

Nepal Telecommunications Authority (NTA)

Ten Year Master Plan (2011 – 2020 A.D.)

For The Development of

Telecommunications Sector in Nepal

July 2010

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Chapter 1 - Preface

1.1. Formation and Working of the Committee

As per its decision of B.S. 2066/12/10 (corresponding to 23rd March 2010), Nepal Telecommunications Authority (NTA) constituted a Task Force to formulate Ten Year Master Plan for the Development of Telecommunications Sector in Nepal. The Task Force consisted of following members:

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|----|--|------------------|
| 1. | Mr. Ram Prasad Sharma, Telecommunications expert | Convener |
| 2. | Mr. Mahesh Prasad Adhikari, Member, NTA | Member |
| 3. | Mr. Balaram Pradhananga, Member, NTA | Member |
| 4. | Mr. Ananda Raj Khanal, Director, NTA | Member |
| 5. | Mr. Kabindra Shrestha, Deputy Director, NTA | Member-Secretary |

The Master Plan has to include: (a) long term vision (b) Objectives (c) Strategy (d) Working Policy (e) Major Program (f) Priorities and (g) Targeted achievements taking into consideration *inter alia* the provisions of the Telecommunications Act 2053, Telecommunications Policy 2060 of the Government of Nepal, the international practices followed in the Telecommunications/ICT sector.

1.2. Looking Back

NTA, established in March 1998, has since been working according to mandate and guidelines set up by Act/Regulations on Telecommunications and government policies. It has now felt it necessary to draft a Ten Year Master Plan in order to allow it to move forward with a clearer vision especially in view of rapidly changing national and international scenario in Telecommunications Sector. In this context, it is only logical to have a brief look of what the sectorial scenario was like in 1998 and earlier, and what progress has been made since then.

The public telecommunications services were introduced in the country with the commissioning of a 100 lines manual magneto telephone exchange and a few world war II surplus wireless sets in the year 1952 A.D. and a single pair Open Wire Trunk line

from Kathmandu which existed since 1936 A.D and covered partially eastern part of Nepal. Meaningful efforts in providing telephone services to a wider section of population took place only after the formation of Department of Telecommunications which was later converted into a Government Board, and eventually, into a Corporation (NTC) in the year June 1975. While one could be tempted to credit either NTC or NTA singly or jointly for the achievements made in the sector thus far, it may be worth remembering that the sectorial developments in the country were in many ways influenced by the developments taking place all over the world. Findings of the Maitland Commission Report of 1985, '*The Missing Link*', Declaration of Millennium Development Goals (MDGs) by United Nations (UN) setting up the targets needed to be achieved in the next 15 years, commitments of the Government of Nepal (GoN) to World Trade Organization (WTO) on liberalizing telecommunication sector and finally the World Summit on Information Society (WSIS) which identified the action plan for utilizing the Information and Communication Technology (ICT) tools to achieve the MDGs, have guided the development of telecommunications sector in Nepal also.

It is worth remembering that in the year 1998, when NTA was established, the best efforts of the Incumbent Service Provider (Government monopoly), was only enough to provide barest of the telecommunications services to a very limited population. Basic telephone services were available only to 2,000 of the 3,915 Village Development Committees (VDCs) in the country, with the national telephone density hardly reaching 2.0%. The tele-density rose to 2.9% in 2005 A.D. Interestingly, the national per capita income at the time was USD 341¹. As of April 2010, the aggregate tele-density has reached 28.5%. The wireless telephone services have made encouraging contribution in raising the tele-density, aided by rise in per capita income which has reached the figure of approx. USD 451.94².

The Telecommunications Act 1993 (Act), and Telecommunications Policy 2004 (Policy) have together defined the roadmap for the NTA. As such, neither the NTA nor the Ministry of Information & Communications (MoIC) could be expected to move any

¹ <http://data.un.org/CountryProfile.aspx?crName=Nepal>

² <http://www.economywatch.com/economic-statistics/country/Nepal/>

differently from the provisions of prevailing laws of Nepal. All the same, above two documents form the most important tools of the Nepalese law pertaining to telecommunications services. But, having been the guiding document for telecom development in the country for over a decade, it has now become necessary to review whether provisions made in the Act are still adequate to meet the challenges and opportunities created by rapidly developing Information & Communications Technology (ICT).

Chapter 2 - Overview of Policy, Legal and Regulatory Framework for the Telecommunications sector

The government of Nepal has formulated a number of policies for the regularization and development of Telecommunications sector in different times. The following policies, formulated by the government, are relevant for the telecommunications sector:

- Communications Policy, 2049 B.S. (1992 A.D.)
- Telecommunications Policy, 2056 B.S. (1999 A.D.)
- Long Term Vision of Communications Sector, 2059 B.S. (2002 A.D.)
- Telecommunications Policy, 2060 B.S. (2004 A.D.)

The Communications Policy 1992 A.D. liberalized telecommunications sector allowing the private sector investment in it. For the first time, the Ministry of Information and Communications authorized three companies from the private sector as Internet Service Providers to provide Internet and E-mail services to the public. Telecommunications Act enforced in 1997 in line with the policy liberalization, created an independent telecom regulator known as Nepal Telecommunications Authority (NTA).

Telecommunications Regulations, 1997 (A.D.) came into effect the same year. It vested regulatory authority and assigned functional responsibilities to Nepal Telecommunications Authority, established in the year 1998.

The Government of Nepal adopted Telecommunications Policy in 1999 (A.D.) for implementing its commitment to a structural reform in the telecommunications sector. In line with the Policy one private sector operator was brought in for Wireless in Local Loop (WLL) based basic telephone service and another for Global System for Mobile Communications (GSM) based cellular mobile technology. Value-added telecommunications services (VAS) were also opened for licensed operators. VAS includes internet with e-mail, voice mail, fax mail services, VSAT network provider, trunk mobile and Global Mobile Personal Communication System (GMPCS).

The government of Nepal formulated Long Term Vision for Communications Sector in 2059 B.S. (2002 A.D.). This vision document declared that a new Telecommunications Policy would be formulated by 2004 (A.D.). Accordingly, new Telecommunications Policy (Policy) was formulated same year. The main focus of Policy is on complete liberalization of the telecommunications sector and adoption of technology neutral approach. It opens entry to all the

qualified person and organizations who want to develop and operate telecommunications service(s). However, scarcity of resources like frequency spectrum and numbering plan allows only prequalified operators to bid for utilization of these resources. The policy also emphasizes equal right of way, an open licensing regime, ensuring universal service access in urban areas, making use of shared telephones in rural areas, and enabling the service users to utilize Information and Communications technology (ICT). It also paved the way for the commercialization of the incumbent monopoly viz. Nepal Telecommunications Corporation (NTC) which now works as a joint venture (Government /Private Investors) Company (NDCL). But the Policy has not yet been implemented fully as the Act and Regulations have not been amended to reflect the spirit of the new Policy.

Complete separation of functions viz. policy making, regulation and operation is yet to be achieved, with the Government's continuing involvement in the operation of state owned telecom operator NDCL by way of Secretary of MOIC assuming its chairmanship. This is said to have resulted in uneven playing field for other operators engaged in telecom development.

2.1. Telecommunications Act, 1997 A.D. – Functions, Duties and Powers of NTA

The Telecommunications Act, 1997 A.D. enumerates the functions and duties as well as powers of NTA as an independent telecom regulator. Such provisions of the Act are legally binding for NTA. Additionally, there are sectorial objectives set through telecom policies, annual policies and development plans (5 years, 3 years etc.) formulated by the government. They also serve as guidelines for NTA. MOIC also issued in 2008 AD, a ministerial level policy-directives for the communications sector which dealt with telecom sector as well.

The preamble of the Telecommunications Act, 1997 A.D. sets three important objectives for promulgation of Telecommunications Act, 1997 A.D. They are:

- To make the Telecommunications services reliable and easily available to the public.
- To involve private sector also in the operation & development of Telecommunications services.
- To regularize and systematize such services;

Summarized below are some of the major functions and duties assigned to NTA by the Act:

- To provide suggestions to the Government on policy, plan and program to be adopted for the development, regulation and operation of telecom services.
- To make telecom services reliable and easily available to the public.
- To involve the national and foreign private sector investors in the development and operation of the Telecom Services.
- To ensure coordination and healthy competition among the operators
- To prescribe, fix and approve standard and quality of plants, services and equipment relating to telecom services.
- To regularize and systematize telecom services
- To grant Licenses to operate telecom services
- To approve and regularize tariff for telecom services
- To discharge functions relating to frequency management in accordance with the policy determined by the Radio Frequency Policy Determination Committee.
- To be instrumental in protecting the rights and interests of the consumers.

Additionally, the Act has also vested the NTA with powers to determine Quality of Services, issue orders or directives to the licensees and settle disputes. NTA has also been authorized to inspect and make investigations in the Licensees' premises, impose fines & punishments for violation of the provisions of the Act, prepare and issue guidelines for operating services.

2.2. Telecommunications Policy, 2004 A.D. and Major Provisions in the Policy

The Telecommunications Policy 2004 (hereafter called "Policy"), which superseded the Telecommunications Policy 1999, accepts the telecommunications service as the basic pre-requisite to all developmental activities. The policy goal is to create favorable environment for making telecommunications service reliable and accessible to all people at a reasonable cost throughout the country in collaboration with the private sector. It has reiterated the Government's

commitment to maintain full competition by promoting private sector participation in this sector since 2004. The strategies and working policies designed to attain the policy goal are briefly described below.

Salient features of the Policy

Main objective: Provide reliable and accessible telecom service(s) at a reasonable cost in collaboration with the private sector

Strategies	Working policies
(a) Provide universal access to telecom service(s).	<ul style="list-style-type: none"> • Existing service providers to extend service without subsidies. • Improve rural telecom service(s) through the operation of rural telecommunications fund. • Establish shared telecom mechanism.
(b) Setup universal service obligation system.	<ul style="list-style-type: none"> • Telecom service(s) shall be provided in the urban areas on demand and within shouting distance even in the sparsely inhabited areas. • Incumbent to provide service to all customers on order in urban areas. • Dominant service provider to provide service(s) to other service providers on order in a timely manner.
(c) Develop corporate services.	<ul style="list-style-type: none"> • Dominant service provider to provide broadband services, and use of advanced technology including corporate telecommunication service.
(d) Liberalize telecom sector	<ul style="list-style-type: none"> • Follow open licensing practice consisting of standard licensing and individual licensing. • Charge license fees/Spectrum fees only to cover the administrative expenses. • Issue separate licenses for the scarce resources as radio frequency

	<p>spectrum, numbering capacity and right of way.</p> <ul style="list-style-type: none"> • Follow adoption of the principle of Technology Neutrality. • Issue licenses to existing licensees to enter into open licensing regime. • Establish transparent licensing procedures and healthy competition.
<p>(e) Make economic efficiency of telecommunications sector effective.</p>	<ul style="list-style-type: none"> • Incorporate immediately competition related provisions in the Telecommunications Act pending enactment of a specific legislation. • Establish a mechanism that discourages anti-competitive and unfair practices such as cross subsidy by dominant service provider(s), fixing price to cause loss to other competitors and to abuse and withhold useful information to other competitors.

2.3. Policy-directives issued by MOIC

Although the Policy was adopted by the government, efforts at implementing them in the form of amendments in the Act and Regulations have not yet materialized. So to implement such provisions which would not require any amendments in the Act, the MOIC issued a series of directives for immediate implementation with the slogan of “Haat haat ma mobile, ghar ghar ma internet” meaning “Mobile in every hand, Internet at every home.” Among other things, this directive intended to ensure that all the Village Development Committees (VDCs) should have 2 Public Call Offices (PCOs) by the end of Year 2065 (Mid-April 2009 A.D.) and appropriately motivate operators to provide telecom services in the rural and remote areas of the country. It also directed NTA to open Rural Telecommunications Services (RTS) sector for licensing. This has resulted in awarding licenses to Nepal Satellite Telecommunications Pvt. Ltd. (NSTPL) and Smart Telecom Pvt. Ltd. (Smart Tel) for providing telecom services in the rural areas of Nepal. The policy has also emphasized the use of existing optical, microwave and satellite links for the purpose of providing access of ICT services to the people in the rural and remote areas of the

country. It also declared that a special program would be implemented to establish alternate information highway. Policy has directed to establish multipurpose tele-centers to provide video-conferencing, distance education, telemedicine, e-governance and e-banking and has also emphasized on formulation and design of plan of action to establish necessary infrastructure required for the same. Stakeholder coordination was also emphasized.

2.4. Nepal's Commitments to General Agreement on Trade in Services (GATS)³

Several commitments on telecom sector liberalization have been made by Nepal to the World Trade Organization (WTO)/General Agreement on Trade in Services (GATS). The status of such commitments pertaining to telecom sector is such that some of them have been implemented and others are in various stages of implementation. It is been briefly examined here.

Most Favored Nation (MFN) obligation, which bars discrimination between and among similar service(s) & suppliers of other WTO members, does not seem to be violated. Likewise, Nepal is found to be largely compliant of the other obligation of not discriminating telecom companies of other countries against providing more favorable conditions compared to its own companies. Section 33 of the Act provides, *inter alia*, for the devolution, upon the expiration of the term of license, of infrastructures and properties relating to telecommunications service in which more than fifty percent of the total capital investment is owned by foreign person or body, seems to be non-compliant with the commitments made. This provision applies to all telecom services in Nepal. Nepalese legislation limits foreign equity participation to a maximum of 80 percent. In view of this, provision of Section 33 seems to be discriminatory between Nepalese and Foreign Service providers. Thus, in order to be GATS Compliant, this section needs to be revised.

On the question of whether any limitation on the number of licenses has ceased to exist since January 2009, Policy has provided for open licensing system, consisting of

³ T. Bhatta, D.R. Ghimire, K.P. Neupane, A Study on Implementation of WTO GATS Commitments on Telecommunications Service sector in Nepal, May 2009, NTA Reports

Standard and Individual licenses. However, a separate authorization requirement has been proposed in the policy for the use of scarce resources like radio spectrum, numbering and right of way. By 2004, two mobile operators had been licensed in compliance with the commitment. Both operators are permitted to operate mobile telecommunications services in CDMA and GSM mode. Moreover, with the Policy, the Nepalese telecom sector has moved to concept of technology neutrality. Service providers may choose any telecommunications technology. Thus Nepal has largely met this obligation. But, this policy provision needs to be translated into law. In other words, the existing telecommunications legislation should be revised to take into account these considerations, as appropriate.

The other provision in the legislation which can be interpreted as WTO non-compliant is Section 22 of the Act, which prohibits, as a rule, the issuance of another license for the operation of the same telecommunications service within five years of the issuance of a license for that service.

Chapter 3 - Methodology

In order to conclude the task assigned to it in a manner that would not only incorporate the expectations and aspirations of all, but also be in line with the international practices as stated in its Terms of Reference, the Committee took a multi-pronged approach. It comprised of (a) Study of available literature, (b) Obtaining input from Experts, Officials, User Groups, Consumers Interest Groups and other stakeholders.

3.1. Literature Review

As the Committee had been entrusted with formulating the Vision/Mission Statements, and thus to prepare the Ten Year Master Plan (TYMP), it attempted to study several documents prepared for NTA that had recommended Vision/Mission Statements as well as action plans for NTA.

Committee carried out extensive internet research to find the relevant documents that would help preparation of the Report. While documents were found for many countries that had one or the other of the components, e.g. in the form of Strategic Plans for specified period, it was possible to find a Master Plan for only one country, Thailand. Both of their Master Plans, for the periods of 1997 – 2006 and for 2008 – 2010 were available. The first document was prepared for the Ministry of Transport & Communications and the second document was prepared for the National Telecommunications Commission (NTC), the telecom regulator of Thailand, and as provided for by the law of that country.

3.2. Collection of Inputs

Committee sought suggestions and opinions from a wide range of people and organizations who are recognized for their contributions in telecommunications sector in Nepal including the officers of the telecommunications Operators, Association of Operators like the Internet Service Providers' Association of Nepal (ISPAN) and others.

Chapter 4 – Emerging trends in telecommunications sector

A brief overview of the developments taking place in this sector was carried out to take stock of the emerging trends, and for this purpose, levels of penetration as regards to telephone service and Internet/broadband services of the developing countries as a whole have been summarized. Likewise, the state of those services in the Asia Pacific Region has been outlined, with the intention that these could provide inputs to Nepal: inputs assuring continuation of direction taken, or indicating that a different course of action needs to be taken.

It has been indicated by Deloitte⁴ in its report ‘Global Mobile Tax Review 2006-2007’ estimates that with every 10% increase in mobile penetration, the GDP growth increases by 1.2%. This proven fact makes it all the more necessary why poor and underdeveloped countries like Nepal need to work much harder for the development of telecom sector.

4.1. Modern Telecommunication and Regulatory Environment Development Trend

Up until the recent past, the terminology ‘telecom service’ used to convey the sense of telephone conversation. It gradually started meaning other services including telephone, while in present day context, it has been used synonymously as ‘Information and Communication Technology (ICTs)’ with the obvious connotations to e-governance, tele medicine, distance education and all other e-applications that could be beneficial for improving the quality of life of the general population, ICTs have been developing very rapidly worldwide and its utilization increasing with the time. ICTs have continued to spread throughout the world. Technological applications which were considered impossible ten years ago have since been deployed and are in wide use. The creation of ICT regulators has been one of the main building blocks of regulatory reform worldwide. Regulators have played a leading role in creating an enabling environment fostering innovation and investment. Hence, the developing countries such as Thailand, India, Bangladesh, including Nepal have liberalized their telecommunications market to foster economic development.

⁴ <http://www.telecomcircle.com/2009/01/impact-of-mobility-on-economic-growth-in-developing-countries/>

In the developing world taken together, introduction and utilization of mobile telephones have dramatically improved access to telecommunication services resulting in aggregate tele-density of 49.5%⁵ at the end of 2008 – from close to zero only ten years ago. In Nepal, mobile telephone penetration has reached almost 25%⁶ in the beginning of 2010. Mobile telecommunication rollout is not only faster than any other traditional technology, but the mobile phone is also most widespread ICT equipment today. The number of Internet users, on the other hand, has grown at a much slower rate, particularly in the developing world, where at the end of 2007 only 13 out of 100 inhabitants used the Internet. Fixed Internet access in developing countries is still limited and is often slow and/or expensive. Broadband connections are quite limited and mobile broadband, while increasing steeply in high-income countries, is still insignificant in most of the developing countries. In such high-income countries, access to the Internet via mobile cellular networks has grown rapidly with the increasing availability of IMT-2000/3G networks and enabled devices, including mobile handsets and data cards that allow users to access the Internet over the mobile cellular network using their computers. Internet access speeds are also increasing, with fixed broadband replacing dial-up in most developed countries, accompanied by a decline in tariffs⁷.

In light of such developments, one may question if the global digital divide is widening instead of narrowing and try to find the contributing factors for such a state of affairs. By analyzing the progress made by individual countries to narrow the digital divide, Nepal can learn from their successes and try to incorporate such initiatives while preparing the ten years master plan for the telecommunication sector.

Telecommunications Sector is different compared to other sectors. The telecommunications play dual role in business.

- Telecommunications as a business itself
- Telecommunications as a business environment enabler which acts as a catalyst in the development of other sectors.

⁵ ITU's publication

⁶ NTA Management Information System, May 2010

⁷ Measuring the Information Society – The ICT Development Index

Irrespective of the technology, these two roles will be continuously played by the telecommunications sector. Hence, to develop the country master plan should be able to incorporate this dual role.

Being late starters in telecommunications, developing countries have an advantage of being able to select advanced and proven technologies suitable to their needs.. Hence, it is better to carry out comparative study of developed countries to find the variables which will boost telecom expansion in the country. While it has been demonstrated that increase in tele-density has positive effect in raising GDP, one⁸ of the studies made while drafting “Vision 2020 India” has also suggested that tele-density in the country has higher correlation with income distribution among the consumers rather than with per capita income.

Nepal, in comparison to other countries has not been able to increase telecommunication penetration rapidly. This might be due to various factors such as government stability, slower rate of GDP growth, Income distribution, etc.

As the number of regulators globally is growing, so are their powers and their roles. Traditionally, regulators have been primarily in charge of ex ante regulation, regulating access to the telecommunication market through licensing, assigning spectrum and other scarce resources, dealing with interconnection issues and contributing to universal access support programmes. Today, however, regulators face increasing expectations. Recently, the focus has shifted toward creating an enabling environment for investment, fostering market growth and ensuring effective digital inclusion for all.⁹

4.2. Global Context of ICT development - ITU¹⁰

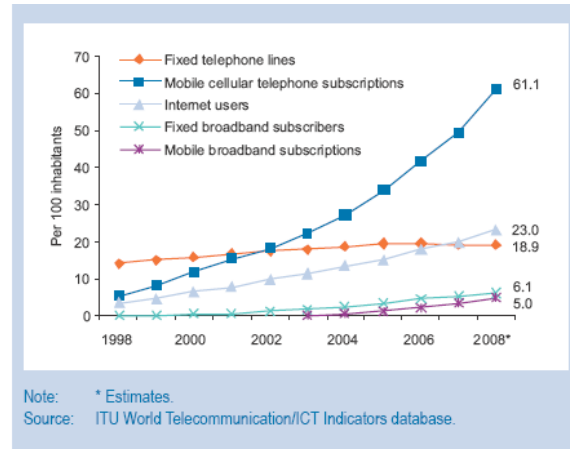
Continuous monitoring of ICT trends and developments is crucial to policy makers, ICT service providers and market analysts. Given the potential impact of ICT use on social and economic development, countries strive towards making the benefits of ICT available to all people. But

⁸ Bhattacharya, Manas, Telecom Sector in India: Vision 2020, Background Paper submitted to the committee on India: Vision 2020,

⁹ Trends in Telecommunication Reform 2009: Hands-on or hands-off? Stimulating growth through effective ICT regulation

¹⁰ http://www.itu.int/newsroom/press_releases/2009/07.html

evidence-based policy making requires measurable facts and comparable indicators. Comparing individual countries' ICT achievements with those of others is an important benchmark to assess regional and global competitiveness and provides incentives to deploy policies that enhance ICT development at the national level.



ITU estimates that by the end of 2008 A.D. the world had 1.3 billion fixed telephone lines – or 19 per 100 inhabitants – and that almost a quarter of the world's 6.7 billion people were using the Internet. However, fixed and mobile broadband penetration levels remained relatively low and stood at 6 and 5 per cent respectively. Despite high growth rates, record numbers, and all high penetration rates, major differences in ICT levels between regions and between developed and developing economies remain.

There has been a clear shift from fixed to mobile cellular telephony, especially since the turn of the century. By the end of 2008, there were over three times more mobile cellular subscriptions than fixed telephone lines. In contrast to the growth in the mobile sector, fixed telephony has experienced almost no growth in the last decade. Indeed, fixed line global penetration has been stagnating. While the number of fixed telephone lines is actually decreasing in many developed countries, it tends to show very small growth rates in developing countries, including Nepal.

ITU's new ICT Development Index (IDI) compares developments in information and communication technologies (ICT) in 154 countries over a five-year period from 2002 to 2007. The Index combines 11 indicators into a single measure that can be used as a benchmarking tool globally, regionally and at the country level. These are related to ICT access, use and skills, such as households with a computer, the number of Internet users and literacy levels.

The countries most advanced in ICT are from Northern Europe. The exception is the Republic of Korea. Sweden tops the new ICT Development Index, followed by the Republic of Korea, Denmark, the Netherlands, Iceland and Norway. They are followed by other, mainly high-income countries from Europe, Asia and North America. Western & Northern Europe and North America are the regions with the highest IDI scores, and most countries from these regions are among the top twenty ICT economies. Less developed countries, in particular the least developed

countries remain at the lower end of the index with limited access to ICT infrastructure, including fixed and mobile telephony, Internet and broadband.

Eastern Europe not only features high relative growth but also has one of the highest IDI value gains and can thus be considered as the most dynamic region on ICT developments during this time period. Countries that were driving this process include the Baltic States and Romania. Other economies that have significantly improved their ICT levels are Luxembourg, the United Arab Emirates, Ireland, Macao (China), Japan, Italy and France.

Globally speaking, most progress has been made on ICT access, which includes Internet bandwidth, fixed and mobile telephony, and households with computers and Internet. In terms of ICT use, which includes the number of Internet users, fixed and mobile broadband, progress has been much slower. In particular broadband, a more recent technology, still has to take off in many countries.

Countries with low ICT levels (and hence low Index ranks) are primarily from the developing world. Given the close relationship between ICT level and GDP, many of the least developed countries, in particular from Africa, rank further down in the IDI, with little change in ranking since 2002. While Nepal has also made strides in the development and use of ICT, its performance has been much lower compared to others; From a position of 133 in 2002 A.D., Nepal has gone down to 139 in 2008 A.D.

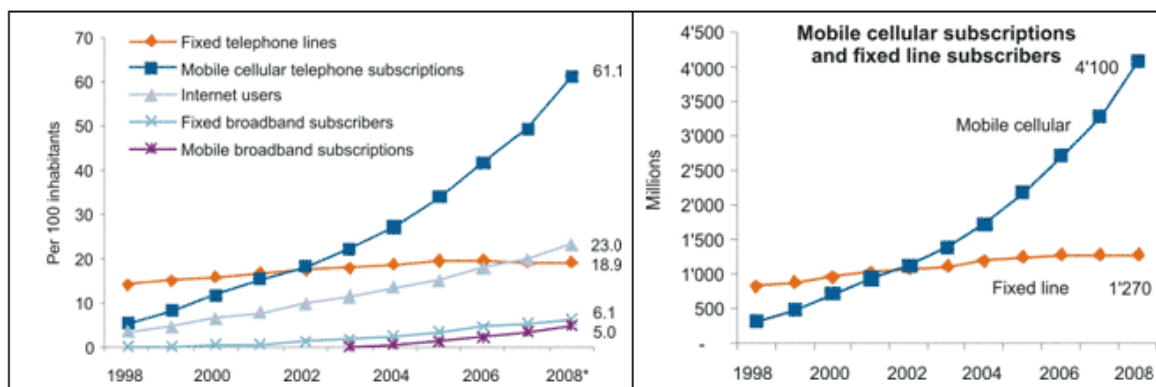
Some developing countries, though, have moved up considerably in the Index over the five-year period, including Pakistan, Saudi Arabia, China and Viet Nam. This is partly due to high mobile cellular mobile phone growth, coupled with an increase in Internet users. China (Rank 73 in 2007 up from 90 in 2002), has made significant progress in increasing the number of fixed telephone lines and mobile subscriptions as well as fixed broadband during the past few years.

Both developed and developing countries have increased their ICT levels by more than 30 per cent over the five-year period, but developing countries are still lagging behind on ICT access and usage. A comparison of ICT levels and GNI per capita (at purchasing power parity) shows a strong link between income and ICT uptake, with some interesting exceptions. Several of the top ICT countries have higher ICT levels than expected given their income levels. For example, the Republic of Korea is outstanding with much higher-than-expected ICT levels. This illustrates how a strong and targeted ICT policy can drive the development of the information society in countries with relatively lower income levels.

Developed countries have much higher levels of ICT use and intensity of use. The developing countries have also made improvements in ICT access over the five year period. They are likely to catch up with developed countries in near future. The Report shows that there is a strong link between the level of ICT and the level of income (in Purchasing Power Parity (PPP) \$ terms), and the relationship is growing stronger over time.

The Report also presents the latest, end-2008 figures for key ICT indicators. There has been a clear shift from fixed to mobile cellular telephony and by the end of 2008, there were over three times more mobile cellular subscriptions than fixed telephone lines globally. Two thirds of those are now in the developing world compared with less than half in 2002.

Global ICT Developments



Note: * Estimates.

Source: ITU World Telecommunication/ICT Indicators database.

Based on ITU estimates, 23 out of 100 inhabitants globally used the Internet at the end of 2008. But penetration levels in the developing countries remain low. Africa with 5 per cent penetration is lagging behind. When it comes to broadband penetration, figures are even lower. Given the rapid spread of IMT-2000/3G mobile cellular networks in many countries, including in the developing world, there is a clear potential for mobile broadband to connect more and more people — and at higher speed.

The main findings of the IDI are:

- Digital divide persists and is decreasing slowly.
- Cost of ICTs is lowest in Singapore and the United States
- Economies with relatively low ICT prices have relatively high IDI levels. Economies with relatively high prices rank relatively low in the index

Economy	Rank 2007	IDI 2007	Rank 2002	IDI 2002
Sweden	1	7.50	1	6.05
Korea (Rep.)	2	7.26	3	5.83
Denmark	3	7.22	4	5.78
Netherlands	4	7.14	6	5.43
Iceland	5	7.14	2	5.88
Norway	6	7.09	5	5.64
Luxembourg	7	7.03	21	4.62
Switzerland	8	6.94	7	5.42
Finland	9	6.79	8	5.38
United Kingdom	10	6.78	10	5.27
Hong Kong, China	11	6.70	12	5.10
Japan	12	6.64	18	4.82
Germany	13	6.61	14	5.02
Australia	14	6.58	13	5.02
Singapore	15	6.57	16	4.83
New Zealand	16	6.44	19	4.79
United States	17	6.44	11	5.25
Ireland	18	6.37	26	4.36
Canada	19	6.34	9	5.33
Austria	20	6.32	20	4.64
Macao, China	21	6.25	23	4.41
Italy	22	6.18	24	4.38
France	23	6.16	25	4.37
Belgium	24	6.14	15	4.91
Taiwan, China	25	6.04	17	4.82
Estonia	26	5.97	31	3.93
Spain	27	5.91	28	4.10
Slovenia	28	5.88	22	4.47
Israel	29	5.60	27	4.24
Malta	30	5.54	29	4.04
Portugal	31	5.47	32	3.87
United Arab Emirates	32	5.29	40	3.27
Lithuania	33	5.29	43	3.17
Greece	34	5.25	30	3.94
Hungary	35	5.19	36	3.49
Latvia	36	5.01	39	3.30
Cyprus	37	4.97	33	3.78
Slovak Republic	38	4.95	35	3.51
Poland	39	4.95	37	3.34
Czech Republic	40	4.88	34	3.74
Brunei Darussalam	41	4.80	41	3.27
Bahrain	42	4.69	38	3.30
Croatia	43	4.68	42	3.19
Qatar	44	4.44	47	2.84
Bulgaria	45	4.37	51	2.74
Romania	46	4.16	60	2.48
Argentina	47	4.12	44	3.06
Chile	48	4.00	45	2.97
Uruguay	49	3.88	46	2.90
Russia	50	3.83	52	2.71
Ukraine	51	3.80	59	2.50
Malaysia	52	3.79	50	2.74
Jamaica	53	3.78	48	2.79
Belarus	54	3.76	57	2.53
Saudi Arabia	55	3.62	73	2.13
Trinidad & Tobago	56	3.61	58	2.50
Kuwait	57	3.57	49	2.77
Bosnia	58	3.54	66	2.33
Turkey	59	3.49	63	2.41
Brazil	60	3.48	54	2.55
Panama	61	3.46	62	2.42
Mauritius	62	3.45	61	2.45
Thailand	63	3.44	70	2.17
Lebanon	64	3.43	56	2.53
TFYR Macedonia	65	3.42	53	2.65
Costa Rica	66	3.41	55	2.54
Venezuela	67	3.34	69	2.18
Moldova	68	3.31	74	2.13
Kazakhstan	69	3.25	68	2.18
Colombia	70	3.25	72	2.13
Maldives	71	3.16	88	1.96
Armenia	72	3.12	81	2.03
China	73	3.11	90	1.95
Peru	74	3.11	71	2.15
Mexico	75	3.09	64	2.38
Jordan	76	3.06	65	2.36
Oman	77	3.00	76	2.12

Economy	Rank 2007	IDI 2007	Rank 2002	IDI 2002
Iran (I.R.)	78	2.94	92	1.93
Palestine	79	2.92	67	2.20
Georgia	80	2.91	75	2.13
Libya	81	2.84	78	2.08
Ecuador	82	2.75	85	1.97
Tunisia	83	2.73	94	1.86
Fiji	84	2.73	83	2.00
Albania	85	2.73	93	1.92
Azerbaijan	86	2.71	100	1.71
South Africa	87	2.70	77	2.11
Mongolia	88	2.67	84	1.97
Syria	89	2.66	102	1.69
Dominican Rep.	90	2.65	87	1.97
Philippines	91	2.63	79	2.07
Viet Nam	92	2.61	107	1.59
Kyrgyzstan	93	2.61	86	1.97
Egypt	94	2.54	95	1.81
Cuba	95	2.53	91	1.94
Paraguay	96	2.52	82	2.02
Algeria	97	2.51	105	1.61
Bolivia	98	2.45	80	2.03
El Salvador	99	2.43	99	1.74
Sri Lanka	100	2.38	97	1.75
Morocco	101	2.34	111	1.37
Honduras	102	2.28	114	1.31
Guatemala	103	2.28	106	1.60
Turkmenistan	104	2.23	89	1.96
Cape Verde	105	2.18	103	1.67
Tajikistan	106	2.14	96	1.76
Gabon	107	2.14	110	1.48
Indonesia	108	2.13	109	1.54
Botswana	109	2.10	101	1.70
Uzbekistan	110	2.05	98	1.75
Nicaragua	111	2.03	112	1.37
Namibia	112	1.92	108	1.58
Swaziland	113	1.73	113	1.32
Ghana	114	1.63	122	1.10
Bhutan	115	1.63	118	1.17
Kenya	116	1.62	116	1.21
Lao P.D.R.	117	1.60	125	1.08
India	118	1.59	117	1.19
Myanmar	119	1.57	104	1.64
Sudan	120	1.56	131	1.03
Cambodia	121	1.53	126	1.07
Gambia	122	1.49	139	0.96
Lesotho	123	1.48	119	1.15
Yemen	124	1.47	129	1.04
Cameroon	125	1.46	120	1.12
Zimbabwe	126	1.46	115	1.29
Pakistan	127	1.46	146	0.89
Côte d'Ivoire	128	1.41	134	1.01
Zambia	129	1.39	124	1.08
Nigeria	130	1.39	123	1.09
Senegal	131	1.38	142	0.95
Congo	132	1.37	121	1.10
Madagascar	133	1.36	140	0.96
Mauritania	134	1.36	135	1.00
Benin	135	1.28	149	0.76
Haiti	136	1.27	127	1.05
Togo	137	1.26	130	1.03
Bangladesh	138	1.26	132	1.02
Nepal	139	1.23	133	1.01
Uganda	140	1.21	143	0.92
Malawi	141	1.17	141	0.95
Comoros	142	1.17	145	0.91
Rwanda	143	1.17	136	0.99
Papua New Guinea	144	1.14	128	1.05
Tanzania	145	1.13	138	0.96
Mali	146	1.12	150	0.75
Ethiopia	147	1.03	147	0.78
Mozambique	148	1.02	148	0.77
Eritrea	149	1.00	137	0.96
Burkina Faso	150	0.97	151	0.68
D.R. Congo	151	0.95	144	0.92
Guinea-Bissau	152	0.90	153	0.56
Chad	153	0.83	152	0.65
Niger	154	0.82	154	0.51

ICT Development Index (IDI): 2002 and 2007

ITU (2008) outlined several steps that governments can take to tackle the broadband divide, including:

- establishing targeted broadband policies;
- awarding spectrum for mobile broadband and fixed wireless technology;
- encouraging new broadband operators and stimulating competition;
- creating investment incentives for the broadband industry;
- using universal service funds to distribute broadband to rural and underserved areas; and
- promoting the development of online e-government services and other local content to minimize dependence on expensive international connectivity, and encourage more citizens to access relevant services and applications.

4.3. ICT in Asia Pacific Region¹¹

In the last decade, the Asia and the Pacific region has experienced continuous ICT infrastructure development and service uptake, which have led the region to become a world leader in utilizing ICTs. At the end of 2007, Asia and the Pacific accounted for 42 per cent of the world's mobile cellular subscriptions, 47 per cent of the world's fixed telephone lines, 39 per cent of the world's Internet users, 36 per cent of the world's fixed broadband subscribers, and 42 per cent of the world's mobile broadband subscriptions.

In relative terms, the region has also made significant progress in ICT uptake in the last decade. By the end of 2007, there were 37 mobile cellular subscriptions per 100 inhabitants in Asia-Pacific region. At the same time, the region had 16 fixed telephone lines per 100 inhabitants, and nearly 15 per cent of the population was Internet user. On the other hand, fixed and mobile broadband penetration stood rather low, at 3.5 per cent and 3.0 per cent respectively.

¹¹ Information Society Statistical Profiles 2009: Asia and the Pacific

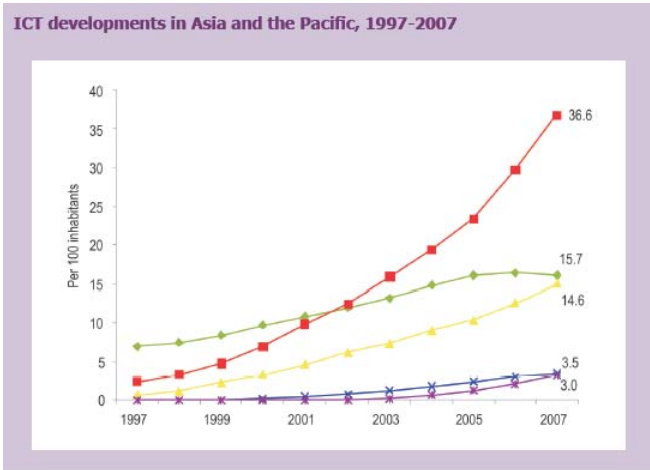


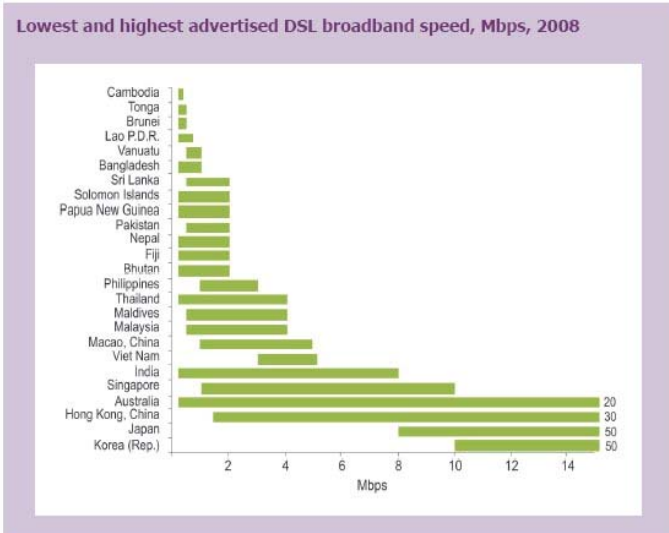
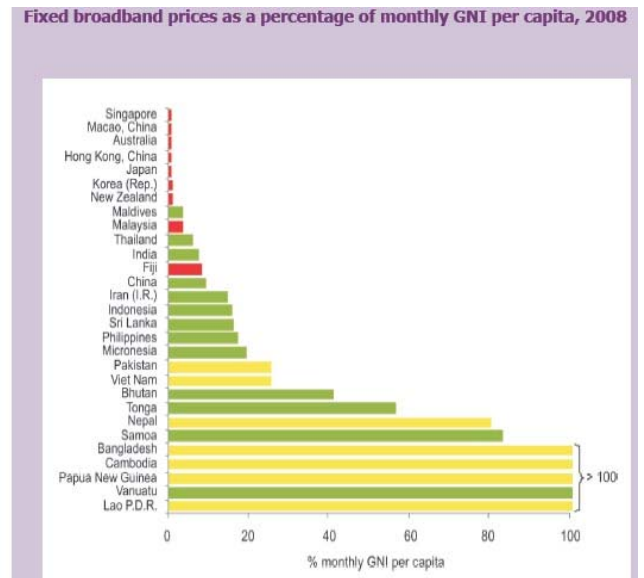
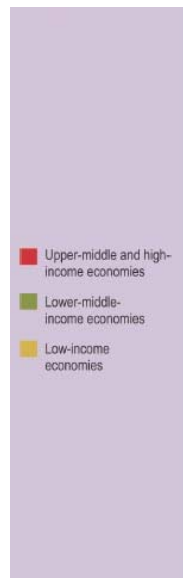
Chart 1.1

- Fixed telephone lines
- Mobile cellular subscriptions
- Internet users
- Fixed broadband subscribers
- Mobile broadband subscriptions

Source: ITU World Telecommunication/ICT Indicators database.

Nepal seems to have comparatively higher broadband prices compared to other countries in the region. One of the reasons may be the hurdle faced by the country to have an international connectivity via optical fiber.

Taking into account the untapped potential of countries like India and



China in terms of mobile broadband, IMT-2000/3G technologies have the capacity to bring access to a significant part of the population the advantages of Internet services at increasingly high speeds. In several low and lower-middle-income economies in Asia and the Pacific there is considerable scope for expanding the Digital Subscriber Line (DSL) base. Another emerging technology that may play an important role in both fixed and mobile broadband Internet access is Wide Interoperability Microwave Access (WIMAX), especially in

providing broadband services for underdeveloped, rural and remote regions.

Chapter 5 – Strategic Direction

Vision, Mission and Values

Nepal Telecommunications Authority (NTA) was established as an autonomous and corporate body in the year 1998 A.D. through implementation of Telecommunications Act, 2053. The Act mandated NTA to regularize Telecommunications services. NTA is also required to ensure that the telecommunications services are reliable and easily available to all the inhabitants of Nepal at reasonable cost with private sector participation in order to support social and economic development of the country.

The Ten Year Master Development Plan envisions as to what NTA aspires to be in future and reflects its desire for improving its performance as a forward looking regulator.

5.1 Vision Statement

NTA aspires to be recognized - nationally and internationally - as one of the outstanding regulators firmly committed to create conducive environment for the operation and development of reliable and sustainable telecommunications services which are accessible to all the inhabitants of Nepal at reasonable cost and for enhancing network capability to support efficient utilization of Information and Communication Technology (ICT) and other state of the art services.

5.2 Mission Statement

NTA is committed to:

- Ensuring accessibility of reliable and quality telecommunications services to all the inhabitants of Nepal on sustainable basis at reasonable cost.
- Promoting free and fair competition among all the telecommunications service providers through strict enforcement of regulations and facilitations, as required, in such a manner that private investors are encouraged to invest in the telecommunication sector.
- Ensuring the development of qualitative human resource capacity as needed so that adequate knowledge and local expertise is available for the operation and development of the sector

- Ensuring that consumer’s interest are fully protected and committing itself for creating environment for the delivery of affordable, reliable and qualitative ICT services to the consumers at reasonable cost
- Being instrumental in raising consumer awareness for the cost, quality and reliability of services and also for making educated choice of available services including ICT utilization.

5.3 Value Statement

- NTA will remain firm in maintaining professionalism and integrity in all its dealings.
- NTA’s activities will always follow the principle of objectivity and transparency
- NTA will remain independent in decision making.
- NTA will provide level playing field for all the players in telecommunication sector.

5.4 Objectives

5.4.1 Main objective of NTA is to create favorable environment for the development and operation of telecommunications services which are reliable and accessible to all the inhabitants of Nepal at reasonable cost in collaboration with the private sector et. al in order to support social and economic development of the country. The main objective to be supported by following:

- For universal access both in urban and rural areas, arrangement shall be made in such a way that at least basic telecommunication services are available within a shouting distance even in sparsely populated areas
- Arrangements for providing on demand telecommunications services will be made in the urban areas of the country and also for provision of corporate telecommunications services to manufacturing and commercial enterprises.
- Urban consumers shall have the opportunity of availing services from different service providers and this opportunity shall be gradually extended to rural subscribers also.
- Network capability shall be enhanced to support efficient utilization of Information and Communication Technology (ICT) and other state of the art services for improving the quality of life of people of Nepal.

5.5 Strategy

Main focus of the Telecom Policy, 2060 (2004 A.D.) is to support the overall social and economic development of country by providing reliable and universally accessible telecommunications services to all the inhabitants of Nepal at a reasonable cost. The Telecommunications Act, 2053 (1997 A.D.) also mandates NTA to:

- Encourage competition among all the operators (both private and government owned) to provide efficient, reliable, sustainable and easily available telecommunications services to all the inhabitants of Nepal at reasonable cost.
- Regularize and systematize all such services
- Be instrumental in development of domestic telecommunications market.
- Protect consumers' interests

Following strategies are developed in order to meet the mandatory responsibilities along with the objectives of governments Telecommunications Policy, 2060 (2004 A.D.)

5.5.1 Free and fair competition

NTA will promote free and fair competition by providing equal treatment to all the service(s) providers and ensure that new entrants gain appropriate foot hold in the market. NTA will identify barriers and eliminate them for new operators as far as seamless entry, at reasonable cost, into the incumbent operators' network is concerned. Private sector investment, both domestic and foreign, shall be encouraged. NTA shall also make necessary arrangements to regularly inform operators about reforms being made in the sector and new opportunities created thereby for service(s) providers.

5.5.2 Consumer Interest Protection Mechanism

NTA will further strengthen its consumer-interest protection division so that it is made more effective, universal and fair to all consumers; ensuring that consumers are well informed about their rights of receiving reliable and qualitative telecommunications services from operator(s) at reasonable cost.

5.5.3 Universal access

Universal access to all the public telecommunications services shall be ensured. Development, operation and availability of all types of public telecommunications services using both terrestrial and satellite technologies shall be encouraged. Other telecommunications services using Information and Communications Technology (ICT)

facilities will also be made available to the desirous users individually and through community centers.

In order to facilitate the people positioned in lowest social and economic strata of society to obtain access to telecommunications services, NTA shall explore possible mechanism to provide some kind of financial assistance through community groups or cooperatives.

5.5.4 Universal Service Obligations

The operators shall provide on demand service(s) to any urban consumer and also to rural consumers eventually when adequate network capabilities are developed in rural areas of the country.

5.5.5 Promotion of both business and non-business telecommunications services

In order to promote both individual and institutionalized business and industry sectors, the operators shall be required to provide leased line for effective utilization of ICT facilities also.

Development of non-business and non-profit telecommunications networks both government and privately operated, shall be encouraged so that they can provide cost effective and efficient services including benefits derived from the system of e-governance and also disaster recovery plans for minimizing and repairing damages caused by accidents and disasters.

5.5.6 Liberalization of telecommunications sector

The telecommunication sector is open for entry to all qualified service(s) providers; but because of limited availability of frequency spectrum, right of way and numbering plan, these resources shall be allocated only to qualified operators.

5.5.7 Human Resources Development

For successful implementation of its mandated functions and for meeting its obligations as per legislation, NTA will make earnest efforts to develop the skills of the persons engaged in management of telecommunications sector, including its own, so that an attractive market place is created for promoting investment and competition which is mainly driven by the skills of its staff and for the effectiveness of its policies and procedures

5.5.8 Institutional development for policy implementation

NTA will regularly review its organizational structure for successful implementation of the provisions of the master plan and also advise the Government on appropriate measures to be taken for the same.

5.5.9 Encourage development of telecommunications network for utilization of Information and Communication Technology

NTA will encourage operators to develop countrywide telecommunications network in such a way that on demand Information and Communications Technology services are made available throughout the country up to all Village Development Committees (VDCs) in order to accelerate the social and economic development of the country.

5.5.10 Rural Telecom Development Fund (RTDF)

Rural Telecom Development Fund, established for the purpose of providing telecommunications services to all the inhabitants of rural areas, including those living below the poverty line, shall be utilized in order to improve the quality of life of all the Nepalese. Towards the end of the Master Plan Period, NTA will review the desirability and timeliness of discontinuation of RTDF contribution so as to reduce the cost of providing services, with the intention of passing on benefits to the consumer.

5.5.11 Utilization of ICT services for developmental activities

In order to facilitate enhancement of the quality of life of people, NTA will encourage up gradation of network capabilities to enable all concerned to utilize services provided by Information and Communication Technology.

5.5.12 Emergency Telecommunications and Climate Change

Emergency telecommunications play a critical role in both warning of disasters and their immediate aftermath by ensuring timely flow of information needed by government agencies and other humanitarian actors involved in rescue operations and providing medical assistance to the injured. There is a need for an integrated approach to ensure the provisioning of early-warning systems, emergency communications and assistance in reconstructing infrastructure destroyed by disasters. The telecommunications service providers need to prepare plans for disaster recovery.

Climate change challenges our ability to achieve economic and social objectives to support sustainable development. The adverse effects of climate change are likely to fall disproportionately on developing countries given their limited resources. Telecommunications/ICTs make a valuable contribution to monitoring, mitigating and adapting to climate change. Nepal needs to get help through international organizations like ITU to respond to climate change.

Chapter 6 – Priorities

- 6.1. Further increase private sector participation to provide reliable and accessible countrywide telecommunications services.
- 6.2. On demand telecommunication services with universal access to be made available during plan period.
- 6.3. Basic telecom facilities to be provided even in most sparsely populated areas of the country.
- 6.4. Multi-operator services to be provided on countrywide basis during the plan period.
- 6.5. Appropriate legal instruments to be provided to NTA by the Government in order to enable it to effectively utilize its legal mandate and discharge its functions and duties more effectively.
- 6.6. Take effective steps for complying with its GATS telecommunications commitment.
- 6.7. Set up a task force to review the organizational structure of NTA and to make necessary changes in it for the effective discharge of responsibility as per planned strategy.
- 6.8. Setup an effective mechanism for consumer education so that desirous persons may utilize the benefits of ICT efficiently and also ensure that consumers are well informed about their rights.
- 6.9. Setup a mechanism which oversees the human resource development for the persons engaged in management of telecommunications sector, including its own
- 6.10. Setup an efficient mechanism that monitors the performance of all the operators as per plan on regular basis and issues directives if necessary for providing reliable telecommunications services
- 6.11. Plan to utilize RTDF effectively for the establishment of countrywide broadband network for providing on demand ICT services to the consumers. Consider providing assistance for accessing telecommunications facility to the people who are placed in the lowest social and/or economic strata of society

- 6.12. Instruct telecommunications operators to be ready with plans to ensure the provisioning of early warning systems of an approaching disaster and also for facilitating rescue and rehabilitation works
- 6.13. Make concerted efforts to realize targets setup under Millennium Development Goals (MDGs) by the United Nations and implement action plan by the World Summit on Information Society (WSIS).

Chapter 7 – Major Programs

7.1. Action Framework for Major Programs

This Master Plan is consistent with all the Laws of the land. Specifically, it is consistent with the Interim Constitution of Nepal 2063, the Telecommunications Act 2053 (Act), Telecommunications Policy 2060 (Policy), and with the commitments made by the Government of Nepal (GoN) with international communities and also as a Member of the World Trade Organization (WTO). Besides these, it is also consistent with the several periodic Plans of the GoN, including the last two 3-year Interim plans.

As entrusted by the Act with the task of providing suggestions to the Government on the Policy, Plan and Program to be adopted by the GoN for the development of telecommunications services, Nepal Telecommunications Authority (NTA) has been fully authorized by the Act to prepare a Master Plan for the development of the telecommunications Sector, for study and eventual adoption by the Government.

The main program of this Master Plan has been developed around the following broad action framework:

7.1.1. Regulating Telecom Sector

- Licensing
- Managing Scarce resources such as radio frequency spectrum and numbering plan
- Establishing standards of Telecom Equipments and Services.
- Ensuring healthy competition and coordination between/among the service providers
- Establishing national Inter-operator roaming
- Establishing Legislative arrangements to curb call-bypass and streamlining L/I activities.

7.1.2. Telecommunications/Information and Communication infrastructure and technological development

- Ensuring utilization of appropriate new technologies, as much as possible, for the development of Telecom/ICT infrastructures and services,

- Encouraging establishment of plants for manufacturing/assembling of telecom equipments and its accessories,
- Ensuring countrywide broadband deployment,
- Establishing interconnectivity, Interoperability and efficient network management,
- Enhancing security, and quality of service standards for wired and wireless networks, including mobile telecommunications,
- Encouraging infrastructure sharing among operators,
- Ensuring establishment of emergency telecommunication services to facilitate disaster management, and handling challenges of climatic changes.

7.1.3. Protection of Consumer Interests

- Ensuring that rights & interests of consumers are protected while developing & extending telecommunications services. Particular focus has to be given on the quality of services and tariff levied for the use of telecom services.
- Assuring number portability
- Ensuring effective implementation of Equipment Identity Register (EIR).

7.1.4. Human and institutional capacity building

- Effectively develop and strengthen, on a sustainable basis, human resources and skills needed for harmonious development of the telecommunication/ICT sector in Nepal.

7.1.5. Universal Service Obligation

It is observed that the rural areas of the country are sparsely covered and are not considered as a financially viable business by telecommunication operators. Recent growth of tele-density in urban areas, aided by mobile technology, has meant that the digital gap between rural and urban areas has widened.

Rural populations will need to be provided with mobile telephony and wireless broadband access, by connecting remote areas to the broadband core networks. Choosing efficient, cost-effective and effecting fast-deployment of technologies - wired or wireless - will improve accessibility. RTDF fund should be used to realize this objective.

7.2. Strategies, Working Policies and Implementation Guidelines for Action Framework of the Ten Years Master Plan (2067/068 – 2077/078)

In view of the above mentioned action framework reflecting the directions of the legislations and expectations of major stakeholders engaged in the sector, this Master Plan for the period of 2067/68 – 2077/78 Bikram Sambat, corresponding to 2011 – 2020 AD has been prepared in line with the recommended Vision/Mission statements, for adoption by the Government of Nepal.

Regulating Telecom Sector

7.2.1. Strategy 1: Issuing new License(s)

NTA has been issuing Licenses based on the present set of legislations. Telecom Policy 2060 has enunciated new strategies which need to be implemented. Also, opportunities afforded by technology needs to be utilized. Thus, there is a need to issue new licenses for new services & applications.

7.2.1.1. Working Policy 1

Constantly review if issuance of new licenses is made possible by amendments in the Act, or is necessitated by technological developments.

7.2.1.2. Implementation Guideline 1

- License additional Mobile Operators if a finding of Independent Study demonstrates the need.
- Implement Open licensing once Act gets amended to allow it.
- Offer new Licenses as necessary to allow consumers benefit from technological advancements.

7.2.2. Strategy 2: Making Nepalese Telecom Sector WTO Compliant

Certain commitments have been made to the international community, making it Obligatory for Nepal to fulfill them within the time frame agreed upon. Implementation of the following

commitments made regarding the telecom sector, would need to be monitored during the the period (A.D.2011 – 2021).

The commitment is that no limitation would exist on January 2009 on the number of service providers.

Telecommunications policy provides for open licensing system and the concept of multi-service operation for all operators. It opens the telecommunications service sector and imposes no limitation on the number of service operators except as limited by scarcity of resources like radio frequency spectrum, numbering plan and right of way. Even though the Policy takes care of this obligation, these policy provisions need to be translated into law.

7.2.2.1. Working Policy 2

For a period of five years of the issuance of a license, Section 22 of the Act prohibits issuance of additional licenses for the operation of the same telecom service, except in the event of a decision that the licensee has failed to provide the services and that additional services are required.

7.2.2.2. Implementation Guideline 2

- Amend the Act to allow Open Licensing as recommended by the Policy.

7.2.3. Strategy 3: Defining Dominant Service Provider (DSP) and Incumbent Service Provider (InSP) and specifying their obligations

Policy has recommended that service obligation be applied to the **Dominant Service Provider** (DSP) and the **Incumbent Service Provider** (InSP) so that use of their network and other facilities is easily available to new entrants. The Competition Act also prohibits abuse of dominant position, and states that no service provider holding dominant position may abuse, or cause to be abused, its position of strength with intent to control competition in the telecommunications sector.

7.2.3.1. Working Policy 3

Define Dominant Service Provider (DSP) and Incumbent Service Provider (InSP) in legislations and implement the legislative mandate for all such providers who fall under the definition of DSP and InSP.

The service obligation shall be applied to the incumbent and dominant service providers to provide their services to all the consumers of the urban areas of the Kingdom immediately after orders for such services are received.

7.2.3.2. Implementation Guideline 3

All DSPs and InSPs shall be required to fulfill some or all of the following obligations by dates specified for each of such obligations.

- Publish their Reference Interconnection Offers.
- Publish their coverage capability of all the specific districts.
- Provide broadband services as well as services based on advanced technology including corporate telecommunication service.
- Categorically state the time frame for different areas of the country where they can provide telecom service on order.

7.2.4. Strategy 4: Revising License Fees

Policy directs that the license fee should be collected only for sufficiently covering the administrative expenses for issuance and administration of the Licenses.

7.2.4.1. Working Policy 4

Existing provisions about the collection of License fees need to be reviewed at the earliest, to bring down License Fees to reduce the cost of services. Moreover, determination of license fee by bidding as per section 22, of the Telecommunications Act is in contravention with the strategic guidelines of the Policy. This section should be suitably amended. Other fee structures which do not require amendment in the Act should be reviewed in line with the Policy and should be implemented.

7.2.4.2. Implementation Guideline 4

- Review the License Fees structure as provided in the Regulations.
- Have Section 22 of Act suitably amended in line with the Policy requirements.
- Review other fee structures.

7.2.5. Strategy 5: Implementing effective Radio Frequency Spectrum Management

As the radio frequency bands recognized internationally for the operation of wireless telecommunications services have been much in demand it causes problems to regulators in the assignment of these to the different service providers. NTA's regulatory authority has to be effectively exercised to solve this problem.

7.2.5.1. Working Policy 5

Implement appropriate radio frequency assignment policy focused on optimization of frequency utilization; such assignment being a function of the coverage to allow additional assignments as the coverage increases.

Recommend radio frequency pricing policy focused on optimization of radio frequency utilization, with built-in instruments to discourage hoarding of assigned radio frequencies, for adoption by Radio Frequency Policy Determination Committee.

7.2.5.2. Implementation Guideline 5

- Formulate effective radio frequency Assignment Policy (FAP).
- Strictly utilize authority to withdraw holding of unused (excess) radio frequencies.
- Establish clear-cut radio frequency Pricing Policy (FPP).
- Effectively implement FPP.

7.2.6. Strategy 6: Streamlining Type Approval Process

Revise the current type approval process so as to ensure the standard of telecom equipments.

7.2.6.1. Working Policy 6

The current Type Approval process is based solely on document verification. Apart from this verification, other methodologies such as carrying out test in the country should be sought so as to encourage OEMs.

7.2.6.2. Implementation Guideline 6

- Fix the standards of telecom equipments.
- Study the current Type Approval Procedure (TAP) & find out the way by which other methodologies can be implemented and revise TAP.

7.2.7. Strategy 7: Monitoring Quality of Service (QoS) of TSPs

Carry out periodic monitoring of QoS of TSPs.

7.2.7.1. Working Policy 7

Periodic monitoring of QoS of TSPs should be carried out through independent bodies to ensure TSPs services' meet specified QoS requirements.

7.2.7.2. Implementation Guideline 7

- Devise the modality to carry out independent periodic monitoring of QoS of TSPs.
- Carry out periodic monitoring to verify that TSPs services' are up to the specified standards.
- Based on the monitoring report, issue necessary directives if necessary.

7.2.8. Strategy 8: Harmonizing Terms and Conditions of License

Terms and conditions, including license fees, renewal fees, royalty and contribution to RTDF, of the licenses issued for providing different types of services are not identical. There is a need to harmonize the same to create a level playing field for all the Licensees.

7.2.8.1. Working Policy 8

The legislation should be suitably amended for License Harmonization.

7.2.8.2. Implementation Guideline 8

- Carry out a Study to identify actions to be taken for achieving harmonization of licenses.
- Implement the recommendations of the Study.

7.2.9. Strategy 9: Implementing Interconnection Guidelines

Interconnection Guidelines (IG) 2065 with provisions of periodic review were implemented by the NTA but with certain exceptions, especially in the implementation of Interconnection Usage Charges (IUC) as applicable to international communications. It is widely believed that the implementation of this component hitherto excluded, would be the natural second step ahead and much awaited by the stakeholders.

7.2.9.1. Working Policy 9

At the time of review of the IG, IUC recommendations as applicable to international communication should be implemented.

7.2.9.2. Implementation Guideline 9

- Review IG in a timely manner to implement IUC on international communication.

7.2.10. Strategy 10: Implementing Inter-Operator Roaming (IOR)

Implement Inter-Operator Roaming (IOR).

7.2.10.1. Working Policy 10

Implementation of IOR would facilitate the consumers by offering them the possibility of using their mobile telephone even in the areas where their chosen provider may not have acceptable Grade of Service or no service at all. In such areas, they should have the opportunity of availing roaming facility in other available network, albeit at justifiable cost.

NTA should carry out a study which ascertains the different actions that need to be taken for providing IOR facilities, and decide on the date(s) when and where the IOR could be implemented.

After the decision by NTA on the Study recommendations, concerned TSPs should be directed to implement the IOR. TSPs should be provided necessary lead time as recommended by the Study.

7.2.10.2. Implementation Guideline 10

- Commission a study on IOR.
- Implement IOR based on the study at the earliest.

7.2.11. Strategy 11: Legislations on Call-bypass and Lawful Interception (L/I)

Have Legislations amended to curb call-bypass and implement L/I activities. A group of Legal Experts has concluded that necessary amendments in the prevailing legislations would be desirable to facilitate NTA to take effective measures to curb prevalence of grey market as a result of call-bypass of international calls.

Likewise, in view of the growing abuse of telecom services by criminals and elements acting against the society at large, it has been felt that the Act needs to be amended and regulations prepared to facilitate and regularize L/I, at the same time honoring the citizens' rights to privacy guaranteed by the Constitution.

7.2.11.1. Working Policy 11

NTA shall obtain recommendations from qualified legal expert(s) for suitable amendments and in additions to prevailing legislation, to enable it to effectively curb the grey market and also to carry out L/I activities.

7.2.11.2. Implementation Guideline 11

- Obtain necessary Recommendations from legal experts.
- Get Telecommunications Act amended to meet this requirement.
- Prepare Regulations/Guidelines on L/I.
- Implement the provisions of amended Act.

Telecommunications/Information and Communication infrastructure and technological development

7.2.12.Strategy 12: Full opening of Voice over Internet Protocol (VoIP) services

Full Opening of Voice over Internet Protocol (VoIP) Services

7.2.12.1. Working Policy 12

VoIP has been already opened for the upcoming RBS operator. NTA needs to conclude the long-extended Consultation process regarding full opening of VoIP, and finalize the actions to be taken including licensing of new operator(s) to establish Interconnection Exchange(s) as necessary to allow the consumers countrywide to utilize the benefits made possible by the technology.

7.2.12.2. Implementation Guideline 12

- Conclude consultation Process on VoIP.

- Implement actions identified by consultation process including licensing of operator(s) for establishing Interconnection Exchange(s).
- Declare full Opening of VoIP.

7.2.13.Strategy 13: Making provisions for countrywide Broadband Access

Make arrangements to ensure that Broadband services are made available to all parts of the country in a gradual manner.

7.2.13.1. Working Policy 13

The draft of the Broadband Policy prepared by the NTA should be forwarded to the GoN for adoption. Decision of the GoN about issuance of License(s) for providing Rural Broadband Services (RBS) to all the VDCs of predefined 39 districts should be implemented. Decision should be taken at the appropriate level to ascertain the basis to be adopted for assigning the necessary frequency spectrum to allow additional TSPs to offer Broadband Wireless Access (BWA) for availing broadband services all over the country.

7.2.13.2. Implementation Guideline 13

- Forward the draft Broadband Policy to the GoN for adoption.
- GoN to adopt Broadband Policy at the earliest possible time.
- Issue License(s) to RBS Operator.
- Decide Licensing criteria for BWA Operator(s).
- Ensure availability of BWA service(s).

7.2.14.Strategy 14: Extension of services

The existing service providers shall be caused to extend their service.

7.2.14.1. Working Policy 14

Some of the telecom providers have not been able to develop their telecom services as per their earlier commitments reflected in the Terms & Conditions, especially in terms of roll out to the

rural areas. NTA shall take a close look in to their roll out obligations and take necessary steps to urge and facilitate them to provide services in such un-served areas.

7.2.14.2. Implementation Guideline 14

- Commission independent study to find out the current status of rollout of all the telecom operators.
- Based on the findings of the study, direct concerned operator(s) to meet their roll out obligations where deemed necessary.

7.2.15.Strategy 15: Promoting Research and Development

Promote Research and Development by encouraging competent person/institutions to ascertain appropriate telecom technologies and to carry out other research activities.

7.2.15.1. Working Policy 15

Those who want to engage in research and Development of telecom technologies should be encouraged.

7.2.15.2. Implementation Guideline 15

- Facilitate Research and Development of telecom technologies.

7.2.16.Strategy 16: Encouraging Infrastructure Sharing

Different telecom service providers, providing similar kinds of services, have established identical infrastructures such as optical fiber networks, towers, base stations, etc. In order to minimize expenses on infrastructure and thereby reduce the cost of services to consumers, it is advisable to utilize common infrastructure by operators to the extent possible and also take advantages of infrastructures built at vantage locations.

7.2.16.1. Working Policy 16

- Legislations to be reviewed and appropriate provisions made to facilitate sharing of infrastructure.

7.2.16.2. Implementation Guideline 16

- Have the Act suitably amended for facilitating common use of infrastructure.
- Carry out the study to identify vantage points.
- Issue and implement Guidelines for Infrastructure Sharing.

7.2.17.Strategy 17: Preparing Disaster Recovery Plan

Normally, all telecom services providers setup mechanisms for speedy recovery of their services in case of system failure. This has to be supplemented by a well established Disaster Recovery Plan both at the National and Operators' Level, to cope with any disaster and/or natural calamity. National plan needs to incorporate the actions to be taken by the state to ensure restoration of services at the earliest. Plans of individual service providers need to incorporate actions to be taken to restore parts of damaged networks and facilities. This has to be done not only to restore the services but also with a view to assist relief team and workers in the disaster affected areas.

7.2.17.1. Working Policy 17

NTA shall prepare Disaster Recovery Plan of Telecom Services (DRPTS), enumerating the course of action to be taken to recover minimum level of telecom service at the earliest possible time during emergencies. Likewise, all NTA Licensees shall prepare Disaster Recovery Plans of Provided Telecom Services (DRPPTS). Each of them will have to give a check-list of actions to be taken to recover at least the bare minimum of the Licensee's services at the earliest possible time during emergencies.

7.2.17.2. Implementation Guideline 17

- NTA shall prepare DRPTS at the earliest.
- Service providers shall be directed to prepare and submit DRPPTS to NTA at the earliest.

Protection of Consumer Interests**7.2.18.Strategy 18: Ensuring protection of Consumer's Rights and Interests**

Ensure that Rights and Interests of Consumer are protected.

7.2.18.1. Working Policy 18

Concerned Divisions at NTA looking after the rights and interests of the Consumers need to be strengthened. Contact centers need to be opened at several locations outside the capital city as required. Consumer Protection Guidelines (CPG) and other similar documents that will assist consumers and NTA Licensees in understanding their rights and obligations in buying and selling of telecom services should be prepared. In addition, present system of approving the tariff should be retained, to ensure that the consumers are not charged unduly.

7.2.18.2. Implementation Guideline 18

- Prepare Consumers Protection Guidelines (CPG)
- Commission studies from time to time on effects of Radio Frequency Radiation (RFR) from mobile phones or mobile towers.
- Prepare similar other documents on protection of consumer interests.
- Open Contact Centers as required

7.2.19.Strategy 19: Creating choice of operators in rural areas

Earlier the target of the GoN of setting up at least two Public Call Offices (PCOs) at each of the Village Development Committees (VDCs) has in some instances necessitated making certain rural areas open only to Telecom Service Providers (TSPs) licensed for such areas. The situation has been changing, and pretty soon, all of the 3915 VDCs of Nepal will have 2 or more PCOs. It is now time for all such rural areas to be opened to other service providers as well, so that consumers of these rural areas may also start exercising their choice of operators.

Telecom Service Providers limited to certain geographical areas of the country have to be allowed to move in to other areas, provided their License conditions allow it and provided they have fulfilled mandatory conditions as required by the License issued to each of them.

7.2.19.1. Working Policy 19

Make necessary amendments in legislations so as to allow all of the licensed operators to operate in all rural areas in a timely manner.

7.2.19.2. Implementation Guideline 19

- Have the legislations amended to allow choice of operators by rural consumers.
- Implement the amended legislation.

7.2.20.Strategy 20: Implementing Mobile Number Portability (MNP)

Implement Mobile Number Portability (MNP)

7.2.20.1. Working Policy 20

Implementation of Mobile Number Portability would facilitate the consumers retaining their mobile numbers irrespective of the providers. This would require the NTA to carry out a study which would ascertain, in close consultation with the Providers, different actions that need to be taken for achieving this goal, and then decide on the date(s) when the MNP may be implemented in the country.

After the decision by NTA on the Study recommendations, concerned TSPs should be directed to implement the MNP. TSPs should be provided necessary Lead time as recommended by the Study.

7.2.20.2. Implementation Guideline 20

- Take timely decisions on implementing approved recommendations of MNP study.
- Instruct the TSPs to implement MNP.

7.2.21.Strategy 21: Promoting Cyber-security

Enhance the confidence of consumers in the use of telecom/ICT services.

7.2.21.1. Working Policy 21

Consumers are often reluctant to use several new telecom/ICT applications due to apprehension of probable security breaches. Hence, special attention should be paid to ensure that telecom/ICT networks are secure to use when backed up by appropriate measures with necessary legal framework in place to take care of possible security breaches. NTA should ensure that

consumers are educated on measures to be taken to guard against probable security breaches while utilizing new telecom/ICT applications.

7.2.21.2. Implementation Guideline 21

- Prepare a checklist enumerating the measures to be taken by consumers to properly utilize telecom/ICT applications and to take effective measures to guard against security breaches for the safe use of telecom/ICT applications.
- Publish notice periodically highlighting such checklist.
- Instruct operators to educate consumers on the points enumerated on the checklist.
- Be instrumental in implementation and making necessary amendments in relevant legislative frameworks.

7.2.22. Strategy 22: Ensuring effective implementation of Equipment Identity Register (EIR).

Discourage unauthorized usage of mobile terminal equipment.

7.2.22.1. Working Policy 22

In order to discourage unauthorized usage of mobile terminal equipment, EIR should be implemented. Directives pertaining to EIR should be drafted and implemented.

7.2.22.2. Implementation Guideline 22

- Carry out the study about feasibility of implementation of EIR and formulate directives.
- Implement the directives.

Human Resource Development & Institutional Capacity Building

7.2.23. Strategy 23: Enhancing Human Resources Development and Institutional Capacity Building

Appropriate measures should be taken in order to enhance skills and develop competencies of NTA staff enabling them to acquire ability to discharge their assigned functions in an effective manner. NTA should promote cooperation between telecommunication/ICT training institutions

for Human Resources Development and create Forums for exchanging and sharing information between various groups having stake in the telecommunication/ICT sector.

7.2.23.1. Working Policy 23

A study should be commissioned to make appropriate recommendations for streamlining NTA organogram necessary for implementing the provisions of Master Plan effectively. The study should also identify training requirement of each position in the organogram.

NTA employees should be encouraged to enhance their capabilities by interacting in national and international forums.

7.2.23.2. Implementation Guideline 23

- As per study recommendations:
 - Create new organogram.
 - Organize custom designed training programs to be conducted by the experts.
- Ensure participation of NTA personnel in the national and international seminars, workshops, conferences and training programs.
- Encourage employees to actively participate in national and international Working Groups and Study Groups

Universal Service Obligation

7.2.24.Strategy 24: Connecting Optical Fiber to all District Headquarters (DHQs)

Make arrangements to ensure that Optical Fiber Cable of appropriate capacity is available at all the District Headquarters, as planned by the GoN.

7.2.24.1. Working Policy 24

Request for Applications (RFA) should be invited.

7.2.24.2. Implementation Guideline 24

- Finalize RFA to incorporate the findings of several reports on the subject.
- Invite RFA and then Issue License(s).

7.2.25.Strategy 25: Encouraging shared use of Customer Premises Equipment (CPE)

Universal service accessibility should be implemented through the shared use of Customer Premises Equipment (CPE), both fixed and mobile. NTA should introduce a procedure allowing provision of common use of CPEs to make universal accessibility to the services by maximum utilization of the available facilities.

7.2.25.1. Working Policy 25

For the widest possible use of telecom services on a shared basis, introduce appropriate mechanism through which a telecom subscriber can resell the service(s) to others. NTA should issue guidelines on resale of Telecom Services by Subscribers of TSPs. Such Guideline may introduce appropriate scheme for the VDCs to register Telecom Service(s) Reseller (TSR), upon the applicant submitting a No Objection Certificate from the concerned TSP.

7.2.25.2. Implementation Guideline 25

- Prepare guidelines on re-sale of telecom service(s) by consumer(s).
- Implement Guidelines on TSR.

7.2.26.Strategy 26: Providing assistance to lowest placed strata of population

Provide assistance to lowest placed strata of population in socio-economic hierarchy for access to telecom services.

7.2.26.1. Working Policy 26

NTA should explore mechanisms that could be implemented in order to ensure that the socially and/or economically lowest placed strata of population could obtain one time financial assistance from NTA towards ownership of CPE including one time charges such as ownership charges, connection fees, etc. Such financial assistance could be made available through the local Community Groups and/or local Co-operatives.

NTA should undertake a study on the modality and amount of such assistance to be provided, possible source of funding, and other details that could lead to successful implementation of the program aimed to assist socially and/or economically lowest placed strata of society to obtain access to telecom services.

7.2.26.2. Implementation Guideline 26

- Commission a study
- Implement the approved recommendations of such study

7.3. Follow-Up & Review

- 7.3.1.** The Government of Nepal shall appoint a committee to follow up and constantly review the Telecommunication Master Plan, (2011 – 2020 A.D.), comprising of those with related knowledge and experience, to be in charge of continuously monitoring and evaluating the implementation of the TMP, throughout the term of the Plan, in order to find out about the status of each phase of implementation of the objectives specified.
- 7.3.2.** The Committee as mentioned shall perform its duties by relying on the network capabilities and involvement of stakeholders. Committee shall give its comments and suggestions to the NTA which will forward it to MoIC for their consideration.
- 7.3.3.** The Committee shall perform its duties in following - up and evaluating the performance subject to the international evaluation standards. The Committee shall also apply the use of the accepted guidelines for evaluating performance of telecommunications sector, regulator, and submit reports on its monitoring, follow - up and evaluation to the NTA every 6 months.
- 7.3.4.** The NTA shall prepare the telecommunications database system, and shall create the network to connect its database with other related agencies, in order to facilitate the compilation, supply, and sharing of accurate, complete, and updated telecommunications information.
- 7.3.5.** The NTA shall periodically review the Telecommunications Master Plan pursuant to changing circumstances as deemed appropriate. It shall do so by using the evaluation results and the guideline proposed by the Committee and advice the MoIC accordingly.

Chapter 8: Targeted Achievements

After the implementation of the proposed Master Plan the expected outcome by the end of the year 2020 is enumerated hereunder;

8.1 Regulating Telecom Sector

- As a result of transparency and fairness in the regulatory processes the number of service providers will increase to provide various telecom services in competitive environment.
- Significant rise in investment in the industry will lead to the provisioning of various state of the art services. Investment in the latest technology will lead to improvement in the quality of services.
- The telephone density will reach in the range of 80 to 100 connections per 100 inhabitants.
- Telephone service will be available on demand on most parts of the country with certain exceptions in the remote and sparsely populated areas where shared telephone service will be available.
- Well designed interconnection guidelines to cover all the services will be in place.
- Open licensing regime will be in place. It will ensure level playing field for all operators incorporating harmonization of the existing licenses. Barriers to entry and exit in the industry will be reduced drastically to increase the degree of competition in the industry.
- Well placed frequency management system and effective pricing policy for the effective use of scarce resources like Radio Frequency Spectrum will prevail.
- Revised license fee regime will be in place to minimize the cost of regulating the industry.
- Installation of broadband network in all district head quarters will enable adjacent villages to have access both to data and voice services. Thus Internet and ICT will be easily available in all the villages.

8.2 Infrastructure and Technology Development

- Telecom services which deploy new technology e.g 3G, 4G, VOIP, WIMAX, NGN, Virtual Private Network, etc. will offer new and value added services as per the potential of the market.
- Telecom infrastructure will be jointly built and utilized by industry.
- New and state of the art technology will be deployed to provide service in competitive environment.
- Conducive environment will prevail for infrastructure sharing.

8.3 Consumers protection

- Majority of the consumers will be more aware of their right to use telecom services and in getting value for their money.
- Number portability and Inter operator Roaming regime will ease the choice for the consumers in selecting service providers.
- Enhanced consumer protection network will be built up.
- User friendly and competitive charges and tariff for all the telecom services will be established.

8.4 Capacity building

- Effective regulatory body with expertise in the key areas will be established.
- Increased level of consultation in key decision making process will take place.
- Reorganized regulatory body with wide coverage of overseeing regulatory matters will be in place.

8.5 Universal Service Obligation

- People in rural areas will have easy access to telecom services at reasonable and affordable prices resulting in improvement of quality of life of rural people.

- The target group of rural people will be identified and provided one time financial subsidy for the initial installation of a telecom service under universal service obligation.
- Multi operator environment will be in place in rural areas as well to provide choice and quality service at affordable price to the people placed in lowest strata of socio-economic hierarchy.
- RTDF will be utilized to provide telecom and ICT service(s) through operators to target groups in specified geographical areas.

8.6 Major Indicators

- Increase in density of fixed telephone line users.
- Increase in density of mobile telephone users.
- Increase in density of Internet Service users.
- Increase in the number of Point of Inter-connection (POI).
- Increase in Consumers Surplus.
- Improvement in Quality of Service (QoS).
- Gradual reduction in charges and tariffs for various telecom services.
- Increase in the degree of competition in the sector.
- Expansion of the service areas.
- Increase in users of telecom service(s) from various social groups.
- Increase in the investment.
- Improvement in the quality of life of general people especially rural inhabitants.
- Increase in the use of telecom products manufactured domestically.
- Reduction in the cost of Customer Premises Equipments.