

Background Paper for Identifying the Best Practice of ICT implementations in Asia and the Pacific

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1. Introduction

During the past decade, Asia and the Pacific region has experienced continuous Information and Communication Technology (ICT) infrastructure developments. ICT penetration in major cities in most of the countries has been fulfilled; however, in rural areas it is far below satisfactory levels and many people in those regions still do not have access to ICT. The digital divide still is a serious problem in Asia and the Pacific, since the region has extremely diverse income, population size, and geographical features, ranging from land-locked regions in the area of Himalayas and Central Asia to isolated islands in the Pacific. According to the latest ESCAP figures, over 50 out of 100 populations in the ESCAP region have mobile connection access, on average. However, when the figure is disaggregated, stark sub-regional and sub-national disparities become obvious.

Fiber optic cables have become indispensable backbone connections among the countries, while emerging wireless and space technology present good approaches to broaden coverage where the broadband cannot reach. Therefore, technology is ready to penetrate any area around the world. The key issue to bridging digital divide is how to reach "Last Mile" by using combinations of latest technologies and overcome various socio-economic barriers which prohibit wider ICT access.

2. Objective

Access to ICT was a central theme in the World Summit of Information Society (WSIS) Plan of Action adopted in Geneva in 2003. The goal was to ensure more than half the people in the world have access to ICT by 2015, among other goals. Although it has been 6 years since the WSIS Plan of Action was adopted, the goal may not be reached the way things stand. Therefore, more strategic and well targeted initiatives are required in order to meet the goal of WSIS.

The purpose of the paper is to illustrate the status of ICT initiatives and implementations which aim to bridge the digital divide. More precisely, this paper aims to help assess how many people, what kind of groups of people and which regions have been left out from accessing ICT, and to identify the main problems of further expanding ICT access which is the foundation of an inclusive information society. Without such foundation, meaningful utilization of ICT for development would not be feasible.

First, this paper introduces the current situation of the digital divide in Asia and the Pacific. Using and comparing the latest statistical data, it provides a bigger picture of ICT access through examining ICT penetration rate and nature of the digital divide in this region. Second, the paper discusses some latest technologies, such as broadband, wireless, and space technology, which could bridge the digital divide as significant access methodologies: This helps to determine which methodology is suitable to bridge the digital divide in certain locality and under certain condition. Finally, the paper identifies major and strategic ICT projects, mainly at the regional, sub-regional and national levels, which have been undertaken in Asia and the Pacific with a view to expanding ICT access. Those projects are also analyzed and assessed based upon their experiences and recommendations.

3. Methodology

This paper is a desk study and literature review of ICT projects in Asia and the Pacific based on the project reports, annual reports, research papers, and case studies which are all published and accessible on the Internet. Some statistical data are calculated based on ESCAP standard definitions.

4. Definitions and Scope

4.1 Scope of the research

The information is focused on the materials issued in 2004 and onwards (up to July, 2009), covering topics related to ICT access and connectivity and ICT projects in Asia and the Pacific. There are many aspects of ICT for development; however, this paper mainly focuses on ICT connectivity as a foundation of an inclusive information society.

The project and initiatives are selected and assessed in the paper based on the following criteria:

- 1) Large scale projects such at regional, sub-regional, and national levels.
- 2) Implementation methods are considered adequate, promising, and useful for the expansion of ICT.
- 3) Mainly the projects are funded and/or implemented by international organizations, financial institutions, research institutions, and governmental agencies.
- 4) Focus countries include least developing countries (LDC), landlocked developing countries (LLDC), and/or small island developing states (SIDS).

4.2 Definition of member states in Asia and the Pacific

This background paper focuses on regional and national ICT implementation in Asia and the Pacific, the area including East Asia, Central Asia, South Asia, Southeast Asia, Oceania, and islands in the Pacific. There are 58 ESCAP member States, and 9 associate members; within the member States, 14 are considered as LDC, 12 are LLDC, and 17 are SIDSⁱ.

4.3 Definition of ICT access

The definition of ICT is varied and has many connotations; hence this paper only aims at ICT access in a limited sense which excludes radio and TV. ICT access in this paper represents how many citizens of the member states, especially in un-connected and under-serviced areas, have access to ICT for development.

5. Characteristics of Asia and the Pacific

5.1 Geographical characteristics and challenges in Asia and the Pacific

The ESCAP region covers east and central parts of Eurasian continents and islands in the Pacific, the area stretching from the Far East and islands in the Pacific, to Turkey. There are a variety of landscapes in these regions, ranging from landlocked regions around the Himalayas and Central Asia to remote small islands in the Pacific Ocean. They have unique characteristics as well as common characteristics, such as lack of access to information, goods and services. Mountains and deserts surround typical landlocked regions in Asia and the Pacific, and some areas are located in high altitudes. Small islands are located away from the rest of the region and typically scattered in the middle of the Pacific Ocean.

5.2. LDC, LLDC, and SIDS in Asia and the Pacific

Since accessing goods and services is generally more difficult in the landlocked countries and remote islands than other groups of countries, geography is one of the primary obstacles of, not only expanding ICT access, but also expanding economic and social opportunities. There are 14 member states that are Least Developed Countries (LDC)ⁱⁱ in Asia and the Pacific, and four out of 14 are Landlocked Developing countries (LLDC), which are Afghanistan, Bhutan, Nepal, and Lao D.P.R.ⁱⁱⁱ. Another six states are Small Island Developing States (SIDS), which are Kiribati, Maldives, Samoa, Solomon Island, Tuvalu, and Vanuatu^{iv}.

6. Current status of digital divide in Asia and the Pacific

The digital divide has become an important criterion to measure the level of a country's readiness to take advantages of ICT for socio-economic development. This chapter aims to illustrate the digital divide with focus on access to ICT in Asia and the Pacific from a regional perspective. Using statistical data generated by ESCAP, the current status of the digital divide in terms of access to ICT is analyzed in the following categories: 1) fixed-telephone, 2) mobile cellular phone (and ratio of mobile subscription out of total share of all subscriptions), 3) Internet and 4) broadband. Data from 2003 and 2008 are used and the compound annual growth rate (CAGR) is applied in each category for the 5-year period.

In the first section, data is compared at the national level to determine changes and trends in each category. In the second section, the average statistical data by geographical sub-region and groups such as LDC, LLDC, and SIDS are compared for further analysis.

6.1. Digital divides at the national level

6.1.1. Fixed-telephone at the national level

Data extracted from E-01(Source: UNESCAP Statistics Division)

Fixed telephone lines per 100 populations			
Country/Name	2003	2008	CAGR(%)
Australia	52.6	44.5	-3.3
Republic of Korea	53.3	44.3	-3.6
Japan	47.3	40.2	-3.2
Nepal	1.4	2.8	14.4
Myanmar	0.8	1.4	13.4
Bangladesh	0.5	0.8	10.9

negative figures, in such countries as Australia (-3.3%), Japan (-3.2%), Korea (-3.6%). It is assumed that those countries have been in the transition to wireless, broadband or wireless broadband technology from fixed telephone line. Although 19 member states out of 51 show negative CAGR figures, some countries still depend on fixed telephone, due to unavailability of alternative communication means. High CAGR figures in terms of fixed telephone lines converge in LDC in South and Southeast Asia, such as in Bangladesh (10.9%), Myanmar (13.4%), and Nepal (14.4%)

6.1.2. Mobile cellular subscribers at the national level

Data extracted from E-02(Source: UNESCAP Statistics Division)

Mobile subscribers per 100 populations			
Country/Name	2003	2008	CAGR(%)
Australia	72.1	105.0	7.8
Republic of Korea	71.2	94.7	5.9
Japan	68.1	86.7	5.0
Pakistan	1.5	49.7	101.0
Uzbekistan	1.2	46.5	106.2
Bhutan	0.4	36.5	150.1
Tajikistan	0.7	34.4	115.1
Afghanistan	0.9	29.0	101.3
Nepal	0.3	11.3	105.0
Turkmenistan	0.2	6.9	103.9

Mobile technology is one of the most rapidly expanding technologies in terms of the speed of expansion and reach to un-connected segments of population and its prevalence has been growing rapidly especially in the developing countries for the past several years. Even though data is not reported by six member countries, 2003 and 2008 mobile cellular subscription data shows that CAGR of industrialized countries, including Australia, Japan, and Korea usage has increased at stabilized rates of 7.8%, 5.0% and 5.9% respectively. On the other hand, subscription

rates have exploded in developing countries, often reaching or exceeding double digits. In fact, growth exceeds triple digits in countries which are both LLDCs and LCDs, such as Afghanistan, Bhutan, and Nepal, with growth rates of 101.3%, 150.1%, and 105.0% respectively, which indicates the existence of underlying demand for communication means and unavailability of other means, such as fixed telephone lines.

Moreover, all the other countries which exceed triple digit growth, except Pakistan, are landlocked countries. These include Tajikistan, Turkmenistan, and Uzbekistan, with 115.1%, 103.9%, and 106.2%. This data could imply that landlocked areas have more advantages of mobile technology implementation and deployment. Although the growth rate is high in these countries, the density of mobiles is still lower than other groups of member countries, such as in Nepal (11.3) and Turkmenistan (6.9), which makes exponential growth possible on statistics. At the same time, there might be continued growth to meet communication demands for the greater number of un-connected people.

Another identified trend is a disparity in growth among developing countries and sub-regions. According to the 2008 data, coverage was relatively high in LLDC, such as Kazakhstan, Azerbaijan, and Armenia, with 96.1, 75.0, and 61.0 per 100 populations respectively, while the growth rates in SIDS are generally lower, with several having only single digit growth. However,

these figures need to be assessed in more detail within an overall picture which combines growths and coverage of other means of communication, such as fixed telephone lines, Internet and broadband networks to elicit a conclusion.

6.1.3. Mobile cellular as share of total telephone at the national level

Mobile technology is not only expanding rapidly, but also far outnumbering conventional fixed telephone line communication tools. The average mobile subscribers among the ESCAP countries already exceeded 50 per 100 populations. On the surface, it appears to qualify meeting the WSIS objective of providing access to half of the population at the regional level. However, there still are significant disparities and differential growth rates between more advanced countries and developing countries.

An interesting finding is that there are growth differences among LDCs. For example, countries with high growth rates of mobile share are Bhutan (59.1%), Nepal (34.8%), and Myanmar (17.5%), while a group of LDC countries show slow growth rates. These countries include Cambodia with only 1% and Afghanistan with 3.2% growth. However, it should be noted that the latter countries already had high of mobile share rates in 2003 including Cambodia with 94.1% and Afghanistan with 84.5%. Another observation finds that there are generally high growth rates in north and central landlocked countries: Kyrgyzstan (25.9%), Tajikistan (40.0%), Turkmenistan (78.4%), and Uzbekistan (40.7%). One interpretation could be that mobile technology probably fits the requirements of landlocked countries more so than in SIDS.

6.1.4. Internet users at the national level

(Data extracted from E-04(Source: UNESCAP Statistics Division))

Internet users per 100 populations			
Country/Name	2003	2008	CAGR(%)
Republic of Korea	65.9	77.8	3.4
Japan	48.4	69.2	7.4
Singapore	53.8	67.3	4.6
Malaysia	35.0	62.6	12.3
Cambodia	0.3	0.5	13.0
Bangladesh	0.2	0.3	13.8
Myanmar	0.0	0.1	27.3
Timor-Leste		0.1	

There are huge digital divides in the number of Internet users between developed or advanced countries and developing countries. The data in 2008 indicates that Internet users per 100 populations are 77.83 in Korea, 69.22 in Japan, 67.28 in Singapore and 62.57 in Malaysia. In contrast, in the same year, only 0.3 per 100 populations in Bangladesh, 0.5 in Cambodia, 0.1 in Myanmar and 0.14 in Timor-Leste subscribed to the Internet. This remains a serious problem, although this figure might not include occasional use of the

Internet at Internet cafes or other public access points. However, examining the other figures and tables on fixed telephone lines and much less available broadband networks, such usage might not be prevalent in un-connected and under-served areas among developing countries.

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