ITU International Satellite Symposium 2017

August 30- 1 September 2017

THE GOVERNMENT OF MONGOLIA
COMMUNICATIONS AND INFORMATION TECHNOLOGY AUTHORITY

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

SATELLITE COMMUNICATION IN MONGOLIA

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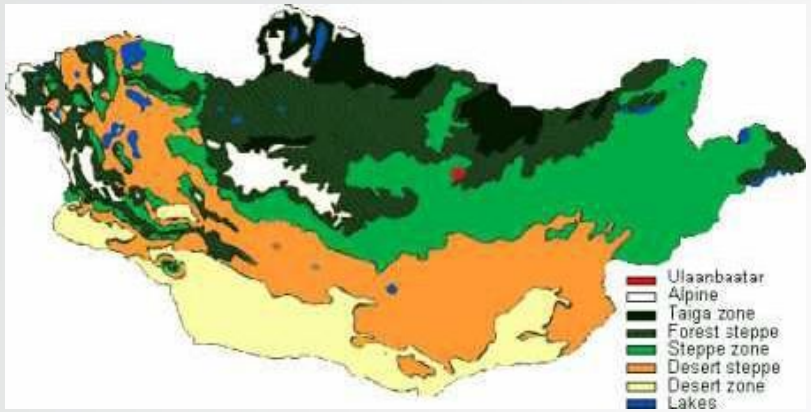
COUNTRY PROFILE





Different regions of the country differ considerably from each by structure of relief and elevation. Such geographic traits of Mongolia determine the severe nature, sharp continental climate and frequently unfavorable weather conditions.

In January 2017, the average air temperature was warmer by (1.2^{0}C) from multiyear average temperatures and warmer by (1.4^{0}C) from the same period in 2016

National facts

Area: **1.564.115.75**km2 (19th), (**603.909** sq.mi)
Population 3.0 million
Capital: Ulaanbaatar
Language: Mongolia
Type of Government: Parliamentary democracy
Government: 13 ministries, 27 agencies
Monetary unit: Togrog/tugriks (MNT)
The country has extensive natural resources, minerals, fossils fuels, forests and vast area of grassland
The major portion of these resources is untapped.
Distributed population
Still Nomadic tradition and way of naturally selected grazing of Horses, Camels, Cows, Sheep, Goats

COUNTRY PROFILE

The ICT development index is calculated based on 11 indicators grouped in 3 sub-indexes: access, use, and capacity.

Social and governance indicators	
Human development index (rank)	108/187
Ease of doing Business index (rank)	76/185
Corruption Perceptions (rank)	94/176
Press freedom index (rank)	98/179

IDI access sub-index rankings and values, 2016 and 2015

Economy	Rank 2016	IDI 2016	Rank 2015	IDI 2015
Thailand	89	5.50	92	5.24
South Africa	90	5.46	90	5.26
China	91	5.45	91	5.26
Venezuela	92	5.42	89	5.44
Palestine	93	5.35	95	5.12
Egypt	94	5.30	93	5.20
Tunisia	95	5.29	96	5.01
Mongolia	96	5.12	100	4.77
Mexico	97	5.08	99	4.82
Algeria	98	5.03	105	4.56
Cape Verde	99	5.02	97	4.89
Fiji	100	4.97	101	4.68
El Salvador	101	4.95	98	4.88
Ecuador	102	4.90	94	5.16

ICT Development Indicators

Indicators	World Average	APC Average	Mongolia		
			2010	2015	2016
Development priorities			**97**	**84**	**90**
ICT development index	**5.03**	**4.7**	**3.52**	**50**	**5.0**
ICT access sub-index	**5.53**	**5.14**	**3.98**	**4.97**	**5.12**
Fixed-telephone subscriptions per 100 inhabitants	15.19	11.9	7.1	7.92	7.92
Mobile-cellular telephone subscriptions per 100 inhabitants	96.07	90.6	92.5	105.06	105.06
International internet bandwidth per Internet user	60	28.31	62.1	87.87	87.87
Percentage of households with computer	43.63	34.1	22.3	35.76	35.76
Percentage of households whit internet access	43.94	36.3	7.7	29	29
ICT use sub-index	**3.64**	**3.28**	**0.75**	**3.2**	**3.2**
Percentage of individuals using the Internet	40.57	33.8	102	27	27
Fixed (wired)-broadband subscriptions per 100 inhabitants	10.34	8.3	2.8	6.84	6.84
Active mobile-broadband subscriptions per 100 inhabitants	37.2	29.7	7.4	57.62	57.62
ICT skills sub-index	**6.81**	**6.65**	**8.12**	**8.69**	**7.23**
Adult literacy rate	87.95	88.09	98.3	98.38	98.38
Secondary gross enrolment ratio	81.48	80.72	91.6	103.48	103.48
Tertiary gross enrolment ratio	37.21	32.62	53.8	62.27	62.27

MILESTONES

1970: Establishment of satellite earth station ”Orbit”

1971: Member of “Intersputnik” international organization for satellite communication

1979: Broadcasting USSR’s TV

1981: International gateway /8 channels UB-Moscow/

1991: TV broadcasting via Asiasat /1 channel/

1993: International Gateway /30 channels UB-Beijing/, International Gateway /8 channels UB-Tokyo/

1997: Member of “Intelsat ” international organization for satellite communication

1998: Installation first VSAT station’s

1999 : TV broadcasting via Intelsat / C band, 1channel/

2004 : DTV broadcasting via Intelsat / C band, 6 channels/

2008: DTV broadcasting via Apstar V /Ku band, 90 channels/

2012: VSAT Ku Band, iSATCOM

CURRENT REGULATORY FRAMEWORK

LAW

- **The Law on Communication (1995)**
- **The Law on Radio Wave (1999)**
- **The Law on Licensing Business Activities (2001)**

POLICY PAPERS:

- **“Mongolian National satellite project” approved by Mongolian Government (2012)**
- **“The Sustainable Development Goals (SDG) 2030” approved by Parliament of Mongolia (2016).**
- **Government Action plan 2016-2020, approved by parliament of Mongolia. 3.2.40**
- **Government ICT Policy 2025, N47, 2017**

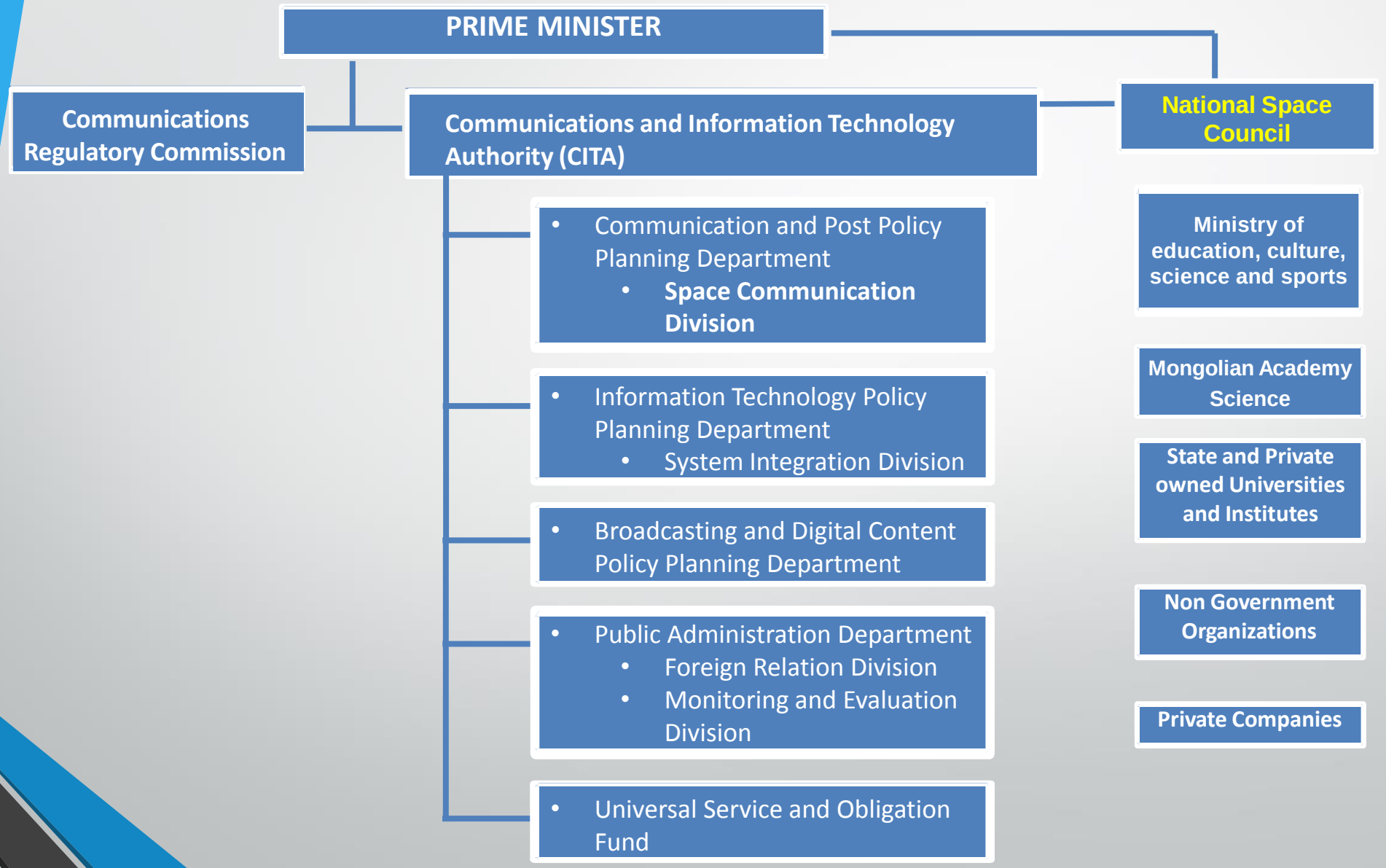
ADMINISTRATION UNIT:

COMMUNICATIONS AND INFORMATION TECHNOLOGY AUTHORITY (CITA)

REGULATOR:

COMMUNICATIONS REGULATORY COMMISION OF MONGOLIA

Space Technology-Related Organizations



Policy Papers

- **“The Sustainable Development Vision 2030” by the Mongolian Parliament. 2016**

  2.1.5 3rd stage in 2026-2030 , launch and use National Communication Satellite

- ***In Government Action Plan 2016-2020 approved by parliament***

  3.2.40 To implement National Communication Satellite Project and to establish national telecommunication network connecting terrestrial and satellite, protecting information security.

- ***Government ICT Policy 2025, N47.***

  3.3.9 launch and use National communication Satellite

“Mongolian National satellite project” approved by Mongolian Government. The project was included following activities:

1. *Improving legal environment to promote space technology development;*
2. *Developing long term strategy for space industry development,*
3. *Developing national communication satellite system,*
4. *Developing national earth observation satellite system,*
5. *Promote international cooperation for the space technology development,*
6. *Human resource development.*

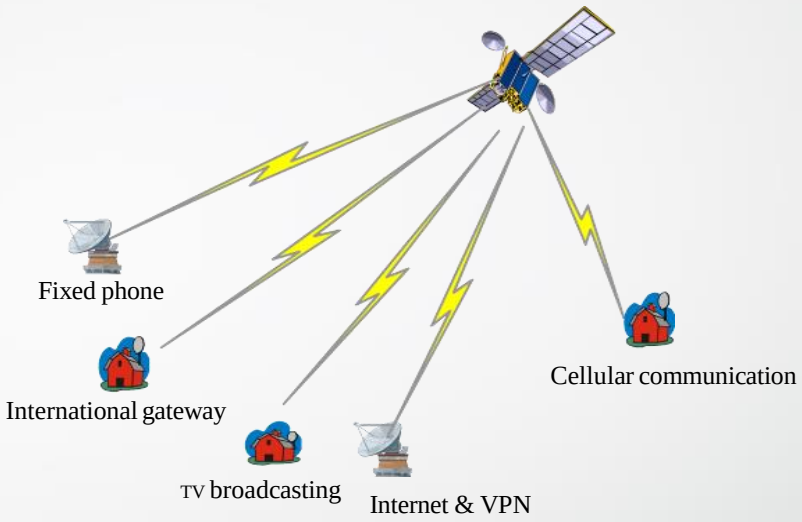
NATIONAL SATELLITE PROGRAM

The following activities have been carried out within the implementation of the current program:

- The basic survey on “Feasibility study on launching communication and remote sensing satellite” was conducted in 2011-2012, which defined current situation and future needs and requirements for remote sensing and communications satellite, possible options and related cost estimation for Mongolia to launch a satellite individually or jointly.
- ITPTA has conducted a satellite technology research, which meets needs and requirements of Mongolia and introduced stakeholders which expressed interest of cooperating in this area to the National Security Council and the Government of Mongolia.
- ITPTA has been submitted the request to orbital position for Mongolian national satellite to ITU.
- As a part of building capacities of domestic universities to prepare national specialists, the preparatory works have started to introduce a master degree program on Satellite communications in 2016 at the School of Information and Communications Technology (SICT) of the Mongolian University of Science and Technology (MUST) and a master degree program on Space engineering at the School of Applied Sciences and Engineering of the National University of Mongolia (NUM).
- As a part of the program to support universities and academic research institutions to develop small research satellite, the national competition to design and launch “CANSAT” satellite has been organized in the last three years. It’s planned to cooperate with APSCO and organize this competition at the international level.

Existing Satellite Services

1.Fixed phone service
2.International gateway
3.TV broadcasting
4.Satellite broadband Internet & VPN
5.Cellular communication
6.Iridium – satellite mobile communication
7.GNSS – satellite positioning equipment



Bandwidth of current communications satellites in use in Mongolia is 400.1 MHz.

Satellites being used:

- Intelsat 906 (C)
- Intelsat 20 – (Ku)
- Apstar 5 – (Ku)

Current users of Satellite technology

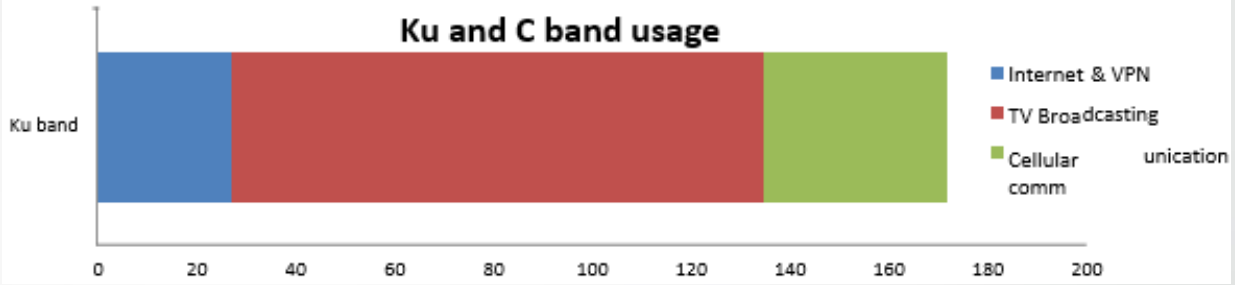
- Government agencies:
  - Mongolian Civil Aviation Agency (MCAA)
  - National Emergency Management Authority (NEMA)
  - National Remote Sensing Center, National Agency of Meteorology, Hydrology and Environmental Monitoring (NAMHEM)
  - National Emergency Management Authority (NEMA)
- Fixed communications carriers:
  - Mongolian Telecommunication Company (MTC),
  - Mongolia NetCom and Naran earth station
  - Mongolia Railway Company
- Mobile (cellular) communications carriers:
  - Mobicom, Skytel, Unitel, G-mobile
- Broadcasting company:
  - DDish
- Satellite network companies:
  - ISATCOM, Orbitnet

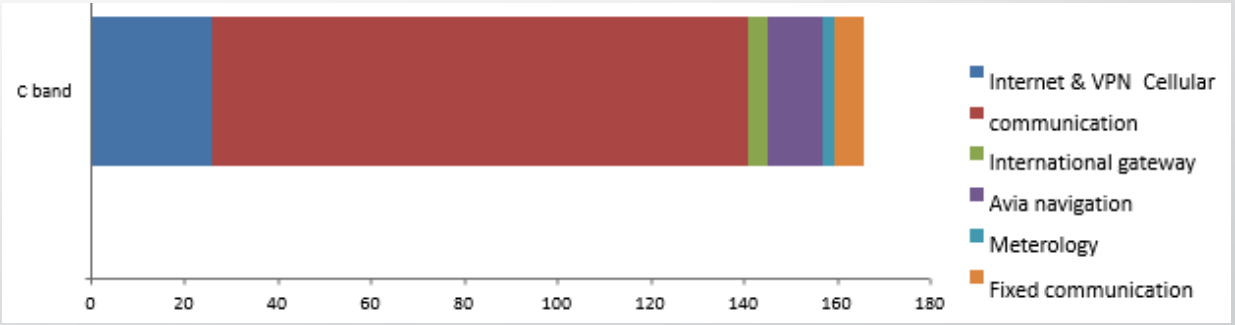
Existing Satellite Services

- Currently in Mongolia, three (3) satellites are being used for satellite communications:
  - INTELSAT 906 (@64 E) in the C-band, and
  - APSTAR 5 (@138 E) in the Ku-band and C-band.
  - Intelsat 20 – (Ku)
- With the exception of one user who uses APSTAR in C-band, all other users employ the Ku-band.
- A number of Mongolian organizations and company are currently using these foreign communications satellites for various purposes.

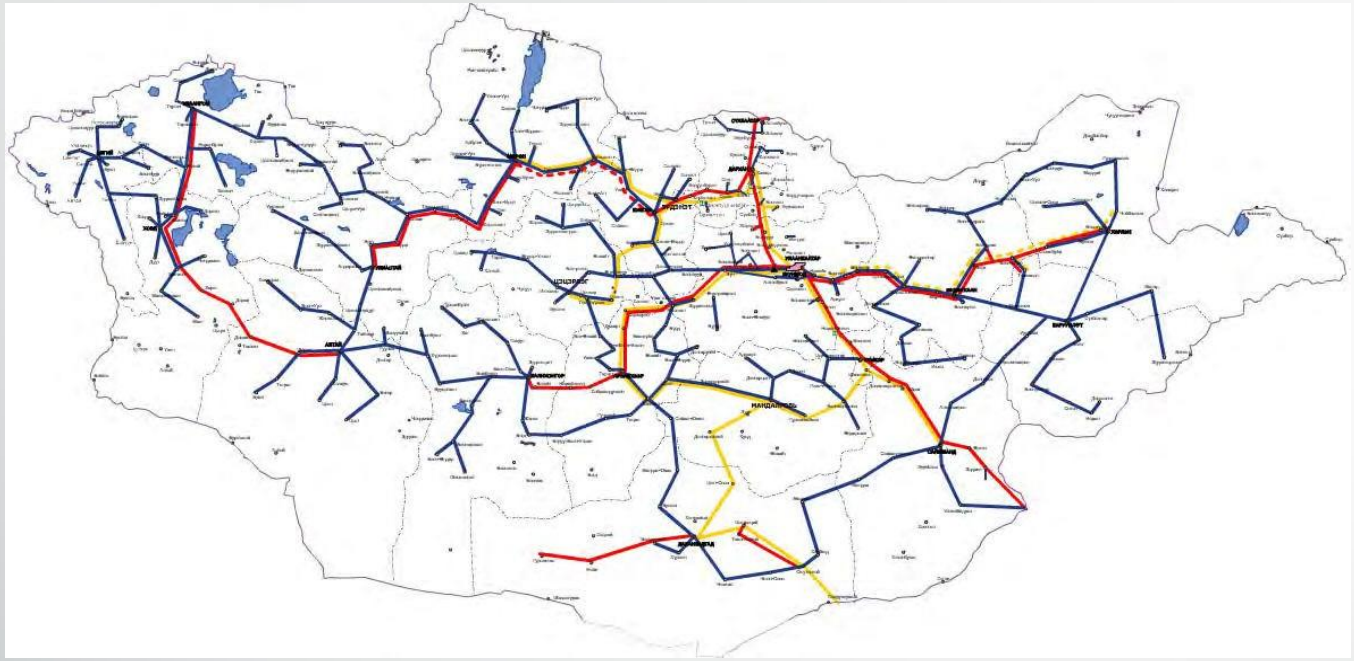
Ku and C Band Usage

- VSAT networks;
- Broadcasting Direct To Home (DTH);
- Disaster relief and emergency communications;
- Back haul for terrestrial mobile networks;
- High capacity internet;
- Distance education;
- Distance medicine;
- Governmental communications etc.,

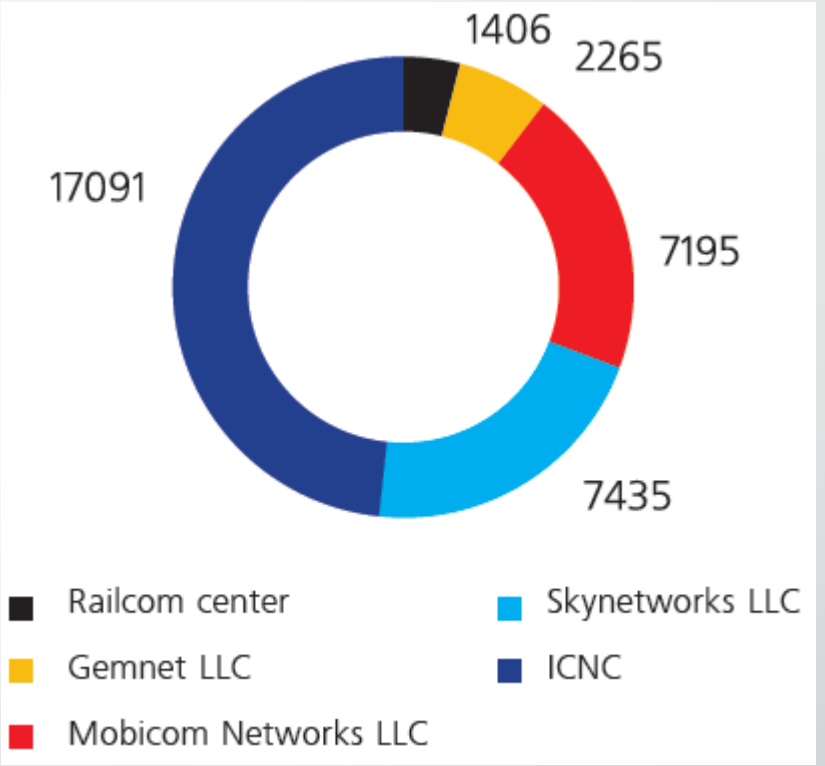




Mongolian Backbone Network

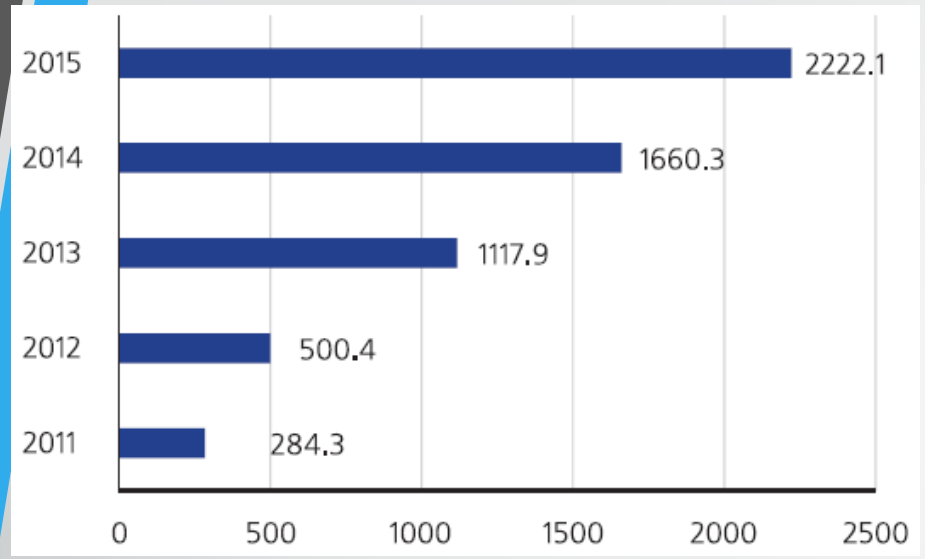


Currently, the total length of fiber optic network in Mongolia is 35,362 km.

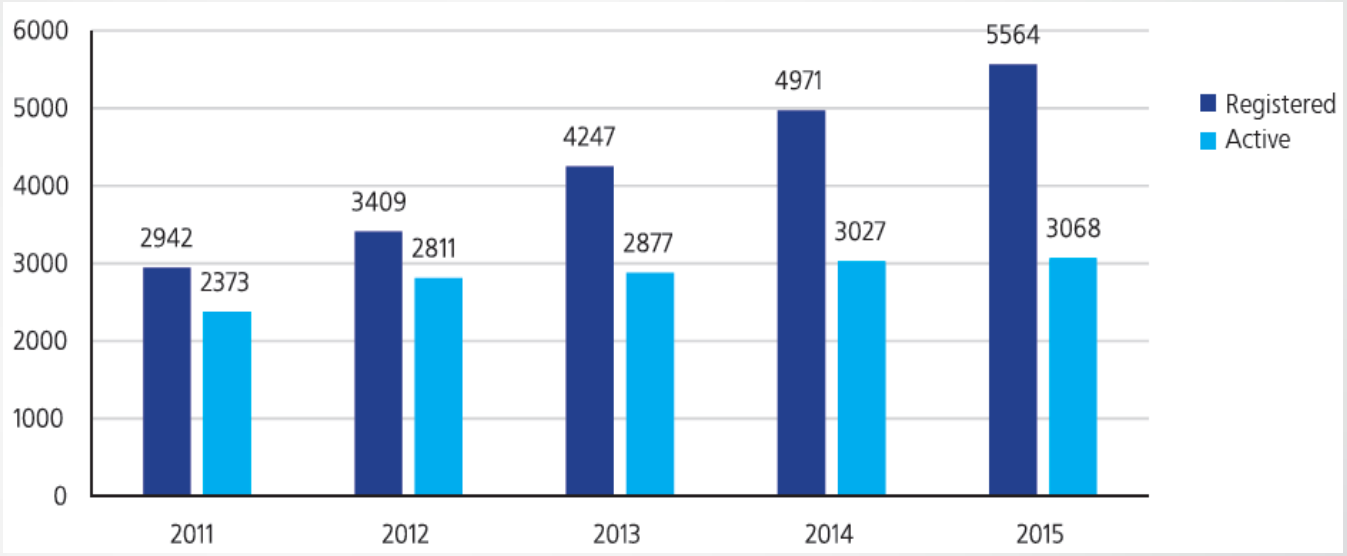


Province center speed: 2.5 Gbit/s
Soum center speed: 155 Mbit/s

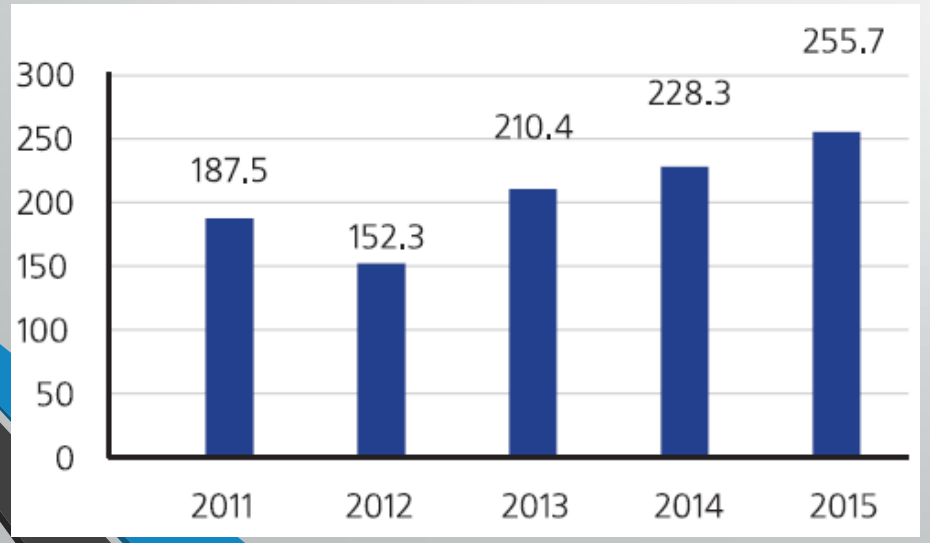
Market share of Fixed and Mobile Subscribers



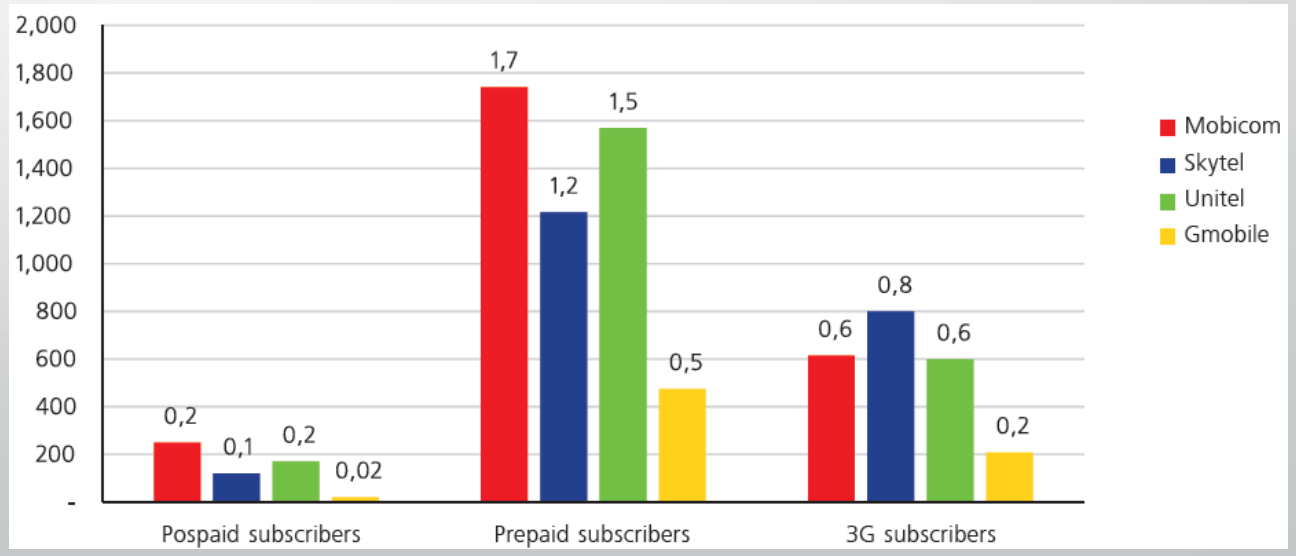
Number of 3G Subscribers, Thousands



Number of Mobile Subscribers, Thousands



Number of Fixed Phone Subscribers, Thousands

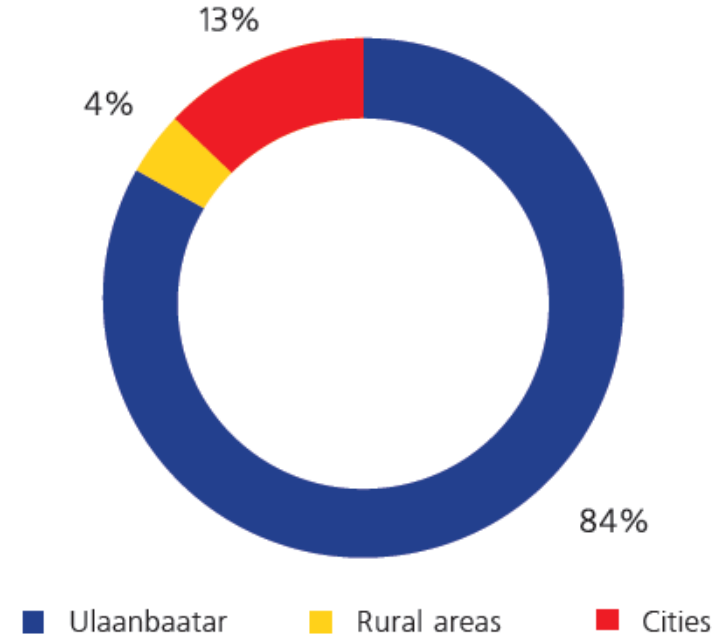


Number of Subscribers by mobile operators, millions

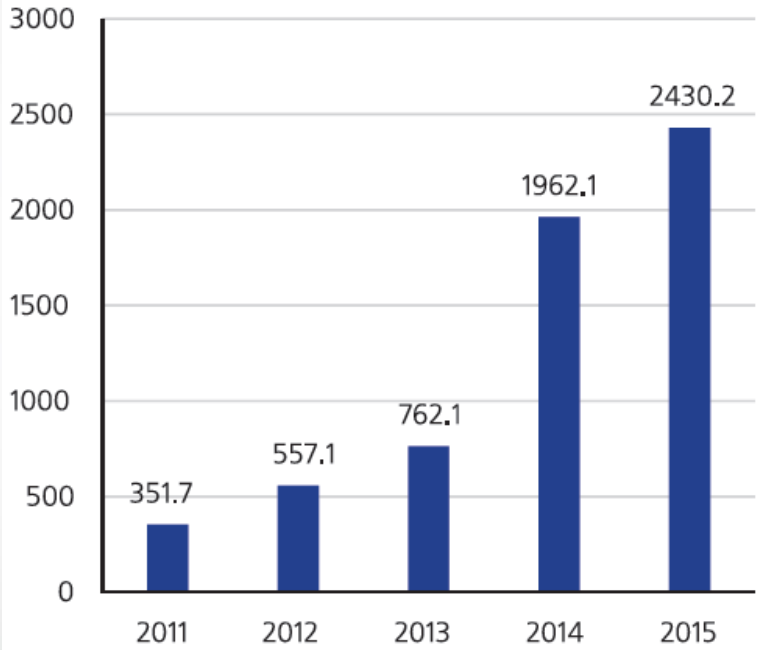
Number of Internet Subscribers

There are 66 companies, which are licensed to provide Internet services in Mongolia. The current total number of Internet users is 2.4 millions.

The average Internet service connectivity speed is more than 2Mbps in Ulaanbaatar, Darkhan and Erdenet cities, and between 300Kbps-2Mbps in other areas.



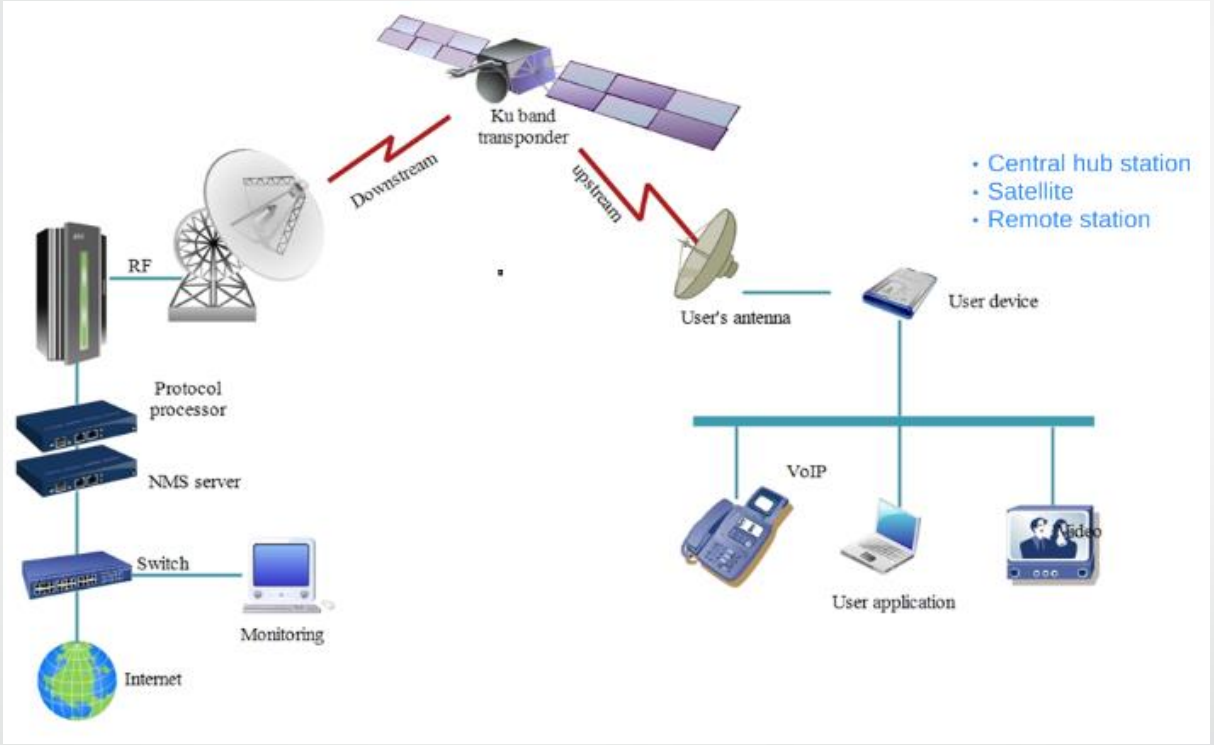
Location of Internet users, percentage



Year	xDSL	Fiber optic	3G	Wi–Fi	Wi–MAX	Other
2012	36.7	65.2	520	5.3	24.6	2.2
2013	40.7	107.9	655.1	10.4	24.3	2.7
2014	29.2	168	1734.4	11.7	16.3	2.4
2015	24.1	157.2	2222.1	16.4	10.3	0.002

Number of Internet Subscribers, thousands

VSAT System for Broadband Service in Soum



Connected schema, high speed internet and telephone service to Administration, Hospital, Kinder Garden, School and Public of Soum

Conclusion

- Lack of terrestrial backbone network in North-western and South-Eastern Part of Mongolia due to geographical condition. Satellite plays an important role in connecting Mongolia and serving the unserved areas.
    - Expanding business with other satellite service providers.
    - Starting to use Ka band service
- Implementing National Satellite Project
    - Both private and public sectors in Mongolia already have sufficient experiences in using satellites for many years.
    - ITU's Planned Orbital Positions for Mongolia **FSS-113.6°E**, BSS-74°E

  Mongolia has not utilized orbits allotted for satellite launching.
    - At planned orbital position **FSS-113.6°E** to study and continue coordination procedure.

  Challenges
    - Human resource and experience is insufficient to do satellite RF coordination
    - To prepare National Satellite market

Thank you for your attention