrum
4. Public interest: min. prices, max. coverage & capacity, including rural and remote areas, Public Protection and Disaster Relief (PPDR)
5. Other players?
6. Administration should integrate all interests
7. Author's personal view:
  1. Beauty-test, as there is more supply than demand
  2. Realistic auctions minimum (reserve) price
  3. Realistic annual RF fees

# Main Roles of National Spectrum Management

1. Avoid and solve interference
2. Design long and short term RF spectrum
3. Support Engineering: propagation, coverage...
4. Coordinate with military wireless services
5. Advance new wireless technologies (such as cognitive radios; digital audio and video)
6. Coordinate with other Administrations
7. Advance new technologies & efficient import
8. Serve your clients, the public: be transparent
9. Reduce RF human hazards

# Interrelation of national spectrum management & monitoring functions

see Figure 1.3-1 Spectrum Monitoring [HandBook](#)

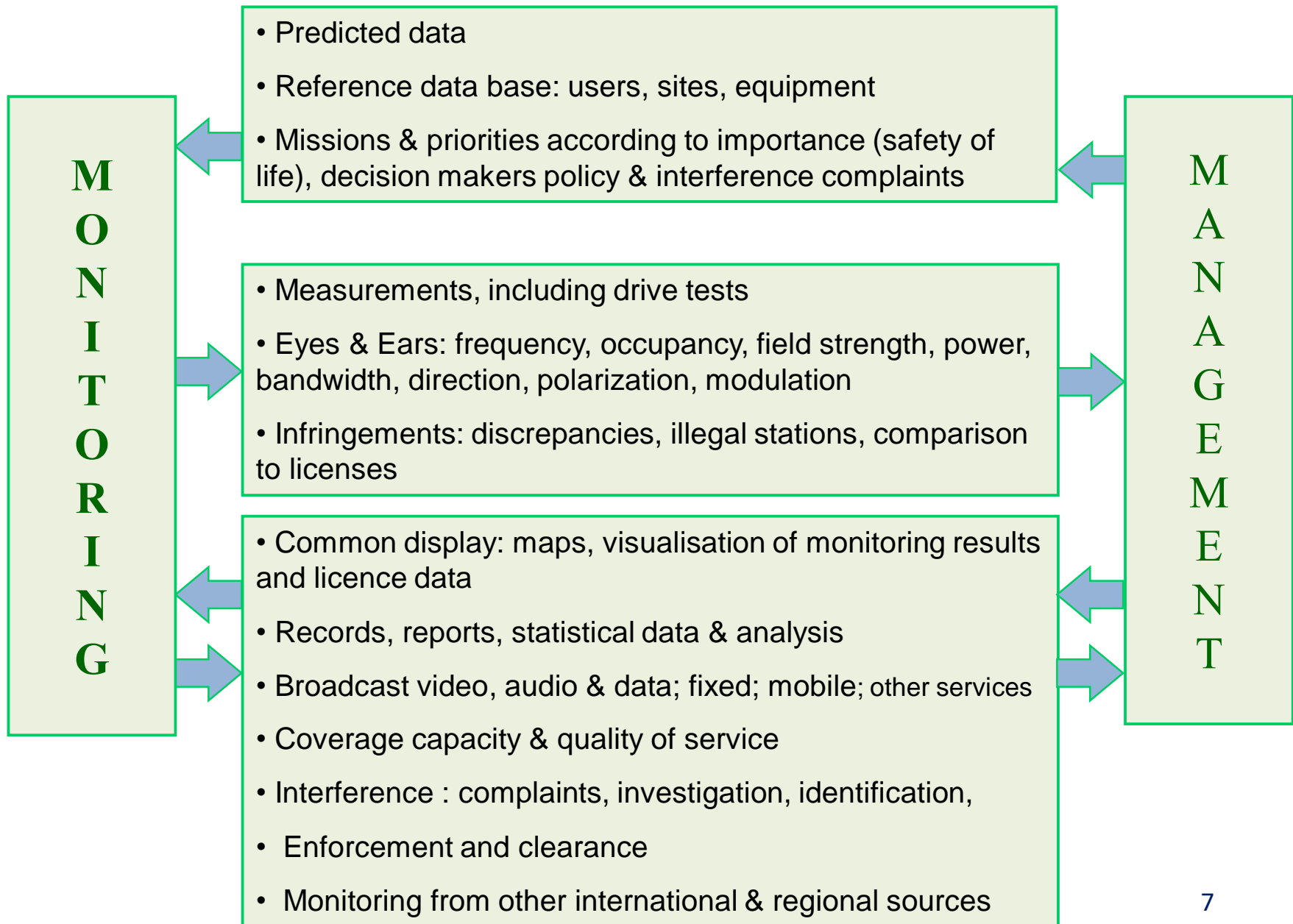
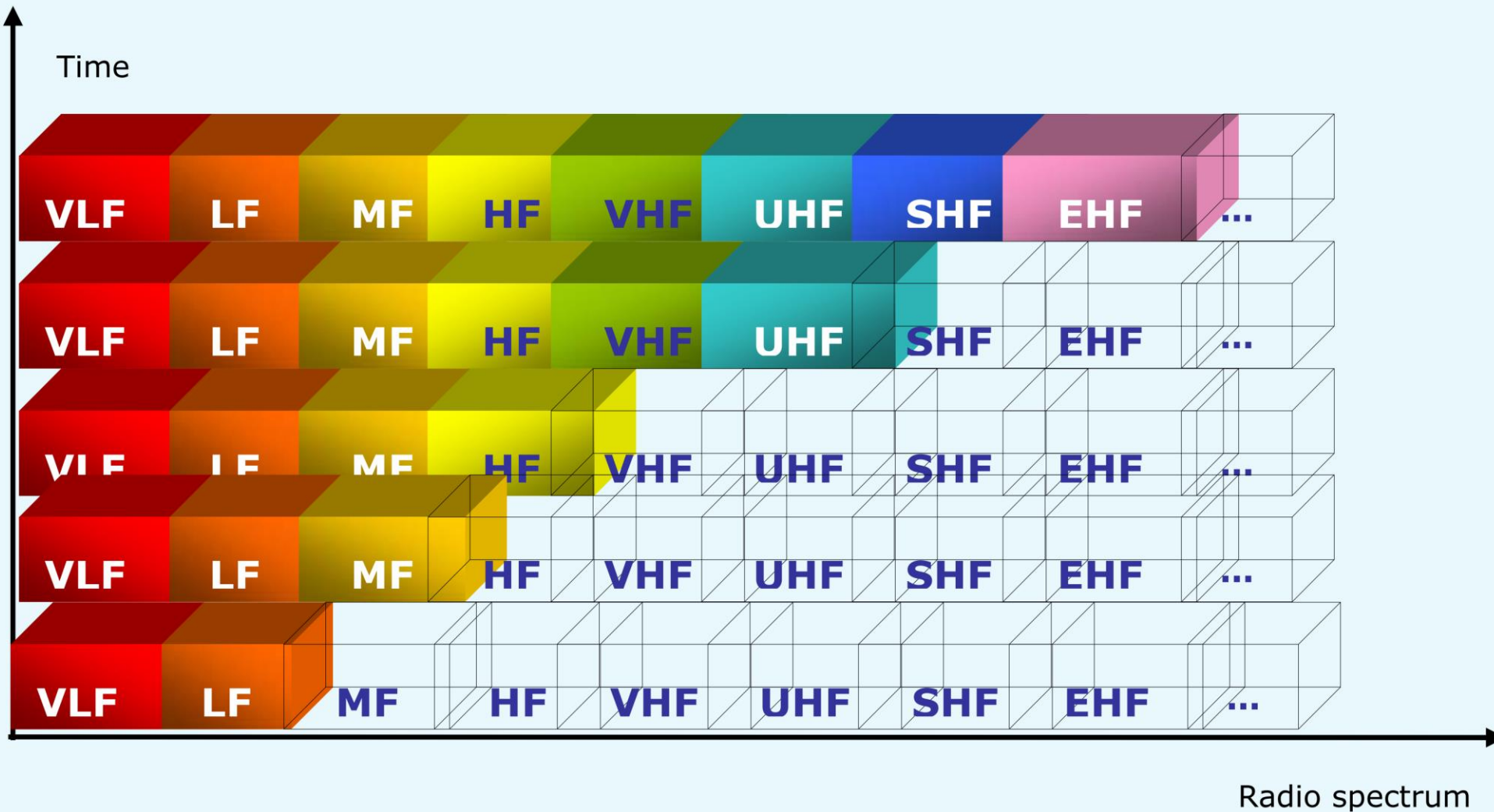




Figure 1: Scarcity of radio frequencies

ITU-D Resolution 9 [Final Report](#); 2014 Fig. 1

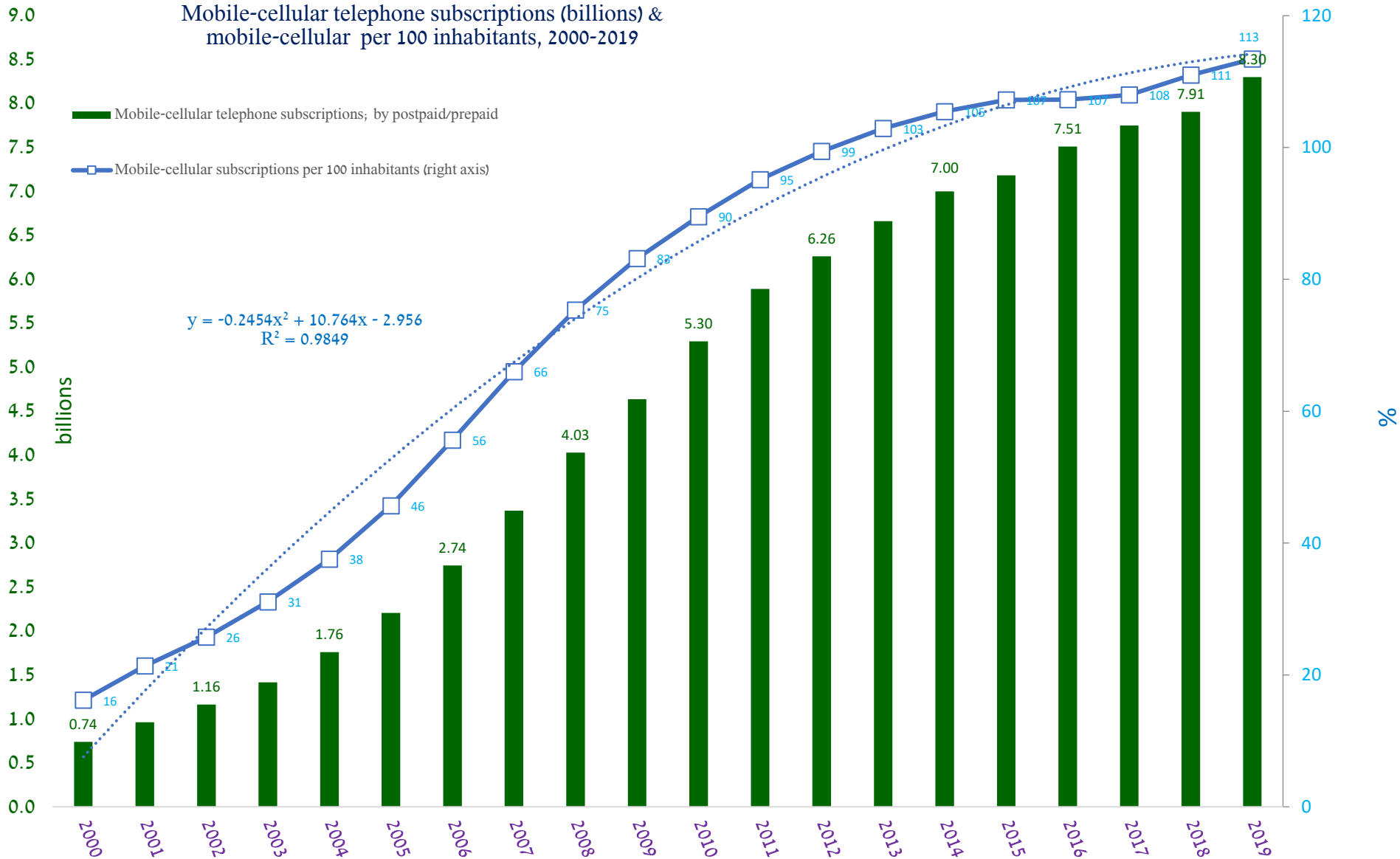
## Scarcity of Radio Frequencies





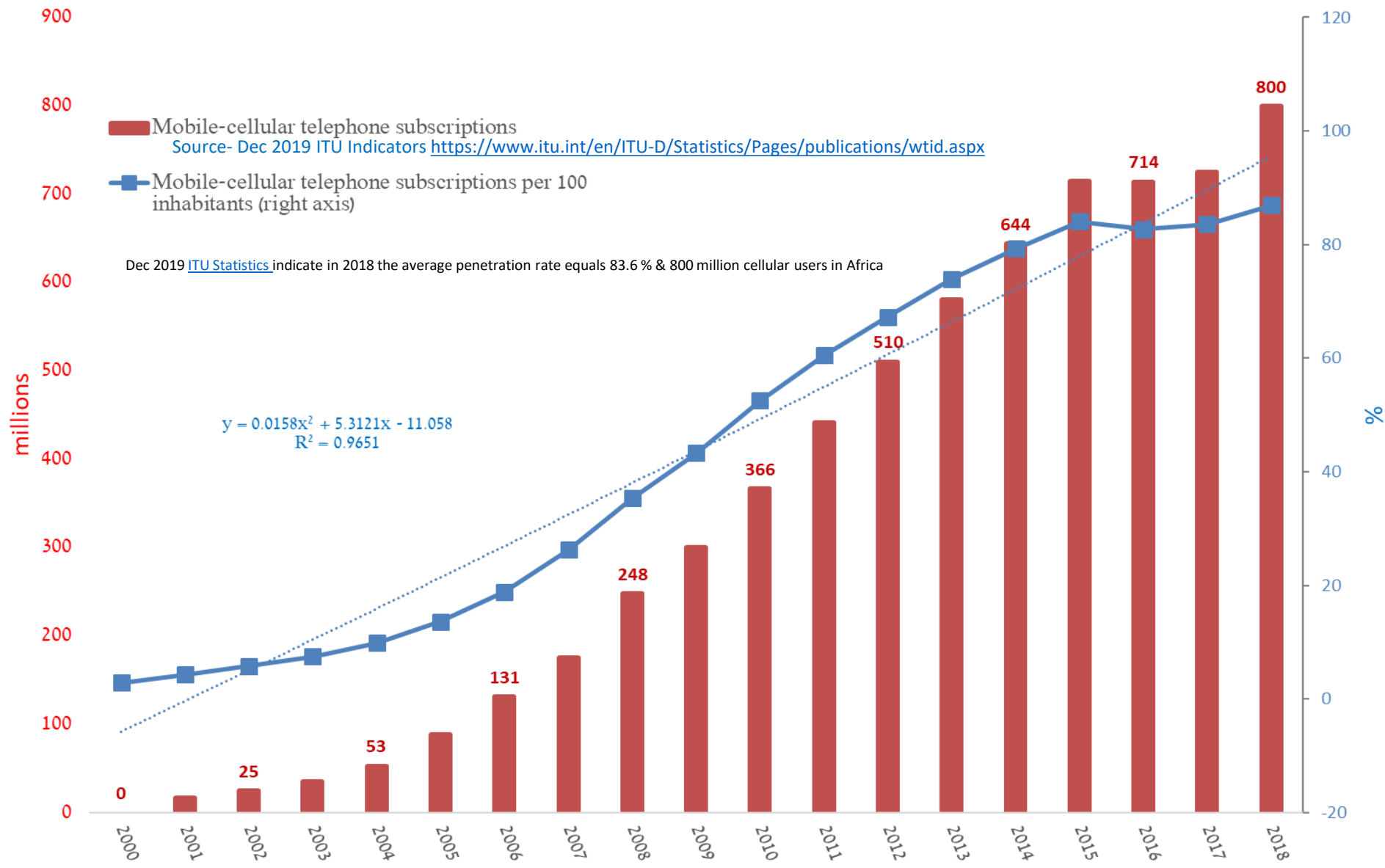
# Global mobile-cellular and telephone subscription rate

Mobile-cellular telephone subscriptions (billions) & mobile-cellular per 100 inhabitants, 2000-2019



Source- Dec 2019 ITU Indicators <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>

# African cellular subscriptions (millions) & subscriptions per 100 inhabitants, 2000-2018



# Thank you! Questions?

See at ITU Regional Radiocommunication Seminar 2021 for **Americas** ([RRS-21-Americas](#)) – Online meeting, 26 April - 7 May 2021 '*Modelos de Licencias de Espectro*' 6 May 2021, found at ITU [WEB](#)

Dr. Haim Mazar (Madjar), vice-chair ITU-Radio [Study Group 5](#) (Terrestrial services)