

## Methodology Note: Knowledge, information and communication habits and needs research in Myanmar

August 2015

This document summarizes the methodology used for LIRNEasia's Baseline Survey on Information, Knowledge and Communications Technology Needs and Uses in Myanmar. The fieldwork was carried out in February-March and May 2015. The objectives of the research are:

1. To understand current national ICT use and penetration levels
2. To establish a baseline for a future evaluation of the socio-economic impacts of mobiles in the country.

### 1.0 Data collection

Two main surveys – a household survey and cluster survey were conducted. The household survey covers information on characteristics of household members; housing and living status; household expenditure and income; respondent's profile; ICT use, information sources, needs and access; respondent's media habits; and perceived Impact of ICTs. The household head (or a suitable alternative) was first interviewed on household characteristics and then one household member between ages 15-65 was randomly selected (using the Kish grid) to be interviewed on individual characteristics and habits.

The cluster survey was conducted in each ward (urban) and village tract (rural) where household surveys were conducted and consisted of three main parts – village/ward administrator interview, mobile network data collection and grocery price collection. Village/ward administrator survey covers general information of ward/village and selected cluster, access to town, mobile network coverage, administrator duties/provision of government services, livelihood, access to markets, schools and health facilities. The mobile network data was collected through a mobile app, Open Signal, and included signal strength and data network quality metrics. The price survey was aimed at collecting the prices of a predetermined group of essential grocery items at the cluster level.

The CAPI system hosted by World Bank Survey Solution 3.2 server is used in this survey. ASUS Fone Pad 7 with Dual SIM tablets were the devices used during the interview to run the Survey Solution Interviewer Application as well as the Open Signal app for mobile signal testing. Huawei 8816 D dual SIM handsets were also used for the Open Signal app for mobile signal testing. The task of mobile signal testing was assigned to field supervisors.

It should also be noted that field teams for the Chin, Rakhine and Shan States were formed with native speakers for easier communication. Local interpreters were hired for a few minority languages such as Pa-Oh, Larhu, Ahkar and Chinese. There are about 300 interviews which were conducted in local languages. Among them, less than half of the interviews were carried out with the assistance of local interpreters.

Fieldwork was conducted in local language/dialects by a total field staff (including supervisors) of 90 by Third Eye Co on behalf of LIRNEasia in February, March and May 2015.

### 2.0 Sample design

The sample was designed to represent all accessible areas of Myanmar, both urban and rural with no more than  $\pm 2.5\%$  margin of error. The township was used as the Primary Sampling Unit (PSU). There are altogether 330 townships in Myanmar. 32 townships from Kachin State, Kayah State, Kayin State, Chin State, Sagaing Region, Rakhine State and Yangon Region are excluded from the PSU sampling frame due to inaccessibility and

security concerns. The excluded townships contain 3% of total households, or 3.5% of population living in conventional households.<sup>1</sup> Excluded townships are listed in Annex 1.

## 2.1 Stratification

A stratified four stage PPS cluster sampling design was used.

The main stratification was based on the population size of the cities/townships. There are three main strata – Big cities, Other Major Cities and Smaller Townships. Big Cities are Yangon, Mandalay and Nay Pyi Taw, each of which have a population that is greater than one million people. Other Major Cities are described as townships with populations of 0.25 million to 1 million. A few townships with smaller populations are also allocated under this stratum based on their level of importance, especially considering their administrative structure and geographic coverage. The remaining townships of small population sizes are included under Smaller Townships.

Two additional levels of sub strata based on geographic coverage and location of residence as per administrative structure were used. The first level sub strata is the 6 geographic areas which are described as Northern hills, Eastern hills, Middle dry zone, Lower valley, Delta & Long coast. The second level sub stratum is Urban and Rural. Samples are allocated as one third and two thirds as appropriate between urban and rural. See Annex 2 for details.

The township sampling frame was based on the Provisional Results of Population and Housing Census of Myanmar 2014.

## 2.2 Selection procedure

The selection procedure used was as given in Table 2.

**Table 1: Sample selection procedure**

Stage	Sampling Unit	Sampling frame	Method of selection	Number selected
Stage 1	Township	List of townships in order of # of household [as per 2014 National Census]	PPS systematic sampling with 2 replicates	70 townships
Stage 2	Wards (urban) + village tracts (VT)s (rural)	List of Wards/VTs in sample townships in order of # of HH [as per 2014 National Census]	PPS Systematic sampling	2 wards + 4 VT per township
Stage 3	Segment: Street/block (urban) +Village (rural)	List of segments in sample wards/VTs in order of # of HH [obtained on the field from local administrator]	PPS Systematic sampling	2 streets per ward + 2 villages per VT
Stage 4	Household	none; HHs within sample segment listed on the field	Random walk following right-hand-rule starting from pre-determined starting points <sup>2</sup> using fixed intervals (urban:7 HH, rural:3 HH) <sup>3</sup>	10 HH per Segment
After Household data collected from HH head				
	Individual	List of HH members aged 15-65 in order of age	Kish grid (random number chart)	1 individual per HH

<sup>1</sup> i.e., excluding those living in institutions.

<sup>2</sup> Predetermined starting points and alternatives: A. Most popular religious building in the Segment; B. intersection of streets (if A not available); C. Office/ clinic or school (if B not available).

<sup>3</sup> *Method of household substitution for non-contactable households:* If, after 3 call-backs on 3 consecutive days a selected household could not be reached, the following procedure was followed: The next household directly to the right of the main household (when interviewer has his/her back to the entrance) was selected; only one attempt was made to visit this house. If this was not successful, the house directly of the left of the main household was selected; again, this could only be visited once. If the interviewer did not have success at either household, he or she had to go to the next selected household, which he or she could reach by adding intervals from the initially selected household.

## 2.3 Determination of Sample Sizes:

### 2.3.1 Household sample size

At the 95% confidence interval, the national level minimum household sample required for a proportion with +/- 2.5% margin of error using multi-stage sampling procedure would be:

$$n = \frac{4s^2}{d^2} * deff$$

where

- n = number of sample required for the survey
- d = margin of error (2.5% of proportion)
- s<sup>2</sup> = variance of the sample proportion (here we set the proportion at 0.5 so that the variance s<sup>2</sup> (0.25) is at the maximum)
- deff = Design Effect (1.3)

Therefore, the minimum household sample required at the national level would be  $\frac{4*0.25^2}{(0.5 \times 0.025)^2} * 1.3 = 8,320$ .

Based on above proposed sampling procedure and minimum required sample size, allocated numbers of sample household per city/ township by urban and rural are presented in Table 3.

**Table 2: Allocated number of sample households**

Main stratum	Geographic area		Sample city/ townships	Total Townships	No. of Sample Townships	Number of Sample Households		
						Urban	Rural	Total
<b>No. of townships represented by survey</b>				<b>298</b>	<b>70</b>	<b>3,680</b>	<b>4,720</b>	<b>8,400</b>
<b>1. Big Cities (16.3% of represented households)</b>				<b>46</b>	<b>16</b>	<b>1,520</b>	<b>400</b>	<b>1920</b>
	4. Lower Valley	1	Yangon	31	8	960	-	960
	3. Middle Dry Zone	2	Mandalay	7	4	320	160	480
	3. Middle Dry Zone	3	Naypyitaw	8	4	240	240	480
<b>2. Other Major Cities (29.5% of represented households)</b>				<b>51</b>	<b>24</b>	<b>960</b>	<b>1920</b>	<b>2880</b>
	1. Northern Hills (2.0% of represented households)			4	4	160	320	480
	2. Eastern Hills (3.6% of represented households)			7	4	160	320	480
	3. Middle Dry Zone (7.6% of represented households)			13	4	160	320	480
	4. Lower Valley (5.0% of represented households)			8	4	160	320	480
	5. Delta (7.0% of represented households)			11	4	160	320	480
	6. Long Coast (4.3% of represented households)			8	4	160	320	480
<b>3. Smaller Townships (54.2% of represented households)</b>				<b>201</b>	<b>30</b>	<b>1,200</b>	<b>2,400</b>	<b>3,600</b>
	1. Northern Hills (5.7% of represented households)			30	4	160	320	480
	2. Eastern Hills (9.5% of represented households)			48	6	240	480	720
	3. Middle Dry Zone (13.8% of represented households)			44	6	240	480	720
	4. Lower Valley (9.4% of represented households)			30	6	240	480	720
	5. Delta (6.3% of represented households)			18	4	160	320	480
	6. Long Coast (9.6% of represented households)			31	4	160	320	480

### 2.3.2. Cluster sample size

The household surveys were carried out in a total of 554 wards and villages ('clusters'); cluster-level data was collected as per Table 1 in each of these clusters.

## 2.4 Weighting of sample according to national census data

The survey focused on two units – household and individual aged 15 to 65 year olds. Therefore, two sampling weights are required for estimation. Weights were calculated based on the Results of Population and Housing Census of Myanmar 2014, as released in May 2015.

Household weights are the inverse of multiplication of sample selection probabilities at the different stages. Selection with replacement is assumed for simplicity for the first stage unit (township)

selection though PPS systematic with 2 replicates is employed. It should be noted that household weights are design weights as per sample design. We finally have one household weight for urban and one household weight for rural for each sample township. It is worth to note that household weight should be applied only to the household related variables.

Sampling weights for individual aged 15 to 65 years is derived with application of household weights. City (Yangon, Mandalay and Nay Pyi Taw), gender and age group (Under 5 years, 5 - 14 years, 15 - 24 years, 25 - 34 years, 35 - 44 years, 45 - 54 years, 55 - 65 years and Over 65 years) of respondent are three additional variables to basic strata variables strata, geographic area and urban/rural. First, estimated total population by those six variables in nesting are obtained from household roster information with application of household weights. Second, numbers of respondents selected by Kish Grid procedure for the same criteria are obtained from the respondent profile data. There are altogether 290 (29 for strata X 2 for gender X 5 for age group) different criteria for individual weights. The ratio of "estimated total population" and "number of respondents" for respective criterion is individual weights for aged 15 to 65 year olds respondents.



## Annex 2: Sample stratification

### MAIN STRATA: POPULATION SIZE

	Criteria	Townships	Population (%)
Big cities (Yangon, Mandalay, Nay Pyi Taw)	Population >1m	46	15.7
Other major cities/ townships*	Population 0.25-1m	51	28.4
Smaller townships	Population <0.25m	201	52.3
Excluded townships	Inaccessible	32	3.6

Based on Provisional Results of 2014 Population & Housing Census of Myanmar

\*Also includes a few important townships in terms of administration and resources

### SUB- STRATA 1: GEOGRAPHIC REGION

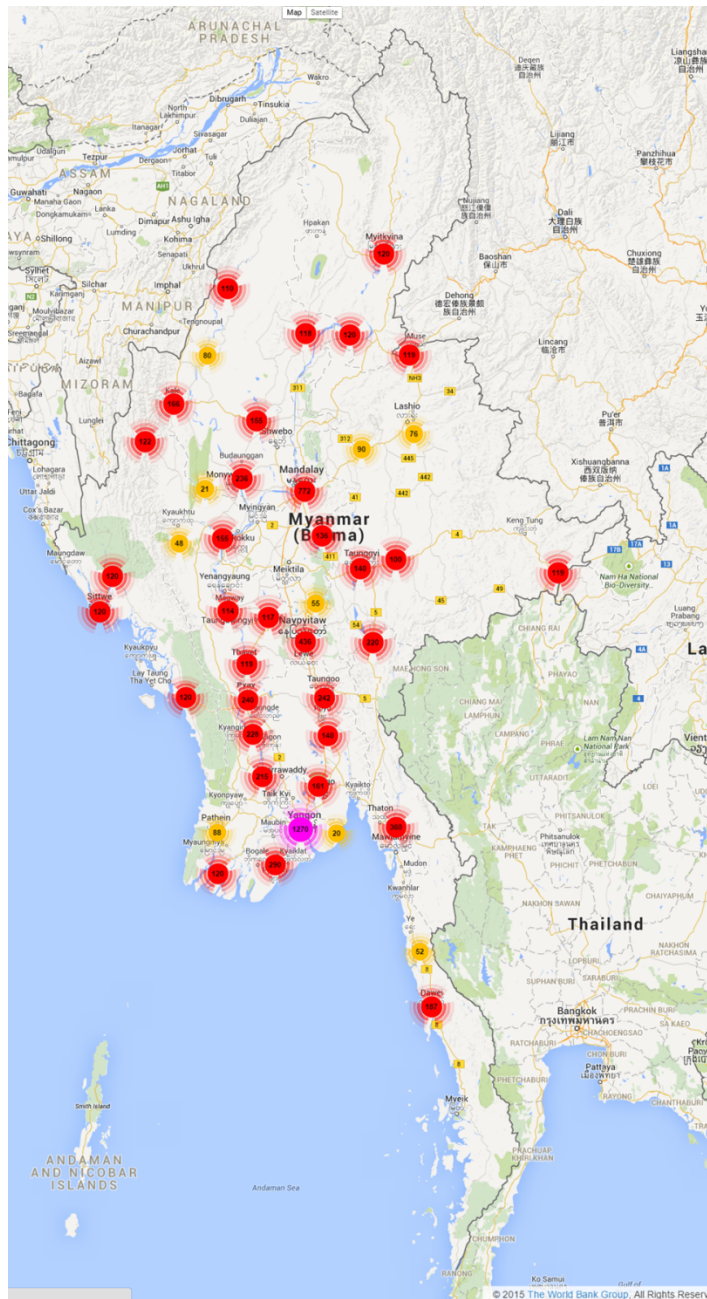
	Population (%)
Northern hills	8.9
Middle dry zone (incl. Mandalay and Nay Pyi Taw)	26.3
Eastern hills	14.4
Lower valley (incl. Yangon)	23.8
Delta	12.9
Long coast	13.7

### SUB- STRATA 2: URBAN-RURAL

	Population (%)
Urban	29.6%
Rural	70.4%

### Annex 3: Map of survey locations

Figure 2 Overview Map of Survey Locations



Note: Numbers in dots indicate number of surveys conducted in that location.

Figure 3 Map of Survey Locations in Yangon City

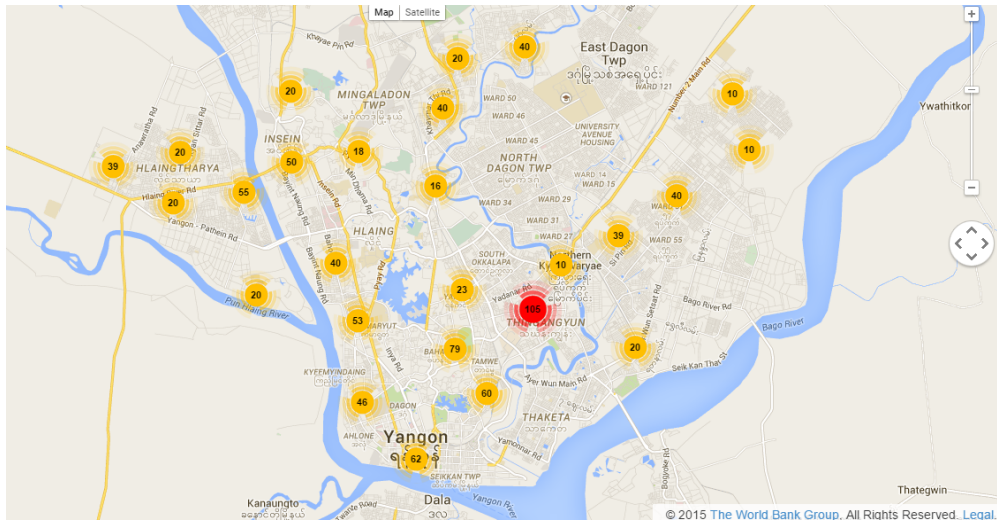


Figure 4 Map of Survey Locations in Myitkyina, Kachin State, Northern Hilly Area



Figure 5 Map of Survey Locations in Muse, Shan State, Eastern Hills





*Annex 4: Myanmar Socio-economic classification grid*

<b>Socio-economic classification group</b>	<b>MMK monthly income</b>	<b>Approximate USD equivalent<sup>4</sup></b>
E	100,000 or below	96 or below
D	100,001 - 300,000	97 - 289
C	300,001 - 500,000	290 - 482
B	500,001 -100,0000	483– 965
A	Over 100,000	Over 966

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<sup>4</sup> MMK1036.10 per USD, as at 1 March 2015 ([www.xe.com](http://www.xe.com))  
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*Annex 5: State/regionwise sample distribution versus Myanmar population distribution*

State/ Region	Population					Sample (planned)		
	Total (millions)	Urban (millions)	Rural (millions)	Urban (% of total)	Rural (% of total)	Urban-Sample	Rural-Sample	Total sample
Ayeyawady	6.2	0.9	5.3	14.1%	85.9%	320	640	960
Bago	4.9	1.1	3.8	22.0%	78.0%	320	640	960
Chin	0.5	0.1	0.4	20.9%	79.1%	40	80	120
Kachin	1.6	0.6	1.1	35.9%	64.1%	80	160	240
Kayah	0.3	0.1	0.2	25.3%	74.7%	40	80	120
Kayin	1.5	0.3	1.2	21.9%	78.1%	40	80	120
Magway	3.9	0.6	3.3	15.1%	84.9%	240	480	720
Mandalay	6.1	2.1	4.0	34.8%	65.2%	440	400	840
Mon	2.1	0.6	1.5	27.8%	72.2%	80	160	240
Nay Pyi Taw	1.2	0.4	0.8	32.5%	67.5%	240	240	480
Rakhine	2.1	0.4	1.7	16.9%	83.1%	120	240	360
Sagaing	5.3	0.9	4.4	17.1%	82.9%	280	560	840
Shan	5.8	1.4	4.4	24.0%	76.0%	320	640	960
Tanintharyi	1.4	0.3	1.1	24.0%	76.0%	80	160	240
Yangon	7.4	5.2	2.2	70.1%	29.9%	1,040	160	1,200
<b>Total</b>	<b>50.2</b>	<b>14.9</b>	<b>35.3</b>	<b>29.6%</b>	<b>70.4%</b>	<b>3,680</b>	<b>4,720</b>	<b>8,400</b>