Review of ICT infrastructure chapter and related recommendations in World Bank (2007, November). *Building the Sri Lankan knowledge economy*. Washington DC: World Bank SASFP.

Without question, the book addresses an important and timely issue. The organization of the book around the four pillars of the business environment, the information infrastructure, the innovation system and human resources, is praiseworthy. The book must be commended for bringing up the topic of what should (and should not) be done, as the Sri Lankan economy moves from reliance on agriculture to reliance on services and valued-added agriculture and industry. It contributes to and adds credence to an ongoing discussion on this subject in Sinhala and English in the popular media (e.g., Samarajiva, 2005; 2008; Sinhala version first published in 2004 in the best selling daily, the *Lankadeepa*).

The book is also correct is understanding that the prerequisites for a knowledge economy are broader than ICT education, contrary to some critics (Blackskinner, 2008). ICT business climate, innovation and human resources are simply inputs for an effective ICT environment that is a necessary condition for a knowledge economy. The ICT sector is just a subset of the knowledge economy not its totality.

However, the book contains erroneous data and faulty prescriptions. The former is particularly dangerous because this is a book with the imprimatur of the World Bank, and many are likely to take the data as having been rigorously checked and therefore reliable. The book has suffered greatly by reliance on wrong data and misguided analysis. The main reason for the detailed review is to prevent bad data and analysis further poisoning the data stream that feeds the policy process. Because it is unlikely that World Bank prescriptions will be accepted and implemented by the present government, they will not cause harm.

Building on foundations of sand

On p. 19, it is stated that the World Bank's Knowledge Assessment Methodology (KAM) will be used throughout the document. The problem here begins with the variables chosen as proxies for the information infrastructure (II):[1] Telephones per 1000 persons (not specifying whether fixed or mobile); computers per 1000 persons, and Internet users per 1000 persons. The problem is with the use of KAM; obviously the authors of the book cannot be held responsible for KAM.

A knowledge economy is defined as "one that creates, disseminates and uses knowledge to enhance its growth and development" (p. 16).

What do organizations (for-profit, government, not-for-profit, etc.) require in terms of II for this? Adequate connectivity (at this time defined as Broadband, being connectivity of over 256 kbps up and down and always on) that is readily available (in all significant population centers and without delay); in configurations that are responsive to customer

[1] The term **information infrastructure** (II) refers to the communications networks and associated software that support interaction among people and organisations. The Internet is the phenomenon that has driven the debate to date. The term Information Infrastructure (II) is useful as a collective term for present networks (i.e. the Internet) and likely future facilities.

needs, including service-level agreements and redundancy; and value for money (price + quality). At the present time, this service is provided primarily over fixed links, using optical fiber or copper media, but increasingly over wireless.

What do people require in terms of II to participate in the knowledge economy? Adequate connectivity (at this time defined as Broadband, being connectivity of over 256 kbps up and down) that is readily available (in all significant population centers and without delay); in configurations that are responsive to customer needs; and value for money (price + quality). At the present time, this service is provided primarily over fixed links, using copper media, but increasingly over wireless. A body of evidence is accumulating that for most of the world's poor, or those at the bottom of the pyramid (BOP) defined by LIRNE*asia* as those belonging to Socio Economic Classifications D and E, this connectivity will be gained through advanced versions of the present-day mobile handsets (Williams, 2008).

What relation do the proxies used for KAM have to do with these conditions? Very little, other than the fact the data (even of questionable quality) are easily available. While the data for the more useful conditions may have been difficult to obtain when the KAM was devised, most of them are readily available now. For example, the OECD introduced the category of access path to include both fixed and mobile connections several years ago. Why not use that, rather than the obsolete fixed phone count (which is not longer even reported separately in India)? It has been found that Internet user figures are highly questionable, because no one knows how many people use an Internet connection, especially when the connections are in offices and cyber cafes. In Indonesia, it was discovered that this number was arrived at by simply multiplying the subscriptions by 10, with no basis being given for the multiplier. And who knows how many computers there are in countries where the grey economy is predominant? What does that have to with a world where mobile phones pack more punch than a ten-year-old computer?

Leave aside the propriety of using these proxies. Are the data correct?

Figure 5 of the book (p. 21) shows that Sri Lanka has not made any progress in fixed telephones per 1000 in the 10 years since 1995; that the number of computers per 1000 has increased significantly, and Internet users per 1000 has actually declined. Figure 4 (p. 20) shows that the overall II performance has marginally increased, possibly because of the increase of computers unconnected to the Internet. Does this make any sense?

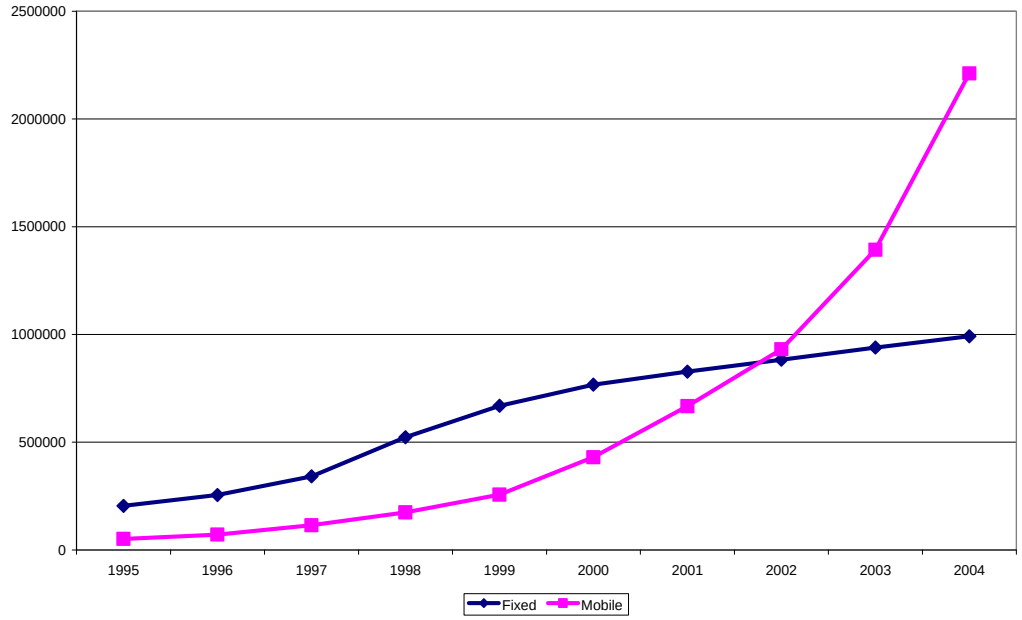

Figure 1: Sri Lanka fixed and mobile connections growth, 1995-2004[2]
Source: Telecom Regulatory Commission (http://www.trc.gov.lk/pdf/statover1.pdf)

Does this reflect the claim that fixed telephones/1000 remained static during this period? The only way that could have happened is if Sri Lanka's population quadrupled in that 10-year period.

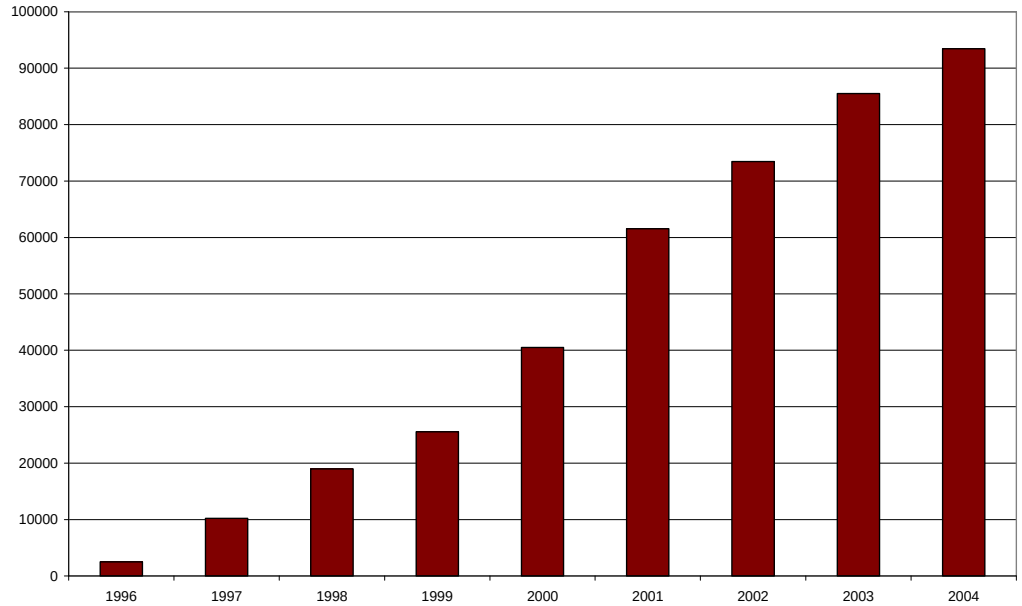

Figure 2: Internet and e-mail subscriber growth, 1996-2004
Source: Telecom Regulatory Commission (http://www.trc.gov.lk/pdf/statover1.pdf)

[2] Though more recent data are available, data up to 2004 are reported because the KAM data are for 2004.

Recalling that these data are for subscribers, not users (if we follow the Indonesian practice, this would have to be multiplied by 10 to get users), does this look like a country that has seen a decline in Internet users per 1000?

Another KAM generated spider graph provides data on a range of ICT indicators, including households with TV in 2004. Here it appears that Sri Lanka is at a 2 on a 10-point scale, where Malaysia occupies a position above 8 (Figure 10, p. 33). Assuming that a 10 equals 100 per cent of households have TVs, this suggests that around 85 per cent of Malaysian and 20 per cent of Sri Lankan households have TVs.

According to the Central Bank of Sri Lanka (2007, special appendix) it was in 1986-87 that 19.6 per cent of Sri Lankan households had TVs. In 2003-04, 70.8 per cent of households, excluding three sparsely populated conflict affected districts, had TVs.

It appears that garbage has been fed in to KAM. Garbage in, garbage out. It appears that the KAM spider graphs have to be discounted.

Errors

It is said on p. 31 that "Sri Lanka's poor infrastructure has been cited by many BPOs as being a major bottleneck to growth, leading potential investors to look to neighbouring countries." See also, discussion on p. 35. Because the book's source for BPO data is a LIRNE*asia* study, based on a survey of BPOs in 2006, it is worthwhile quoting the relevant findings:

- Most companies (76%) are planning expansion, including physical expansion and market development;
- Civil and political instability is considered the leading threat to the industry (67%);
- The mass transport service is considered the leading infrastructure bottleneck to BPO operations and growth (57%);
- Telecommunications facilities is the second most frequently cited infrastructure constraint (48%) and 38% expressed dissatisfaction with broadband facilities (LIRNE*asia*, 2006)

Now venturing outside the proxies used in KAM, the book reports Internet connectivity prices in Sri Lanka, using a rather obscure indicator that calculates the cost of 20 hours of Internet connectivity (assuming a dial-up connection) and states that it was USD 25.28 in August 2004. At a time when always-on ADSL with a promise of 2 mbps downlink speed and 512 kbps uplink was available for around USD 60 for businesses and a home ADSL package for around USD 20, this was a rather mysterious measure to use. According to Figure 12 (p. 37), Sri Lanka is more than twice as costly as India. Using more reasonable comparison units, Figure 3 shows that Sri Lanka is quite reasonably priced in relation to its South Asian peers.

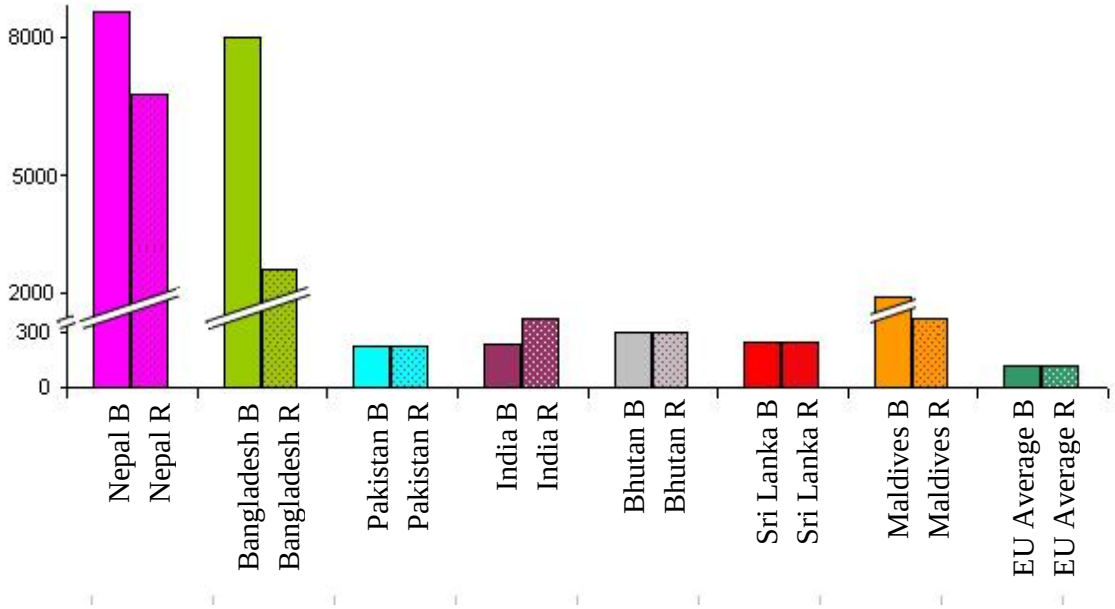

Figure 3: Broadband prices in South Asian countries. 256 kbps business and residential connection prices compared on the basis of annual rental.[3]
Source: LIRNEasia, Broadband Benchmarks-South Asia February 2008

The telecom infrastructure discussion suffers considerably because it has relied heavily on poor-quality publications based on secondary research and faulty analysis by an Australian-based group (Balasooriya, Alam and Coghill, 2006 and Fernando, 2006).[4] The normal excuse of "but this is the only published material on this subject" does not fly because there is a considerable literature (Dharmawardene, 2004; Knight John, 2004; Samarajiva, multiple references, Selvarajah, 1999). The claim that the fixed market did not grow until 2005 because of market saturation is an example of the resulting flaws. One cannot have market saturation and growing waiting lists simultaneously, as claimed within the same page (p. 34). The market was not saturated, but the operator was not willing to meet the demand until CDMA 800 frequencies were released, enabling connections to be given at a dramatically lower per-line cost.

It is odd to see a rate rebalancing plan, at least acquiesced to by the World Bank at the time, criticized in a World Bank document (p. 34). No evidence is presented for other claims such as the lowering of computer prices because of the government sponsored e Sri Lanka PC (p. 34). The claim that Sri Lanka Telecom PLC has been granted frequencies for WiMAX (p. 35) is wrong (Sirimanna, 2008). On p. 36 it is claimed that a fifth operator has been licensed to bring down telephony costs, without providing any evidence that mobile telephony cost are actually high. Recently, Nokia published a report claiming that Sri Lanka has the lowest total cost of ownership in mobile in the

[3] Most widely used 'unlimited' package of each country is considered for comparison.
[4] Balasooriya and Fernando are one and the same person, a Sri Lankan government official on leave, studying for her Ph.D. in Australia.

world (Nokia, 2008). LIRNE*asia*'s own analysis places it among the lowest four in the world (Iqbal and Sivapragasam, 2008).

The book does not provide any evidence to support the claim that Sri Lanka's Internet quality of service is poor (p. 37). This is understandable because data did not exist at the time of writing. However, these data are now available (LIRNE*asia*, 2008) and show that while quality is indeed poor, it is not out of line with India (Figure 4).

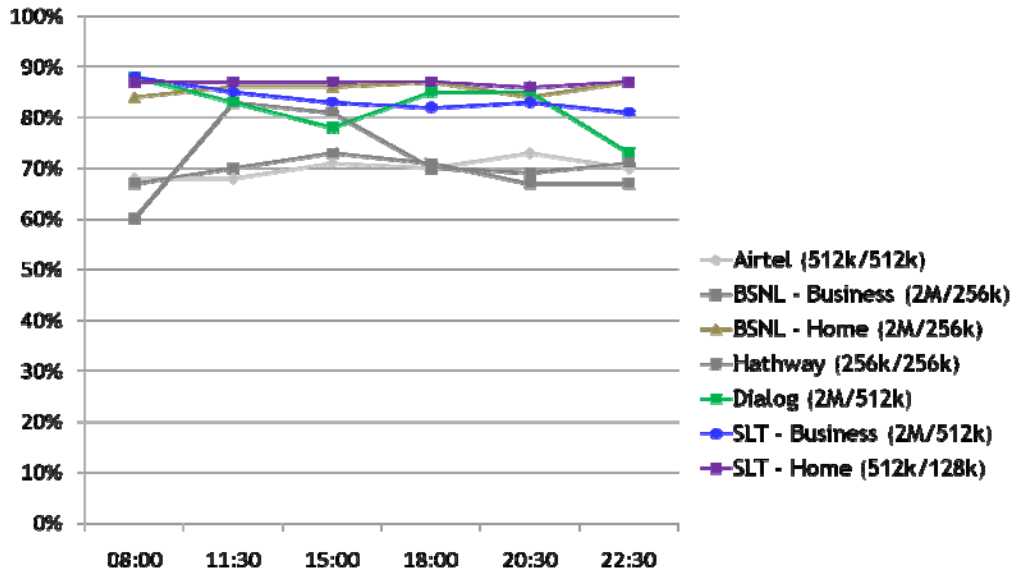

Figure 4: Comparative first mile (user to ISP) download throughputs of selected Indian and Sri Lankan broadband packages, measured in Dec 2007 and January 2008.
Source: LIRNEasia (http://lirneasia.net/wp-content/uploads/2008/07/chanuka-wattegama.pdf, accessed July 27, 2008)

Recommendations

Given the massive problems identified in the preceding analysis and in the KAM, the credibility of the recommendations is suspect. However, because some of the recommendations do not flow from the data as such, but from international good practices, they are worth discussing.

The recommendation on p. 40 pertaining to an appropriate legal framework (and implementation) is non-problematic, though it is puzzling why it is sourced to the UNDP, when the basic framework including draft legislation was prepared in 2003-04 under a World Bank technical assistance project (Samarajiva, 2004b).

The recommendation re the need for an explicit universal service policy (p. 39) is somewhat puzzling because the past few years have witnessed the rapid narrowing of the digital divide, at least with regard to voice telephony, with progress being made even in fixed telephony, where the share of the Western Province has come down from 65 per cent in 2001 to 45 per cent in 2007, according to the Telecom Regulatory Commission. When mobile phones are factored in (as they should be), the picture is of a rapidly narrowing voice divide. With the fiber backbones of both Sri Lanka Telecom PLC and Dialog Telekom PLC being rapidly rolled out to the regions and broadband service being offered in almost all major towns, it appears that this is not a problem that requires

government intervention, other than in terms of releasing the frozen funds collection for universal service and the reversal of ill-considered efforts to over-tax the telecom customers, among whom mobile customers currently pay over 26 per cent of their bill to the government as levies.

It is recommended that a "competition commission" be created to address regulatory problems affecting the telecom industry (p. 39). Why a general competition commission would succeed where a specialized commission built with World Bank assistance has failed; how the independence of a regulatory authority can be safeguarded under a government that flouts its own Constitution; and how a competition commission, if created, can be funded, are questions that are not answered.

On p. 78, it is recommended that Sri Lanka establish a fund along the lines of Korea's Informatization Fund, to build on the achievements of e Sri Lanka. This suggests that (a) e Sri Lanka has been successful; and (b) the State is capable of properly administering a massive fund. Dispassionate analysis of e Sri Lanka will show that it is not a success, with the entire infrastructure component stalled; the plan for sustainable and commercially oriented common-use facilities (telecenters) hijacked for political purposes into a scheme for funding computer facilities inside Buddhist religious establishments; low applications for the business development fund; etc. The fact that there has been a universal service fund since 2004 is not mentioned, nor is the fact that disbursements started to trickle out of it only in 2007.

Overall, the recommendations do not appear to be anchored in the analysis, but on selective appropriation from the case studies (e.g., infrastructure recommendations taken from Korea, but not from China). The analysis appears to be there to establish that a problem exists. It does, but not what is portrayed by the analysis. The real problem is a state that is different from the classic form (see, Khan, 2005); driven by different objects and incapable or unwilling to engage in effective government. Good grounded analysis would have offered us insights on how to build a knowledge economy, working around such a state.

References

Balasooriya, A., Q. Alam and K. Coghill (2006). The effectiveness of the telecommunications regulatory regime: The case of Sri Lanka. Public administration and development, 26(5): 383-93.

Blackskinner (2008, March 23). Comment. http://www.lirneasia.net/2008/03/building-sri-lanka%e2%80%99s-knowledge-economy/#comment-180417

Central Bank of Sri Lanka (2007). *Annual report*. Colombo: Central Bank

Dharmawardena, S. (2004). Sri Lanka's experience in interconnection and liberalization of international telecom segment. *SAFIR Newsletter*, Issue 15: 2-7.

Fernando, Asoka (2006). Regulation and FDI: Sri Lankan telecommunications industry. Monash University.

Iqbal, T. & N. Sivapragasam (2008, March 21). Mobile benchmark studies in South Asia and Latin America. http://lirne.net/2008/03/mobile-benchmark-studies-in-south-asia-and-latin-america-compared/

Khan, Mushtaq (2005) 'Markets, States and Democracy: Patron-Client Networks and the Case for Democracy in Developing Countries.' *Democratization*, 12 (5): 705-25.

Knight John, M. (2004). Privatization and regulation. In *Economic policy in Sri Lanka: Issues and debates*, S. Kelegama and G. Corea (eds.), pp. 363-78. New Delhi: Sage.

LIRNE*asia* (2006, August 29). *A baseline sector analysis of the business process outsourcing industry of Sri Lanka.* Colombo: ICTA. http://www.lirneasia.net/wp-content/uploads/2006/09/BPO_Report_ver3-5-Final.pdf

LIRNE*asia* (2008, March 18). *Broadband benchmarks.* http://www.lirneasia.net/wp-content/uploads/2008/03/broadband-benchmarks-feb-2008-pdf.pdf

Nokia (2008). Affordability key in bringing digital inclusion. *Expanding Horizons*, 1:12-13

Samarajiva, R. (2000). The role of competition in institutional reform of telecommunications: Lessons from Sri Lanka, *Telecommunications Policy*, 24(8/9): 699-717. http://www.comunica.org/samarajiva.html

Samarajiva, R. (2001a). Establishing effective regulation: South Asia's challenges. In *Regulation of infrastructure services: Progress and the way forward*, eds. S. K. Sarkar & K. Deb, pp. 45-58. New Delhi: TERI.

Samarajiva, R. (2001b). Regulating in an imperfect world: Building independence through legitimacy. *Info*, 3(5): 363-68.

Samarajiva, R. (2004a). Getting from dysfunctional government to e(ffective) government: Mapping a path in Sri Lanka, *International Journal of Regulation & Governance*, 4(2): 171-85.

Samarajiva, R. (2004b). Sri Lanka's telecom reforms of 2002-03, *SAFIR Newsletter*, issue 17, pp. 5-9. http://www.safirasia.org/safir/files/Newsletter/Issue17.pdf

Samarajiva, R. (2005, April 20). BPOs or daha dahasak wewu? *Lanka Business Online.* http://www.lbo.lk/fullstory.php?newsID=1803905964&no_view=1&SEARCH_TERM=24

Samarajiva, R. (2008, January 28). Choices: rural or urban? *Lanka Business Online.* http://www.lbo.lk/fullstory.php?newsID=1088105733&no_view=1&SEARCH_TERM=24

Samarajiva, R. & A. Dokeniya with S. Fernando, S. Manikkalingam & A. Sanderatne (2005), Regulation and investment: Sri Lanka case study, in *Stimulating investment in network development: Roles for regulators*, eds. A.K Mahan and W.H. Melody, pp. 141-76. Monte Video: World Dialogue on Regulation. http://www.regulateonline.org/content/view/435/31/

Samarajiva, R. & R. Singh (2006), Extending access to services: Policy and regulatory reforms and smart subsidies, chapter 6 of *From envisioning to designing e Sri Lanka: Joining the information services economy*, volume 1, N.K Hanna. Washington DC: Finance and Private Sector Development Unit, South Asia Region, The World Bank.

Selvarajah, K. (1999). Telecoms transition in Sri Lanka: A model for small countries. *Info*, 1(1): 77-93.

Sirimanna, B. (2008, February 24). SLT unions up in arms over WiMax deal. *Sunday Times*. http://sundaytimes.lk/080224/News/news0012.html

Williams, I. (2008, January 29). Mobile Internet services to grow in Africa. *IT Week* http://www.itweek.co.uk/vnunet/news/2208346/mobile-internet-services-grow-africa