



# THE INTRODUCTION OF IMT-2000 IN THE ANDEAN COUNTRIES

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# INTRODUCTION

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# THE ANDEAN COMMUNITY (ANDEAN COUNTRIES)

**Colombia**

Population: 42,321,000  
PIB: 89,400 M\$ (2000)  
PIB per capita: 2,080\$ (2000)

**Venezuela**

Population: 24,170,000  
PIB: 115,900 M\$ (2000)  
PIB per capita: 4,690\$ (2000)

**Peru**

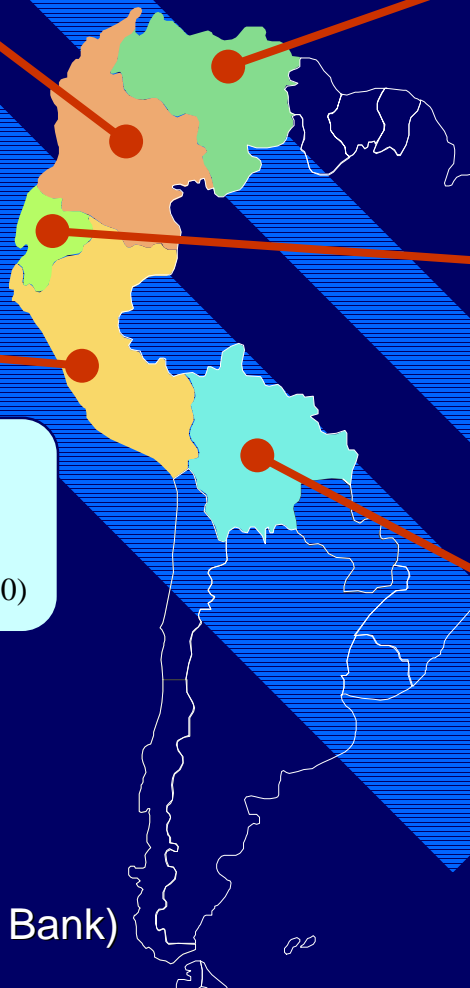
Population: 25,662,000  
PIB: 54,250 M\$ (2000)  
PIB per capita: 2,170\$ (2000)

**Ecuador**

Population: 12,646,000  
PIB: 13,921 M\$ (2000)  
PIB per capita: 1,100\$ (1999)

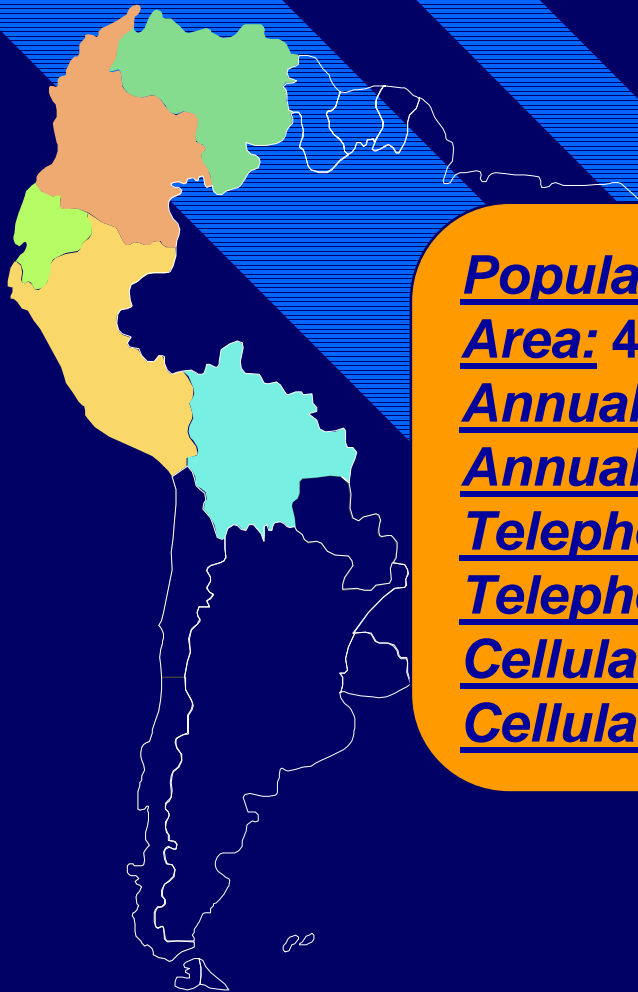
**Bolivia**

Population: 8,329,000  
PIB: 8,500 M\$ (1999)  
PIB per capita: 1,010\$ (1999)



(Source: CAN and The World Bank)

# THE ANDEAN COUNTRIES (Statistics)



**Population: 113,128,000 inhab. (2000)**

**Area: 4,7 millions (square km)**

**Annual Income: 277,000 M\$ (1999)**

**Annual income per capita: 2,498 \$ (1999)**

**Telephone lines: 14,9 millions (2000)**

**Telephone density: 12,9 (2000)**

**Cellular subscribers: 9,9 millions (2000)**

**Cellular density: 8,7 (2000)**



## THE ANDEAN COUNTRIES

### Privatization of Telecom Services

#### BOLIVIA



Free competition in all services, except basic TP. Free competition from November 2001

#### COLOMBIA



Free competition in all services. Long distance TP since 1998

#### ECUADOR



Free competition in all services, except basic TP. Free competition from January 2002.

#### PERU



Free competition in all services. Basic TP since August 1998

#### VENEZUELA



Free competition in all services. Basic TP since November 2000



# WHAT IS ASETA?



- **ASETA**: Asociación de Empresas de Telecomunicaciones de la Comunidad Andina (Association of Telecommunications Enterprises of the Andean Pact)
- **Established**: in 1974, as an International Organization of the Andean Pact
- **Members**: private and public telecom enterprises from the Andean Community
- **Goal**: to promote the harmonious development of the telecommunications and to contribute to the integration process of its countries
- **Headquarters**: Quito, Ecuador



**SUPRANATIONALS  
LAWS**

**Andean Community  
Commission**

**ASETA  
relationships**

**CAN  
Executive Secretary**

**CAATEL  
Andean Committee  
Of Telecom Authorities**

**ASETA**

**Advisor**

**Advisor**





# **SOME STATISTICS OF CELLULAR COMMUNICATIONS IN THE ANDEAN COUNTRIES**

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# DEVELOPMENT

## First Phase

- Cellular services started in the region at the beginning of the 90's, in the 800 MHz band, using AMPS technology
- Most countries issued two national licenses
- Digitalization was gradually introduced between mid 94 and mid 98

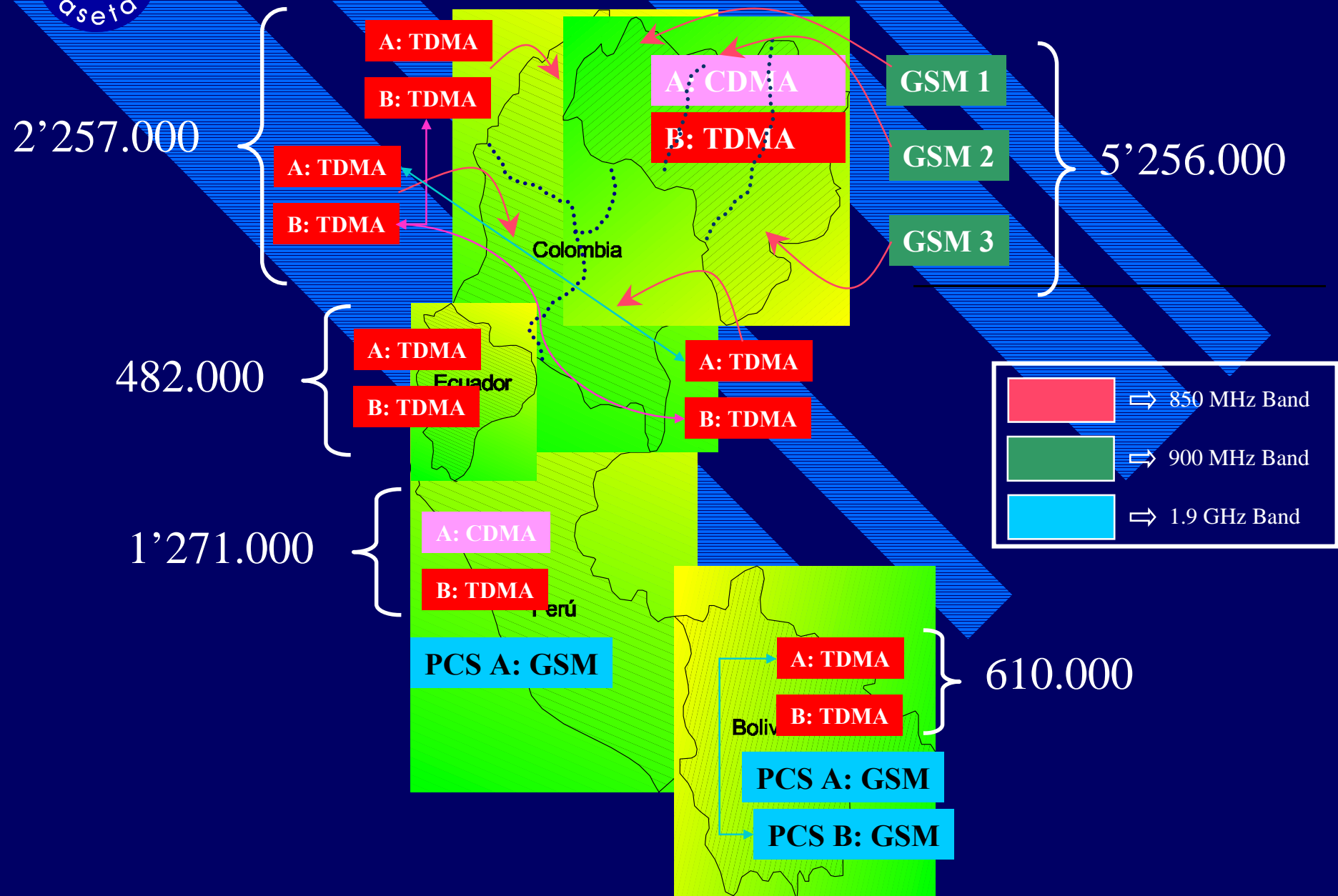


## Second Phase

- **A series of PCS licenses (1900 MHz band) were issued between end 99 and early 2000**
- **The new licensees have chosen GSM technology (Bolivia and Peru)**
- **Key international operators are consolidating their presence in the Subregion**
- **Some services as e-mail, e-banking, news and others supported on WAP and CDPD are beginning to be offered; GPRS and 1x have been announced**

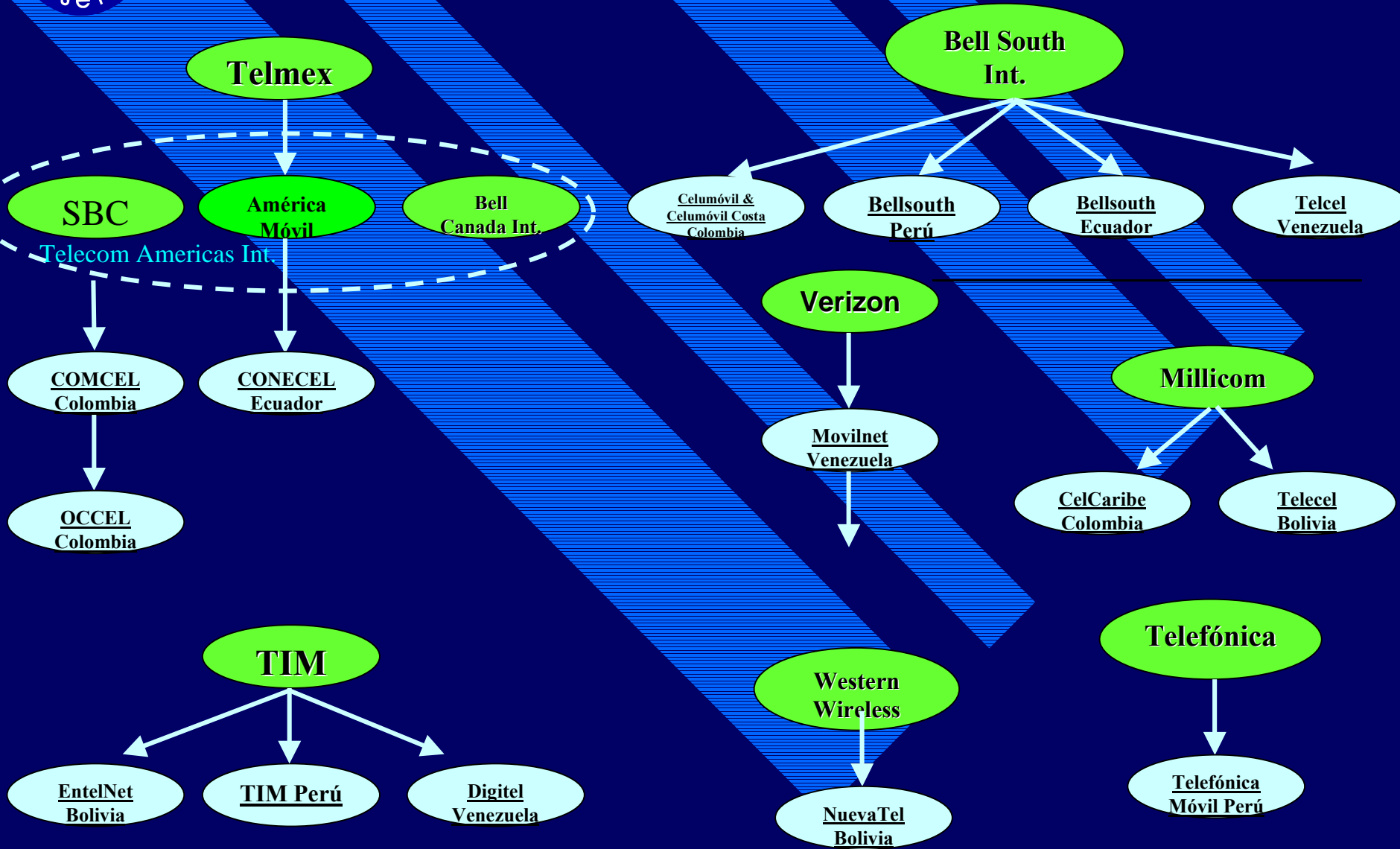


# CELLULAR LICENCES IN THE SUBREGION





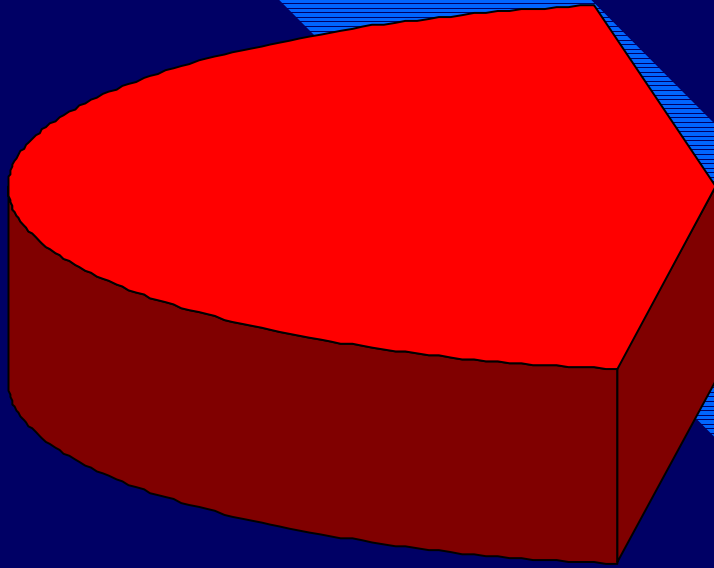
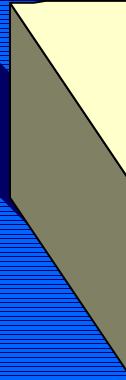
# PRESENCE OF INTERNATIONAL OPERATORS IN THE SUBREGION



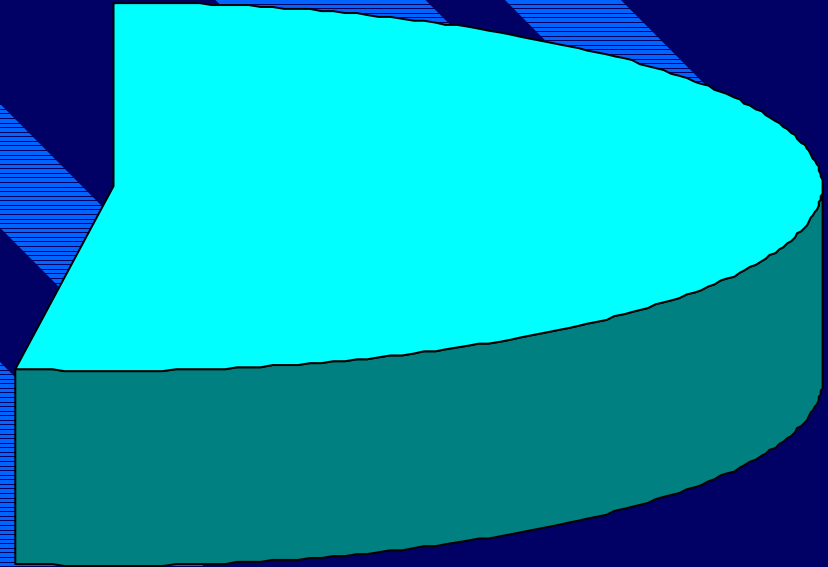


# TECHNOLOGY PIE IN CAN

**GSM**  
**2.9%**



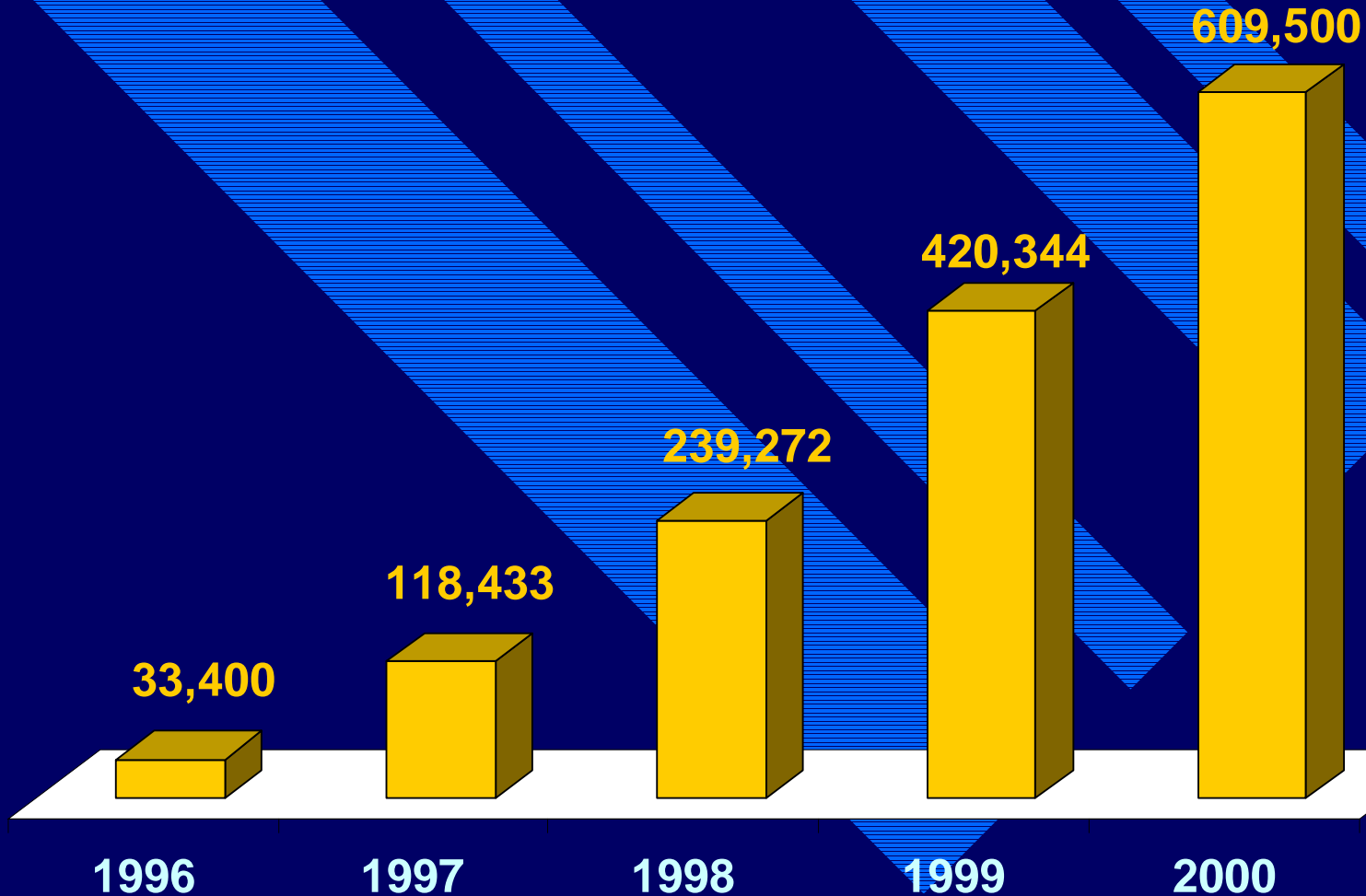
**AMPS/CDMA**  
**44.8%**



**AMPS/TDMA**  
**52.3%**



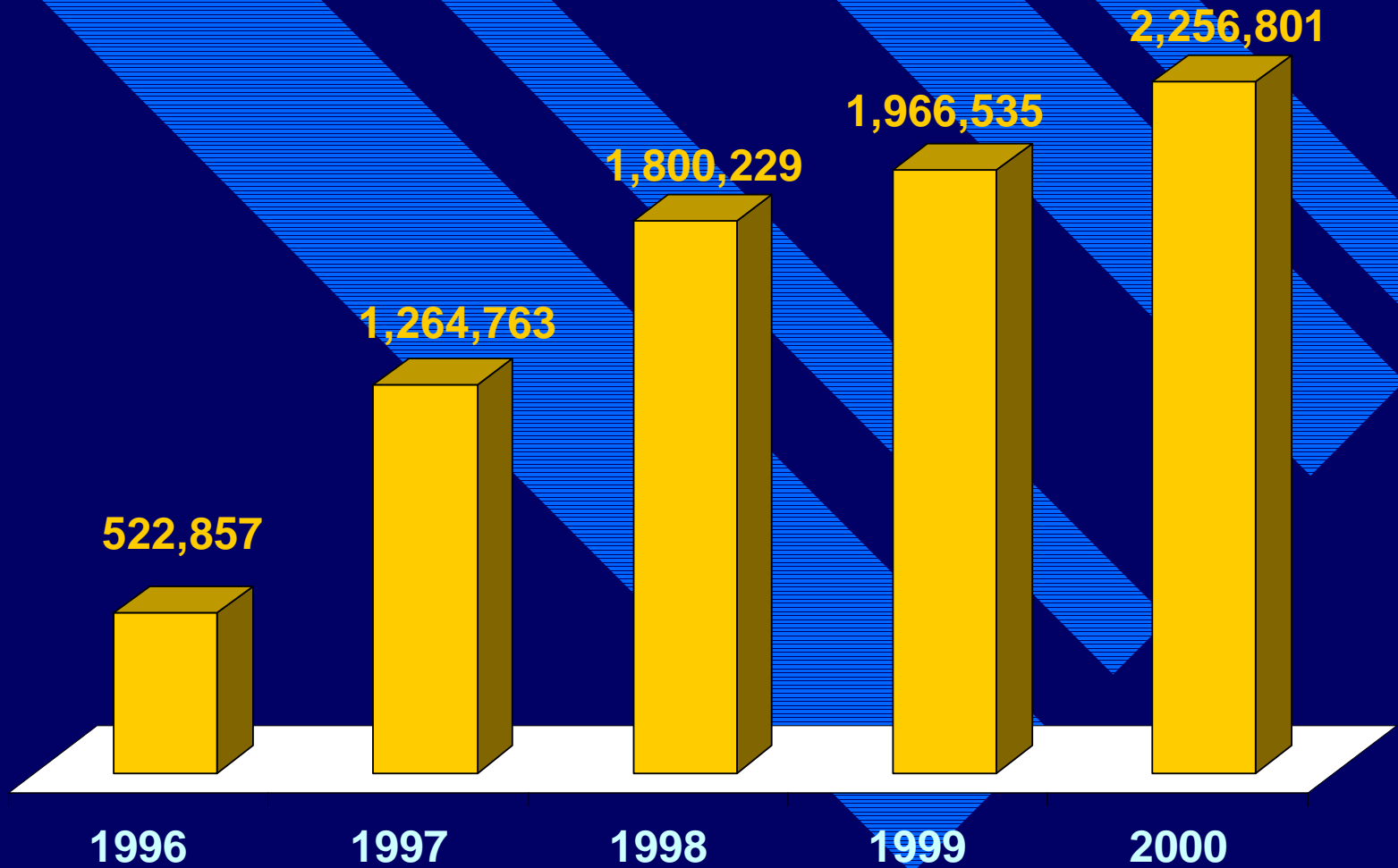
# BOLIVIA: cellular subscribers



(Source: SITTEL, 2000: Latincom)



# COLOMBIA: cellular subscribers

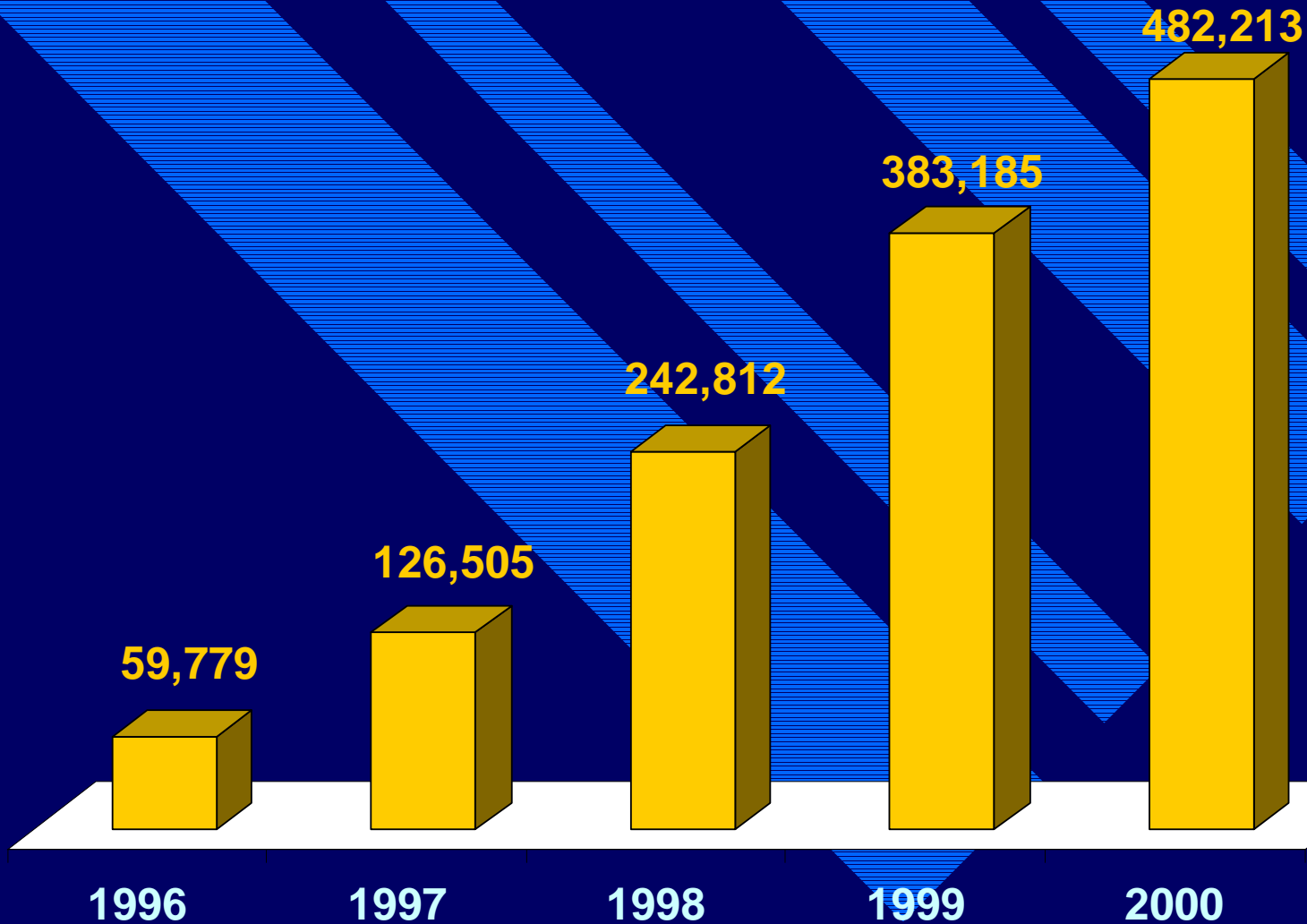


(Source: Ministerio de Comunicaciones)





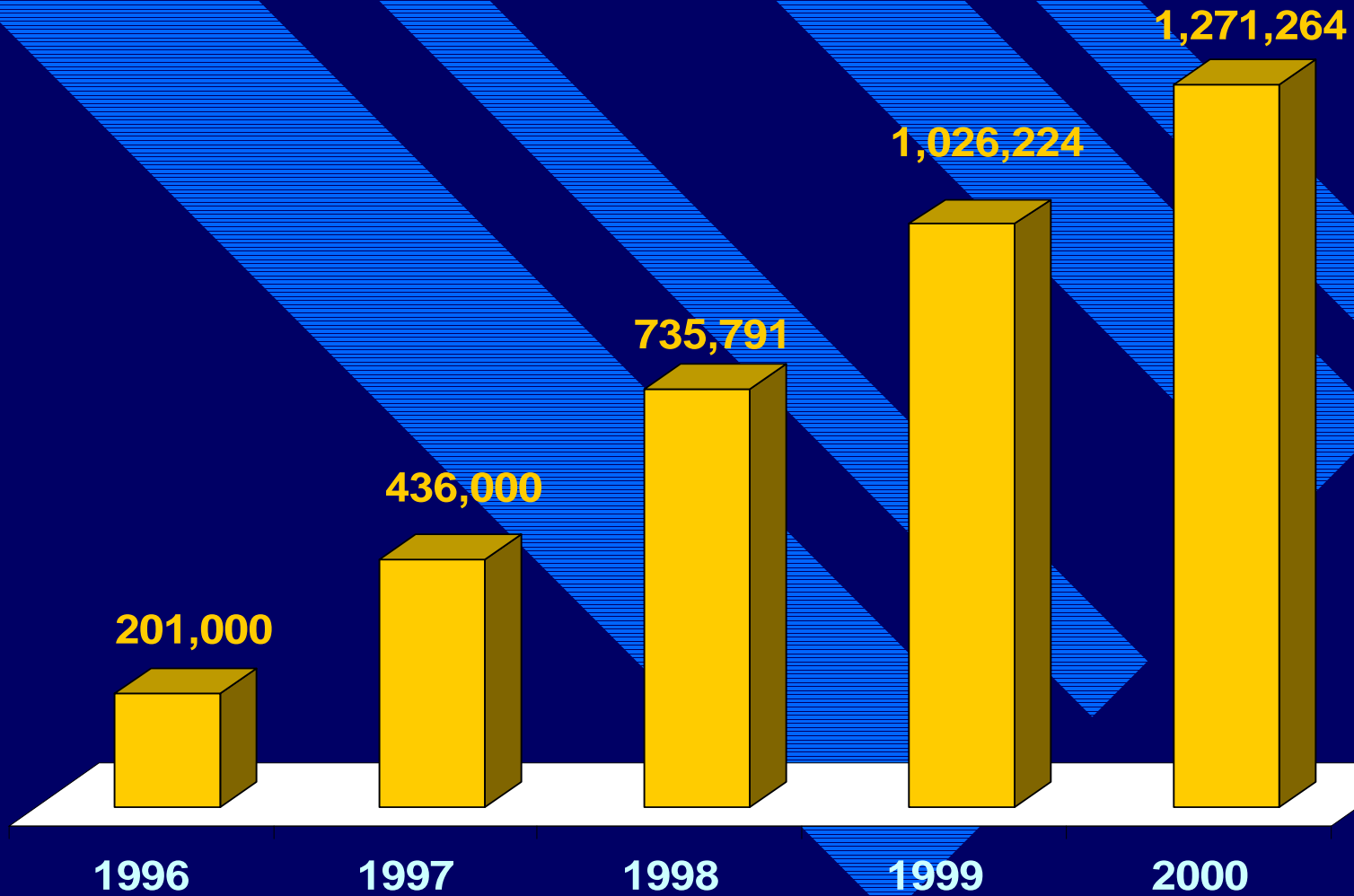
## ECUADOR: cellular subscribers



(Source: SUPTEL)



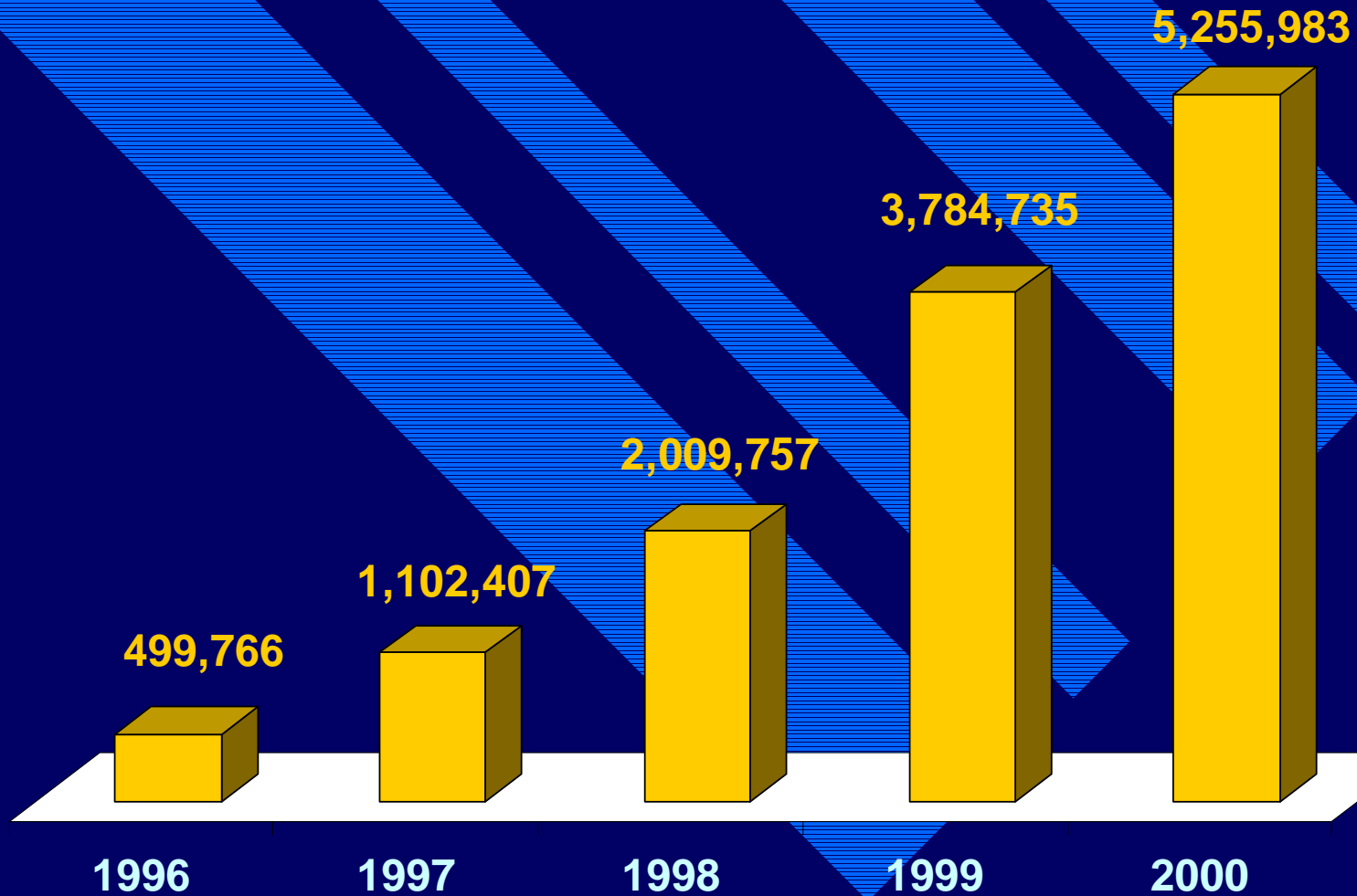
# PERU: cellular subscribers



(Source: OSIPTEL)



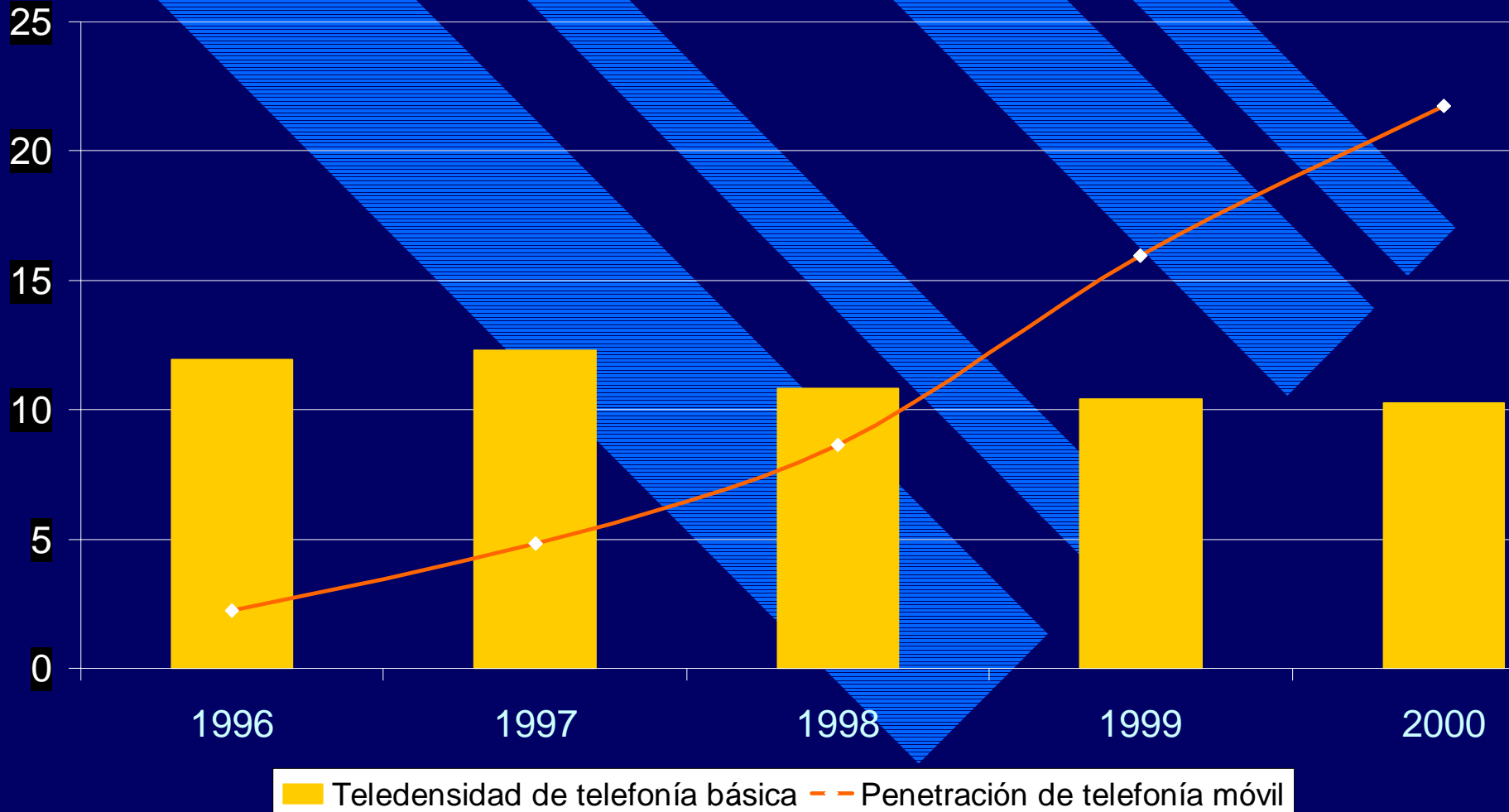
# VENEZUELA: cellular subscribers



(Source: CONATEL)



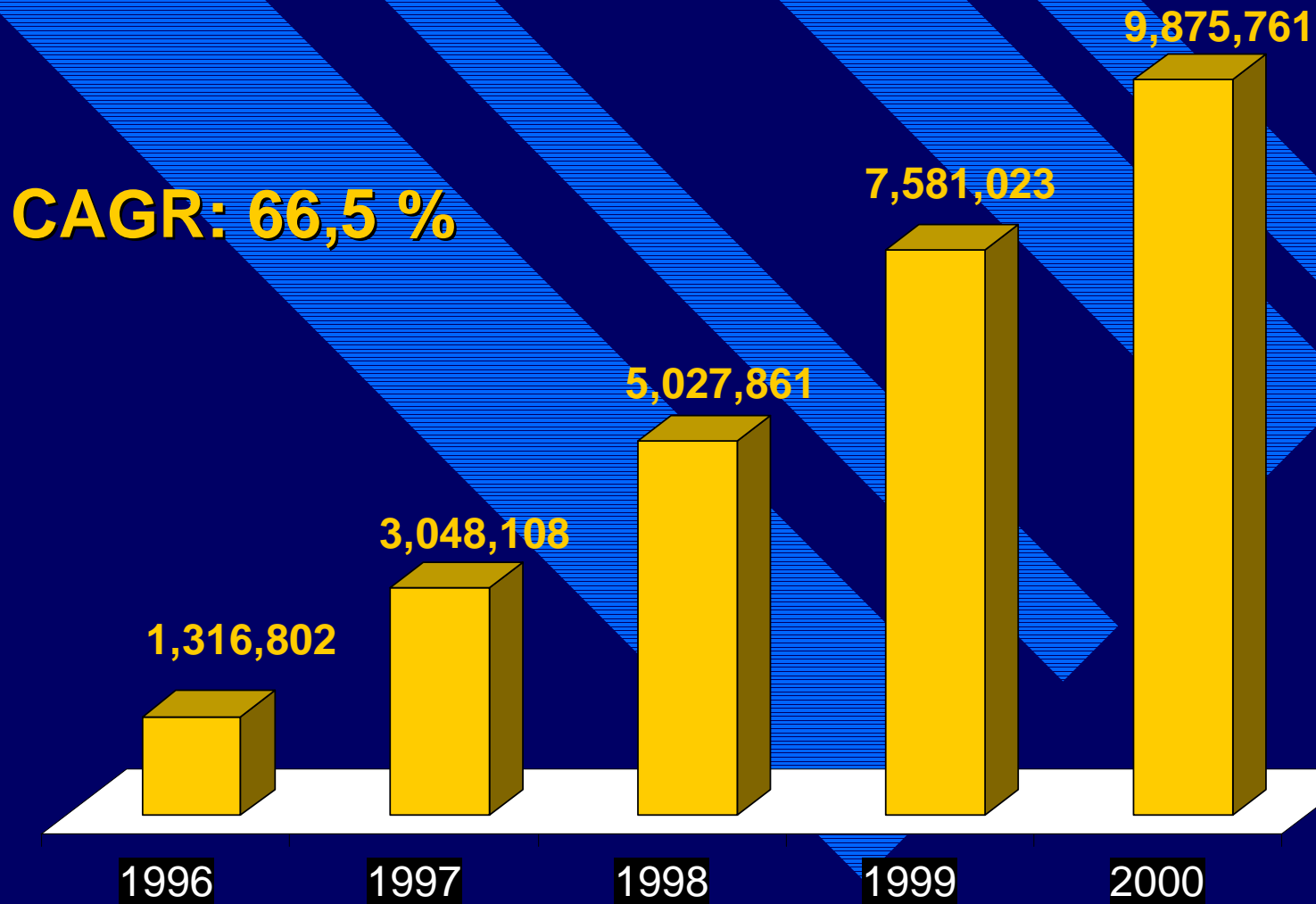
## Venezuela: more mobile than fix



(Fuente: CONATEL)



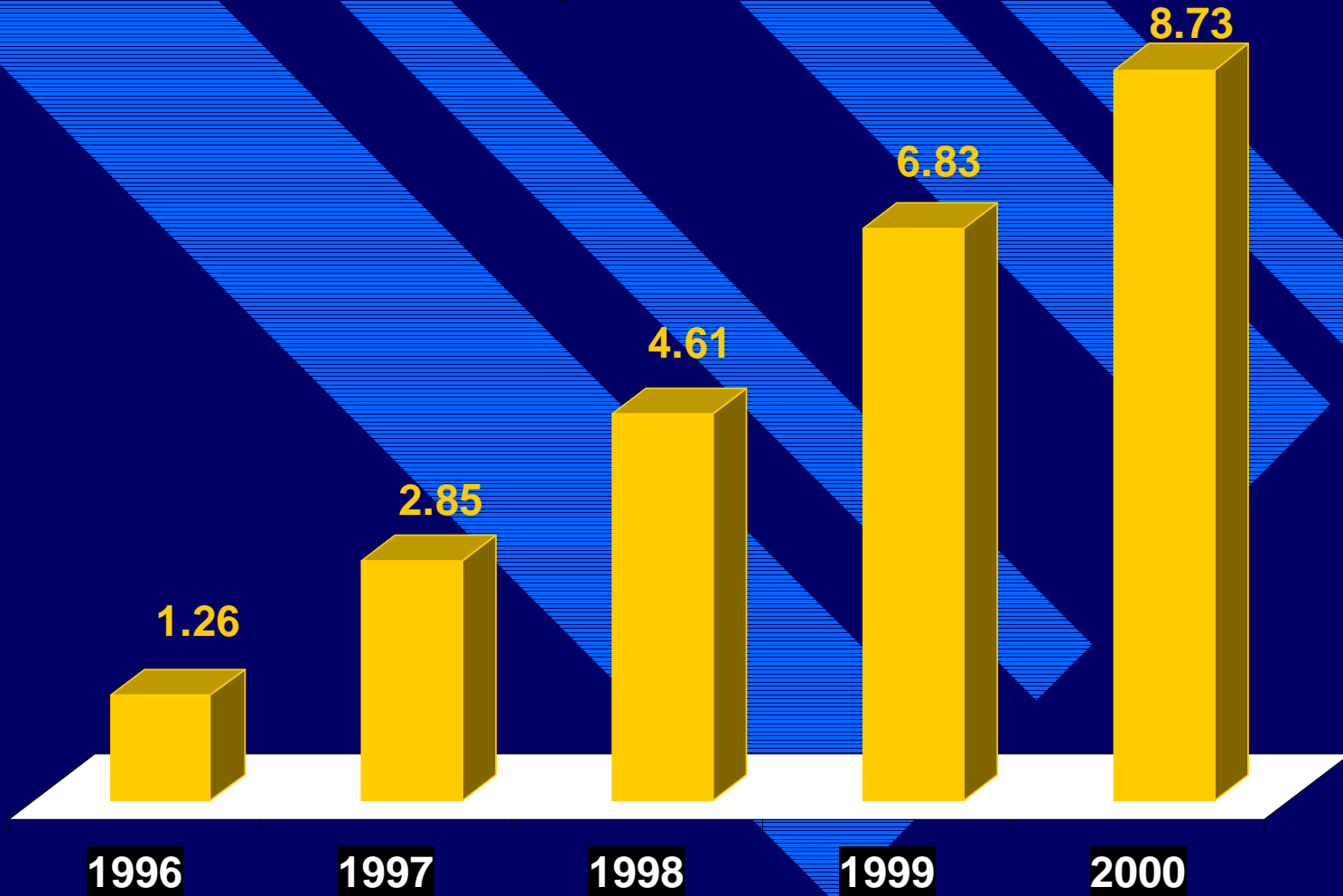
# GROWTH OF CELLULAR SUSCRIBERS IN THE ANDEAN COUNTRIES



(Source: Countries)



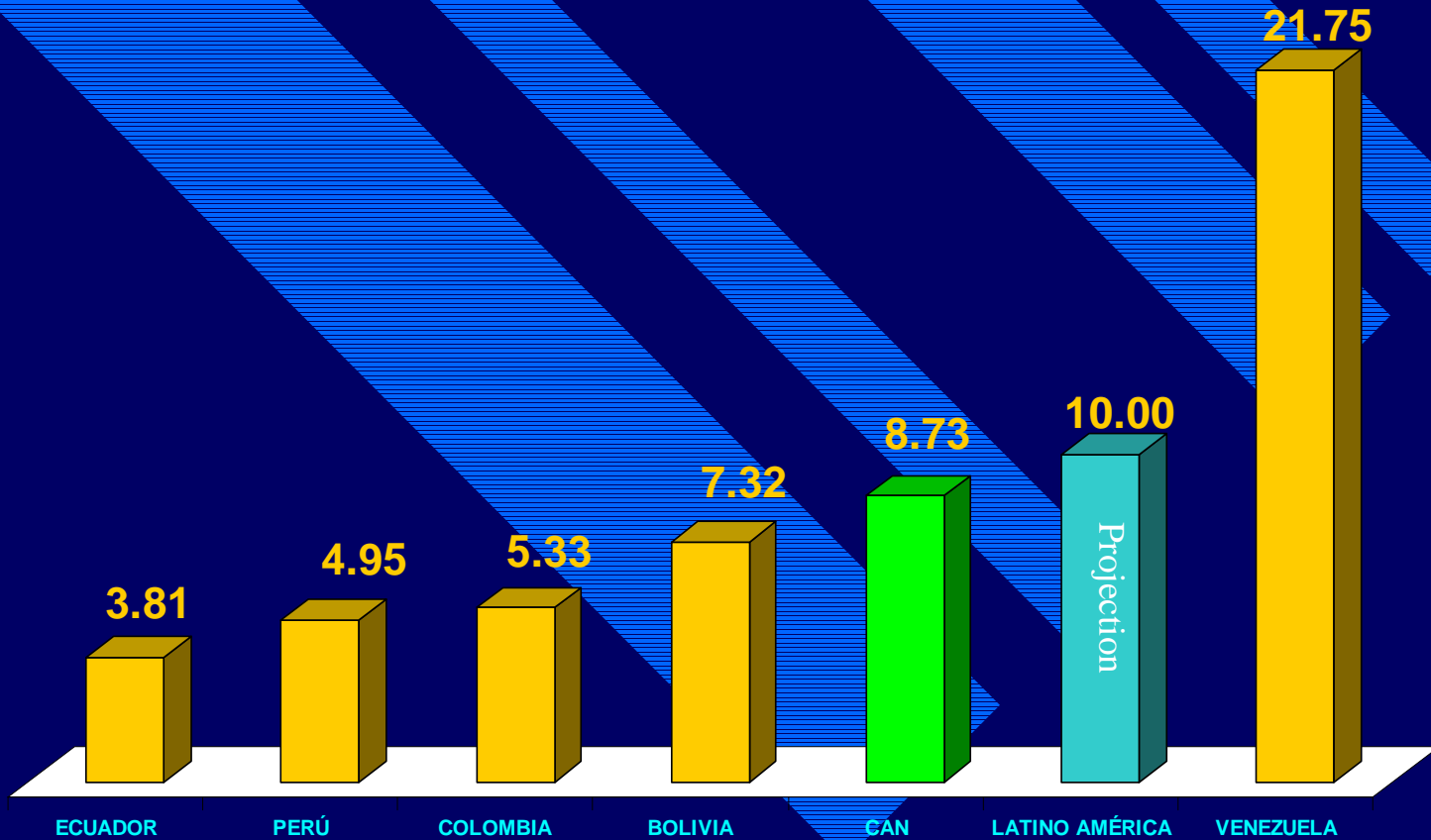
# DENSITY GROWTH IN THE SUBREGION (1996 TO 2000)



(SOURCE: Countries and CAN)



# CELLULAR DENSITY PER 100 INHABITANTS IN 2000



(Source: Regulatory bodies)



# **ANDEAN COOPERATION ON IMT-2000 (3G)**

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## ANDEAN COOPERATION ON IMT-2000 (3G)

### CAATEL decision to cooperate

In July 2000 **CAATEL:**

decided to create a Working Group (GT/9) to “*Study the Implementation of IMT-2000 in the Andean Region*”, and:

mandated **ASETA** to study: “*the available 3G spectrum in the subregion, in the spectrum allocated by WARC-92 for IMT-2000*”



# ASETA STUDY ON IMT-2000 SPECTRUM IN THE ANDEAN COUNTRIES

## OBJECTIVES

### To obtain:

- General information, about different aspects of 3G: background, technological and spectrum aspects, PCS/IMT-2000 overlap, global situation, etc.
- Detailed information, about the situation of the spectrum identified by WARC-92 for IMT-2000, in the Andean Countries



# ASETA STUDY OF IMT-2000 SPECTRUM IN WARC-92 BAND

## OBJECTIVES

- To identify the available spectrum for IMT-2000 in the WARC-92 band
- To propose some tasks
- To make conclusions and recommendations



# PCS ASSIGNMENTS

1885 1900 1920

1980

2010 2025 2110

2170

2200



1850

1910 1930

1990



**BOLIVIA**

**COLOMBIA**

**ECUADOR**

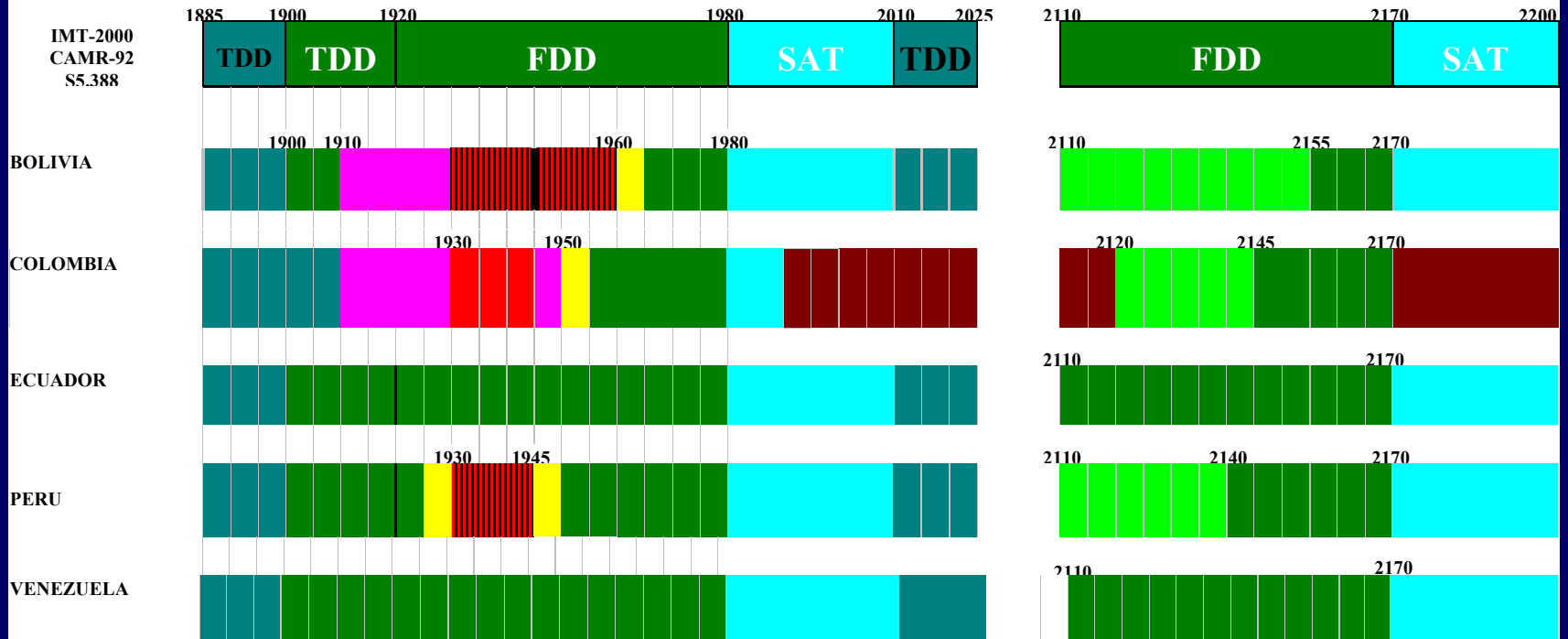
**PERU**

**VENEZUELA**



# EXAMPLE OF AVAILABLE IMT-2000 SPECTRUM IN THE WARC-92 BAND

## IMT-2000 ANDINO (Alt.)





# Available Spectrum<sup>1</sup>

Country	FDD		TDD		
	1920 – 1980 MHz ↑	2110 – 2170 MHz ↓	Short term	Long term	
			1900 – 1920 MHz	1885 – 1900 MHz	2010 – 2025 MHz
<b><u>BOL</u></b>	20	60	10	15	15
<b><u>COL</u></b>	40	60	10	5	15
<b><u>ECU</u></b>	60	60	20	15	15
<b><u>PER</u></b>	45	60	20	15	15
<b><u>VEN</u></b>	60	60	20	15	15

<sup>1</sup> Guard bands not considered



# Possible assignments

Country	Short term	Long term
	FDD + TDD	TDD
Bolivia	<u>One</u> $2 \times 15 + 5$	$15 + 15$
Colombia	<u>Two</u> $2 \times 15$	$0 + 15$
Ecuador	<u>Four</u> $2 \times 15 + 5$	$15 + 15$
Perú	a) <u>Two</u> $2 \times 15 + 5$ b) <u>Three</u> $2 \times 10 + 5$	$15 + 15$
Venezuela	<u>Four</u> $2 \times 15 + 5$	$15 + 15$



# POSSIBLE ASSIGNMENTS IN THE WARC-92 BAND

1885

1900

1910

1930

1965

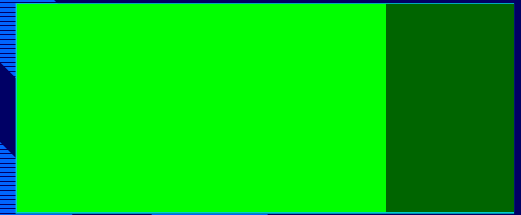
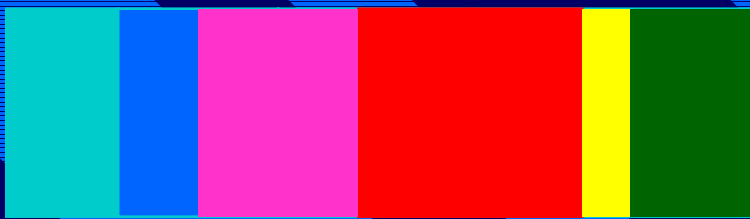
1980

2110

2155

2170

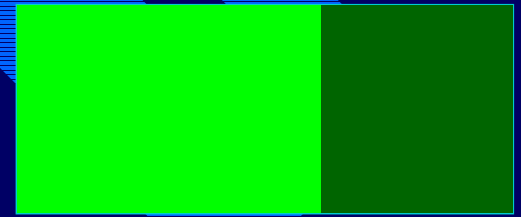
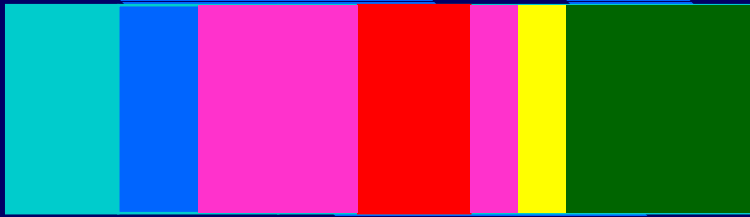
**BOL**



1955

2145

**COL**

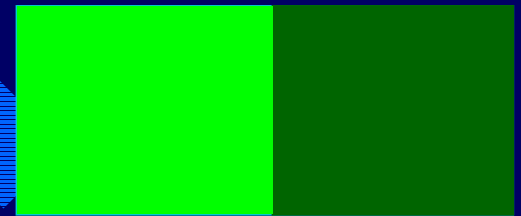
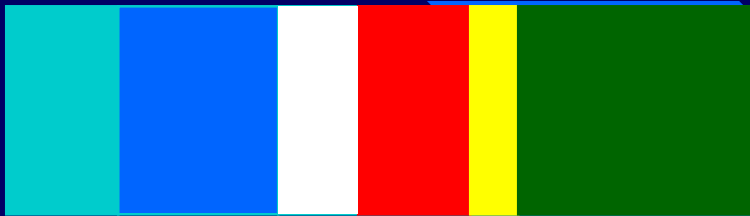


1920

1950

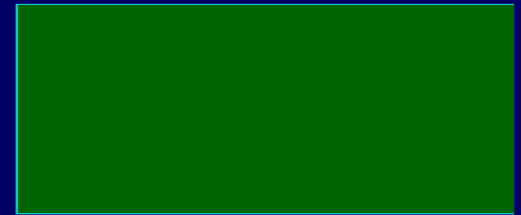
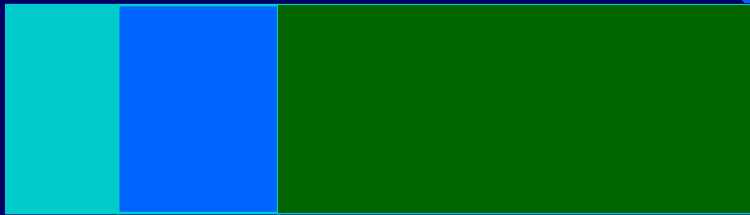
2140

**PER**



**ECU**

**VEN**







# PROPOSED TASKS (1)

As a result of the study, CAATEL resolved that, in collaboration with ASETA, the Workin Group will carry on the following activities:

- PROMOTE THE EXCHANGE OF INFORMATION among countries on IMT-2000 issues
- SUPPORT THE ADMINISTRATIONS in the adoption of policies and strategies regarding the introduction of IMT-2000, taking into account their particular needs and the convenience of the harmonized introduction in the Subregion



## PROPOSED TASKS (2)

- **PREPARE AND PRESENT COMMON POSITIONS** at CITELE, ITU and other fora
  
- **DEVELOP STUDIES** related to:
  - Spectrum issues
  - 2G to 3G evolution, and the needs of the cellular andean operators
  - 3G services
  - Licence assignments
  - Guard bands
  - Content provision



## PROPOSED TASKS (3)

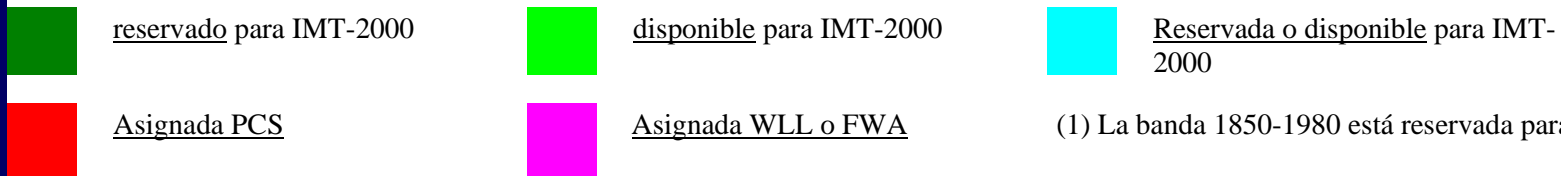
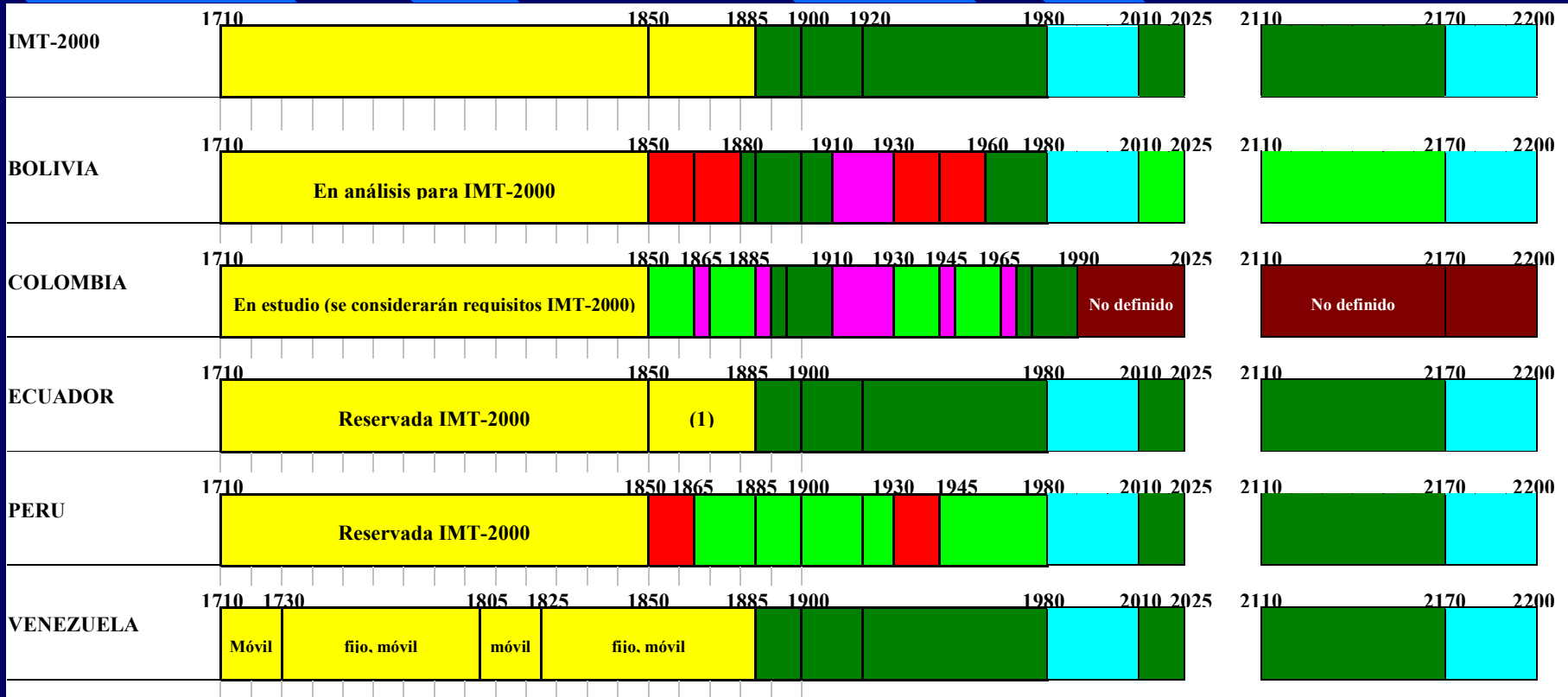
- **FOLLOW THE ACTIVITIES OF** ITU, UMTS Forum, CDG (*CDMA Development Group*) and the UWCC (*Universal Wireless Communications Consortium*).
- **ANALYZE THE POSSIBILITY OF HAVING INTEROPERABILITY AND ROAMING** among 3G networks and services in the Subregion



# **SPECTRUM: CONSOLIDATED SITUATION**

**1710 – 2025 and 2110 – 2200 MHz  
Bands  
in the Andean Countries**

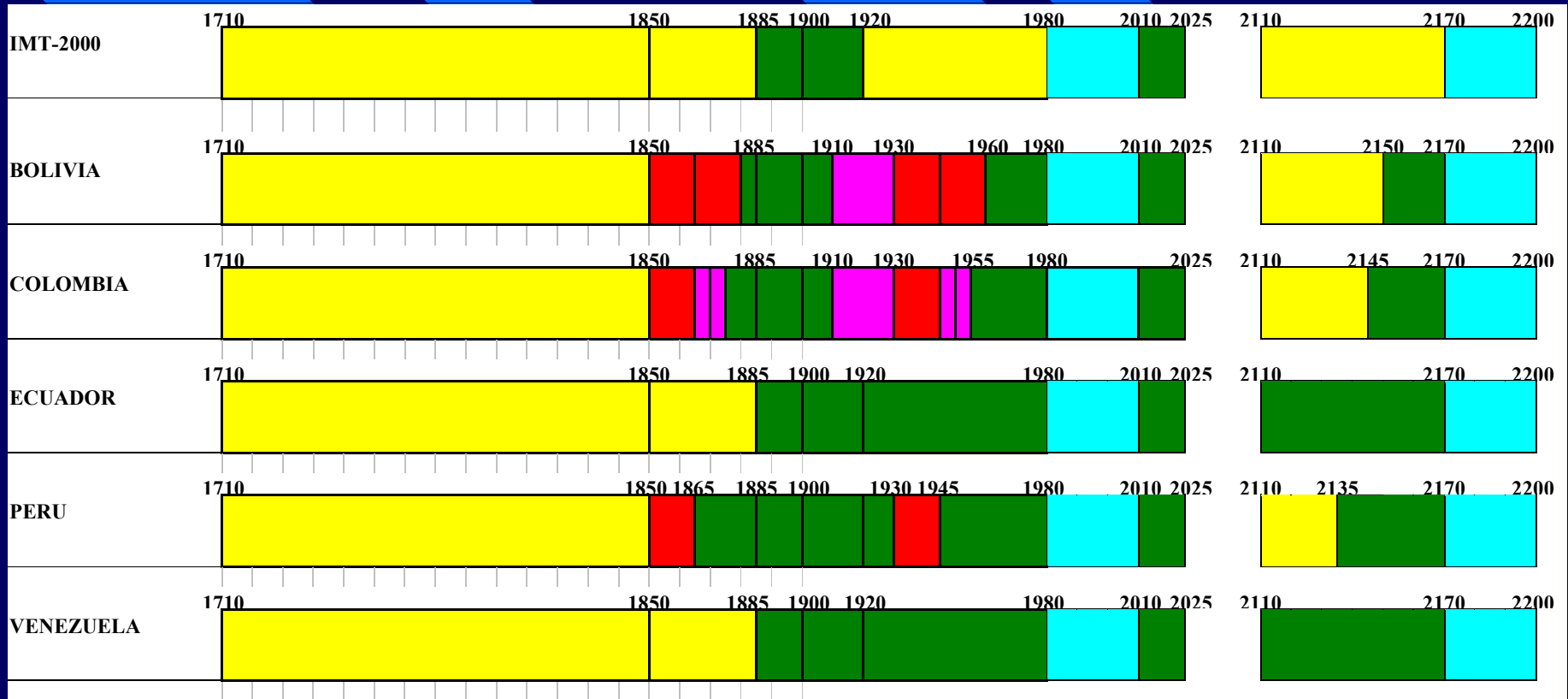
# IMT-2000 SPECTRUM SITUATION: 1710-2025 and 2110-2200 MHz Bands



(1) La banda 1850-1980 está reservada para IMT-2000 o PCS



# AVAILABLE IMT-2000 SPECTRUM: 1710-2025 and 2110-2200 MHz Bands



Espectro potencial para IMT-2000 (reservado, disponible o en estudio)



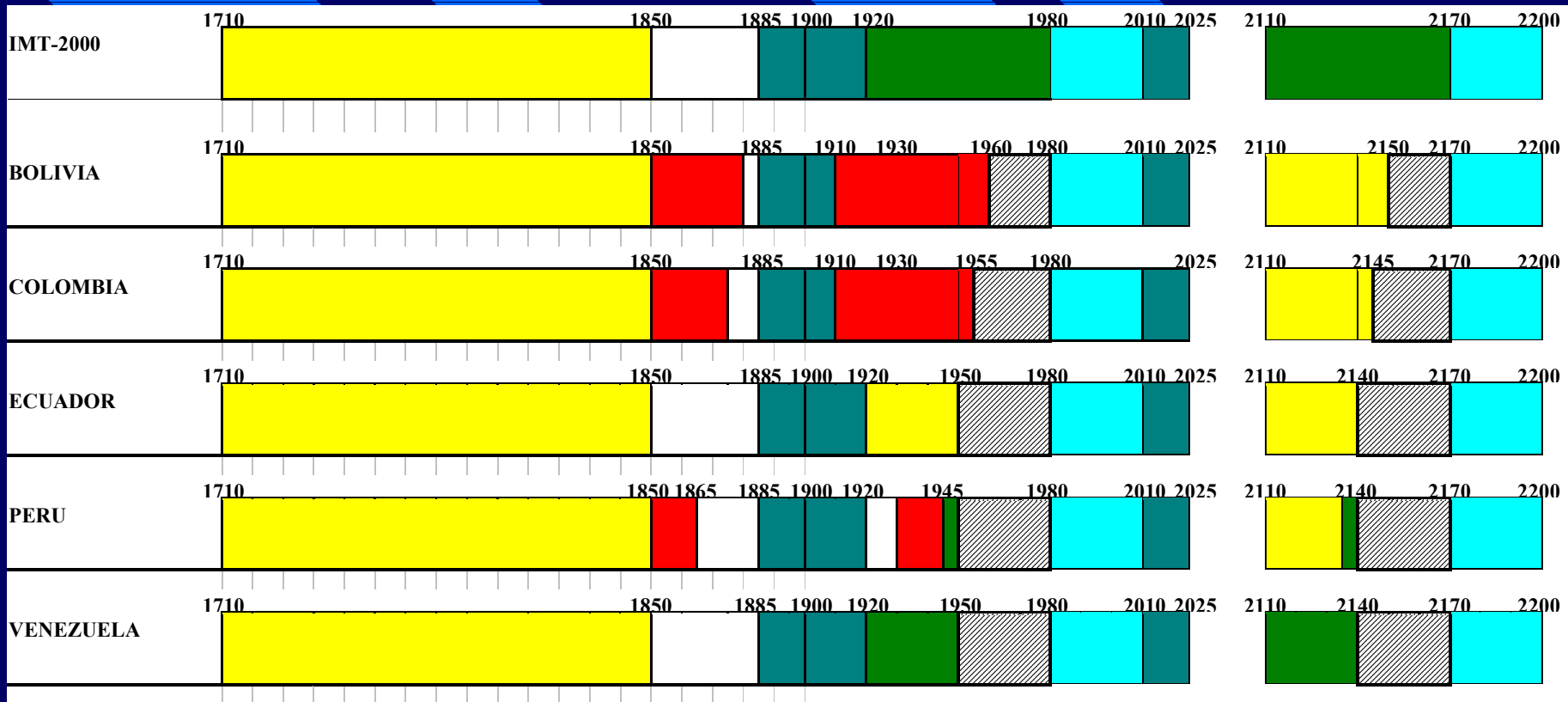
Asignada PCS



Asignada WLL o FWA



# EXAMPLE OF HARMONIZED IMT-2000 SPECTRUM: 1710-2025 and 2110-2200 MHz Bands



**FDD** **TDD** **Espectro potencial para IMT-2000 (reservado, disponible o en estudio)**

**Asignada PCS, WLL o FWA** **No contemplado**

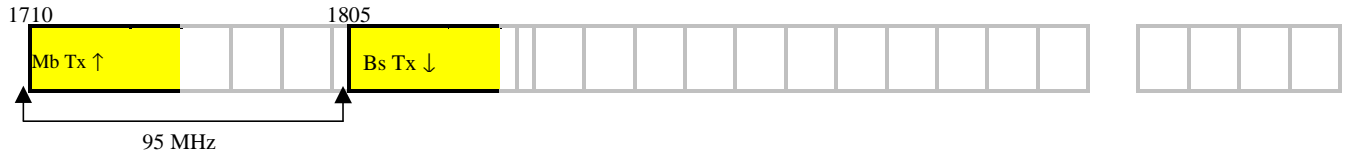
# PREFERRED BAND PAIRING OPTIONS

## 1710 - 2200 MHz Band

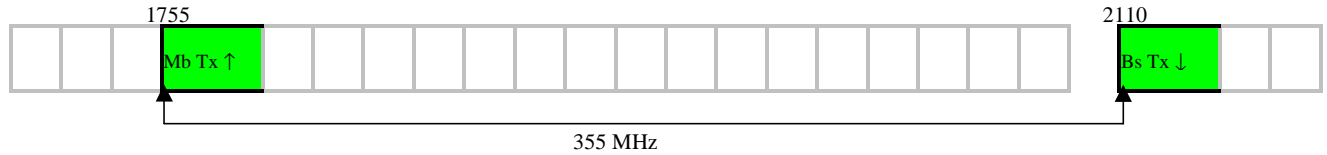
### XVIII CCP.III Citel Meeting



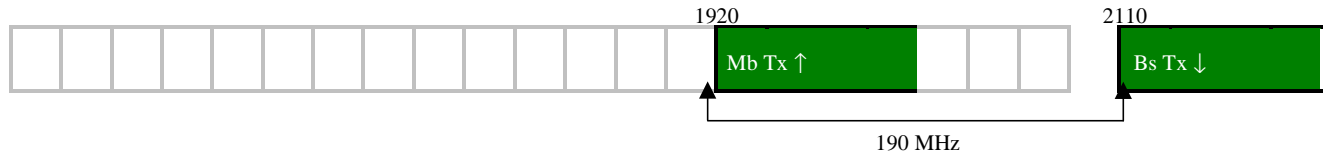
Opción 1:



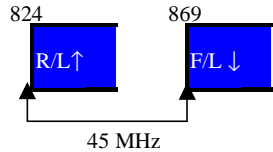
Opción 2:



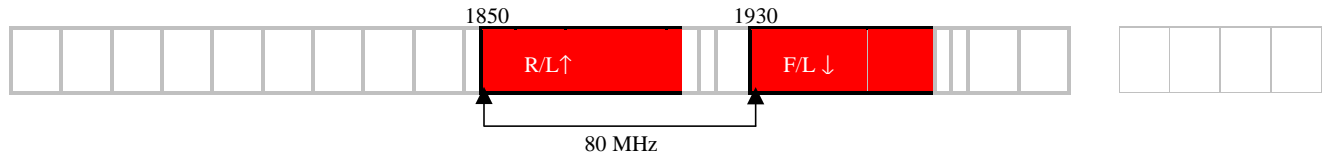
Opción 3:



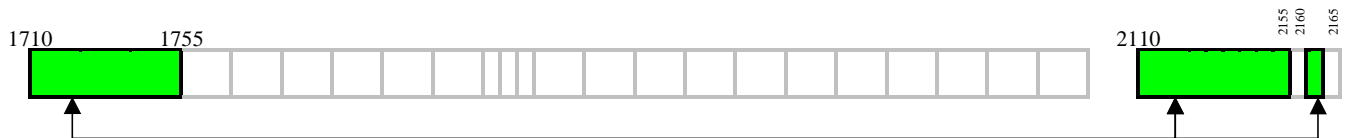
Opción 4:



Opción 5:

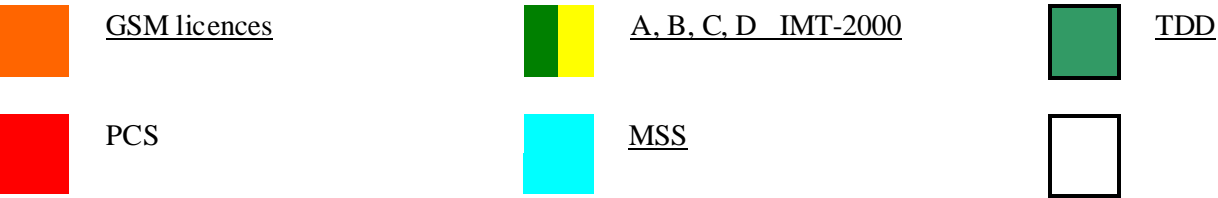
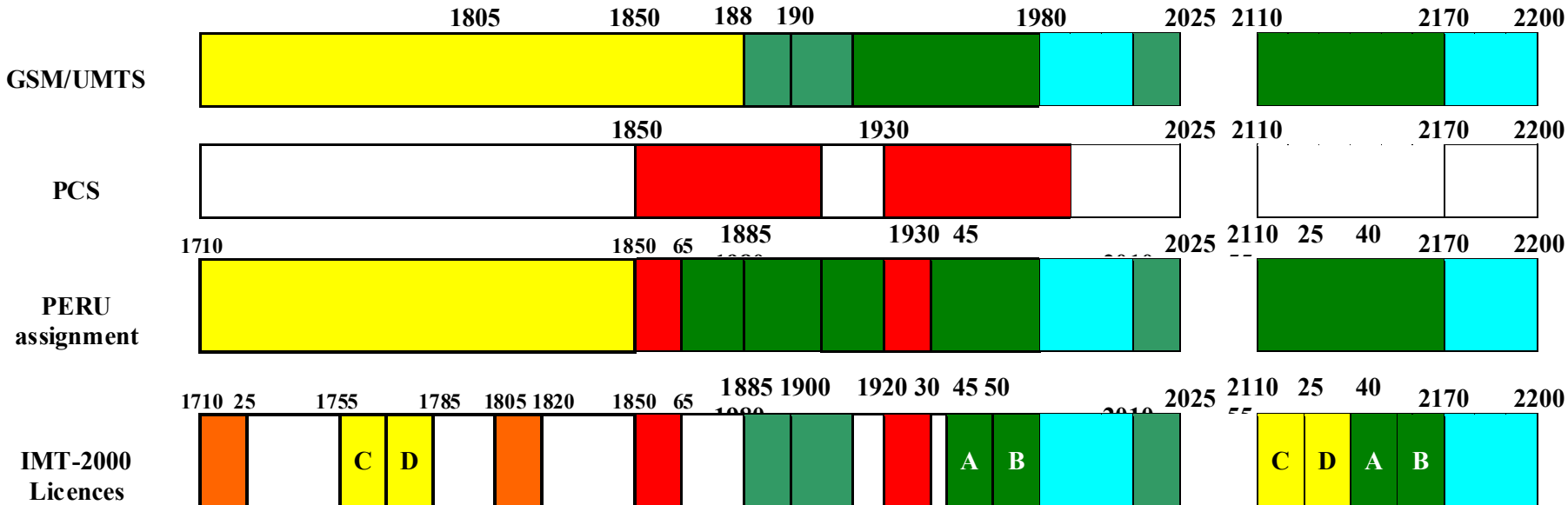


Opción USA:



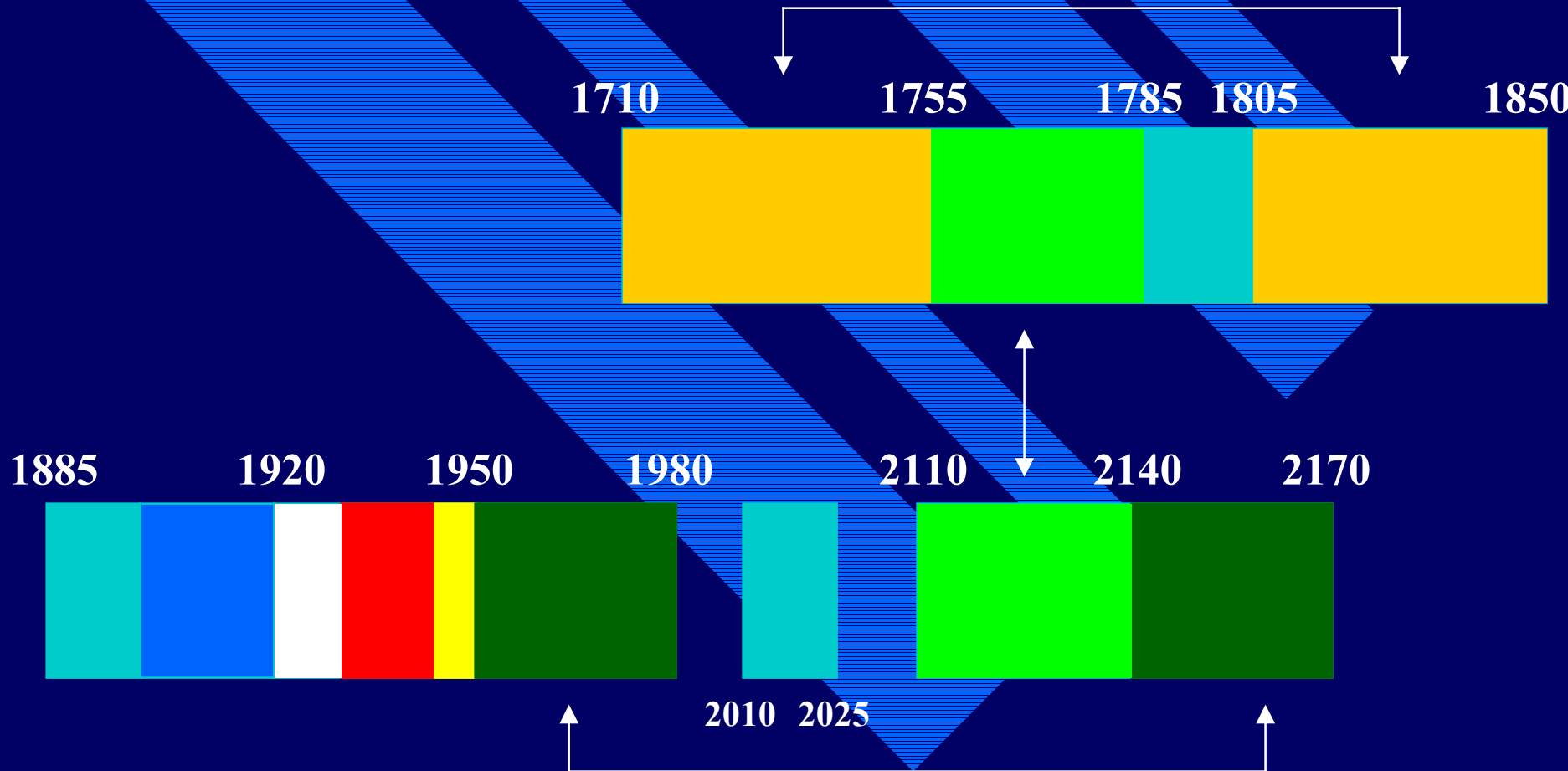


# EXAMPLE OF POSSIBLE LICENCES





# EXAMPLE OF BAND PAIRINGS





# CURRENT ACTIVITIES

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## ACTIVITIES IN THE ANDEAN COUNTRIES

- **Colombia:** is studying the issue of a licence to a new operator
- **Ecuador:** plans to issue one or two new licences
- **Venezuela:** has concluded a public consultation process (ASET/Ovum, consultants)



## WORK WITH ITU

**On October 1, ASETA and an Expert (contracted by ITU) will begin a 12 weeks effort to:**

- **Consolidate information about spectrum, technical aspects, services, etc. on IMT-2000**
- **Obtain information, suggestions and concerns from Administrations and operators of the Subregion**
- **Make recommendations on the spectrum utilization and the evolution towards 3G**
- **Suggest communitarian mechanisms to implement IMT-2000 in the Subregion**



## ASETA ACTIVITIES

- Perform specific studies (spectrum)
- Propose initiatives to Administrations
- Act as Consultant as in the case of Venezuela
- Look for international support, with ITU, UWCC, CDG, UMTS Forum
- Support the Administrations, through seminars (Venezuela, Peru, Ecuador)
- Find and distribute information
- Follow the activities, in Citel, ITU, International Fora, etc.



# CONCLUSIONS

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# CONCLUSIONS (1)

- SIGNIFICANT PROGRESS ON IMT-2000 ANALYSIS HAS BEEN MADE
- IMPORTANT DECISIONS HAVE BEEN TAKEN ON SPECTRUM ISSUES
- WORK ON VARIOUS ASPECTS OF 2.5G AND 3G CONTINUES
- AN ANALYSIS OF THE IMT-2000 SPECTRUM SITUATION IN THE 1710 – 2025 AND 2110 – 2170 MHZ BANDS HAS BEEN CONCLUDED
- IN MOST CASES IT WOULD BE POSSIBLE TO IMPLEMENT 3G SYSTEMS AND SERVICES IN THE DIFFERENT COUNTRIES





## CONCLUSIONS (2)

- **SPECTRUM SITUATION COMPLEX BUT ALLOWS FLEXIBILITY**
- **SOME CONCERNS:**
  - ***DEVELOPING OF A DATA MARKET***
  - ***EVOLUTION OF THE EXISTING OPERATORS THAT DO NOT HAVE A CLEAR PATH TO 3G (I.E. TDMA)***
  - ***UTILIZATION OF WARC-92 SPECTRUM BY NON-GSM OPERATORS***
  - ***HARMONIZATION DECISIONS IN CITEL AND ITU***
- **STUDY WITH ITU WILL HOPEFULLY ALLOW TO MAKE CONCRETE RECOMMENDATIONS**

**THANKS A LOT**

qsetd