# Global e-Indices' Rankings and Bangladesh:
*Indicators for Measuring Digital Bangladesh*

Access to Information (a2i) Programme

*In partnership with*

Bangladesh Bureau of Statistics (BBS)
And
Statistics and Informatics Division (SID)

# Global e-Indices' Rankings and Bangladesh:

*Indicators for Measuring Digital Bangladesh*

**Access to Information (a2i) Programme**

*In partnership with*

**Bangladesh Bureau of Statistics (BBS)**

And

**Statistics and Informatics Division (SID)**

April 2013

'Access to Information' (a2i) Programme is hosted by the Prime Minister's Office (PMO) and the Cabinet Division, and supported by UNDP Bangladesh and the USAID, which seeks to improve the accessibility and quality of public services for underserved communities and groups delivered mostly by Upazilas.

**Global e-Indices' Rankings and Bangladesh:**
**Indicators for Measuring Digital Bangladesh**

**Published jointly by**
Access to Information (a2i) Programme in Bangladesh
Prime Minister's Office (PMO)
Government of the People's Republic of Bangladesh
And
Bangladesh Bureau of Statistics(BBS)
Statistics & Informatics Division (SID)
Ministry of Planning
Government of the People's Republic of Bangladesh

April, 2013


Research Team:
Mr. Anir Chowdhury, Policy Advisor, a2i
Mr. Hasanuzzaman, Policy Associate, a2i
Dr. Md. Abdul Mannan, Director (Enabling Environment), a2i
Mr. Md. Mahfuzul Islam Shamim, Policy Associate, a2i
Mr. Md. Mazedul Islam, Programme Associate, a2i
Ms. Farzana Sultana, Programme Associate, a2i
Mr. Tahmid Hasnat Khan, Deputy Secretary, SID
Mr. Md. Nazrul Islam, Senior System Analyst, BBS

*Disclaimer: The views expressed in this paper are those of the author(s) alone and do not necessarily reflect the views of Government of Bangladesh, UNDP Bangladesh and USAID.*

The a2i hereby extends special gratitude to UNDP Bangladesh and USAID for their continuous technical and financial support.

ISSN 0245 8398

*Development partners:*

# Acknowledgements

This report has been prepared by the Access to Information (a2i) programme with financial support of UNDP Bangladesh and USAID. This is the first time that an attempt has been made in mapping the data for monitoring and evaluation of Bangladesh, which also helped to bring about the salient features from all aspects of ICT4D in the country. The report has been prepared by Mr. Hasanuzzaman, Policy Associate, a2i under the supervision of Mr. Anir Chowdhury, Policy Advisor, a2i. It has been finalized through, *ab initio*, a brainstorming session with researchers and experts, followed by a national Roundtable discussion, incorporating the feedbacks, comments generated by the consultation with the stakeholders and experts' inputs.

Mr. Md. Nojibur Rahman, Secretary, Statistics and Informatics Division (SID), Mr. Golam Mostafa Kamal, Director General, Bangladesh Bureau of Statistics (BBS) and Mr. K. A. M. Morshed, Assistant Country Director, UNDP Bangladesh, attended and delivered their guiding thoughts on the national Roundtable discussion on the draft report. The Roundtable itself was a milestone for this study as the participants from different strata e.g. statistical officers from various government departments, officers, academicians, members of civil society, and specialists were very keen to provide their thoughtful and constructive ideas for further improvement of the report. The role of Dr. Sajjad Zohir, Director, Economic Research Group (ERG), should be highlighted here for his overall support to accomplish the study.

We would also like to thank all interviewees for providing us with useful information and opinions, in particular the people we have interviewed face-to-face and those who gave useful input in the Roundtable discussion. Their insights and advice have been invaluable. We here also extend our humble gratitude to UNDP Bangladesh and USAID for their valued and continuous support toward the a2i Programme.

## Acronyms

| | |
|---|---|
| a2i | Access to Information |
| AVCB | Activating Village Courts in Bangladesh |
| BBS | Bangladesh Bureau of Statistics |
| BCC | Bangladesh Computer Council |
| BTCL | Bangladesh Telecommunications Company Limited |
| BTRC | Bangladesh Telecommunication Regulatory Commission |
| ECA | Economic Commission for Africa |
| ECLAC | Economic Commission for Latin America and the Caribbean |
| EFT | Electronic fund transfer |
| EGDI | e-Government Development Index |
| ERG | Economic Research Group |
| ESCAP | Economic and Social Commission for Asia and the Pacific |
| ESCWA | Economic and Social Commission for Western Asia |
| HIES | Household income and expenditure survey |
| ICT | Information and Communication Technology |
| ICT4D | ICT for development |
| IDI | ICT for Development Index |
| IDPD | Improving Democracy through Parliamentary Development |
| IGC | International Growth Centre |
| IGS | Institute of Governance Studies |
| IPB | ICT Price Basket |
| IT | Information technology |
| ITU | International Telecommunication Union |
| LFS | Labour force survey |
| MoI | Ministry of Information |
| MoICT | Ministry of Information, Communication and Technology |
| MoPT | Ministry of Posts and Telecommunications |
| NRI | Networked Readiness Index |
| NSDS | National Strategy for the Development of Statistics |
| NSO | National Statistics Office |
| NSS | National Statistical System |
| OECD | Organization for Economic Cooperation and Development |
| PPP | Purchasing power parity |
| PRP | Police Reforms Programme |
| RTI | Right to Information |
| SFYP | Sixth Five Year Plan |
| SID | Statistics and Informatics Division |
| SPDB | Strategic Priorities of Digital Bangladesh |
| TBD | To be decided |
| UIS | UN Educational, Scientific and Cultural Organization Institute for Statistics |
| UISCs | Union Information Services Centre |
| UN | United Nations |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| USD | United States dollar |
| WSIS | World Summit on Information Society |
| WEF | World Economic Forum |

# Table of Content



**List of tables**



**Annexures**

## 1. Introduction

Internet, and information and communication technologies (ICTs), came into prominence in the late 1990s almost coinciding with the onset of the "good governance" agenda which sought to reform the role of the state in promoting economic growth and social development. After seven years of the Tunis Commitment, it is, nevertheless, difficult to offer a simple and short definition which would sufficiently capture the dynamic relationship between ICTs and its ability in accelerating economic growth and reducing poverty.[1] A report by the OECD, titled, *Innovation and Inclusive Development*, captures this complex phenomenon in the following eloquent way:

> "ICTs constitute the most transformative innovation of the recent past. ICTs are interesting in the context of the inclusive development debate because of their ability to strengthen connectivity not only of higher-income groups but also of those at the lower income level. Indeed, a variety of ICT-based applications are geared at bringing fundamental changes to disadvantaged groups" (OECD 2012: 43).

The use of ICTs is conceived as an "enabling" factor for facilitating and streamlining institutional processes toward improving public service delivery to the excluded. In short, this process is coined as ICT for development (ICT4D) where ICT is perceived to have the potential to boost economic, social and political development, contributing toward the progress of humankind as a whole (Rue 2011). ICTs can expand the capacity of the poor by empowering them to enjoy their right to freedom of expression in the decision-making process, alongside ensuring their participation in the opportunities brought about by economic growth. In its election manifesto "Vision 2021 Bangladesh: A New Horizon," the incumbent Awami League government introduced the concept of "Digital Bangladesh," a mirror reflection of the Information Society vision. The two key pillars of the Digital Bangladesh – connecting citizens and facilitating pro-poor services at citizen's doorsteps – exemplifies innovative and pluralist demand-drive service delivery models, catering to the needs of the poor.

Subsequently, the newly elected government put in place a number of laws, policies and strategies to put in action the Digital Bangladesh vision. The ICT Policy 2009, ICT Act 2009 and the Right to Information (RTI) Act 2009 have laid the foundations

---

[1]In 2005, governments reaffirmed their dedication to the foundations of the Information Society in the Tunis Commitment and outlined the basis for implementation and follow-up in the Tunis Agenda for the Information Society. The Tunis Commitment was a consensus statement of the World Summit on the Information Society, adopted on November 18, 2005 in Tunis, Tunisia. In particular, the Tunis Agenda addresses the issues of financing of ICTs for development and Internet governance that could not be resolved in the first phase. The Tunis Commitment is available online at http://www.itu.int/wsis/docs2/tunis/off/7.pdf (Accessed on 29/12/2012).

for identifying the Digital Bangladesh priorities for the government (IGS 2010). In 2010, the government approved the Digital Bangladesh Strategy and the amended Telecommunication Act 2010.

All such steps have been in the right direction. However, heed has to be now paid towards tracking progress through designing indicators for assessing the ICT4D impact. In the quest to quantify and evaluate a country's preparedness for the Information Society, envisaged under the Tunis Commitment, different institutions have come up with a wide variety of methods in designing and constructing indices of "e-governance" or "e-development." These composite indices are made up of different sub-indicators that are based on various statistics. It is to be pointed out here that statistical science does not require high technical sophistication; much of the richness of the modern subject comes from those whose primary expertise is in substantive fields, and who bring subject-matter enhancements to the application of statistics (Skinner, 2012).

There is, nevertheless, consensus that statistics is a tool for problem-solving and decision-making which can be used in many areas of life in order to make well-informed choices, take sound decisions and understand the society and the world we live in. However, one must be cautioned of the fact that numbers in the public arena are also at risk of misuse in support of different interests. As is known, the weight of each component of the index, as well as the chosen statistics, differ among indices and as a result, there are many facets of the statistics discipline whereby its relevance varies according to its users.

In the latest budget speech (FY2012-13), the Hon'ble Finance Minister of Bangladesh, Mr. Abul Maal A Muhith, confirmed that a number of ministries had introduced 'Digital File Tracking System' and more importantly, all the Deputy Commissioners' offices have started providing e-service to the clients. In addition, the Office of the Controller and Certifying Authority has been established for issuance of e-certificates; electronic Fund Transfer (EFT) was introduced in three ministries and it was indicated that the system would be expanded at district level. These are all good steps and milestones affirming the gradual digital transformation process in Bangladesh. However, without a framework for assessing such a phenomenon, it becomes difficult to capture and follow the socio-economic implications of ICT4D in Bangladesh.

### *1.1 Objectives and methodology*

Because this is a work in progress, it is expected that further research works and actions will need to be carried out with the objective of informing Bangladesh's position in the global rankings, and, at the same time, initiating a process for tracking the digital transformation of Bangladesh with the aid of a set of indicators, designed to capture the national scenario. For instance, Bangladesh is not reported in the ITU's

latest ICT for development index (IDI) and it is the overarching aspiration that this report will not only kick-off a process for tracking the socio-economic ICT4D transformation of Bangladesh, as envisioned under the national Perspective Plan, but at the same time, help to fill key data and information gaps.

In so doing, the two, *inter alia*, objectives of the paper are to (i) report on the latest rankings of three most commonly referred e-indices and their sub-indices; and, (ii) set the ground for exploring a revised set of indicators for better reflection of country-specific ICT4D transformation. It is believed that home-grown indicators will allow rankings to highlight the extent of technological transformation in the national context. Such an exercise will also help to identify, facilitate and consolidate the data collection and reporting processes in a transparent way. This would help identify the type of data that needs to be supplied to the international organisations.

The report blends in a mix of primary and secondary sources of information. Relevant literature was studied to learn about the strengths and weaknesses of global e-indices, bearing in mind the objective of bringing such assessment closer to the prevailing reality in country-specific contexts. We identify the discrepancy in three widely used global e-indices' rankings, by considering the top 3 and bottom 5 countries, alongside 15 countries in Asia. The latest rankings are taken as the point of departure for the present analysis. This helps to comprehend the ability of the three e-indices as a predictive modelling exercise in capturing the extent of ICT transformation.

In addition, national plans and strategies of Bangladesh were studied to examine the indentified indicators and provide recommendations for reviewing these by taking into cognisance the ICT4D aspects. This has been done with the primary objective of increasing the present report's relevance for both the state and non-state concerned stakeholders, and international partners involved in the ICT4D monitoring and evaluation process.

A brainstorming session was organised by the Access to Information (a2i) programme with researchers and experts at the beginning of the study. We presented the preliminary findings to a group of informed researchers and practitioners, and the revised final findings in a national Roundtable discussion attended by secretaries of concerned government departments, academicians, civil society and media representatives, and officials of international agencies.[2] This present report is

[2] The Roundtable discussion was organized on 28 January 2013. Mr. Md. Nojibur Rahman, Secretary-in-charge, Statistics and Informatics Division (SID), was the Chief Guest whilst Dr. Jnanrendranath Biswas, Executive Director, Bangladesh Computer Council (BCC) and Mr. Khalilur Rahman, Additional Secretary, Ministry of Information, attended the discussion as Special Guests. The discussion was chaired by Mr. Golam Mostafa Kamal, Director General, Bangladesh Bureau of Statistics (BBS). A draft of this report was presented by the author of the present report.

informed by the discussions of these meetings (see section 3). In particular, the draft report prepared under a joint initiative supported by the Bangladesh Growth Research Programme of IGC and ERG helped to set the ground for mapping the data structure and processes, alongside a set of indicators.[3]

*1.2 Limitations*

This paper does not attempt to make an assessment of all the "e-indices" tools that are currently available. The paper's second limitation is that it does not investigate the nitty-gritty issues relating to the methodologies, since such a topic merits a separate and lengthy discussion. This paper offers a short and succinct report of the latest rankings of some of the most commonly referred e-indices. The report falls short of drawing lessons from other countries' experience, because the objective here is to investigate a 'development bandwidth' from the perspective of advancing the ICT agenda for inclusive development in Bangladesh. Although a limitation, the purpose is to track Bangladesh's digital transformation by articulating new partnerships involving public, private and international actors, and, at the same time, it offers a map of indicators prepared on the basis of consultation and interviews with experts.

Finally, we recognise the methodological constraint that the objectivity and impartiality of secondary sources may be questionable, and that media reports and even academic work may have limited coverage and bias. Overall, however, with the triangulation of methods – perusal of secondary material, statistics and survey material, and in-depth interviews – we are reasonably confident that our findings are valid, despite constraints of time and resources.

*1.3 Layout of the report*

In the following section we look at the trends with regard to the latest rankings of three global e-indices. An analysis of the different countries' rankings in the composite index and their sub-indices is presented in section 2 to depict the relative performances of selected Asian countries. An attempt has been made to put forward a set of recommendations, drawing on the Roundtable discussion, the Sixth Five Year Plan (SFYP) FY2011-FY2015 and the ten-year "Perspective Plan of Bangladesh: Making Vision 2021 A Reality," and the draft prepared by the a2i titled "Strategic Priorities of Digital Bangladesh" (SPDB), in Section 3.[4] This section draws on the ideas and suggestions generated during the Roundtable discussions, and also from the discussions and in-depth interviews with ICT4D experts. The final section 4

[3] A special thanks to Dr. Sajjad Zohir, Director, Economic Research Group (ERG), for sharing the draft with the a2i.

[4] Draft available online at http://www.a2i.pmo.gov.bd/tempdoc/Strategic_Priorities_of_ Digital_Bangladesh_Jan_2011.pdf (Accessed on 27/02/2013)

concludes by proposing further areas of research works that may be undertaken for drawing lessons in adopting policies and implementing projects, aimed at consolidating the monitoring and evaluation of the Digital Bangladesh process.

### *1.4 Audience*

Since the overall objective of this research is to facilitate better recording of the Digital Bangladesh transformation, we hope the knowledge generated will benefit various stakeholders. Thus, multiple audiences can use this report. First, the report is addressed to public officials in Bangladesh (and developing countries) who are tasked to collect and analyse, and at the same time, provide data to international organisations, in assessing ICT4D. It is hoped that discussion and debate will be generated amongst the government departments about the issues and suggestions raised by the study. Second, it is addressed to an academic audience. We present latest data and offer new indicators for understanding the role of the ICT4D in the context of a developing country like Bangladesh, which contributes toward new knowledge. Finally, the study is addressed to concerned citizens who are keen on monitoring the performance of Bangladesh and in advocating measures for tracking the country's digital transformation.

## 2. Global E-Indices: Latest Rankings and Asia

The raison d'être of global surveys is to assess whether countries are deploying e-governance measures for promoting inclusive development. Implicit in this concept is that a low-income country with a very large population like Bangladesh must exert far more effort to achieve a given level of e-government development in providing many more online access points to its citizens, than a country with high-income and low population. Notwithstanding their limitations, indices are useful in ranking countries according to a defined set of categorised indicators.[5] In the ensuing discussion, we report on the latest rankings of three commonly referred e-indices. The objective here is to broaden our understanding about the different messages emanating from the global "e" rankings.

### *2.1 World Economic Forum*

The World Economic Forum's (WEF) *Networked Readiness Index* (NRI) measures the propensity for countries to exploit the opportunities offered by ICTs (table 1). The NRI assesses the impact of ICT on the competitiveness of nations. The Index is a composite of three components: the environment for ICT offered by a given country or community (market, political and regulatory, infrastructure environment), the readiness of the community's key stakeholders (individuals, businesses, and governments) to use ICT, and finally the usage of ICT amongst these stakeholders.

**Table 1: Rankings in the Networked Readiness Index (NRI)**

| Countries | NRI | | Sub-indices | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Environment | | Readiness | | Usage | |
| | *2012* | *2011* | *2012* | *2011* | *2012* | *2011* | *2012* | *2011* |
| *Top 3* | | | | | | | | |
| **Sweden** | 1 | 1 | 3 | 1 | 3 | 3 | 1 | 3 |
| **Singapore** | 2 | 2 | 1 | 4 | 8 | 1 | 5 | 4 |
| **Finland** | 3 | 3 | 2 | 3 | 2 | 2 | 4 | 6 |
| *Asia* | | | | | | | | |
| **Bangladesh** | 113 | 115 | 123 | 115 | 103 | 104 | 108 | 122 |
| **Cambodia** | 108 | 111 | 89 | 109 | 106 | 111 | 111 | 110 |
| **China** | 51 | 36 | 64 | 57 | 66 | 16 | 51 | 36 |
| **India** | 69 | 48 | 78 | 58 | 64 | 33 | 78 | 67 |
| **Malaysia** | 29 | 28 | 23 | 36 | 55 | 10 | 29 | 25 |
| **Nepal** | 128 | 131 | 125 | 134 | 111 | 118 | 135 | 133 |
| **Pakistan** | 102 | 88 | 112 | 96 | 97 | 60 | 107 | 96 |

*(Table 1 contd.)*

[5] See Minges (2005) for an interesting discussion on the strengths and weaknesses of e-indices.

*(Table 1 contd.)*

| Countries | NRI | | Sub-indices | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Environment | | Readiness | | Usage | |
| | *2012* | *2011* | *2012* | *2011* | *2012* | *2011* | *2012* | *2011* |
| **Philippines** | 86 | 86 | 111 | 94 | 77 | 99 | 86 | 71 |
| **Sri Lanka** | 71 | 66 | 71 | 75 | 67 | 42 | 71 | 82 |
| **Thailand** | 77 | 59 | 59 | 64 | 75 | 53 | 83 | 61 |
| **Vietnam** | 83 | 55 | 96 | 78 | 86 | 35 | 69 | 73 |
| ***Bottom 5*** | | | | | | | | |
| **Chad** | 138 | 138 | 139 | 138 | 130 | 137 | 140 | 137 |
| **Mauritania** | 139 | 130 | 135 | 124 | 137 | 133 | 138 | 128 |
| **Angola** | 140 | 133 | 141 | 135 | 139 | 127 | 130 | 130 |
| **Yemen** | 141 | n/a | 134 | n/a | 136 | n/a | 141 | n/a |
| **Haiti** | 142 | n/a | 142 | n/a | 142 | n/a | 139 | n/a |

**Source:** Dutta et al. (2010) and (2012)

Sweden, Singapore and Finland are the top three countries in the latest NRI rankings (Dutta et al 2012). They have succeeded in maintaining this position since the last survey in 2010. Chad, Mauritania, Angola, Yemen and Haiti constitute the bottom 5 group. In case of Asia, barring Bangladesh, Cambodia and Nepal, all other countries saw a fall in their ranking in 2011-12 when compared to the preceding year. It is of interest to point out that Bangladesh's decline in the environment sub-index ranking (from 115 to 123) has been compensated by improvements in the readiness (104 to 103), and usage (122 to 108) sub-indices of the NRI. Similar explanation can be applied to other countries whose rank in the NRI reflects a balanced reflection of its components. For instance, the position of Chad has remained the same at 138 which is explained by its low rankings in the sub-indices.

Malaysia's improvement by 13 places in the environment sub-index is noteworthy (from 36 to 23); Nepal also moved up by 9 places (from 134 to 125). In the readiness sub-index, Philippines registered the most significant progress by moving up 22 places (from 99 to 77). Bangladesh, Sri Lanka and Vietnam are the outliers in the usage sub-index whilst all other Asian countries' rankings declined in the latest scores. Bangladesh moved up by 14 places (from 122 to 108), Sri Lanka by 11 places (from 82 to 71) and Vietnam by four places (from 73 to 69). What is of interest here is that despite the global norm of quick ICT adoption by the non-state sectors, the public sector in Bangladesh scores higher in the usage sub-index than the private sector.

*2.2 International Telecommunication Union (ITU)*

The *ICT Development Index* (IDI) is constructed by the UN's International Telecommunication Union (ITU), based on a globally agreed set of ICT indicators. This makes it a valuable tool for benchmarking the most important indicators for measuring the Information Society. The Index is assembled using 11 ICT indicators,

grouped in three categories: access, use and skills. The access sub-index captures ICT readiness, and includes five indicators (fixed-telephony, mobile telephony, international Internet bandwidth, households with computers, and households with Internet). The use sub-index assesses ICT intensity, and includes three ICT intensity and usage indicators (Internet users, fixed (wired)-broadband, and mobile broadband). The skills sub-index relates to ICT capability or skills as indispensable input indicators which is given less weight in the computation of the IDI, compared with the other two sub-indices. It includes three proxy indicators (adult literacy, gross secondary enrolment and gross tertiary enrolment).

**Table 2: Rankings in the ICT Development Index (IDI) and ICT Price Basket (IPB)**

| Countries | IDI | | IDI Sub-index | | | | | | IPB* |
|---|---|---|---|---|---|---|---|---|---|
| | | | Access | | Usage | | Skills | | |
| | *2011* | *2010* | *2011* | *2010* | *2011* | *2010* | *2011* | *2010* | *2011* |
| ***Top 3*** | | | | | | | | | |
| **South Korea** | 1 | 1 | 11 | 11 | 1 | 1 | 1 | 1 | 32 |
| **Sweden** | 2 | 2 | 6 | 6 | 2 | 2 | 16 | 16 | 9 |
| **Denmark** | 3 | 3 | 9 | 8 | 3 | 4 | 12 | 12 | 7 |
| ***Asia*** | | | | | | | | | |
| **Bangladesh** | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 110 |
| **Bhutan** | 118 | 117 | 121 | 120 | 108 | 111 | 125 | 125 | 84 |
| **Cambodia** | 121 | 119 | 113 | 111 | 135 | 143 | 120 | 120 | 130 |
| **China** | 78 | 79 | 82 | 83 | 66 | 69 | 89 | 89 | 67 |
| **India** | 119 | 116 | 116 | 115 | 120 | 124 | 115 | 115 | 85 |
| **Malaysia** | 58 | 57 | 54 | 51 | 56 | 48 | 90 | 90 | 51 |
| **Maldives** | 72 | 72 | 63 | 62 | 73 | 81 | 102 | 102 | 44 |
| **Myanmar** | 131 | 129 | 149 | 148 | 155 | 155 | 111 | 111 | n/a |
| **Nepal** | 137 | 134 | 138 | 136 | 129 | 127 | 130 | 129 | 132 |
| **Pakistan** | 127 | 125 | 119 | 113 | 127 | 128 | 142 | 142 | 112 |
| **Philippines** | 94 | 94 | 105 | 105 | 98 | 94 | 77 | 78 | 113 |
| **Sri Lanka** | 105 | 105 | 103 | 102 | 112 | 112 | 98 | 98 | 50 |
| **Thailand** | 92 | 89 | 91 | 89 | 100 | 95 | 62 | 64 | 78 |
| **Vietnam** | 81 | 86 | 85 | 84 | 76 | 79 | 101 | 101 | 106 |
| ***Bottom 5*** | | | | | | | | | |
| **Burkina Faso** | 151 | 151 | 141 | 138 | 144 | 142 | 154 | 154 | 156 |
| **Eritrea** | 152 | 151 | 155 | 155 | 134 | 132 | 139 | 139 | 155 |
| **Central African Rep.** | 153 | 153 | 154 | 152 | 147 | 147 | 152 | 151 | n/a |
| **Chad** | 154 | 155 | 153 | 152 | 147 | 147 | 152 | 151 | n/a |
| **Niger** | 155 | 154 | 150 | 150 | 152 | 153 | 155 | 155 | 160 |

*Out of 160 countries
**Source:** ITU (2012)

According to the latest IDI rankings, South Korea, Sweden and Denmark are the top three countries (ITU 2012). Similar to the other two e-indices the IDI's bottom five belongs to countries in Africa - Burkina Faso, Eritrea, Central African Republic, Chad

and Niger. In case of Asia, China (79 to 78) and Vietnam (from 86 to 81) improved in their overall IDI rankings. Bangladesh was not reported due to paucity of statistical data, although it got ranked under the ICT's price basket (IPB) index. Only China was able to make some progress, by moving up 1 position (from 83 to 82) in the access sub-index whereas rankings declined for all other countries, barring Philippines, which remained at 105th position. In the usage sub-index, all Asian countries, except Malaysia, Nepal, Philippines and Thailand, registered some progress. Myanmar and Sri Lanka remained at 155th and 112th positions respectively.

One of the novel aspects of the latest ITU's Information Society rankings is that it provides a demand-side overview of the ICT development in countries, through its IPB index. One interesting aspect of this analysis is that it serves to identify those countries that perform contrarily, i.e., better (or worse) than their income levels would predict. The purchasing power parity (PPP) adjusted prices of mobile-cellular and fixed-broadband Internet services, which take into account the national buying power of a local currency, show that a number of developing countries with relatively low GNI per capita levels – including Sri Lanka, Bangladesh, Nepal, India and Pakistan – are offering mobile-cellular services at a relatively low price. In Sri Lanka and Bangladesh, it is reported that the mobile-cellular sub-basket costs less than US $4, compared with ten times this amount in Japan and New Zealand (ITU 2012).

*2.3 UN e-Government Survey*

One of the most comprehensive indicators evaluating the impact of ICT on the political economy arrangements is the UN's *E-Government Survey*. The latest report, titled, *E-Government for the People*, introduced significant changes to the survey instrument in the round, focusing more on how governments are using ICTs to deliver public services and expanding opportunities for citizens to participate in decision-making process. As a result of the latest changes in the methodological approach, the world average of the *e-Government Development Index* (EGDI) in 2012 registered a mixed trend. Likewise, the Report cautioned that the rankings should not be interpreted as the deterioration of e-government initiatives on a global scale since the latest EGDI measures e-government development of countries *relative* to one another within a given year. Conversely, a drop in a country's ranking should serve as a reminder of the need to devote greater resources toward improving online services and expanding access to telecommunication infrastructure, not penalising it because of its decline.

The EGDI consists of three components: online service, technological infrastructure and human capital. According to the latest Report (UN 2012), South Korea, Netherlands and the UK are the top performers (table 3). Similar to the other two earlier discussed indices, the bottom 5 group is represented by countries from Africa: Sierra Leone, Haiti, Niger, Chad and Somalia. Notwithstanding its benefits for policymakers and researchers, the

EGDI ranking suffers from serious conceptual inconsistency which we briefly discuss below. This is noteworthy because such a barrier undermines the prospect of designing a harmonised method for evaluating the transformation to Information Society.

**Table 3: Rankings in the E-Government Development Index (EGDI)**

| Countries | E-government development index | | | Sub-indices | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Online service index | | | Technological Infrastructure | | | Human Capital Index | | |
| | *2012* | *2010* | *2005** | *2012* | *2010* | *2005** | *2012* | *2010* | *2005** | *2012* | *2010* | *2005** |
| ***Top 3*** | | | | | | | | | | | | |
| **Republic of Korea** | 1 | 1 | 5 | 1 | 1 | 4 | 7 | 13 | 10 | 6 | 7 | 23 |
| **Netherlands** | 2 | 5 | 12 | 5 | 12 | 20 | 8 | 2 | 9 | 10 | 9 | 15 |
| **UK** | 3 | 4 | 4 | 4 | 4 | 3 | 10 | 4 | 14 | 34 | 32 | 6 |
| ***Asia*** | | | | | | | | | | | | |
| **Afghanistan** | 184 | 168 | 168 | 148 | 106 | 124 | 168 | 163 | 189 | 184 | 179 | 174 |
| **Bangladesh** | 150 | 134 | 162 | 88 | 60 | 158 | 164 | 161 | 179 | 173 | 167 | 159 |
| **Bhutan** | 152 | 152 | 130 | 110 | 114 | 72 | 139 | 139 | 153 | 170 | 164 | 156 |
| **Cambodia** | 155 | 140 | 128 | 161 | 135 | 110 | 154 | 166 | 173 | 144 | 135 | 138 |
| **China** | 78 | 72 | 57 | 62 | 55 | 42 | 87 | 89 | 77 | 106 | 98 | 99 |
| **India** | 125 | 119 | 87 | 58 | 55 | 38 | 145 | 147 | 141 | 158 | 147 | 150 |
| **Malaysia** | 40 | 32 | 43 | 20 | 16 | 40 | 57 | 52 | 42 | 109 | 96 | 93 |
| **Maldives** | 95 | 92 | 77 | 120 | 127 | 82 | 74 | 60 | 102 | 84 | 90 | 55 |
| **Myanmar** | 160 | 141 | 129 | 181 | 154 | 139 | 190 | 190 | 182 | 127 | 127 | 124 |
| **Nepal** | 164 | 153 | 126 | 141 | 125 | 69 | 167 | 171 | 172 | 163 | 152 | 153 |
| **Pakistan** | 156 | 146 | 136 | 106 | 100 | 65 | 135 | 131 | 146 | 175 | 168 | 171 |
| **Philippines** | 88 | 78 | 41 | 71 | 49 | 19 | 110 | 118 | 97 | 67 | 78 | 59 |
| **Sri Lanka** | 115 | 111 | 94 | 101 | 97 | 80 | 116 | 120 | 134 | 120 | 107 | 103 |
| **Thailand** | 92 | 76 | 46 | 67 | 67 | 26 | 103 | 94 | 76 | 104 | 66 | 78 |
| **Vietnam** | 83 | 90 | 105 | 95 | 79 | 115 | 69 | 79 | 120 | 116 | 114 | 100 |
| ***Bottom 5*** | | | | | | | | | | | | |
| **Sierra Leone** | 186 | 177 | 167 | 170 | 189 | 152 | 177 | 179 | 178 | 183 | 169 | 174 |
| **Haiti** | 187 | 169 | n/a | 185 | 181 | 181 | 160 | 135 | 155 | 181 | 161 | 157 |
| **Niger** | 188 | 183 | 174 | 160 | 172 | 189 | 180 | 184 | 170 | 189 | 183 | 181 |
| **Chad** | 189 | 182 | 169 | 182 | 181 | 186 | 181 | 177 | 187 | 186 | 180 | 170 |
| **Somalia** | 190 | 184 | n/a | 167 | n/a | 190 | 189 | 183 | 168 | 190 | n/a | 190 |

*e-readiness index (179 countries)
**Source:** Compiled from UN (2012), UN (2010) and UN (2005)

It is of interest to point out that the Netherlands and the UK did not figure in the top category in 2010. Moreover, neither the top three countries nor the bottom 5 today belonged to their respective groups seven years back in 2005.[6] Niger, ranked 174 out of 179 in 2005, is one of the exceptional cases in the sense that it has continued to

[6] At that time, the US, Denmark and Sweden topped the index. The bottom five (current ranking) were Palau (113), Micronesia (Federation States of) (127), Marshall Islands (146), Tuvalu (134) and Nauru (141).

remain "e-trapped," a trend \captured by the deterioration in its sub-indices. However, there is another side to the same coin which shows the problems in terms of interpreting statistics for policy decision-making purposes.

In 2012, Bangladesh ranked 150th in the EGDI with the following scores in its sub-indices: total index value, i.e., EGDI: 0.2991, of which, online service component: 0.4444; telecommunications index: 0.0641; and, human capital index: 0.3889. Interestingly, when Bangladesh ranked 134th in 2010, the score was as follows: EGDI: 0.3028; online service component: 0.1209; telecommunications index 0.0109; human capital index 0.1710. Thus, it is evident that despite witnessing improvements in the sub-indices, Bangladesh's rank did not move up the ladder due to the changed methodological approach. In other words, although Bangladesh's score improved, it was not sufficient vis-à-vis other UN member states' performance.

Between 2005 and 2010, only 4 countries in Asia witnessed an overall positive change in their EGDI rankings. These were South Korea (from 5 to 1), Malaysia (43 to 32), Vietnam (105 to 109), and Bangladesh (162 to 134). The latter registered the most significant progress in this period supported by the remarkable improvements in all its sub-indices, barring the human capital sub-index. What is noteworthy is Bangladesh's robust progress in the online service sub-index where it improved by 98 places to reach 60 in 2010, from 158 in 2005. Vietnam, Malaysia and Afghanistan also saw some positive developments in this regard. In the technological infrastructure sub-index, Maldives and Vietnam achieved the highest development in this period, moving by 42 and 41 places (102 to 60 and 120 to 79), respectively. Cambodia, China, India, Nepal, Pakistan and Thailand were able to post some marginal progress in the human capital sub-index.

For the two-year period between 2010 and 2012, Vietnam stands out in the Asian group of countries, registering a move forward by 7 places (from 90 to 83) in the latest EGDI rankings. Bhutan's position remained the same at 152 from 2010 to 2012. Bangladesh witnessed a serious decline in its overall ranking (from 134 to 150), alongside deterioration in all sub-indices' rankings, in particular, the online service sub-index. Only Maldives and Bhutan posted positive changes in this sub-index. In the technological infrastructure sub-index, Cambodia, China, India, Nepal, Philippines, Sri Lanka and Vietnam registered progress. Maldives and Philippines made some progress in the human capital index, with all other Asian countries registering a negative trend of development.

## 3. ICT4D Indicators: A Strategy for Bangladesh

It is evident from the preceding discussion that there is heterogeneity in indicators and that they have limitations with regards to their design and conception. It portrays a pessimistic outlook for the countries in Asia at a time when it is being argued by global economists that the economic centre of gravity is shifting to this region. In 2012, Bangladesh ranked low at 150th in the EGDI; however, the country was identified in the category of countries with populations larger than 100 million that have made a special effort to improve service delivery to large swathes of their populations (UN 2012: 42). Bangladesh was positioned alongside the US, China, India, Brazil, Japan and other giant economies (ibid). The low overall ranking is also not a reflection of the Bangladesh's performance in the online service index.

In this section, we discuss a set of ICT4D indicators, presented in Annex II, from the Bangladesh perspective. We also outline some new roles and partnerships by drawing on the views and opinions shared by public and private experts at the Roundtable discussion. Thus, we identify new strategies which we hope will be useful in guiding the data collection and reporting process informing global e-indices, and at the same time, pave the way for working towards a set of home-grown ICT4D indicators to capture Bangladesh's transformation to the envisaged Digital Bangladesh vision.

### *3.1 Global indicators*

The "Partnership on Measuring ICT4D" was launched in 2004 to improve the availability of internationally comparable ICT statistics (hereafter Partnership).[7] The annex to the latest report details the 53 indicators that are included in the revised and extended version of the Partnership's core list of ICT indicators.[8] The indicators are grouped into six categories, i.e., general information on subscriptions and prices, the performance of business sector, adoption and usage of ICT at the household, government and education levels, and ICT industry. The list is presented in box 1 in

[7] As of November 2011, members of the Partnership were International Telecommunication Union (ITU); Organization for Economic Cooperation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Educational, Scientific and Cultural Organization Institute for Statistics (UIS), Economic Commission for Latin America and the Caribbean (ECLAC), Economic and Social Commission for Western Asia (ESCWA), Economic and Social Commission for Asia and the Pacific (ESCAP), Economic Commission for Africa (ECA), Department of Economic and Social Affairs, Eurostat and World Bank. In November 2011, the United Nations Environment Programme (UNEP) secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal submitted an application for membership in the Partnership. Pending the decision of the members, it is expected that the secretariat will become a full member of the Partnership in 2012.

[8] The report is available online at http://unstats.un.org/unsd/statcom/doc12/2012-12-ICT-E.pdf (Accessed on 13/01/2013).

Annex I. The main purpose of the core list is to help countries that collect (or are planning to collect) ICT statistics to produce high quality and internationally comparable data. The overarching objective is to enable index construction and rationalisation of the different categories. This is imperative from the perspective that monitoring and cross-country comparisons are required to be able to go beyond the outcome variable and capture changes that cause those impacts, including policy and ICT infrastructure environment.

The *Core ICT Indicators* was first launched by the Partnership on 15 November 2005, at the World Summit on the Information Society (WSIS) in Tunis. It is to be borne in mind here that any data used in constructing an index should be able to withstand independent testing and verification. In the following analysis, we build the discussion on a set of 138 indicators under seven broad categories. The list of indicators aspires to be as inclusive as possible by incorporating as many "users" as feasible to make it relevant for the broadest group of nations possible. By the same token, it incorporates a framework that is amiable to developing country contexts by acknowledging the role that public access can play in accelerating the pace of socio-economic development. In particular, the LIRNEasia's indicators, focusing on the impact of mobile phones enabled public services at the bottom of the pyramid in five countries of South Asia, is suggested for designing a set of indicators depicting ICT4D transformation in developing countries like Bangladesh (see table 7 in Annex II).

One may speculate here whether there is a need to devote resources and time in designing a set of home-grown indicators. Zambrano and Seward (2013), in an UNDP report, cite the a2i's programme as possessing the strongest sustainable pro-poor linkages among the reported projects. "The a2i programme in Bangladesh bridges the three core e-governance components of e-administration, e-service delivery and e-participation. It has developed a strong policy environment for the spread of ICTs and supported the launching of 4,501 service centres across the country...to foster better service delivery to many previously underserved areas, undergirding a strong pro-poor focus," (ibid: 45). However, such positive reporting is neither being reflected by the existing national nor global indicators (as discussed in section 2) for measuring ICT4D impacts in Bangladesh.

*3.2 ICT4D indicators for Bangladesh: A proposal*

It is to be highlighted here that the 10-year national Perspective Plan builds upon the Constitution of Bangladesh, particularly in relation to the articles concerning people's rights and provision. The Plan affirmed that "in the 21st Century, comparative advantage will become much less a function of natural resource endowment (such as coal or iron) and capital-labour ratios; it will be much more a function of technology

and skills. Natural physical endowment and history will play a much smaller role; human ingenuity, ideas and skill will play a much larger role." (GED 2010: 84). The National ICT Policy 2009 has produced a detailed and time-bound action plan of 306 activities. These are to be implemented in the short-term, medium-term (5 years) and long-term (10 years).

The following strategic goals have been articulated by the Perspective Plan, based on, among others, the National ICT policy.

- Facilitate quality education for disadvantaged sections of the population, by innovative application of ICT technologies.
- Create stimulating environments for educational excellence.
- Improve the quality of gender-responsive health care for the rural poor by developing computer-based medical consultation systems and installing them in upazila hospitals.
- Generate employment by making ICT literacy available particularly to young men and women in disadvantaged parts of the country.
- Ensure the effective utilisation of resources such as computers, Internet connectivity, and industrial complexes by close monitoring using ICT tools and processes.
- Improve tele-density to bring most of the population under the ICT umbrella. Activities will include the introduction of e-community centres.
- Building the infrastructure for high-speed Internet and related support services such as telemedicine should be a major goal.
- Give appropriate importance to indigenous technology and inspire local technology through appropriate import and export policies.
- Establish Bangladesh as a business process outsourcing destination.
- Ensure universal connectivity.
- Promote new technologies, value added services, content generation and promote/facilitate content service providers.
- Rationalise the taxation policy for a range of ICT equipment, alongside the pricing and licensing systems for Internet services.

The Perspective Plan envisages that by implementing plans set out in this strategic document, Bangladesh will move towards a poverty free, middle-income, prosperous country status. The SFYP, on the other hand, lists 35 indicators for monitoring and evaluating its implementation. It has estimated that the vision of knowledge based economy would consume about 1 per cent of the total expenditure under the Plan. These are placed under the "Development Results Framework" (DRF) category. There are nine DRFs of which, two are directly pertinent for the present report, i.e.,

ICT and governance.[9] It is to be pointed out here that because the Plan has provided broad level indicators, sector-focused ICT indicators under broad categories need to be established to monitor and track the ICT4D transformation.

The outcome forecasted under the ICT DRF needs to be further expanded to incorporate the objectives of the Perspective Plan. For instance, there could be usage indicators to better highlight the impact of ICTs on the social setting. Similarly, although service delivery is mentioned as one of the outcomes under the governance DRF, it falls short of prescribing a specific indicator to take into cognisance the role of ICTs. Such an absence may undermine evaluation of ICTs influence because it does not take into consideration the IT enabled public services which are already in operation (e-Purjee, land records, examination results, etc).

Tables 1-7 in Annex II present a total of 138 indicators. It has identified some possible sources of information and the data collection method. The tables at the end of this report include all the 53 indicators identified by the Partnership and propose an additional 85 indicators for tracking Bangladesh's performance in the ICT context. The proposed indicators track the adoption and usage ICT tools and assess their socio-economic implications. They also take into consideration the gender dimension, as argued by Jensen and Amy (2009). However, the major challenge to having sex-differentiated statistics and indicators on ICT is that few sources collect such data. Not many government organisations collect national ICT statistics in a consistent and regular manner; of those that do, very few provide a breakdown by gender. It is vital that countries have these data in an increasingly globalised world and in order to ensure that the Information Society that develops is equitable and non-discriminatory.

The indicators are grouped under seven categories, and have incorporated the gender aspect of ICT4D: infrastructure and affordability; ICT at the household, business, government (civil service, judiciary and law enforcement, and parliament), social sectors (education, health, agriculture and land management, social safety nets, climate change), and mobile usage (a LIRNEasia model). In principle, modalities should be adopted so that categories can be compared across indices. This would also allow indices to be built up from agreed upon categories without having to reinvent the wheel each time. The majority of the indicators belong to the social sector category, which is in line with the objective of the present report. They include indicators for measuring the objective of ICT4D in relation to education and health sectors.

The indicators also present new and innovative sectoral measures. For instance, one of the key recommendations put forward by the Commission on Information and

[9] Income and poverty, human resource development, water and sanitation, energy and infrastructure, gender equality, environmental sustainability, ICT, urban, and governance.

Accountability (CoIA) for Women's and Children's Health was that by 2015, all countries should have integrated the use of ICTs in their national health information systems and health infrastructure. The Directorate General Health Service (DGHS), under the Ministry of Health and Family Welfare, shared the draft "Revised Operational Plan" with the a2i, which helped to design a set of new indicators for this particular sector.

We have also presented a set of indicators, drawing on Samarajiva (2012), for tracking the usage of mobile phones at the bottom of the pyramid, because nearly 70 per cent of the population today in Bangladesh own a mobile phone. In general, a2i's SPDB was the key in identifying new sector-specific indicators measuring ICT's impact. It is to be noted here that Bangladesh was identified as one of the top 30 outsourcing countries in the world and developing a set of home-ground indicators is impeding because it would serve to provide prompt policy response in the face of rapid technological or organisational changes.

Further works, nevertheless, will need to be carried out by concerned stakeholders to give effect to the suggested ICT4D indicators. In particular, the newly formed Statistics and Informatics Division (SID) will need to play a proactive role in completing and finalising the suggested list of indicators. Below, we outline some suggestions put forward by participants at the Roundtable discussion.

*3.3 Institutionalising ICT4D tracking*

There is consensus that there should be a research contact group (RCG), consisting of representatives from the government, private sector, civil society organisations (CSOs) and academia which would work towards incorporating national plans and strategies' targets in suggesting a set of home-grown indicators for Bangladesh. Tracking ICT expenditure in national surveys (household and labour force) and aligning home-grown indicators with the SFYP will allow greater public sector ownership. The national statistical office (NSO), i.e., the BBS, could also consider adopting the "Real Access Framework" by using the existing indices. The RCG could begin its operation by reviewing the proposed list of indicators attached at the end of this report, which would also help to identify key partners for tracking Bangladesh's digital transformation. It is very important that the BBS and SID maintain regular communication with other public agencies and private sector actors in terms of data collection so that there is a constant data feeding and modification process.

As a result of the ICTs descendant on the institutional and market processes, there is general agreement that it has also become important to reconsider traditional survey techniques. There is an online system for submission of industrial information/data although industries have yet to fully respond to this initiative. Implementation of the

National Strategy for the Development of the Statistics (NSDS), a holistic approach covering the entire National Statistical System (NSS), will require the support of the IT world in Bangladesh so that it is able to overcome the limitations with regard to providing information. It is proposed that the sources of information be identified through local mapping and subsequently, indicators be tailored to reflect local environment in order to better inform policymaking decisions. Home-grown indicators should draw upon and blend in existing indicators which would require solid methodology to be able to cope with developments in both social and technological avenues.

In strengthening the SID, which is at its infancy stage, five key partners have been identified. the Ministry of Planning, the Ministry of Information and Communication Technology (MoICT), the Bangladesh Computer Council (BCC), the Ministry of Information (MoI), and the a2i. The purpose of the present report is to establish a mechanism to develop and regularly update the method and regularly collect and process relevant data; interpret and disseminate the findings – with policy briefs for the government as well as how and where to integrate supports. Such an exercise will draw upon both private and public sectors' stakeholders.

## 4. Conclusion

This report has traced the performance of Bangladesh in the three most widely used global e-indices. The discussion has revealed that there are both demand-side and supply-side problems associated with the data feeding process. In conclusion, we suggest five areas of research work which could be undertaken for assisting the government in designing its individual e-indices for each category.

- A study on detailed indicators and their categories to identify which international index/indices most closely corresponds with the Bangladesh national vision for e-development. These will need to be tracked on a regular basis.
- The aforesaid study will identify which data to feed to which organisation and how. Bangladesh fares worse relative to competing nations in some indices simply because data cannot be provided with regard to the progress information to the appropriate monitoring organisations.
- A study may be undertaken to devise strategies for moving Bangladesh up in rankings in global e-indices methodically over the years, setting some short-term targets to be undertaken under the SFYP. This would call for two further actions: (i) a study on Bangladesh's development bandwidth (nations above and below); and, (ii) taking aggressive measures in addressing the current weaknesses of ICT4D indicators.
- A report on aligning the National ICT Policy and e-Service projects in different ministries with the above-mentioned strategy, without compromising the national vision for e-development
- A study on designing a methodology, by drawing on the three discussed e-indices, for tracking national transformation towards Information Society.

One of the WEF reports, titled, *The Future of Government: Lessons Around the World*, argued that "to be efficient in today's complex, interlinked and fast-changing environment, governments need to redesign their structures and processes to capitalise on a new set of actors and tool" (WEF 2011: 5). This underlines the importance of introducing changes in the established institutional processes guiding social interactions through technological change. Today, governments around the world are investing large budgets and significant time in estimating their level of e-readiness. It is suggested that more studies in developing countries to be undertaken that would include both the macro and micro levels, in order to formulate a more refined version with regard to the state of "e" affairs in a society. The use of ICT could emerge as one of the political agendas in the political parties' manifestos in the immediate term, if one is able to showcase its necessity for development in the context of Bangladesh. The political implications of tracking socio-economic transformation under the Digital Bangladesh vision, by engaging the global development community, merit a separate discussion which is beyond the scope of this present report.

**References**

a2i. (2011). *Strategic Priorities of Digital Bangladesh*. Dhaka: Access to Information (a2i). Draft available online at http://www.a2i.pmo.gov.bd/tempdoc/Strategic_Priorities_of_Digital_Bangladesh_Jan_2011.pdf

Dada, D. (2006). "E-Readiness for Developing Countries: Moving the Focus from the Environment to the Users." *Electronic Journal of Information Systems in Developing Countries* (EJISDC), 27(6): 1-14.

Dutta, S. and Bilabao-Osario, B. (eds). (2012). *The Global Information Technology Report 2012. Living in a Hyperconnected World*. Geneva: World Economic Forum (WEF) and INSEAD.

Dutta, S. and Mia, I. (eds). (2011). *The Global Information Technology Report 2010-11. Transformations 2.0*. Geneva: World Economic Forum (WEF) and INSEAD.

GED. (2010). *Outline Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 a Reality*. Dhaka: General Economics Division (GED), Planning Commission, Ministry of Planning, Government of the People's Republic of Bangladesh.

Hafkin, J.N. "Women and Gender in ICT: Statistics and Indicators for Development." *Information Technologies and International Development* (ITID), 4(2): 25-41.

IGC. (2011). "ICT Data Need in Bangladesh." Draft report by for the International Growth Centre (IGC).

IGS. (2010). *The State of Governance in Bangladesh 2009: Entitlement, Responsive, Sustainability*. Dhaka: Institute of Governance Studies (IGS), BRAC University.

ITU (2012). *Measuring Information Society*. Geneva: International Telecommunication Union (ITU).

ITU (2005a). *Measuring ICT: The global status of ICT indicators. Partnership on Measuring ICT for Development*. Geneva: International Telecommunications Union (ITU). Paper available online at http://www.itu.int/ITU-D/ict/partnership/material/05-42742%20GLOBAL%20ICT.pdf (Accessed on 29/12/2012).

ITU (2005b). "A New, Inclusive ICT Index."Available online at http://www.itu.int/osg/spu/ni/digitalbridges/docs/DAI-Ch5.pdf (Accessed on 01/01/2013).

Jensen, M. and M. Amy. (2009). "Measuring Progress: Towards better measures of global ICT adoption and use." Paper available online at http://www.giswatch.org/sites/default/files/measuring_progress_0.pdf (Accessed on 29/12/2012).

Minges, M. (2005). "Evaluation of e-Readiness Indices in Latin America and the Caribbean." Santiago: United Nations. Available online at - http://www.eclac.org/publicaciones/xml/0/24160/w73.pdf

OECD. (2012). "Innovation and Inclusive Development." Conference Discussion Report. Geneva: Organisation for Economics Cooperation and Development (OECD). Available online http://www.oecd.org/sti/innovationinsciencetechnologyandindustry/oecd-inclusive-innovation.pdf (Accessed on 29/12/2012).

Planning Commission. (2011). *Sixth Five Year Plan FY2011-FY2015: Accelerating Growth and Reducing Poverty*. Dhaka: Planning Commission, Ministry of Planning, Government of the People's Republic of Bangladesh.

Rue, L.F. (2011). "Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression."Available online at http://www2.ohchr.org/english/bodies/hrcouncil/docs/17session/a.hrc.17.27_en.pdf (Accessed on 03/01/2013).

Samarajiva, R. (2012). "How the poor use ICTs: Findings from multi-country studies of Teleuse at the Bottom of the Pyramid." Paper presented at the FAO Regional Workshop on Mobile Technologies for Food Security, Agriculture and Rural Development, 3-4, April2012.

UN (2012). *E-Government Survey. E-Government for the People*. New York: United Nations (UN).

UN (2010).*E-Government Survey: Leveraging e-government at a time of financial and economic crisis*. New York: United Nations (UN).

UN (2005).*Global E-Government Readiness Report 2005.From E-Government to E-Inclusion*. New York: United Nations.

WEF. (2011). *The Future of Government: Lessons from Around the World*. Geneva: World Economic Forum (WEF). Available online - http://www3.weforum.org/docs/EU11/WEF_EU11_FutureofGovernment_Report.pdf (Accessed on 03/01/2013).

Zambrano, R. and Seward, R.K. (2013). *From Connectivity to Service Delivery: Case studies in e-governance*. New York: United Nations Development Programme (UNDP).

## Annex I: Partnership's List of ICT4D Indicators

**Box 1: Measuring Information Society**

- A1 Fixed telephone lines per 100 inhabitants
- A2 Mobile cellular telephone subscriptions per 100 inhabitants
- A3 Fixed Internet subscribers per 100 inhabitants
- A4 Fixed broadband Internet subscribers per 100 inhabitants
- A5 Mobile broadband subscriptions per 100 inhabitants
- A6 International Internet bandwidth per inhabitant (bits/second/inhabitant)
- A7 Percentage of the population covered by a mobile cellular telephone network
- A8 Fixed broadband Internet access tariffs per month in USD and as a percentage of monthly per capita income
- A9 Mobile cellular telephone prepaid tariffs per month in USD and as a percentage of monthly per capita income
- A10 Percentage of localities with public Internet access centres (PIACs)
- HH1 Proportion of households with a radio
- HH2 Proportion of households with a television
- HH3 Proportion of households with telephone
- HH4 Proportion of households with a computer
- HH5 Proportion of individuals who used a computer in the past 12 months
- HH6 Proportion of households with Internet access
- HH7 Proportion of individuals who used the Internet in the past 12 months
- HH8 Location of individual use of the Internet in the past 12 months
- HH9 Internet activities undertaken by individuals in the past 12 months
- HH10 Proportion of individuals who used a mobile cellular telephone in the past 12 months
- HH11 Proportion of households with access to the Internet by type of access
- HH12 Frequency of individual use of the Internet in the past 12 months
- B1 Proportion of businesses using computers
- B2 Proportion of persons employed routinely using computers
- B3 Proportion of businesses using the Internet
- B4 Proportion of persons employed routinely using the Internet
- B5 Proportion of businesses with a Web presence
- B6 Proportion of businesses with an Intranet
- B7 Proportion of businesses receiving orders over the Internet
- B8 Proportion of businesses placing orders over the Internet
- B9 Proportion of businesses using the Internet by type of access
- B10 Proportion of businesses with a local area network (LAN)
- B11 Proportion of businesses with an Extranet
- B12 Proportion of businesses using the Internet by type of activity
- ICT1 Proportion of total business sector workforce involved in the ICT sector
- ICT2 ICT sector share of gross value added
- ICT3 ICT goods imports as a percentage of total imports
- ICT4 ICT goods exports as a percentage of total exports
- ED1 Proportion of schools with a radio used for educational purposes
- ED2 Proportion of schools with a television used for educational purposes
- ED3 Proportion of schools with a telephone communication facility
- ED4 Learners-to-computer ratio in schools with computer-assisted instruction
- ED5 Proportion of schools with Internet access by type of access
- ED6 Proportion of learners who have access to the Internet at school
- ED7 Proportion of learners enrolled at the post-secondary level in ICT-related fields

- ED8 Proportion of ICT-qualified teachers in schools
- EG1 Proportion of persons employed in central Government organisations routinely using computers
- EG2 Proportion of persons employed in central Government organisations routinely using the Internet
- EG3 Proportion of central Government organisations with a local area network (LAN)
- EG4 Proportion of central Government organisations with an Intranet
- EG5 Proportion of central Government organisations with Internet access, by type of access
- EG6 Proportion of central Government organisations with a Web presence
- EG7 Selected Internet-based online services available to citizens, by level of sophistication of service

**Source:** Rue (2011).

## Annex II: A Proposal for Mapping Data Collection for ICT Indicators (Partnership's 53 indicators)

**Table 1: Core indicators on ICT infrastructure and access**

| Code | Indicator | Possible Source | Collection method |
|---|---|---|---|
| A 1. | Fixed telephone lines per 100 inhabitants | BTCL | Administrative records |
| A 2. | Mobile cellular subscribers per 100 inhabitants | BTCL | Administrative records |
| A 3. | Fixed Internet subscribers per 100 inhabitants | BTCL | Administrative records |
| A 4. | Fixed broadband Internet subscribers per 100 inhabitants | BTCL | Administrative records |
| A 5. | Mobile broadband subscriptions per 100 inhabitants | BTCL | Administrative records |
| A 6. | International Internet bandwidth per inhabitant (bits/second/inhabitant) | BTCL | Administrative records |
| A 7. | Percentage of population covered by mobile cellular telephony/ telephone network | BTCL | Administrative records |
| A 8. | Internet access tariffs per month in US$, and as a percentage of per capita income | BTCL | Administrative records |
| A 9. | Mobile cellular tariffs (100 minutes of use per month), in US$, and as a percentage of per capita income | MoPT/BTRC | Administrative records |
| A 10. | Percentage of localities with public Internet access centres (PIACs):<br>a. Number of inhabitants<br>b. Location (rural/urban/etc) | MoICT/a2i-UISCs | Administrative records (partial) |
| A 11. | Proportion of households with electricity | LFS & HIES 2010, Population Census 2011 | Survey, Census |
| A 12. | Computers per 100 inhabitants | HIES 2010 | Survey |
| A 13. | Internet subscribers per 100 inhabitants | MoPT | Administrative records |
| A 14. | Broadband Internet subscribers per 100 inhabitants | BTCL | Administrative records |
| A 15. | Number of Internet service providers (ISPs), and access lines in proportion to total population | MoPT/ BTCL | Administrative records |

**Table 2: Core indicators on access, and use of, ICT by households and individuals**

| Code | Indicator | Possible source | Collection method |
|---|---|---|---|
| HH 1. | Proportion of households with a radio | HIES 2010/SC | Survey |
| HH 2. | Proportion of households with a TV | HIES 2010/SC | Survey |
| HH 3. | Proportion of households with<br>a. Any telephone<br>b. Fixed line telephone<br>c. Mobile cellular telephone only<br>d. Both fixed and mobile cellular telephones | HIES 2010/SC | Survey |
| HH 4. | Proportion of households with a computer | HIES 2010/SC | Survey |
| HH 5. | Proportion of individuals who used a computer (from any location) in the last 12 months | NA | |
| HH 6. | Proportion of households with Internet access at home | HIES 2010 | Survey |

| | | | |
|---|---|---|---|
| HH 7. | Proportion of individuals who used the Internet in the last 12 months | HIES 2010/SC, LFS 2010 | Survey |
| HH 8. | Location of individual use of the Internet in the last 12 months:<br>a. Home, work, school, etc<br>b. Another person's home<br>c. Community Internet access facility (UISCs, etc)<br>d. Commercial Internet access<br>e. Any place via a mobile cellular telephone<br>f. Any place via other mobile access devices | TBD | Survey |
| HH 9. | Internet activities undertaken by individuals in the last 12 months<br>a. Getting information about goods or services<br>b. Getting information related to agriculture, education, and other social services<br>c. Getting information from general government organisations<br>d. Interacting with general government organisations<br>e. Sending or receiving e-mail<br>f. Telephoning over the Internet/VoIP<br>g. Posting information or instant messaging<br>h. Purchasing or ordering goods and services<br>i. Internet banking<br>j. Education or learning activities<br>k. Playing or downloading video games or computer games<br>l. Downloading movies, images, music, watching TV or video, or listening to radio or music<br>m. Downloading software<br>n. Reading or downloading online newspapers or magazines, electronic books | TBD | TBD |
| HH 10. | Proportion of individuals who used a mobile cellular telephone in the last 12 months | TBD | TBD |
| HH 11. | Proportion of households with access to the Internet by type of access:<br>a. Narrowband<br>b. Fixed broadband<br>c. Mobile broadband | TBD | Survey |
| HH 12. | Frequency of individual access to the Internet in the last 12 months<br>a. At least once a day<br>b. At least once a week but not every day<br>c. Less than once a week | TBD | Survey, SC |
| HH 13. | Share of marginalised population having access to information and services through PIACs | TBD | TBD |

**Table 3: Core indicators on use of ICT in business (e-commerce)**

| Code | Indicator | Possible source | Collection method |
|---|---|---|---|
| B 1. | Proportion of businesses using computers | TBD | TBD |
| B 2. | Proportion of person employed routinely using computers | TBD | TBD |
| B 3. | Proportion of businesses using Internet | TBD | TBD |
| B 4. | Proportion of person employed routinely using the Internet | TBD | TBD |
| B 5. | Proportion of businesses with a web presence | TBD | TBD |
| B 6. | Proportion of businesses with an intranet | TBD | TBD |
| B 7. | Proportion of businesses receiving orders via the Internet | TBD | TBD |
| B 8. | Proportion of businesses placing orders via the Internet | TBD | TBD |
| B 9. | Proportion of businesses using the Internet by type of access:<br>a. Narrowband<br>b. Fixed broadband<br>c. Mobile broadband | TBD | TBD |
| B 10. | Proportion of businesses with a Local Area Network (LAN) | TBD | TBD |
| B 11. | Proportion of businesses with an extranet | TBD | TBD |
| B 12. | Proportion of businesses using the Internet by type of activity<br>a. Sending and receiving email<br>b. Telephoning over the Internet/VoIP<br>c. Posting information or instant messaging<br>d. Getting information about goods or services<br>e. Getting information from general government organisations<br>f. Interacting with general government organisations<br>g. Internet banking<br>h. Accessing other financial services<br>i. Providing customer services<br>j. Delivering products online<br>k. Staff training | TBD | TBD |
| B 13. | Proportion of business income attributable to receiving orders via the Internet or web | TBD | TBD |
| B 14. | Type of activities undertaken to receiving orders via the Internet or web (both back-end and front-end) | TBD | TBD |

**Table 4: Core ICT indicators for social sectors: education, health, agriculture and land management, social safety net programmes, and climate change**

| Code | Indicator | Possible source | Collection method |
|---|---|---|---|
| | *Education* | | |
| ED 1. | Proportion of schools with a radio used for educational purposes | TBD | Institutional Survey |
| ED 2. | Proportion of schools with a television used for educational purposes | TBD | Institutional Survey |
| ED 3. | Proportion of schools with a telephone communication facility | TBD | Institutional Survey |
| ED 4. | Learners-to-computer ratio in schools with computer-assisted instruction | TBD | Institutional Survey |
| ED 5. | Proportion of schools with Internet access by type of access: | TBD | Institutional |

| | | | |
|---|---|---|---|
| | a. Any Internet access<br>b. Access by fixed narrowband only<br>c. Access by fixed broadband only<br>d. Both fixed narrowband and broadband access | | Survey |
| ED 6. | Proportion of learners who have access to the Internet at school | TBD | Institutional Survey |
| ED 7. | Proportion of learners enrolled at the post-secondary level in ICT-related fields | TBD | Institutional Survey |
| ED 8. | Proportion of ICT of qualified teachers in secondary and tertiary level | TBD | Institutional Survey |
| ED 9. | Proportion of schools with electricity | TBD | Institutional survey |
| ED 10. | Percentage of primary and secondary schools having internet access for students | TBD | Institutional Survey |
| ED 11. | Percentage of students enrolled in tertiary education having Internet access for students for study purposes | TBD | Institutional Survey |
| ED 12. | Percentage of enrolled students to PC (in primary, secondary and tertiary education) | TBD | Institutional Survey |
| ED 13. | Percentage of students enrolled in tertiary in an ICT field or an ICT dominate field (of total number of students, by gender) | TBD | Institutional Survey |
| ED 14. | Percentage of tertiary education institutions with e-learning courses (of the total number of tertiary education | TBD | Institutional Survey |
| ED 15. | For what purpose do students/teachers use computers/Internet (percentage for e- mail, research, employment opportunities, application software, etc. | TBD | Institutional Survey |
| ED 16. | Access to international research materials at the secondary and tertiary level | TBD | TBD |
| ED 17. | Number of multimedia classrooms in proportion to total classrooms/students/teachers | TBD | TBD |
| | *Health* | | |
| H 1. | Geographic distribution of health institutions with computer, telephone and Internet connectivity | TBD | Survey |
| H 2. | Per cent of health professionals who use ICTs for medical purpose | TBD | Survey |
| H 3. | For what purpose do health professionals use the Internet<br>a. Tele-medicine<br>b. e-Mail<br>c. Research<br>d. Health information<br>e. Continuing medical education or distance learning<br>f. Health promotion (including health information systems), database, software applications, etc.) | TBD | Survey |
| H 4. | Proportion of government health facilities submitting timely and adequate report as specified by the HIS | TBD | Survey |
| H 5. | Number of health facilities having specially design telemedicine centres | TBD | Survey |
| H 6. | Number of health facilities using video/audio conferencing | TBD | Survey |
| H 7. | Number of health facilities using mobile phone health service in the upazila hospitals | TBD | Survey |
| H 8. | Number of upazila health complexes providing tele-consultation services | TBD | TBD |
| H 9. | Number of non-government heath organisations providing tele- | TBD | TBD |

| | | | |
|---|---|---|---|
| | consultation services | | |
| H 10. | Number of community clinics providing tele-consultation services | TBD | TBD |
| H 11. | Number of government health organisations using ICT | TBD | TBD |
| | *Agriculture and land management* | | |
| ALM 1. | Number of on-line consultation and diagnosis for crop, veterinary and aquaculture problems, gender disaggregated | TBD | TBD |
| ALM 2. | Number of days required to disseminate new technology/skills to field | TBD | TBD |
| ALM 3. | Number of women directly involved in agriculture | TBD | TBD |
| ALM 4. | Number of public organisations that uses a computerised land management system | TBD | TBD |
| ALM 5. | Number of municipalities/city-corporations leveraging computerised revenue management system | TBD | TBD |
| ALM 6. | Percentage of citizen who make on-line payment of land tax | TBD | TBD |
| ALM 7. | Number of days required for completion of land registration and mutation process | TBD | TBD |
| ALM 8. | Number of citizen who accessed land records/information on line | TBD | TBD |
| | *Social safety nets* | | |
| SSN 1. | NPR created and actual number of vulnerable and marginalised population is identified by category | TBD | TBD |
| SSN 2. | Level of match between vulnerable population database and actual beneficiaries of SSN programmes | TBD | TBD |
| SSN 3. | Share of graduation of beneficiaries from vulnerable groups to mainstreamed population | TBD | TBD |
| SSN 4. | Share of G2C payments that are happening electronically and mobile technology | TBD | TBD |
| SSN 5. | Share of population having access to some form access to banking | TBD | TBD |
| | *Climate change* | | |
| CC 1. | Number of successful evacuation after an area is indentified as hot-spot for next erosion | TBD | TBD |
| CC 2. | Number of people who have received early warning through cell broadcasting and community radio | TBD | TBD |
| CC 3. | Number of women who have directly received early warning | TBD | TBD |
| CC 4. | CO2 emission per capita | TBD | TBD |
| CC 5. | Number of citizens involved in environmental monitoring and reporting using ICT tools | TBD | TBD |

**Table 5: Core indicators on ICT in government (e-government)**

| Code | Indicators | Possible Source | Collection method |
|---|---|---|---|
| | *Civil service* | | |
| eG 1. | Proportion of persons employed in government organisations routinely using computers | a2i | Survey |
| eG 2. | Proportion of persons employed in government organisations routinely using the Internet | a2i | Survey |
| eG 3. | Proportion of government organisations with a Local Area Network (LAN) | a2i | Survey |
| eG 4. | Proportion of government organisations with an intranet | a2i | Survey |
| eG 5. | Proportion of government organisations with Internet access (type) | a2i | Survey |

| | | | |
|---|---|---|---|
| eG 6. | Proportion of government organisations with a web presence | a2i | Survey |
| eG 7. | Selected Internet-based services available to citizens, by level of sophistication of service<br>a. Number of citizens benefiting from e-services<br>b. Number of active e-services<br>c. Customer satisfaction rating on public service delivery | a2i | Survey |
| eG 8. | Percentage of government organisations using searchable databases for administrative decision making | a2i | Survey |
| eG 9. | Percentage of civil servants who championed ICT-enabled service delivery in the last 12 months | a2i | Survey |
| eG 10. | Percentage of civil servants using ICT-based communication within the government | a2i | Survey |
| eG 11. | Percentage of civil servants using ICT-based knowledge management within the government | a2i | Survey |
| eG 12. | Number and share of local government institutions connected into high speed inter-agency network | a2i | Survey |
| eG 13. | Number and share of local government institutions with information management system at the back-end | a2i | Survey |
| eG 14. | Number and share of local government institutions with front-end one-stop service delivery points | a2i | Survey |
| | *Judiciary and law enforcement* | | |
| JLE 1. | Number of cases disposed of where the case process management is digitised | TBD | TBD |
| JLE 2. | Number of e-Services that were introduced ensuring citizens access to case related information | TBD | TBD |
| JLE 3. | Number of village courts using ICTs | AVCB | TBD |
| JLE 4. | Number of citizens who received all/ some of the above e-Services | TBD | TBD |
| JLE 5. | Number of cases of which all documents were recorded and preserved digitally. | PRP | TBD |
| JLE 6. | Number of police stations where the process management is digitised | PRP | TBD |
| JLE 7. | Number of e-Services that were introduced ensuring citizens access to case related information | PRP | TBD |
| JLE 8. | Number of citizens who received all/ some of the above e-Services | PRP | TBD |
| | *Parliament* | | |
| P 1. | Access to, and use of ICT tools, by MPs for internal parliamentary activities | IDPD | TBD |
| P 2. | Number of MPs using ICT tools to communicate with constituents | IDPD | TBD |
| P 3. | Number of parliamentary debates or records accessible in their entirety to the citizens | IDPD | TBD |
| P 4. | Number of incidences of citizens contacting their MPs or the Parliamentary Secretariat through ICT tools | IDPD | TBD |

**Table 6: Core indicators on ICT industry**

| Code | Indicator | Possible source | Collection method |
|---|---|---|---|
| ICT 1. | ICT industry total income | TBD | Compilation |
| ICT 2. | Production of domestic ICT goods and services: share in gross value added | TBD | Compilation |
| ICT 3. | Trade in ICT goods and services<br>a. As a percentage of total exports<br>b. As a percentage of total imports<br>c. As a percentage of GDP | Foreign Trade Statistics, BBS | Complied statistics |
| ICT 4. | Research and experimental development (R&D) expenditure | TBD | TBD |
| ICT 5. | Type of R&D performed by the ICT industry | TBD | TBD |
| ICT 6. | ICT industry employment | LFS | Survey |
| ICT 7. | Access to, and use of ICT by youth | TBD | TBD |
| ICT 8. | Number of young people having recognised computer use certifications (e.g. ICDL) | TBD | TBD |
| ICT 9. | Number of young people being employed in service delivery through ICT | TBD | TBD |
| ICT 10. | Number of ICT related (software/hardware/IT Enabled Services) start-ups | TBD | TBD |

**Table 7: Core indicators on Mobile usage**

| Code | Indicators | Possible source | Collection method |
|---|---|---|---|
| MU 1. | Make phone calls | LIRNEasia | TBD |
| MU 2. | Receive phone calls | LIRNEasia | TBD |
| MU 3. | Send/receive missed calls | LIRNEasia | TBD |
| MU 4. | Send/receive SMS<br>a. Private<br>b. Public information<br>c. Tracking applications and others | LIRNEasia | TBD |
| MU 5. | Send/receive MMS | LIRNEasia | TBD |
| MU 6. | Send/receive e-mail | LIRNEasia | TBD |
| MU 7. | Browse the Internet | LIRNEasia | TBD |
| MU 8. | Entertainment (take photos/video, radio, music, etc) | LIRNEasia | TBD |
| MU 9. | Share that you have content created | LIRNEasia | TBD |
| MU 10. | Send/receive or download/upload other content | LIRNEasia | TBD |
| MU 11. | Use as an organiser | LIRNEasia | TBD |
| MU 12. | Check my bill/credit | LIRNEasia | TBD |
| MU 13. | Send/receive talk time me/load | LIRNEasia | TBD |
| MU 14. | Access social networking or blog applications | LIRNEasia | TBD |

*Published by*
Access to Information (a2i) Programme

জনগণের দোরগোড়ায় সেবা
service @ doorsteps