



# ASIA-PACIFIC REGIONAL WORKSHOP ON “MANAGING SPECTRUM IN THE AGE OF WIRELESS COMMUNICATION”

*Bangkok, Thailand 3-4 May, 2017*



## TRENDS IN SPECTRUM MANAGEMENT OF MONGOLIA

**AMGALAN Zandraa**

DIRECTOR GENERAL, Radio Frequency Regulation and Monitoring Department

Communications Regulatory Commission of Mongolia

eMail: [amgalan@crc.gov.mn](mailto:amgalan@crc.gov.mn); Web: [www.crc.gov.mn](http://www.crc.gov.mn)





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## 1 COUNTRY PROFILE

Establishment of CRC

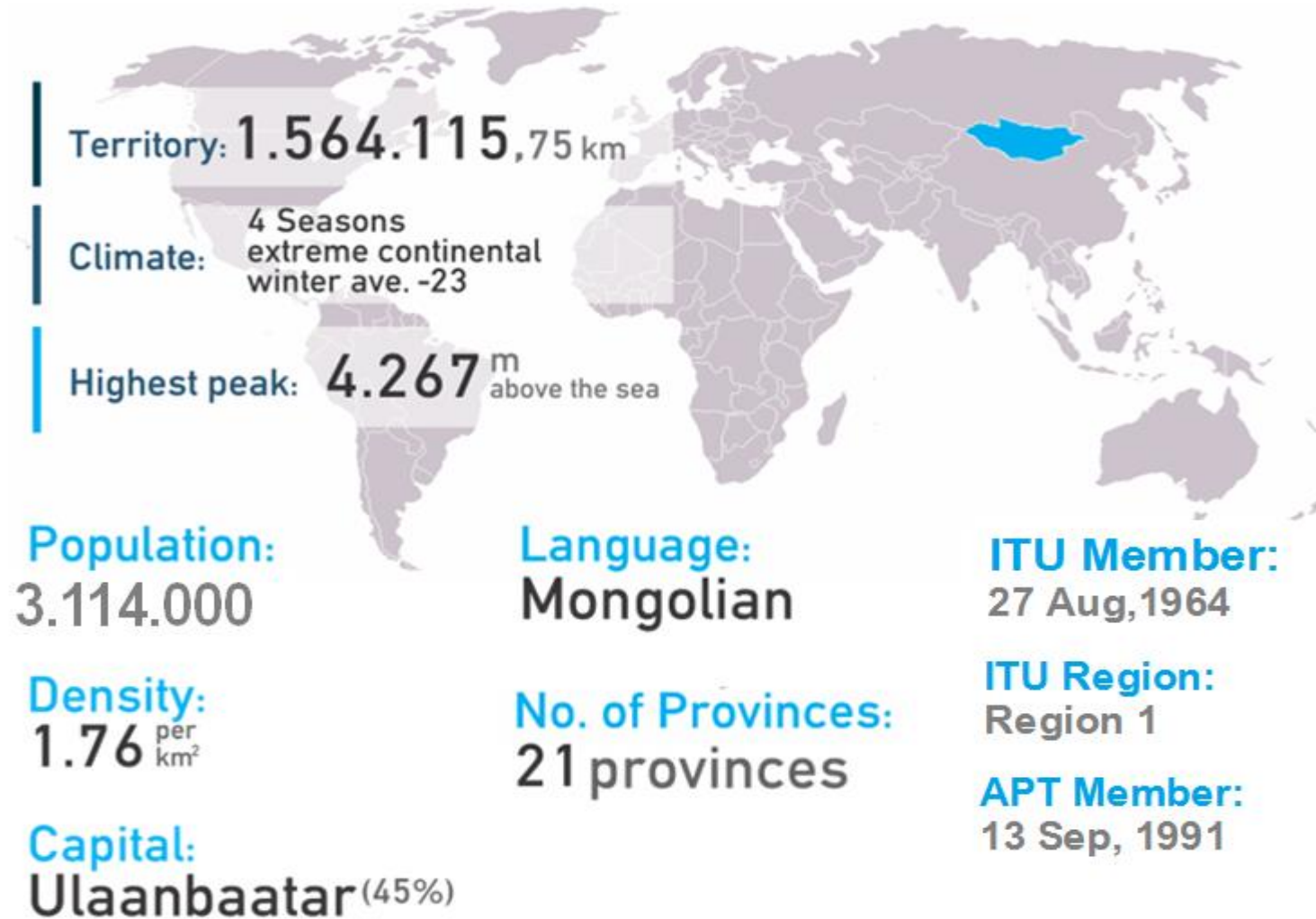
Mission & Main responsibilities

National Spectrum Management

Statistics of ICT Sector in MNG

Regulatory for IMT

Challenges & Planned Activities





# 1. IDI WORLD RANK



## 1 COUNTRY PROFILE

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## ICT DEVELOPMENT INDEX 2016

IDI 2016 Rank

**90**

IDI 2015 Rank

**93**

IDI 2016 Value

**4.95**

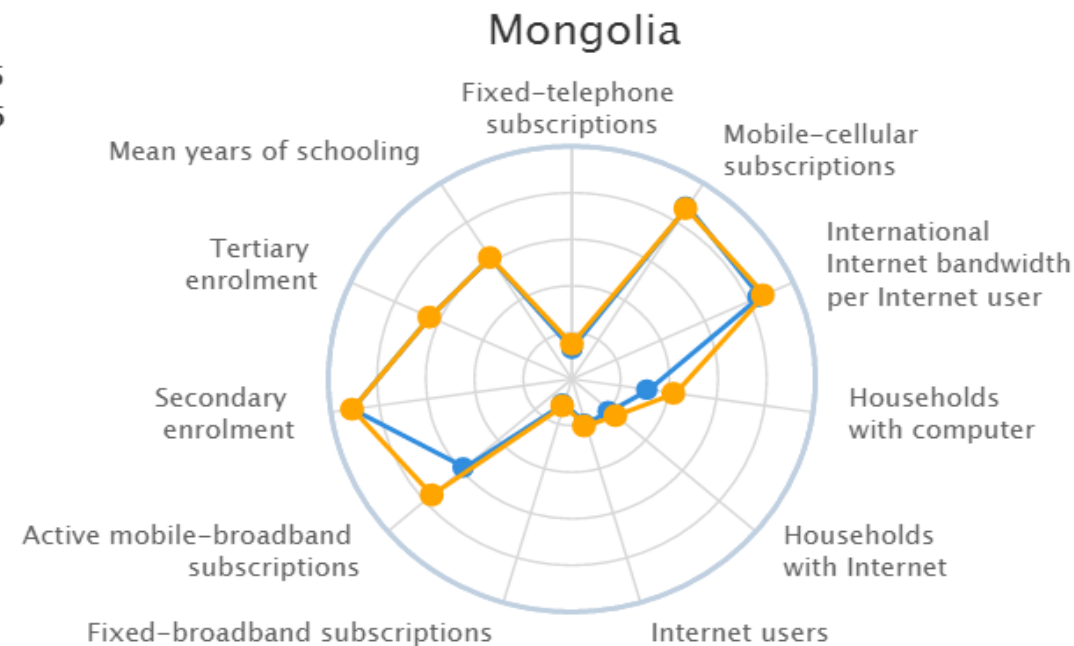
IDI 2015 Value

**4.54**

Regional IDI 2015 Rank

**14**

● 2015  
● 2016





## 2. LEGAL ENVIRONMENT & ESTABLISHMENT OF CRC



County profile

### 2 ESTABLISHMENT OF CRC

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# 2. CORPORATE ORGANIZATIONAL CHART

County profile

## 2 ESTABLISHMENT OF CRC

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National Spectrum Management

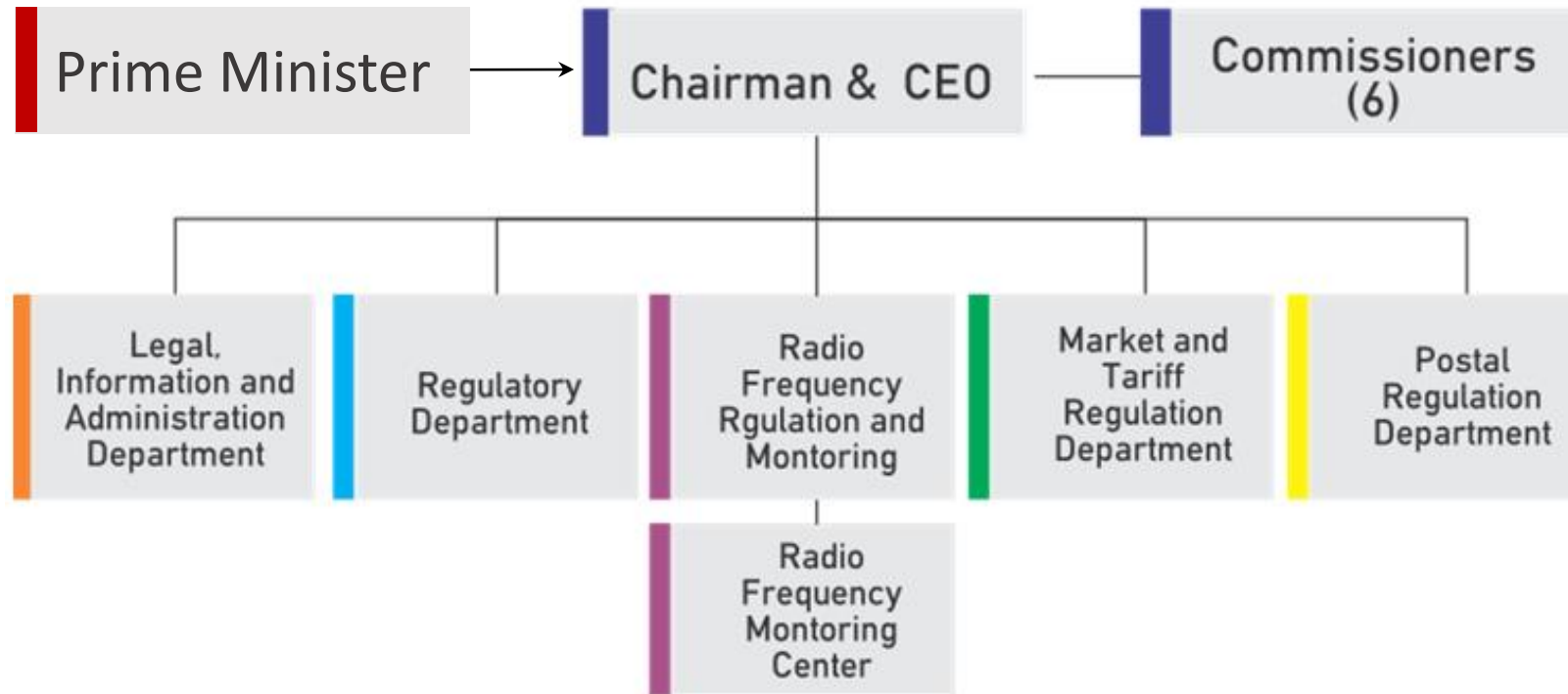
Statistics of ICT Sector in MNG

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# 3. MISSION & MAIN RESPONSIBILITIES



County profile

Establishment of CRC

## 3 MISSION & RESPONSIBILITIES

National Spectrum Management

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### CRC REGULATES /Law on Licensing Entities/

- Telecommunications
- TV and Radio broadcasting
- Content
- Spectrum Management and Monitoring
- Post
- Internet

### AUTHORITY OF CRC /Law on Communication/

- To prepare a proposal of State Policy
- Licensing
- Certification
- Interconnection
- Tariff
- Competition
- Enforcement of USOF obligation
- Standardization
- Numbering
- Managing Radio Frequency Spectrum
- Settlement of Regulation and spectrum utilization fee
- Resolving disputes



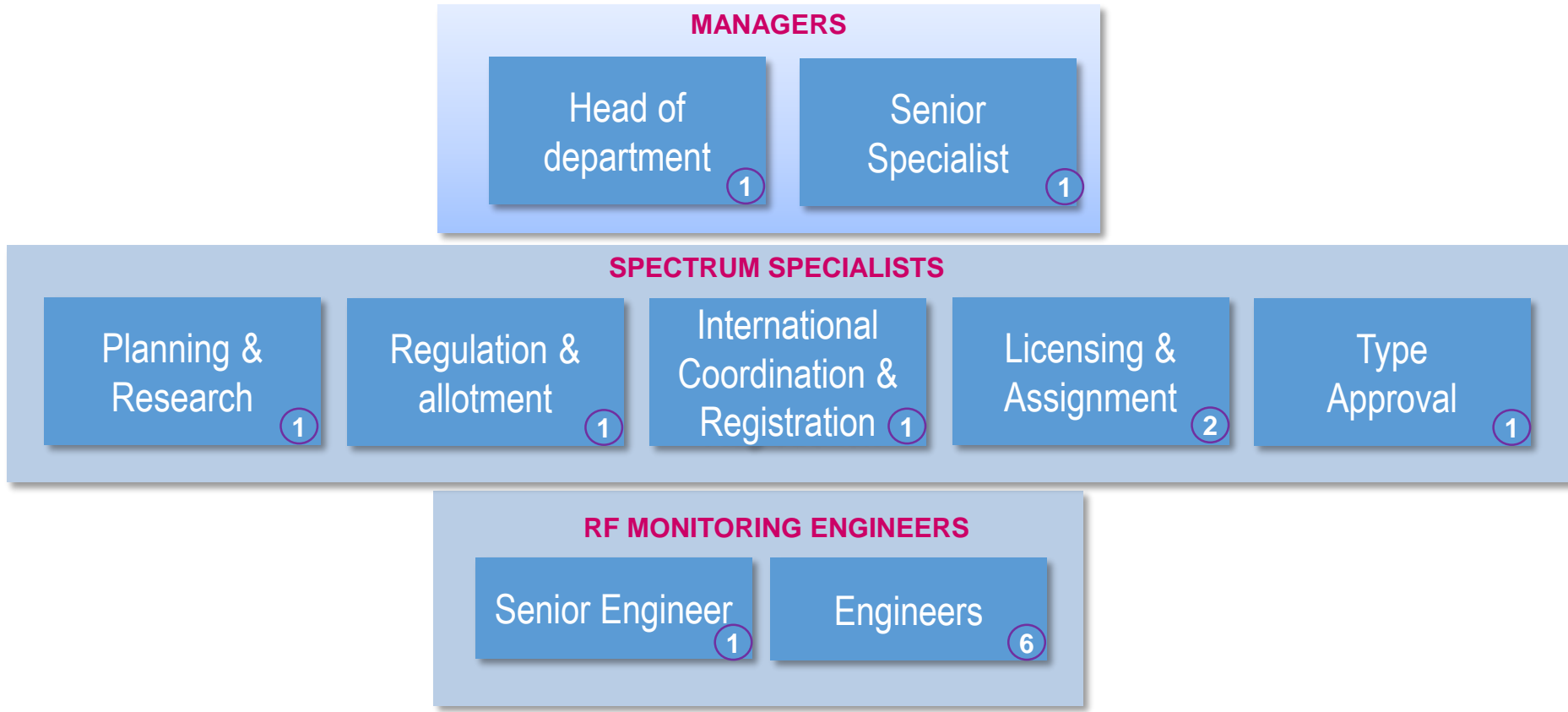
CELEBRATING  
**25 YEARS**  
OF ACHIEVEMENTS



# 4. SPECTRUM MANAGEMENT STRUCTURE



- County profile
- Establishment of CRC
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Total- 15





# NATIONAL ALLOCATION TABLE & CHART



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8.3-110 kHz

ITU allocation Region I	National allocation
8.3-9 METEOROLOGICAL AIDS SERVICE ADD 5.A116 ADD 5.B116 ADD 5.C116	8.3-9 METEOROLOGICAL AIDS SERVICE ADD 5.A116 ADD 5.B116 ADD 5.C116
9-11.3 METEOROLOGICAL AIDS ADD 5.A116 RADIONAVIGATION	9-11.3 METEOROLOGICAL AIDS ADD 5.A116 RADIONAVIGATION
11.3-14 RADIONAVIGATION	11.3-14 RADIONAVIGATION
14-19.95 FIXED MARITIME MOBILE 5.57 5.55 5.56	14-19.95 FIXED MARITIME MOBILE 5.56
19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL(20 kHz)	19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL(20 kHz)
20.05-70 FIXED MARITIME MOBILE 5.57 5.56 5.58	20.05-70 FIXED MARITIME MOBILE 5.56
70-72 RADIONAVIGATION 5.60	70-72 RADIONAVIGATION
72-84 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60 5.56	72-84 FIXED MARITIME MOBILE RADIONAVIGATION 5.56
84-86	84-86

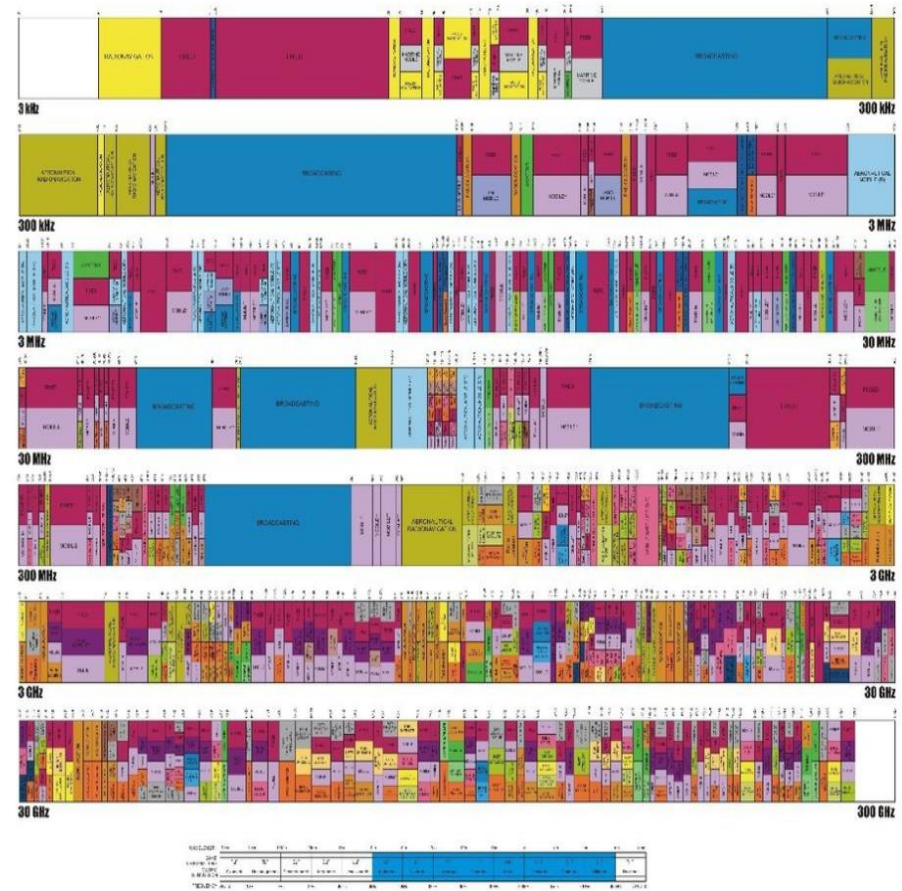
## MONGOLIA FREQUENCY ALLOCATIONS THE RADIO SPECTRUM

RADIO SERVICE COLOR LEGEND

MOBILE	MOBILE SATELLITE	FIXED	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE
MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE
MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE
MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE
MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE	MOBILE SATELLITE	FIXED SATELLITE

ALLOCATION USAGE DESIGNATION

ITU	FR	FD	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FV	FW	FX	FY	FZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FV	FW	FX	FY	FZ
-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



Source: <http://crc.gov.mn/en/k/V/14>



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Cross border frequency coordination agreement between administrations of Mongolia and Russian Federation on the radio frequency spectrum regulation and use in the border areas has been signed in **1983 and 2013**.



Cross border frequency coordination agreement between administrations of Mongolia and China on the radio frequency spectrum regulation and use in the border areas has been signed in **1989 and 2015**.



# APPROVED RADIO TECHNOLOGY AND AUTHORIZED STATIONS



**Licensing regime – based on the first come first serve and beauty contest.**

Spectrum band	Service	Technology	Number of station
<b>Broadcasting</b>			
LW (164 kHz)	Public radio	AM	5
MW (882 kHz)	Public radio	AM	2
HW (9590 kHz)	Public radio	AM	3
DRM30 (26 MHz)	Public radio	DRM30	Planned in 2018
FM (87.5-108 MHz)	Commercial radio	FM	106
Band 3 (174-230 MHz)	Audio broadcast	DAB+	Planned in 2018
Band 4 (470-574 MHz)	Video broadcast	DVB-T2	378
Band 4 (574-694 MHz)	MMDS	DVB-T2	46
<b>Mobile communication</b>			
Band 31 (5 MHz x2)	Cellular	CDMA450 / 2G	Nationwide, 1
APT700 (10 MHz x2)	Cellular	LTE / 4G	Nationwide, 4
Band 5 (7 MHz x2)	Cellular	CDMA850 / 2G	Nationwide, 1
Band 5 (10 MHz x2)	Cellular	WCDMA850 / 3G	Nationwide, 1
Band 8 (24.7 MHz x2)	Cellular	GSM900 / 2G	Nationwide, 2
Band 3 (10 MHz x2)	Cellular	GSM1800 / 2G	Nationwide, 2
Band 3 (10 MHz x2)	Cellular	1800/LTE / 4G	Nationwide, 4
Band 2 (10 MHz x2)	Cellular	2100 /WCDMA	Nationwide, 4

County profile

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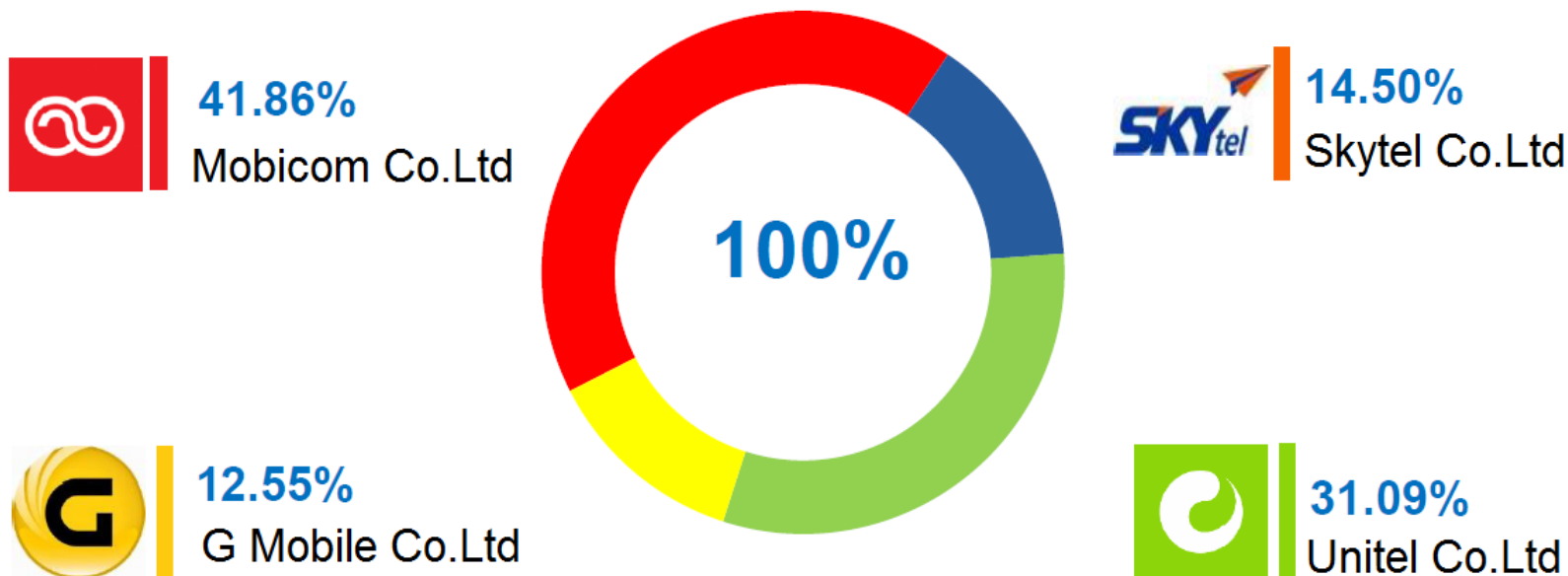
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CELEBRATING 25 YEARS OF ACHIEVEMENTS

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MNOs	2012 oH	2013 oH	2014 oH	2015 oH	2016.06.30
Mobicom Co.ltd	46.03%	46.25%	40.03%	41.81%	41.86%
Skytel Co.ltd	15.84%	16.60%	15.98%	14.99%	14.50%
Unitel Co.ltd	29.01%	29.48%	32.37%	30.87%	31.09%
G Mobile Co.ltd	9.12%	7.67%	11.62%	12.33%	12.55%
	100.00%	100.00%	100.00%	100.00%	100.00%

## Technology neutrality is approved by IMT implementation policy in Mongolia.

	3GPP Band	User-Base (MHz)	Base - User (MHz)	Duplex	License coverage	Spectrum Cap Max	Number of career	Issued License
1	31	452.5-457.5	462.5-467.5	FDD	Nationwide	5 MHz x 2	1	-
2	28	703-748	758-803	FDD	Nationwide	10 MHz x 2	4	4
3	20	847-862	806-821	FDD	Nationwide	10 MHz x 2	1	-
4	8	890- 915	935 - 960	FDD	Nationwide	10 MHz x 2	2	-
5	3	1 710-1 785	1 805-1 880	FDD	Nationwide	10 MHz x 2	4	4
6	1	1 920-1 980	2 110-2 170	FDD	Nationwide	10 MHz x 2	4	-
7	7	2 500-2 570	2 620-2 690	FDD	Regional	20 MHz x 2	4	2
8	40	2 300 - 2 400		TDD	Regional	40 MHz	3	-
9	38	2 570 - 2 620		TDD	Regional	40 MHz	1	-
10	43	3 400 - 3 600		TDD	Regional	50 MHz	4	2

*Radio frequency band allocation for Next Generation Mobile System*

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CHALLENGES & PLANNED ACTIVITIES

- Illegal and unauthorized radio stations (*VSAT, BWA, wireless camera, FM, TV, MMDS etc*) are growing in country side and mining place.
- Due to financial support, national spectrum monitoring system and measurements are not developed.
- Lack of skilled human resources for Spectrum management and monitoring area.
- Due to big territory and low population density, adequate network coverage of mobile service and QoS does not comply with requirement.
- Due to high terminal cost and service tariffs, poor geographical coverage, the actual deployment rate of 4G is much slow.
- Need the spectrum regulation and licensing method for IoT/M2M.



# PLANNED ACTIVITIES



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CHALLENGES & PLANNED ACTIVITIES

- Consulting service on Spectrum Master Plan of Mongolia from ITU in 2017.
- Entry appropriate modification to the Communication and Radio wave law in 2017.
- Extend the spectrum monitoring by transportable equipment in near future.
- Establish type approval test labs for wireless sets in near future.
- Establish new pricing regime for spectrum usage of IMT in 2017.
- Establish the DRM30 and DAB+ service in 2018.



# THANK YOU FOR YOUR ATTENTION !



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