Version 3.0

Advancing evidence-based policymaking and regulation in the emerging Asia-Pacific to ensure greater participation in ICTs: Research, capacity-building, advocacy and dissemination by LIRNE*asia*

Proposal submitted to IDRC by LIRNE*asia*

March 10, 2008

LIRNEasia
www.lirneasia.net

1. Project overview

Title of the project : Advancing evidence-based policymaking and regulation in the emerging Asia-Pacific to ensure greater participation in ICTs: Research, capacity-building, advocacy and dissemination by LIRNE*asia*

Project proponent : LIRNE*asia*, Colombo, Sri Lanka

Abstract : LIRNE*asia*'s overall mission of actionable research seeks to identify the institutional constraints to effective use of information and communication technologies to improve the lives of the people of Asia, not in abstract terms but in the context of specific historical and institutional conditions, and to catalyze the changes conducive to greater participation by users and suppliers. This requires that the agents promoting evidence-based policy making and regulation, be in situ, either in terms of the specific country or the region.

LIRNE*asia*'s overall mission of capacity building seeks to contribute to building capacity for evidence-based intervention in the public-policy process by in-situ experts. The proposed research, capacity-building, advocacy and dissemination programs for 2008-10 builds on previous WDR [World Dialogue on Regulation for Network Economies] and LIRNE*asia* research and capacity-building initiatives described in its 2006-2007 Annual Report (available at http://www.lirneasia.net/about/annual-reports/) and previously submitted technical reports and will be further described in the Final Technical Report that will be submitted at the end of the current project.

The research component, which accounts for 61 per cent of the overall budget, comprises four inter-related modules: "Teleuse@BOP3," "Mobile 2.0@BOP," "Indicators, continued," and a small module intended to facilitate mutual learning within LIRNE.NET. Teleuse@BOP3 is a quantitative (representative-sample) multi-country study of how people at the Bottom of the Pyramid (BOP) use ICTs that builds on two previous studies. In addition to seeking to understand, through longitudinal analysis, the dynamics of how hitherto excluded people join the (electronically) connected world as in previous studies,

Teleuse@BOP3 will seek to understand how people at the BOP are beginning to use the mobile for services "more than voice," which is what the second module, Mobile 2.0@BOP, is about. This module explores the conditions that can affect the trajectory of a mobile-centric future that has the potential to include more at the BOP in the information society (in the components that constitute the "horizontal issues") and facets of the inchoate phenomenon such as mobile payments (in the components that constitute the "vertical aspects").

"Indicators, continued" is what the words suggest: it is a continuation of the work done in 2006-08 on improving the measurement of ICT sector and regulatory performance. "Indicators, continued" contributes to the entire research, capacity-building, advocacy and dissemination enterprise. Like the T@BOP3 study, the "Indicators, continued" module deals both with continuity and with change. The results of the foundational work on indicators that was done in the 2006-08 cycle were not fully realized within that time frame; to realize them it is necessary to continue the engagement with those who produce the inputs and those can better use them to improve policy making and regulation. In addition, the Indicators module will make a significant contribution to the Mobile 2.0@BOP module by assembling in the countries covered by T@BOP3 the supply-side data on how people enter the information society, through the mobile interface or otherwise. It will also assemble the available demand-side data from National Statistical Offices (NSOs) on the subject.

The rationale for working on the development of sustainable mechanisms for generating better ICT sector and regulatory performance indicators was that they were foundational to evidence-based policy making and regulation. That rationale still remains. The final, small component is a cross-cutting and linking activity that seeks to ensure greater coordination among, and thereby better outcomes from, the units of LIRNE.NET.

In Teleuse @BOP3, we continue and expand the well-received (as documented by Annex 2) demand-side survey of the past integrating it more closely with the Mobile 2.0@BOP module, which will be conducted after the quantitative portion of the former. The multiple country and issue studies that comprise Mobile 2.0@BOP will in turn directly feed into the

qualitative portion of Teleuse@BOP3 and enrich the overall findings. The indicators work is foundational to all ICT policy and regulation research, and is therefore foundational to Teleuse@BOP3 as well as to Mobile 2.0@BOP. The final, linking activity does not have any content independent of the above three components, being intended to enhance cooperation among sister research organizations and amplify their productivity.

The research component provides a foundation for the capacity-building and advocacy and dissemination components, amounting to around 26 per cent and 12 per cent respectively of the total budget. The biggest module within the five-module capacity-building component (at 46 per cent) is CPR*south*, a broad-based capacity-building enterprise initiated and managed by LIRNE*asia*. It is closely articulated with the modules on tutorials for young scholars and internships, all serving the end of creating the conditions that facilitate in-situ policy intellectuals within the region. In addition, support is also sought for capacity building among regulatory-agency and statistical-organization staff and for scholarships for the LIRNE.NET training course, the latter at significantly lower levels than in the past.

The advocacy and dissemination component comprises three modules, the first being continuation of the successful rapid response program. The second module is general dissemination, this at significantly higher levels than in the past. Dissemination is proposed in multiple forms, including direct communication with the primary audiences of policy makers, regulators, senior managers of relevant companies, and opinion leaders and communication with them through the changing of their symbolic environment constituted by the media. For these purposes, a video documentary on Teleuse@BOP3, photo documentation of Mobile 2.0@BOP and active engagement with Wikipedia and relevant blogs, in addition to conventional media dissemination is proposed. The third module is a summative conference that will pull together the activities and achievements of LIRNE*asia*'s first five years, which, depending on the will of the CPR*south* board, may be held conjointly with the CPR*south*4 conference.

Objectives: The overall objective of the 2008-10 research, capacity-building, advocacy and dissemination program of LIRNE*asia* is the advancement of evidence-based policymaking and regulation in the emerging Asia-Pacific to ensure greater participation in ICTs in the context of a more integrated world economy. Specific objectives are:

- To conduct a research program that comprises four inter-related modules, that will lay a foundation for advancing evidence-based ICT policy and regulation, including creating greater awareness of BOP-friendly policy actions by government, regulators and operators;
- To establish the conditions to facilitate the creation and sustenance of in-situ policy intellectuals; and
- To disseminate the output of all activities in multiple ways to different audiences capable of influencing reform, including carefully targeted rapid-response interventions and new-media presence.

Estimated budget: USD xxxx
Estimated duration: 24 months

2. Administrative information

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Introduction

The Asia-Pacific is one of the most dynamic regions of the world economy. Yet, South Asia, an important sub-region within the Asia- Pacific, is home to the world's largest concentration of poor people in and includes many countries that rank very low in ICT sector performance. Throughout the region there are many countries that offer high-priced and low-quality ICT services to their people and have within them extremely weak or inept policy and regulatory systems. Basic reforms, such as allowing multiple suppliers to participate in markets that government-owned monopolists have manifestly failed to serve, have been done slowly and partially, if at all.

The relationship between ICTs, growth and poverty alleviation is a complex one that has been discussed in LIRNE*asia*'s first book, in addition to work by recent writers.[1] The purpose of the present research not being that of advancing knowledge in this domain, further discussion of these writings is not undertaken. The purpose of the present proposal is the advancement of evidence-based policy making and regulation through an integrated program of research, capacity building and advocacy. The proposed research is of an applied nature. It rests on the conclusion, supported by the above literature, that the contribution of ICTs to economic growth and poverty alleviation is a positive one. The findings of the proposed research will contribute to, and advance, knowledge in applied areas such as the trajectory of the mobile as a mode by which those at the Asian BOP will enter the information society. Even apparently non-research activities such as capacity building through the vehicle of CPRsouth have been conceptualized as research projects that will advance knowledge in how knowledge work is done and scholarly networks sustained under less-than-ideal conditions.

Throwing technology by itself, ICT or otherwise, at the problems faced by those at the Asian BOP within these countries is ineffective. Improvements in institutional structures, policy

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[1] Samarajiva, R. & A. Zainudeen (eds.) (2008), *ICT infrastructure in emerging Asia: Policy and regulatory roadblocks*, New Delhi & Ottawa: Sage and IDRC, Introduction; and recent writing such as Waverman, L., M. Meschi, and M. Fuss (2005). "The impact of telecoms on economic growth in developing countries," paper presented at TPRC. http://web.si.umich.edu/tprc/papers/2005/450/L%20Waverman-%20Telecoms%20Growth%20in%20Dev.%20Countries.pdf

making, and regulation are needed for technologies and new services to be useful and sustainable.[2] LIRNE*asia* seeks to address these improvements through research, training and advocacy, focusing broadly on the emerging[3] Asia-Pacific. Now in its fourth year of existence, LIRNE*asia* has broadened its research focus to the entirety of South Asia (eight countries) and the three largest nations of the original ASEAN. This set, contains some of the fastest growing telecom markets in the world, among the most populous and containing the largest numbers of the unconnected (see Figure 1). It also includes the world's largest concentration of poor people. China and Vietnam are not included because of the difficulties of fully engaging with these countries which are outside the legal and administrative cultures and the relationship networks of the present group of researchers at LIRNE*asia* and because we have not yet identified high-quality researchers who can conduct LIRNE*asia* research in these countries.[4] All of the Asia-Pacific comes within the scope of its capacity-building activities, and indeed some capacity-building and dissemination activities serve those outside the Asia-Pacific as well.

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2 For a comprehensive discussion see, Samarajiva, R. & A. Zainudeen (eds.) (2008), *ICT infrastructure in emerging Asia: Policy and regulatory roadblocks*, New Delhi & Ottawa: Sage and IDRC, Introduction.

3 Defined pragmatically as countries with per-capita GDPs below Malaysia.

4 If additional funding can be mobilized, Teleuse@BOP research will be conducted in Vietnam. Through the holding of CPR*south*3 in Beijing, the foundation is being laid for engagement with China.

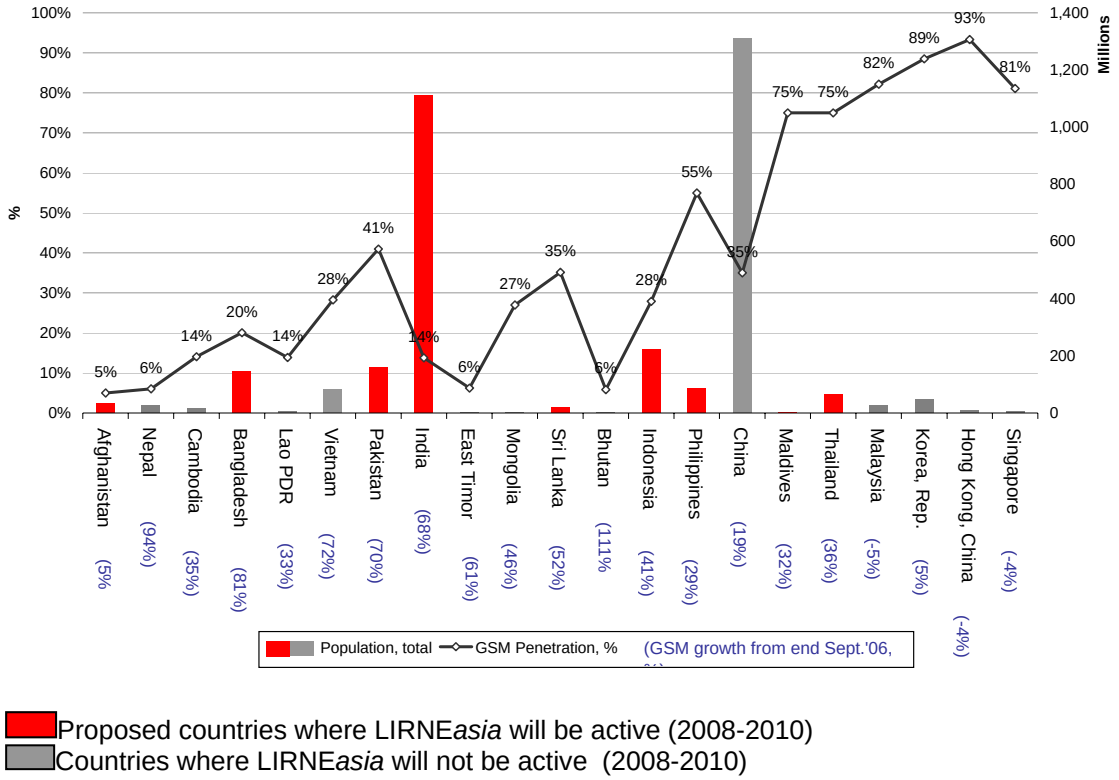

Figure 1: Population, GSM penetration and GSM growth since end September 2006 for selected Asian countries (2007)

Sources: Informa Telecoms and Media (2008); World Bank (2008)

*LIRNE*asia*'s mission and achievements*

LIRNE*asia*'s mission is "to improve the lives of the people of the emerging Asia-Pacific by facilitating their use of ICTs and related infrastructures; by catalyzing the reform of laws, policies and regulations to enable those uses through the conduct of policy-relevant research, training and advocacy with emphasis on building in-situ expertise."

For the past three and a half years, LIRNE*asia* has engaged in a concerted and focused program to achieve its mission, bootstrapping itself into a credible player in the ICT policy and regulation space in the Asia-Pacific region, extending beyond its comfort zone of India and Sri Lanka to the totality of the newly expanded membership of the South Asian Association for Regional Cooperation (SAARC) that now included Afghanistan and three

large and influential founding members of the Association of South East Asian Nations (ASEAN). Within 3.5 years it has extended its research coverage to 11 countries from five, with a much broader coverage being achieved in capacity-building actions. Its Annual Report, website and the various technical reports submitted to IDRC document its outputs and outcomes (See Annex 1 for outcome map for 2006-2008 research cycle).

The core mission of LIRNE*asia* can be restated in terms of advancing evidence-based policy making and regulation in the ICT sector. Our work which includes short-term and opportunistic advocacy actions as well as long-term capacity-building actions that build on a foundation of timely and relevant research conducted across multiple countries intends to both improve sector and regulatory performance and create an exemplar of good governance for other sectors. Our research problematizes each of these terms and will in fact help advance understanding of each of them.

Among the essential infrastructure sectors, ICT infrastructure is the one where barriers to participation have been reduced the most. Partially as a result, it is also the sector where improvements in performance are most visible, in terms of wider access, lower prices, improved quality and greater choice. The resulting improvements in many economic value chains in society and the effects, generally positive, on the polity and society of improvements in ICT performance justify weight being given to improving evidence-based policymaking and regulation and, thereby, further improving sector performance.

The proposed activities comprise four inter-related research modules, five capacity-building modules, and three advocacy and dissemination modules. Capacity building draws from research; research is assisted by the relationships established through capacity building. Advocacy and dissemination draw from research as shown in Figure 2. The research modules are organically integrated: Mobile 2.0@BOP draws from both the results of T@BOP3 on "more-than-voice" teleuse at the BOP and from supply- and demand-side data generated by the Indicators module. The research questions on expatriate workers and handsets, for example in T@BOP3 are derived from Mobile 2.0@BOP. The emphasis being placed on fixed and mobile broadband quality of service derives from the greater

importance that attaches to quality of service as people try to use the mobile phone for more-than-voice applications.

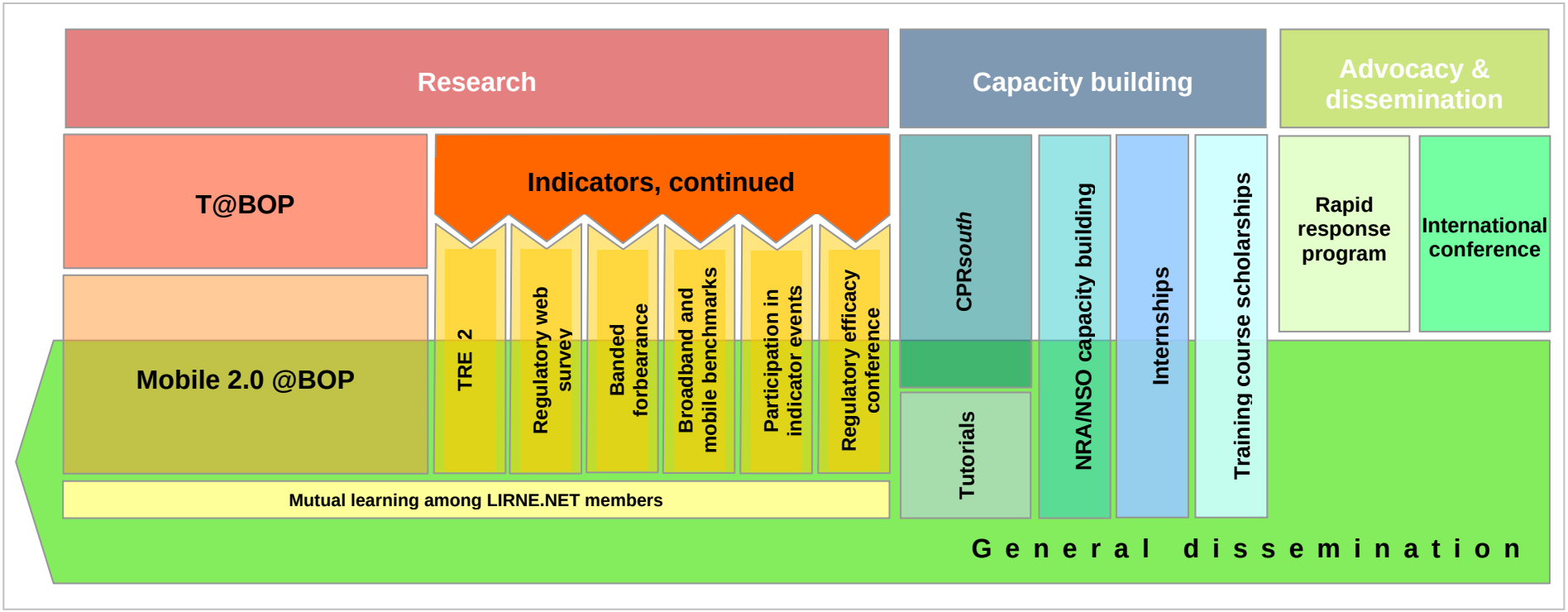

Figure 2: Advancing evidence-based policymaking and regulation in the emerging Asia Pacific to ensure greater participation in ICTs: Research, capacity building and advocacy by LIRNE*asia*

1.0 Research

1.1. Teleuse @ Bottom of the pyramid 3 (T@BOP3)

The next billion and *the bottom of the pyramid*[5] are increasingly common terms in the telecom industry. It is widely accepted that the next billions of teleusers will come from emerging markets, particularly India, China and other Asian countries. As the number of mobile owner-users worldwide surpassed the 2 billion mark in 2005, the GSM Association was among the first to assert that the "next billion" would come from such markets. Gartner estimates that "emerging markets today account for more than half of the world's total telecom connections…this will grow to 69 percent by 2010."[6] Given that Asia contains the largest number of poor people, it therefore follows that many of these new owner-users will come from the bottom of the pyramid, or the BOP in Asia.

LIRNE*asia* conducted two consecutive demand-side surveys on telecom use at the BOP in 2006 and 2006. The first, serving essentially as a pilot, surveyed 3,200 respondents among teleusers at the BOP in 7 districts in India and 4 in Sri Lanka, using a structured questionnaire, with the fieldwork being conducted by the market-research firm TNS in multiple languages. A meta-analysis of Bangladesh was also conducted. The 2005 study revealed an unexpectedly high reliance on shared phones (both public and private) in the former two countries; the Bangladesh study highlighted the high degree of phone sharing in the context of the Grameen "Village Phone" program. This underlined the potential for innovative forms of shared access. The Bangladesh study also highlighted the importance of the telephone in securing remittances from family members working in the city or abroad. The results of T@BOP1 (also known as Teleuse on a shoestring) were published as the first section of the IDRC co-published 2008 book, *ICT infrastructure in emerging Asia: Policy and regulatory roadblocks*, among others.

Market researchers divide the working-age population into five groups or socio-economic classifications (SEC), based on the principal wage earner's education and

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5 Prahalad, C.K. (2004). The fortune at the bottom of the pyramid: Eradicating poverty through profit. Upper Saddle River, New Jersey: Wharton School Publishing.

6 http://www.gartner.com/it/page.jsp?id=499110. See also for instance http://pdf.wri.org/n4b_chapter3.pdf, http://www.lirneasia.net/2007/02/the-next-billion-is-from-asia-and-africa/, http://www.digitimes.com/telecom/a20061017PR202.html, , http://www.tectonic.co.za/view.php?id=1295

occupation.[7] Given difficulties experienced in ascertaining accurate income information in the 2005 study, it was decided that the use of SECs, which are strongly correlated with income, was the best way of identifying the BOP. The "lowest income" earners of the five groups are SECs D and E. LIRNE*asia*'s survey of the demand for, and use of, ICTs by people in SEC D&E, Teleuse@BOP2, has generated a great deal of enthusiasm, as evidenced by the considerable media coverage (Annex 2) and indeed the development of new products.[8] It has been used effectively in advocacy, in conjunction with other data generated by the indicators work.[9]

Teleuse@BOP2 was based on a 6,269 representative-sample survey, representative of teleusers at the BOP[10] in Pakistan, India, Sri Lanka, the Philippines and Thailand. A smaller, non-representative sample of the "middle and top" of the pyramid was also studied in each country. The 2006 study included an innovative diary methodology to record use patterns. The survey was conducted by A.C. Nielsen, a global market research organization, through its country offices using common methodology.[11] The key findings uncovered a phone-owning potential for 115 million current non-owner users at the BOP between mid-2006 and mid-2008 in the five countries studied alone (Figure 3) (vertical growth); when additional (second) connections by current owners are considered (horizontal growth), this number was estimated to be as high as 140 million. As Figure 3 illustrates, this could bring the phone penetration at the BOP up to as high as 70 per cent in countries like Sri Lanka and Pakistan, 50 per cent in India and much higher in Thailand and the Philippines.

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7 Bijapurkar, R. (2007). We are like that only: Understanding the logic of consumer India. New Delhi: Penguin Books

8 Direct quotation from Group CEO of Dialog Telekom, Dr Hans Wijayasuriya, in video "Teleuse at BOP." http://www.idrc.ca/en/ev-118658-201-1-DO_TOPIC.html and http://www.idrc.ca/en/ev-118659-201-1-DO_TOPIC.html

9 http://lirne.net/?s=Lanka+mobile+tax

10 Additionally, a 2,420 sample of the 'middle and top' of the pyramid (that is, belonging to SEC groups A, B and C) was also taken for valid comparison.

11 Methodology details can be found in Annex 3. The quantitative survey as well as qualitative discussion guides can be found in Annexes 4, 5 and 6.

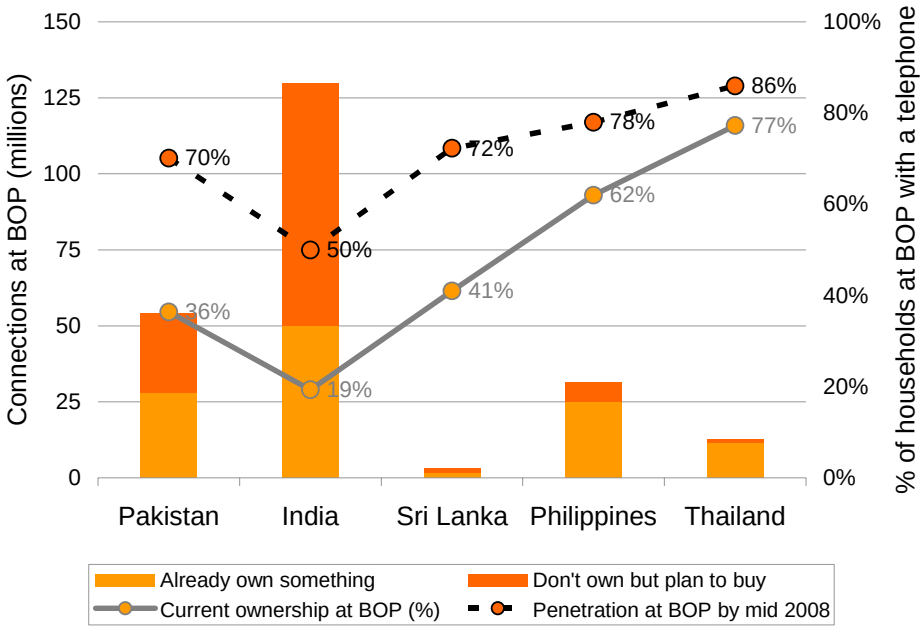

Figure 3: Growth potential at the bottom of the pyramid in Pakistan (26 million), India (80 million), Sri Lanka (1 million), the Philippines (7 million) and Thailand (1 million) between mid-2006 and mid-2008.

Source: Teleuse@BOP2, LIRNEasia (2006)

The findings of LIRNE*asia*'s Teleuse@BOP2 study have been disseminated widely to regional operators as well as operators in Sri Lanka, India and Pakistan as well as senior policy makers, regulators and media in both India and Pakistan. The wide media attention that the findings have received in multiple countries in multiple languages is evidence of the relevance and need for such research in the industry (Annex 2). New products in the telecom industry have also been developed based on research of this kind.[12] The studies have helped LIRNE*asia* to establish demand-side research as one of its areas of specialization.

The 2006 study was one of the first studies to compare telecom use at the BOP across five emerging economies. The study was ahead of the curve; terms such as "bottom of the pyramid" and "next billion" were not commonplace in the telecom industry when these studies were conceived in late 2004. However, now industry is taking initiative to see how they can serve the "poor" and turn a profit by providing them with services that they require. The growth in mobile connections even at the BOP is substantial. The next Teleuse@BOP study will similarly aim to explore issues on the rise, and provide

12 See http://www.lbo.lk/fullstory.php?newsID=1181452815&no_view=1&SEARCH_TERM=5

insight into these areas of interest to better equip policy-makers to develop appropriate policies, for industry to craft appropriate products and services and for more people at the BOP to join the information society.

One particular issue that will be explored is the rise of "Mobile2.0" applications at the BOP, which will draw synergies with the larger "Mobile2.0@BOP" component of LIRNE*asia*'s 2008-2010 research program. The next in the series, Teleuse@BOP3 will also pick up on the learnings of its predecessors, and proceed into more advanced analyses and projections. It will include a multi-media component.

1.1.1. Issue on the horizon: Mobile 2.0[13]

Unlike in more developed economies, where industry is said to be heading for a "quadruple-play" based on a "fat pipe" coming into the house, a different path is being followed in less developed economies, where everyone may not necessarily own a phone but many have not even heard of the Internet. Here, almost everyone has at least used a phone before and thus has familiarity with the technology. The BOP is rapidly moving from being non-owner users of ICTs to owner-users. By 2010, more than 50 per cent of the BOP in India, Pakistan, the Philippines, Thailand and Sri Lanka will own mobiles. These mobiles are now (or will increasingly become) payment devices that can also send/process/receive voice, text, images; in the next few years they will also be capable of information-retrieval and publishing functions normally associated with the Internet. Even among the remaining BOP population, many will be using CDMA phones that for the most part mimic the capabilities of the GSM mobiles.

People at the BOP, especially in countries that are exhibiting rapid economic growth (like India) are coming out of poverty. As their economic constraints lessen, it is likely that they will gradually increase their communication-related spending, absolutely and as a proportion of their income. Will this go to paying for fat pipes to connect their homes to a host of entertainment and data services (quadruple play) or for incrementally increasing the amounts paid for the communication services they currently consume or for investing in new terminal devices that would improve their communicative interactions (Mobile 2.0)?

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13 Also see Section 1.2 of this proposal.

The BOP (and therefore, the majority of people in the developing world) are likely to enter the world of knowledge and convenience promised by the Internet through the path opened by the rapid evolution of the mobile, rather than an evolutionary path centered on a fat pipe connecting houses.

One of LIRNE*asia*'s main research themes for 2008-2010 will interrogate this premise, exploring in-depth micro-payments and remittances, agriculture applications, voting applications, e-government services etc., in addition to the fundamental policy and regulatory issues affect the evolution of mobile technology along this path.

1.1.2. Learnings from Teleuse@BOP2

One of the key learnings from the project was the less-than-ideal timing of the qualitative studies. This component was conducted at the same time as the quantitative component, therefore the "why" questions which arose during quantitative analysis could not be answered, especially with respect to women's use of the telephone. The quantitative and qualitative components of T@BOP3 will therefore be lagged, to allow for improved interpretation of the quantitative findings.

Overall, the diary component of the study was successful, allowing LIRNE*asia* to collect data on the usage patterns of 50 per cent of the quantitative sample at the point of consumption over a two week period; this was a significant improvement from Teleuse@BOP1, where usage data was collected based on recall of the respondent, a seriously flawed method in retrospect. However, there were some shortcomings, with the diary failing to capture information on SMS usage as well as some expenditure information. LIRNE*asia* will continue working on these areas with different methods in T@BOP3.

A key objective of the Teleuse@BOP study was to calculate the price and income elasticities of demand of phone usage at the BOP, using data on expenditure and usage collected from the diaries completed by fifty percent of the quantitative study. This objective could not be met, due to a lack of expenditure data, and inflexibility of the

existing data. This is an area that LIRNE*asia* will try to improve, based on the previous learnings, perhaps using more general techniques to look at demand sensitivity.

More than 2,000 surveys were conducted among SEC A, B and C groups, or the "top and middle" of the pyramid to allow for valid conclusions to be drawn about the BOP's attributes and behavior. LIRNE*asia* plans to repeat this component in Teleuse@BOP3, but in a less costly manner, possibly reducing the "top and middle" of the pyramid samples, but maintaining the credibility of the comparisons. In addition, we will disaggregate SEC E and SEC D in the analysis to get a better understanding of effects of income (and educational status and occupational level). Suggestions have been made that we look at all SEC groups. This cannot be done because the costs will be extraordinary; we do, however, plan to explore more cost-efficient method of looking at the SEC A, B and C groups, and will be open to suggestion (although our understanding of Souter et al. is that the additional purposive sampling to enable disaggregated analysis of the sample proved ineffective in Mozambique as well as Gujarat, and were abandoned altogether in Tanzania. Nevertheless this issue will be looked at in detail).

Several unsuccessful attempts were made to obtain the input of a gender expert at the analysis stage at IDRC's suggestion. Nevertheless, the analysis was completed as planned, with one publication already out, several papers produced and discussion initiated on a Pakistan-centered blog.[14] It is somewhat frustrating that despite the good work done by LIRNE*asia* researchers on gender analysis, including the making of specific policy recommendations to senior decision makers in Pakistan and India,[15] perception persists among IDRC personnel that the T@BOP research has not done gender analysis.

Nevertheless, there is always room for improvement. LIRNE*asia* hopes to obtain inputs from a range of experts in qualitative research, including, but not limited to gender

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[14] Zainudeen, A. and A. Samarajiva (2007). Phones at the bottom of the pyramid: Accessibility, *i4d*, October. http://www.i4donline.net/articles/current-article.asp?articleid=1497&typ=Features. A paper based on a gender analysis of access and usage patterns was presented at CPR*south*2 (December 2007, Chennai). A different version is due to be presented at the International Communications Association conference in May 2008 (Montreal). The paper has also been submitted to the *New Media and Society* academic journal. For blog discussion see, http://telecompk.net/2007/06/22/the-gender-divide-in-pakistan-telecom/

[15] http://www.lirneasia.net/wp-content/uploads/2007/06/pkteleuseatbopnewsreleasejun7.pdf and http://www.lirneasia.net/2007/03/indias-universal-service-officials-seek-information-about-teleuse-at-the-bottom-of-the-pyramid/

researchers, starting from the questionnaire-design stage in Teleuse@BOP3. This is in the context of a one-day methods workshop which was jointly conceptualized with Telenor Research and Innovation Center Asia Pacific (TRICAP) in Cyberjaya, Malaysia. A range of qualitative researchers including those at Microsoft Research India (Bangalore), Ericsson Consumer Lab (Cyberjaya), and those involved in IDRC projects in the region, plus others such as Professor Brenda Dervin from Ohio State University will be invited.

The findings of the study were widely disseminated in 2006-08 to a variety of audiences, including industry (global and regional), policy makers, civil society and media. The importance of different forms of presentation became clear when presenting the research to different kinds of audiences, for example image-based forms (photographs, video clips etc.) seemed to be more effective for civil society and media. However, the lack of arrangements to capture images at the field-research stage made workarounds necessary. LIRNE*asia* therefore hopes to capture video footage at different points during the field work, bringing the BOP teleuser to the presentation screen and making it easier to explain how the data was collected.

1.1.3. Teleuse@BOP3

While anchored in the larger research program, the study will repeat a subset of the important questions from the previous versions of the study to allow for trend analysis in repeat countries. In addition to the household survey, the diary-based study and the focus groups (now lagged) will be conducted as with Teleuse@BOP2.

It is proposed that the study will be repeated in the five countries covered in T@BOP2 (India, Pakistan, Philippines, Thailand and Sri Lanka). Depending on availability of funding from industry, the survey will be expanded to the BOP of up to nine countries (Bangladesh, Indonesia, Vietnam and China, in ranked order). These countries have been selected because of the rapid telecom growth, large BOP populations and relevance to Mobile 2.0@BOP research.

Teleuse@BOP3 will explore Mobile 2.0 and its potential at the bottom of the pyramid, most specifically relating to mobile payments, especially remittances by expatriate

workers. It is widely recognized that remittances by expatriate workers is a source of funds for developing countries and BOP populations, dwarfing official development assistance. A key new feature of the study is that aspects of the expatriate-worker teleuse experience will be studied in the countries with significant expatriate-worker populations; this will constitute a special component of the standard household survey, but returning/departing workers will be studied also. This will provide much insight into the use of and potential for mobile-based remittance services.

The fieldwork will be outsourced through a competitive bidding process, to a reputed research organization with regional capabilities to implement fieldwork in the countries being surveyed. The bids will be evaluated both on technical and financial criteria. The bulk of the research tools will be designed by LIRNE*asia*, based on its expertise and experience, and input from Industry Partners will also be used. The analysis will be conducted by LIRNE*asia* also.

Sample design, etc. of T@BOP2 were done by AC Nielsen, one of the world's largest market research companies under the oversight of Dr Harsha de Silva, a co-founder of the market research company that is now AC Nielsen Lanka (See Annex 3 for methodological details). The same procedures will be followed for T@BOP3.

The qualitative component will be lagged to allow for better investigation of additional questions that arise from the quantitative results. A more efficient method will be used to study the comparison group, the 'middle and top' of the pyramid.

In light of the fact that youths are a heavily mobile-dependent group, and therefore, more likely to be users of new services, Teleuse@BOP3 will include more youths in the samples than in previous versions of the study where the lower cut-off was 18 years.

1.1.4. Research questions

Access and uptake

- What will be the growth in new connections (mobile and fixed) at the BOP over the following 2 years?
- What factors affect usage levels?
- Is mobile use at BOP growing faster than internet use and awareness?
- How big is the network effect at the BOP?

Affordability, willingness to pay

- What is the level of affordability in terms of connection and use?
- What factors affect affordability levels?

More than voice

- What is the current usage and potential for more-than-voice services at the BOP? (including remittances, agriculture information, e government applications, etc)
- What might be the barriers (language, trust, etc.) to the uptake of such services at the BOP?
- What role does local language play in the BOP's ability to consume information (including e-government) through the mobile or through internet?
- What is the willingness to pay for more than voice services?
- How important are ICTs to migrant workers and his/her family?
- What factors determine the use of SMS and missed calls (alternatives to voice)?
- What are the handset capabilities of current mobile users?

Gender

- Does the gender divide widen or narrow with increases in penetration at the BOP?
- As penetration increases, is there a divergence in men's vs. women's use of the phone?
- What are the factors that affect gender differences?

Benefits of access

- What is the value of a mobile phone to the BOP user (especially in terms of economic value)?
- Is a call a call? A minute a minute? How can we capture the benefits of high-value communications?

- What are the complements that help people benefit from mobiles (for. e.g., easy road access; education; proximity to large towns; proximity of banks, etc)?

The questionnaire developed for T@BOP2 is given as Annex 4. The questionnaire used for T@BOP3 will be a revised version developed at the planning meeting scheduled for May 2008.

The extension of the study into four new countries will require substantial additional funds. Major efforts are being made to raise funds from the private sector (regional telecom operators such as Telekom Malaysia International and Telenor and equipment vendors). If matching funds (not necessarily on a 1:1 ratio) cannot be raised in time, it will not be possible to cover all the countries. The countries in order of priority are:

1. India
2. Pakistan
3. Philippines
4. Sri Lanka
5. Thailand
6. Bangladesh
7. Indonesia
8. Vietnam
9. China

The priorities were assigned at a research planning meeting held in August 2007. Obviously, the top five are there because they were the countries that were included in T@BOP2.[16] Here the basic rationale was that there is value of repetition that would allow longitudinal analysis. The priorities for the remaining four were assigned collectively by the researchers based on multiple factors such as growth rates (see Figure 1), significance of BOP (Bangladesh is one of the fastest growing markets, with a high BOP population), regional leadership (Vietnam is high growth and also a regional leader), and the ability of LIRNE*asia* to enter and work in a sustainable way. The reason

[16] In the 2006-08 proposal Indonesia was also included, but it was clearly stated that a minimum of five countries would be studied, not six. The final selection in T@BOP2 was a combination of countries that were to be studied for the Indicators project and what we could afford. The countries for the indicators study were selected on the basis of researcher availability (we did not have a researcher for Bangladesh) and the desire to have equal representation from South East Asia. The reason for dropping Indonesia was money. At the last minute, APDIP/UNDP reneged on the commitment they had made to give more than USD 50k.

Indonesia gets ranked above China, for example, is because LIRNE*asia* has many relationships there already, compared to China, where the relationships are just being built up. And, of course, there is always the question of how much BOP research in China will cost, given the need for a large sample.

Funding of USDxxxx[17] is requested for the T@BOP3 study covering India, Pakistan, the Philippines, Sri Lanka and Thailand. Depending on the field-research bids that are received and external funds generated, the study will be extended to the other countries in the list above in ranked order.

1.2. Mobile 2.0@BOP[18]

The dominant narrative with regard to telefutures is of a "fat pipe" (coaxial cable, fiber or even wireless) coming into each household carrying entertainment and data (including Voice over IP). Convergence of previously distinct analog or digital information streams over a single bit-stream conduit into the house is envisaged, with different terminal equipment (home theaters for entertainment, different devices for data and voice). The converged bit stream will be carried, and billed for, by a single operator (an evolved cable or telephone operator).

The inhabitants of the future household described above will also carry mobile devices that will be capable of voice and data communication, information retrieval and forms of entertainment consumption. Evolved mobile phones or laptop computers that are capable of multiple functions over a single set of wireless carriers controlled by a single company, or "bundled" terminal devices that use different sets of wireless carriers (e.g., one set of frequencies for voice communication; and another set of frequencies for receiving audio or audio-visual broadcasts). In some cases, it is envisaged that the mobile interface will also be provided by the owner of the fat pipe into the home ("quadruple play"). Given the limitations of mobile terminal devices and the wireless conduits, it is

17 Inclusive of 13 per cent overhead.

18 The broad theme was agreed upon by the constituent units of LIRNE.NET in December 2006-February 2007, and elaborated on at a research planning and communication training event held in August 2007 that brought in non-Colombo-based LIRNE*asia* researchers. It is expected that DIRSI and RIA will conduct related research.

generally envisaged that the mobile services will be complementary to the fat pipe into the house rather than a substitute.

BOP households in developing countries do not fit into the dominant narrative. A majority of the households in these segments do not currently have their own access paths to connect to interactive electronic networks, though most are connected to receive-only audio or audio-visual networks (e.g., radio, terrestrial TV, satellite TV and in some urban slums, sub-optimally designed cable TV). T@BOP2 allows us to project the BOP households who will have their own access paths, by 2010. It also tells us that the monthly spend on teleuse by these households will be in the range of USD 5-8 per month.

Table 1: Monthly spend on telecom at BOP in India, Pakistan, Philippines and Sri Lanka

Country	Monthly expenditure (USD)
India	5.73
Pakistan	7.86
Philippines	5.63
Sri Lanka	7.28

Source: Teleuse@BOP2, LIRNEasia (2006)

Within current technology and pricing parameters, it is clear that these households may not be able to afford more than mobile telephony and forms of advertiser-supported entertainment delivered over receive-only channels.[19]

If pressed about the way these BOP populations fit into the dominant narrative, its proponents or believers are likely to come up with a telecenter addendum. Here, it is envisaged that the BOP populations will use the communication, information-retrieval and publication functions directly available to the fat-pipe-connected developed-country households through common-use access points or multi-purpose telecenters.

[19] Dialog Telekom's DTH satellite TV business model that is being rolled out in Sri Lanka is illustrative. In addition to conventional packages aimed at SEC A and B markets, it is offering a package comprising connection charges inclusive of dish and set-top box of <USD 100 and monthly charges <USD 1.

However, an alternative narrative is emerging. The proposed Mobile 2.0@BOP module of the present proposal seeks to give shape and focus to this emergent narrative through a series of studies, some comparative and some going into specific applications in detail. It will pay special attention to the conditions that will have to be met for the alternative narrative to be realized.

Country studies will be used to explore in depth certain aspects of the Mobile 2.0 phenomenon as it applies to the BOP. From these in-depth studies, a full and reality-connected picture of the overall phenomenon will emerge, placing weight on what is actually happening on the ground rather than speculation. The process is similar to that which was adopted in LIRNE.NET's third cycle of research which LIRNE*asia* implemented in 2005-06. The results can be seen in LIRNE*asia*'s first book, co-published in Sage and IDRC in 2008.[20]

The BOP in the countries studied in T@BOP2 is rapidly moving from being non-owner users of ICTs to owner-users. By mid 2008 there will be a significant number of new connections. The projections based on the T@BOP2 study are as follows.

Table 2: Projected connections 2006-08 at BOP in India, Pakistan, Philippines and Sri Lanka, 2006-08

Country	Projected new connections at BOP (millions)
India	101
Pakistan	30
Philippines	10
Sri Lanka	1

Source: Teleuse@BOP2, LIRNEasia (2006)

A majority of the new connections, except in Sri Lanka, will be mobile. Mobiles are now (and will increasingly become) payment devices that can also send/process/receive voice, text, images; in the next few years they will also be capable of information-retrieval and publishing functions normally associated with the Internet. Even among the

[20] Samarajiva, R. & A. Zainudeen (eds.) (2008), *ICT infrastructure in emerging Asia: Policy and regulatory roadblocks*, New Delhi & Ottawa: Sage and IDRC.

remaining BOP teleusers such as those in Sri Lanka, a significant percentage will be using CDMA phones that for the most part mimic the capabilities of the GSM mobiles.

People at the BOP, especially in countries that are exhibiting rapid economic growth (like India) are coming out of poverty. As their economic constraints lessen, it is likely that they will gradually increase their communication-related spending, absolutely and as a proportion of their income. Will this go to paying for "fat pipes' to connect their homes or to incrementally increase the amounts paid for the communication services they currently consume or for investing in new terminal devices that will improve their communicative interactions?

The alternative narrative is premised on the correctness of the latter answer. It sees the path by which those at the BOP (and therefore, the majority of people in the developing world) enter the world of knowledge, convenience and entertainment promised by the Internet as being through the rapid evolution of the mobile and incremental increases in mobile-related expenditures, rather than an evolutionary path centered on a fat pipe connecting houses that required massive, non-incremental public and private investments if those at the BOP are to walk that path.

Here, a central feature will be the payment capability of the mobile handsets. It is now enabling voice through pre-paid mechanisms, such as "EZ reload." It will also enable Internet access, especially after interface problems are solved. It will provide the upstream path to make the current entertainment channels available at the BOP interactive (for example, to order a sporting event using a mobile-based payment). It will allow the currently unbanked millions at the BOP to finally enter the world of formal finance.

In this narrative, the mobile is the center; the main thing. It is not a complement to anything; it is central. It is Mobile 2.0@BOP.

Do narratives matter in the policy world? The entire body of work described as "the argumentative turn in policy analysis" posits that they do (as does common sense). Fischer distinguishes between a narrative that primarily serves to explain what is and an argument which primarily seeks to address what ought to be. However, he concedes that

often narratives are constructed in order to elicit specific actions and rest on arguments.[21] In the present instance, we do not explicitly wish to argue for a specific action or actions through the alternative narrative. Our thesis is that the narrative is emergent and that what we are doing is to give it shape and form. Our actions may hasten its emergence, but they may equally change its trajectory of development by illuminating problems and weaknesses in the emergent form.

Our conception of the narratives (the dominant as well as the emergent) is that by their existence (through acceptance by key actors) they privilege and throw into prominence certain phenomena and cloud and push into the background certain others. This is in line with the concepts of framing and competing narratives in the "argumentative turn" literature. Schön states that social reality is constructed through a process of naming and framing and that often metaphors underlying the stories define the problems that are set for solving and determine the direction of problem solving.[22] Sawhney is specifically concerned with how the metaphors used to describe technologies (or systems of technologies) influence market and policy actions. In particular, he addresses new technologies or emergent large technical systems. Noting that new technologies tend to be described metaphorically in terms of old technologies, Sawhney states that the metaphors tend to influence actors' perceptions of the capabilities of the technology or system and also influence the design of new institutions.[23]

How does one research an emergent narrative? Not in the classic style: hypothesis, dependent and independent variables, etc. Kaplan, Roe and others propose the use of the tools of literary criticism. Kaplan suggests that the "truth" of a narrative can be judged in terms of "the internal connections among the five core elements of narrative: agent, act, scene, agency and purpose."[24] However, this is not the best approach for truly inchoate narratives such as the mobile-centric path to the information society that we are investigating. More appropriate is a comprehensive approach that utilizes all the elements of the policy analytic toolkit: "microeconomics, statistics, organization theory

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21 Fischer, F. (2003). *Reframing public policy: Discursive politics and deliberative practices*. Oxford: Oxford University Press. p. 181.

22 Schön, D.A. (1979). Generative metaphor and social policy, in A. Ortony (ed.), *Metaphor and thought* (pp. 255-83). London: Cambridge University Press, p. 255 and p. 264.

23 Sawhney, H. (1996). Information superhighways: Metaphors and midwives. *Media Culture and Society*, 18: 291-314.

24 Kaplan, T.J. (1993). Reading policy narratives: Beginnings, middles and ends," in F. Fischer and J. Forester (eds.), *The argumentative turn in policy analysis and planning* (pp. 167-85). Durham NC: Duke University Press.

and legal analysis."[25] Given the widely differing academic backgrounds of the researchers who will be engaged in the Mobile 2.0@BOP research (economics, law, engineering, etc.) and that fact that not all of them have been contractually committed, let alone firmly identified, it is not possible to impose a centrally controlled common research methodology on all the participating researchers. The research manager and those responsible for weaving together the strands will take responsibility to introduce the researchers to the broad approach to policy analysis embedded in the "argumentative turn" literature at the various planning and synthesis meetings. They will also take responsibility to ensure that the final product will be integrated into a cohesive narrative, as befits an engagement with competing narratives.

The research on each of the components (horizontal issues and vertical aspects) will be informed by the demand-side data generated specifically for the Mobile 2.0@BOP requirement by T@BOP3; data collected from NRAs and NSOs within the Indicators Continued work will also feed into these components. In turn, the output of the Mobile2.0@BOP research will influence the analysis and interpretation of the Teleuse@BOP3 findings, and furthermore affect the kind of indicators collected (Figure 4). The research will also utilize the supply-side data generated by the "Indicators, continued" module. For example, the evidence on how many people are entering the information society through the mobile pathway as opposed to the conventional computer-fixed broadband pathway will be answered by data from the indicators module. The specifics of BOP participation in the information society will be supplied by T@BOP3.

[25] Roe, E.M. (1992), Applied narrative analysis: The tangency of literary criticism, social science and policy analysis, *New literary history*, 23: 555-81.

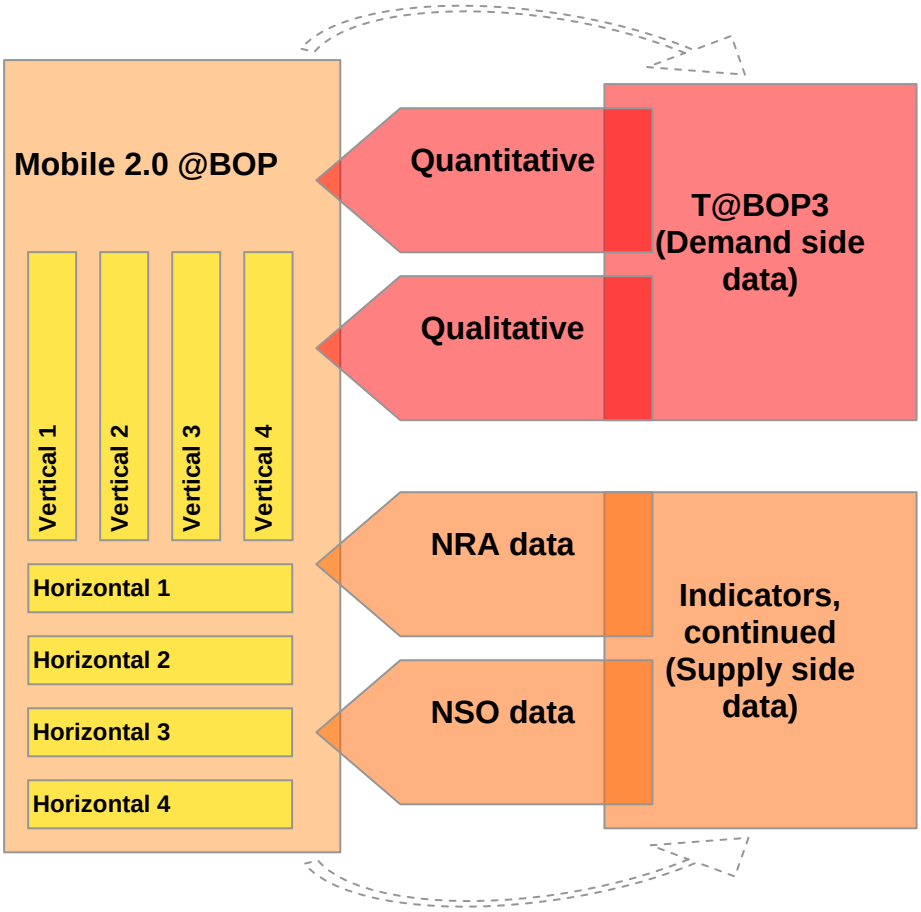

Figure 4: Linkages among the research modules

Mobile 2.0 @ BOP will be researched in terms of horizontal issues and vertical aspects. Horizontal issues are the basic conditions that affect the emergence of Mobile 2.0@BOP. The analysis here may emphasize one or another country, but the intention is not to do country studies but to address policy and regulatory issues that are applicable to all or most countries in the emerging Asia Pacific. The combination of the horizontal and vertical will provide the full picture of emerging mobile-centric telefuture. The answers to the component research questions will yield an understanding of the dynamics of the unfolding of this alternative narrative.

In contrast, the vertical aspects, though each contains specific research questions, are intended to fill out the mobile 2.0 narrative, by exploring and explaining how a particular aspect such as m-payments is taking shape in one or two countries. Each individual study is similar to the country studies funded by IDRC and others.[26] The novelty is that

[26] E.g., Lallana, E. (2004). *SMS, business and government in the Philippines.* Department of Science and Technology and IDRC; Mendes, S., E. Alampay, E. Soriano and C. Soriano (2007). *The innovative use of*

the country studies do not stand alone but are integrated into a coherent whole. The method has been tried out earlier in LIRNE.NET research, including the third cycle on network extension. How the different aspects are pulled together into a policy-relevant, coherent narrative is illustrated by the 2008 Sage-IDRC co-published book.[27]

There is always the questions of which vertical aspects and how many. The obvious answer is that priorities must be assigned because of resource constraints: some will be studied, other will not. All kinds of justifications can be given for the choices that are made. In the context of the narrative framework discussed above, the most honest answer is that the selection is made on the basis of the experience and judgment of the researchers close to the phenomena that are being studied. Given that a policy and regulatory focus is the signature of LIRNE*asia* research and its reputation, the judgment is strongly influenced by economic factors. For example, this is why we privilege the study of value-added service business models over studies of pirated content. There is also the little matter that our researchers do not have a comparative advantage in systematically researching the policy and regulatory implications of pirated content stored in mobiles.

This approach has several advantages over the more conventional comparative approach, where the same phenomenon is examined across multiple countries using a common methodology. Among primary audiences for our work--policy-makers, regulators, senior managers of firms and opinion leaders—a premium is placed on examples and best practices; there is less demand for rigorous comparative analyses. Our research yields outputs that are of value in communicating to these audiences, with the additional twist that we study worst practices as well as best practices, in both cases choosing countries that are not radically different from our target countries and are indeed among the target countries.

The second rationale for our approach is that it allows us to make the best use of the researchers we have and to maintain high quality. In many cases, the demand for comparative research drives research managers to farm out work to research

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mobile applications in the Philippines: Lessons for Africa, SIDA. www.sida.se/shared/jsp/download.jsp?a=33306&f=SIDA38306en_Phillippines+web.pdf

[27] Samarajiva, R. & A. Zainudeen (eds.) (2008), *ICT infrastructure in emerging Asia: Policy and regulatory roadblocks*, New Delhi & Ottawa: Sage and IDRC.

organizations irrespective of competence and quality. Entities such as the Institute of Policy Studies in Sri Lanka benefit from this "demand" feature, but it is debatable whether it yields good research overall and whether it serves to build up research institutions located in the emerging countries. Given the need to fill in the holes in the comparative results matrix, there is a tendency to accept whatever output that is sent rather than accept only high-quality output. With the demand for disconnected, externally conceptualized research high, researchers in many entities in emerging countries keep running from one project to another, unable to articulate connections and deeper implications, and not developing to a point where they can independently conceptualize and design large research projects.

LIRNE*asia* does not farm out research to faceless organizations; we spend time and money to carefully select potential researchers and we involve them in the research design once selected; we do not contract with organizations but with individuals (even though the final contract can take the former form depending on the specific circumstances); and we work hard to create the space for researchers to explore the connections among different research projects and the deeper implications of the results. Because of these core principles, we rarely undertake conventional comparative research.

The T@BOP research is an obvious exception however. In 2006-08 we used a comparative approach in the sector and regulatory performance indicators project, which included the Telecom Regulatory Environment (TRE) research. [28] In the former case, the practical problems of conducting the research are solved by outsourcing the work. In the latter, the nature of the intended outputs (standardized definitions and procedures) required comparative work.

In any case, we are dealing with inchoate phenomena and the end objective is the fleshing out and assessment of an alternative narrative, not a conventional comparative-research product. The adopted approach is best for the 2008-10 objective, as the comparative approach was best for the 2006-08 objective.

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[28] Samarajiva, R., Galpaya H., Goswami, D., and Ratnadiwakara, R. (2007), "Telecom Regulatory Environment (TRE) assessment: Methodology and implementation results from five emerging economies" paper at the 35th Telecom Policy Research Conference, Fairfax VA, September 28-30, 2007. With contributions from Payal Malik, Joseph Wilson, Lorraine Carlos Salazar, and Malathy Knight John.

1.2.1. Horizontal issues

Certain fundamental policy and regulatory issues affect the evolution of mobile technology along the path described in the alternative narrative. Few developing countries have created workable conditions for competition in the mobile space, especially the equitable and efficient allocation of frequencies, towers and related infrastructure and mobile number portability.[29] Currently, frequencies, licensing regimes and regulatory actions/inactions constrain the rapid development of mobiles along the evolutionary path. Among the horizontal issues that will be studied are:

- In their desire for revenues and rents governments and politicians/officials are conflating **the issuance of licenses for service provision and frequencies**, for example with regard to 3G frequencies and WiMAX. For example, many countries have issued GSM 1800 frequencies to companies that already hold system or service-provision licenses and frequencies in the GSM 900 band without going through a formal licensing process, based on auctions, beauty contests, etc. However, in most countries issuance of 3G frequencies has been based on the issuance of new system or service-provision licenses. Issuance of new system licenses for every new standard and application that requires new frequencies is costly in terms of scarce regulatory resources, opens up additional opportunities for extraction of rents (above and below the table) and introduces unnecessary uncertainties to the investment process. When excessive rents are extracted, innovation can stall, as was seen in the case of European 3G auctions.[30] The research question is where a reasonable boundary can be drawn between the issuance of additional frequencies to system operators and the issuance of new licenses.[31]

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[29] Samarajiva, R. (2006). Preconditions for effective deployment of wireless technologies for development in the Asia-Pacific, *Information Technology and International Development*, 3(2): 57-71. http://www.mitpressjournals.org/doi/pdf/10.1162/itid.2007.3.2.57

[30] Mansell, R., R. Samarajiva & A. Mahan (eds.) (2002). *Networking knowledge for information societies: Institutions and intervention.* Delft: Delft University Press. http://www.lirne.net/resources/netknowledge/index.htm, see especially chapters by Bauer, Cave and Ure and the section introduction on "Change" by Samarajiva, Mansell and Mahan.

[31] Policy research of the type that is described here cannot easily be fully specified at this early a stage. The working out of the research design is an interactive and iterative process that involves the researcher and the research managers. If IDRC so wishes, we can submit the worked out research designs that will form the attachments to the research contracts that will be entered into. The competence of LIRNE*asia* to engage in this form of research design has been amply demonstrated in the research conducted as part of the 3rd cycle of WDR research on network extension. It must be noted that a high level of detail on the research design was not demanded in these previous proposals.

- The **spectrum refarming process** whereby frequencies currently used for low-value applications are cleared and reassigned for high-value applications is fraught with conceptual, economic and policy problems and is holding back the introduction of new services. For example, application of the principle of "beneficiary pays" yields a relatively simple solution when refarming results in private-property like rights being assigned to the beneficiary of the reassignment. The payments made by the beneficiary can be used to compensate the former user whose equipment now has to be decommissioned/exported and who has to obtain new equipment to operate at another frequency. However, when the prospective use is for non-exclusive uses such as WiFi, there is no easy source of funds to compensate the existing user.[32] The research question is whether the classic "beneficiary pays" model used in spectrum refarming requires modifications to work well in the government environments of emerging Asia. An additional question is how the problem of compensating users who have to relocate to allow the use of WiFi frequencies.

- Without the ability to change suppliers without disrupting social and economic relationships (a necessary consequence of having to give up one's number/address every time the service supplier is changed) competition cannot work well. Pakistan has taken the lead in implementing **mobile number portability** (MNP) and India is considering its adoption. MNP has costs and the debates are still ongoing about the minimum threshold market size for MNP and about who has to bear the costs.[33] In this research the minimum size of a market that can support MNP will be assessed. The question of how to assign the costs of the MNP transition as well as the preconditions for successful implementation will be determined.

- The implications of the **new conception of frequency use** promoted by Google and partially accepted by the FCC in a recent decision[34] need to be examined for

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32 Samarajiva, R. (2006). Preconditions for effective deployment of wireless technologies for development in the Asia-Pacific, *Information Technology and International Development*, 3(2): 57-71. http://www.mitpressjournals.org/doi/pdf/10.1162/itid.2007.3.2.57

33 http://www.lirneasia.net/2007/10/mobile-number-portability-the-case-for-and-against/ and Jayawardena, N. (2007) "Switching networks no longer a nightmare," *Financial Times*, October 12, http://www.dailymirror.lk/2007/10/12/ft/05.asp

34 http://www.dailywireless.org/2007/05/22/google-to-fcc-real-time-auction/

the developing countries. Currently, different business models in use in different countries result in greater or lesser restrictions on what customers can do with their handsets and service choices. For example, Asian operators do not usually apply SIM locks and restrictive long-term contracts like their counterparts in Europe and North America respectively, but rarely allow roaming on the networks of competitors and the use of services that are not supplied by the principal operator. The Google challenge to conventional thinking has opened up inquiry into the possibilities of breaching the different forms of walled gardens erected by operators. The research will seek to identify different models of frequency use and will compare the positive and negative aspects.

- The **interface between telecom and banking regulation** and creative ways to provide safeguards without strangling the industry. Telecom regulation is based on the control of market power; on creating the conditions for competitive provision of services under highly imperfect market conditions. Banking regulation is based on the need to address problems of information asymmetry and trust on the one hand and to control, for good or ill, the creation of money outside the government monopoly. Bank regulators define their object of regulation not on whether the relevant entities call themselves banks or not but on the terms and conditions of how the deposits of money that they take from customers are treated and whether or not they extend credit to customers. By these criteria some mobile operators who offer m-payment services have the look and feel of banks. For example, a pre-paid account that is used for subsequent payments to multiple vendors could be construed as a conventional checking account. If a post-paid customer is allowed to make payments for services other than telecom, it amounts to the mobile operator extending credit to the customer. In some countries mobile operators have begun to offer m-payments in collaboration with banks, carefully demarcating the boundaries between functions subject to banking and telecom regulation.[35] In others, it appears that the mobile operators are implicitly entering the banking business. The interface between the two forms of regulation, first flagged in the literature by former

[35] E.g., http://www.lirneasia.net/2007/08/dialog-and-ndb-to-launch-ez-pay-mcommerce-solution-an-alternative-to-visamaster-cards/

Dutch regulator Professor Jens Arnbak,[36] needs to be explored and creative solutions evolved of the public interest is to be served. The research will identify the pros and cons of different regulatory regimes that are emerging in different contexts. Based on this analysis, policy recommendations for innovation-friendly regulatory arrangements will be developed.

1.2.2. Vertical aspects

In the proposed research, we will explore in depth the following vertical aspects:

- **The growth, forms and regulatory problems of domestic and international mobile payments: Philippines.** This subject has attracted considerable attention from researchers and development practitioners because of the interest in remittances and the roles they play in alleviating poverty.[37] Some studies have been done on m-payments in Kenya and the Philippines but based on preliminary assessment of the literature, we believe that in-depth research in the Philippines where multiple and complex forms of remittances exist can add to the understanding of the emergent phenomenon. The research questions that will be addressed include an analytical description of the different modes of m-payments and related financial transactions; a classification of the multiple forms of emergent m-payments with international examples; documentation of the growth of m-payments, distinguishing between international and intra-country m-payments; the regulatory problems that have been experienced and are likely to emerge; and the barriers to use by the BOP.

- **Mobile 2.0 agricultural applications appropriate for farmer needs, building on work done in 2006-07: India and Sri Lanka.** In the 2006-08 cycle,

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[36] Arnbak, Jens C. (2002). Multi-utility regulation: Yet another convergence, in *Networking Knowledge for Information Societies: Institutions and Intervention*, Robin Mansell, Rohan Samarajiva & Amy Mahan (eds.), p. 144. Delft: DUP Science.

[37] E.g., Porteous, D. (2006). The enabling environment for mobile banking in Africa, Report for the Development for International Development (DFID). http://www.dfid.gov.uk/pubs/files/enabling-environment.pdf; Donner, J. (2007). M-Banking and M-Payments Services in the Developing World: Complements or Substitutes for Trust and Social Capital?, Working paper v1.1, 29 June. http://www.jonathandonner.com/donner_mbanking_soccap.pdf; Zmijewska, A. E. Lawrence, R. Steele (2004), *Classifying m-payments- a user- centric model*, Proceedings of the Third International Conference on Mobile Business, M-Business 2004, http://www-staff.it.uts.edu.au/~rsteele/classifyingm_paymentmodel.pdf

LIRNE*asia* completed two innovative sub-projects on ICT applications in agriculture in Sri Lanka. The original e Sri Lanka pilot project Govi Gnana Seva[38] is being revived as a public-private partnership involving Dialog Telekom, Sri Lanka's largest mobile service provider. A consortium including LIRNE*asia* is likely to be awarded a large multi-year USAID grant to operate a Connecting Regional Economies (CORE) project that focuses on improving the efficiency of agricultural value chains in five conflict-bordering districts of Sri Lanka.[39] The GGS revival may occur within CORE or outside. CORE has indicated strong interest in extending the traceability work done in 2007-08 by LIRNE*asia* as part of its value-chain enhancement work.

At the February 2008 summative workshop on the research on transaction costs and traceability[40] and the subsequent visit to the Rural Technology and Business Incubator (RTBI) at the Indian Institute of Technology Madras[41] by the researchers who led that project, the learnings of the present research were consolidated and future work prioritized. The core of the GGS and related activities will be carried out independent of IDRC funds. However the GGS project provides an opportunity to conduct a natural experiment to observe changes in indicators related to market price and farmer income before and after the introduction of a mobile-based price information system. Funds are requested to carry out the baseline survey, post-implementation survey + analysis. The specific goal is to quantify changes in welfare of farmers and traders and wastage in the value chain up to the Dambulla wholesale market (the country's largest agricultural market and the site of 2007-08 transaction-cost research).

In parallel, LIRNE*asia* has identified agriculture related collaborative research that can be conducted with RBIT of IIT-Madras. Common ground has been identified in testing out a system for providing market price information along

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38 http://www.icta.lk/Insidepages/News&event/260905whatsnew.asp

39 http://www.usaid.gov/locations/asia_near_east/countries/srilanka/ . The proposal was adjudged the best and the contract signed. However, the previous grantee has appealed the decision, resulting in a 100-day freeze.

40 http://www.lirneasia.net/2008/03/lirneasia-public-lecture-makes-it-to-the-press/

41 http://www.rtbi.in/agriculture.html . Note that this collaboration builds on the successful collaboration between IIT Madras and LIRNE*asia* on establishing CPR*south* and hosting CPR*south*2 in Chennai.

with other information such as weather (similar to GGS), using local-language voice recognition and weather monitoring technology developed at IIT-M. A pilot project will be conducted in a selected district in Tamil Nadu, in a set of villages where IIT-M already has existing relationships. A phone-based system that enables farmers to call a number and request market prices for various products using their local language will be implemented. As in Sri Lanka, a before-and-after survey will be done to measure changes in welfare to farmers. However the research will be more detailed than in Sri Lanka, in that multiple technologies will be tested – one village will have the option of requesting market data through the voice-recognition system or through SMS. Another will have the option of SMS or walking into a tele-kiosk (established by a company within the RTBI umbrella), and yet another may using another combination. The goal is to understand which modes of technology are acceptable to farmers, when and why.

Both projects leverage additional external resources from public-private partnerships in Sri Lanka and from RTBI at IIT Madras in the case of the Indian work, limiting the use of IDRC funds to social-science research activities only. The research questions have to do with changes in producer surplus and reduction in wastage. Because our research in Sri Lanka covers the value chain from farmer to wholesale market only, we are unable to measure consumer surplus easily. In the prior work that we draw from, Jensen as well as Akers,[42] the commodities were fish in Kerala and grain in Niger. In the proposed studies, the commodities are vegetables and fruits produced by small farmers. The costs of tracking retail prices in fruits and vegetables are higher than for fish and grain. This problem applies to India as well. Tracking changes in waste is a useful proxy for improvements in the efficiency of value chains.

42 Jensen, R. (2007). "The Digital Provide: Information (Technology), Market Performance and Welfare in the South Indian Fisheries Sector." *Quarterly Journal of Economics*. Vol. 122, Issue 3: 879-924; Aker, Jenny C., "Does Digital Divide or Provide? The Impact of Cell Phones on Grain Markets in Niger" (January 15, 2008).

- **Freedom of expression issues pertaining to dissemination of customer-requested SMS. Indonesia, Pakistan or Thailand.**[43] The content dissemination and coordination functions of the mobile are exemplified by customer-requested SMS services. In the classic distinction of push and pull media, this clearly falls on the pull side, unlike broadcast SMS. In the US, a recent controversy involving an operator's refusal to provide this service to NARAL, an abortion-rights organization, brought out the relevant issues.[44] The rationale for broadcast regulation rests partly on spectrum scarcity and partly on the power of ideas that are broadly disseminated. An unlimited number of "speakers" can use the SMS channel, as long as the mobile operators (or the common carriers, in regulatory terminology) allow it on a non-discriminatory manner. In the telecom space, there is no regulation of "what goes through the pipes," under the common-carrier principle. The fact that it is sent only to those customers who explicitly request the messages in a pull mode appears to reduce the justification for restriction by operators or by governments. However, government in countries without strong liberal democratic traditions there has been a tendency to apply restrictions to SMS as a whole, rather than just content. The intention here is to examine the service in a country where it is offered and draw out the policy implications in Asia-Pacific context. The research is set in a legal framework. The questions are about the actual practices and the emerging legal doctrine, if any.

- **Business models for delivering mobile value-added services: Buzz City, India and Thailand.** Value-added services (VAS) over the mobile are drawing increasing attention from operators and content providers. The former believe that this provides a way out of the predicament of decreasing average revenues per customer (ARPU). The latter see this as a potentially powerful distribution medium, in light of the increasing likelihood that the mobile will become the primary method of accessing the Internet for a majority of the population.[45] Content being provided on mobiles range from the simple ringtone to

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43 It has not been possible to identify the researcher who will undertake this assignment. The researcher's familiarity with the legal environment of the study-country is a critical ingredient. Therefore, the country is still open.

44 http://www.lirneasia.net/2007/09/violation-of-common-carrier-principle-a-battle-is-won-but-war-continues/

45 http://www.lirneasia.net/2007/10/is-india-showing-us-the-mobile-centric-internet-future/

Bollywood movies and social networking on mobiles.[46] However, the business models vary greatly. Indian operators take roughly 70 per cent of the revenues of VAS leaving 30 per cent to be split among aggregators and content providers, while the ratio is reversed in Thailand. This study will document the way the VAS are shaping up as well as analyze the business models.

Buzz City is an innovative VAS provider[47] who contacted LIRNE*asia* on the basis of an op-ed piece published in Singapore.[48] This was followed by an invitation to deliver the second NUS - Buzz City Digital Media lecture.[49] LIRNE*asia* research was used in the Buzz City blog[50] and the company offered to share usage data with LIRNE*asia* for research purposes. The fact that Buzz City operates in more than 60 countries and serves over 2 million customers[51] makes this offer an exceedingly interesting one. The researcher will examine the different business models that this one company works with in multiple countries, looking for explanatory factors for the wide divergence and indicators of which model will become dominant under which conditions. Special emphasis will be placed on India and Thailand.

- **Identifying conditions for delivery of successful m-government services to the BOP: India.** LIRNE*asia* is already engaged with the question of e-gov services delivered over mobile.[52] The 1919 Government Information Centre implemented as part of e Sri Lanka, which was conceptualized and implemented by LIRNE*asia* personnel, has been the basis of early thinking. Professor Subhash Bhatnagar,[53] one of the resource persons invited to the AgInfo research Workshop held in February 2008 and one of the world's leading experts on e-government, has agreed to work with LIRNE*asia* to identify the best m-government projects in India and to help conduct best-practice research.

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46 http://www.lirneasia.net/2007/12/award-winning-mobile-networking-firm-uses-lirneasia-data/

47 Awarded best mobile social networking service at GSMA Mobile World Congress in 2008: http://www.globalmobileawards.com/winners.shtml#winner_cat1d

48 http://www.lirneasia.net/2007/06/straits-times-low-income-telephone-users-in-asia/

49 http://www.lirneasia.net/2007/10/more-than-voice-at-the-bottom-of-the-pyramid/

50 http://www.lirneasia.net/2007/12/award-winning-mobile-networking-firm-uses-lirneasia-data/

51 http://www.buzzcity.com/l/coverage/MobileSocialNetworking.pdf

52 Galapaya, H., R. Samarajiva & S. Soysa (2007). "Taking e-government to the bottom of the pyramid: Dial-a-gov?" International Conference on Theory and Practice of Electronic Governance, Macau China, December 11, 2007.

53 http://www.iimahd.ernet.in/~subhash/

- **The interplay of information over mobiles, payments and logistics: Bangladesh.** Cell Bazaar is new commercial venture that has been described as Craig's List on mobiles[54] which has gained acclaim recently.[55] It is described as a user-generated virtual marketplace, accessible via mobile phone or computer to nearly 17 million people in Bangladesh. Buyers and sellers trade basic goods from their mobiles, engaging in one-to-many trading. Users post or search an item, spending less than US$.02, either by SMS or WAP through the mobile or through the Internet, depending on their preferences. This study will examine how transactions are completed, including payments and the delivery of the good or service. The research has similarities to a previous study conducted by the same researcher in Bangladesh on the Grameen Village Phone program, in that the conditions for replication will be identified.[56]

- **Evaluating use of mobiles for disaster warning in a community-based model: Sri Lanka.** The major Last-Mile HazInfo research project funded by IDRC comes to a close in March 2008. It broke new ground in community-based early warning. A proposal to continue this work through a disaster risk-reduction initiative that involves the coastal tourist hotels and Sri Lanka's largest community-based organization Sarvodaya is currently under consideration by CIDA.[57] Here, the objective is to establish a commercially sustainable mechanism to provide bidirectional communication capabilities to first responders in hotels and in Sarvodaya villages; to provide training (and periodic retraining) in disaster risk reduction and response to hotel staff and villagers; and to provide "tsunami-ready" certification to hotels and villages on the basis of the preceding actions. The communication capability was selected on the basis of field-testing during the Last-Mile HazInfo project and the training for first responders was also trialed during that project. When the CIDA funding is approved, we expect the first phase of implementation to commence in April-

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54 http://www.lirneasia.net/2007/08/mobile-craigs-list-in-bangladesh/

55 Awarded best use of mobile for social and economic development at GSMA Mobile World Congress in 2008: http://www.globalmobileawards.com/winners.shtml#winner_cat1d

56 Knight John, M., A. Zainudeen and A.S. Khan (2007). An investigation of the replicability of a microfinance approach for extending telecom access to marginal customers, in A.K. Mahan and W.H. Melody (eds.), *Diversifying Participation in Network Development: Case studies and research from WDR Research Cycle 3*. Montevideo: WDR.

57 Approval has been indicated in principle, with two conditions to be satisfied.

May 2008 and conclude in March 2009. The research that is proposed in the present instance is an evaluation of the implementation of the above described project with emphasis on the role of mobiles in sustaining the closed-user-group, community-based model.

- **Identifying the conditions for use of mobiles for disaster warning in a public-warning model: Maldives.** In the larger picture of disaster risk reduction, public warning is an essential component. LIRNE*asia* scoped out the technical and institutional parameters of a public warning system for Sri Lanka (and possibly other countries with similar governance structures). [58] The original NEWS:SL report identified cell broadcasting as a key technology of early public warning, especially if high mobile penetration existed. This was because cell broadcasting is not subject to congestion, which affects all communication media except broadcasting. However, it was not possible to conduct research on the public warning as part of the Last-mile HazInfo project because that required the consent and cooperation of the government, which was not forthcoming at the time. The Last-mile HazInfo project was focused on community-based warning and was applied to a geographically dispersed closed-user group. In addition to achieving its main objectives in terms of last-mile warning and preparedness, it allowed us to gain a deeper understanding of the mechanisms of effective first-responder communication, which is an essential ingredient of any public warning system. Now, equipped with the findings of the Last-mile HazInfo project, we have been able to gain the consent and cooperation of the Telecom Authority of the Maldives (TAM) to conduct a scoping study to introduce cell broadcasting to the atoll nation, with emphasis on its possible use for early warning. The Maldives is an excellent location for implementing cell broadcasting because the country has almost 100 mobile SIMs per hundred people and the highest level of telecom development in South Asia.[59] The proposed research will include a component on protocols for communication between the warning authority in government and the two

[58] Samarajiva, R. (2005) Mobilizing information and communications technologies for effective disaster warning: Lessons from the 2004 tsunami, *New Media and Society* (7(6); 731-47. http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN022464.pdf, and Samarajiva, R., M. Knight-John, P. Anderson & A. Zainudeen (2005), National Early Warning System: Sri Lanka (NEWS:SL) , a participatory concept paper for the design of an effective all-hazard public warning system, version 2.1, http://www.lirneasia.net/2005/03/national-early-warning-system/ , 17 March.

[59] http://www.tam.gov.mv/articles.php?artID=39

mobile operators and an assessment of the other day-to-day applications of cell broadcasting. More detail is provided in Annex 7 which was the basis of the agreement for the project being given by the Telecom Authority of the Maldives.

It is customary in LIRNE*asia* research practice to follow an open-source research approach where results are presented to stakeholders in draft form and revised based on their input.[60] The primary mechanism used for this is a World Dialogue on Regulation expert forum, usually held in conjunction with another event that attracts senior-level regulatory and operator personnel.[61] It is proposed that the expert forum of research cycle 5 (Mobile 2.0@BOP) be held in Singapore (a central point for policymakers, regulators and operators from the region) in June 2009 in conjunction with the 13th LIRNE.NET course and CommunicAsia. The final results will be presented at the proposed research conference in December 2009 (3.3).

To carry out the mobile 2.0@BOP research and disseminate it among the prime audiences of government and service-provider decision makers, funding in the amount of USDxxxx [62] is requested.

1.3. Indicators, continued

1.3.1. TRE2

The TRE1 research conducted in 2006-07 has been well received in the media and by regulators (Annex 8). It was conducted in six countries with a common methodology in mid 2006. Significant improvements were made in the analysis and documented in a TRE Manual that has been field-tested by DIRSI and is being finalized. The paper documenting the improved methodology and results was well received at the Telecom Policy Research Conference 2007.[63]

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60 Samarajiva, R. & S. Gamage (2007), Bridging the digital divide: Building Asia-Pacific capacity for effective reforms, *The Information Society*, 23(2), 109-117.

61 In WDR research cycle 2 (regulation and investment), the expert forum was a stand-alone event that also served as LIRNE*asia*'s launch event. In Research Cycle 3 (network extension), it was held in Singapore in September 2005 in conjunction with the LIRNE.NET course. In Research Cycle 4 (indicators), the expert forum was held in Singapore in March 2007 in conjunction with the LIRNE.NET course.

62 Inclusive of 13 per cent overhead.

63 Samarajiva, Rohan and Helani Galpaya, Divakar Goswami and Dimuthu Ratnadiwakara, with contributions from Payal Malik, Joseph Wilson, Lorraine Carlos Salazar, and Malathy Knight John (2007) "Telecom Regulatory Environment (TRE) assessment: Methodology and implementation results from five

Discussions were undertaken to place the regular conduct of TRE assessments on a sustainable footing and in a larger number of countries with the GSM Association. However, this proved unsuccessful because GSMA wants full country coverage from the start and because they had already commissioned a global regulatory performance index from Professor Len Waverman.[64] Efforts to obtain continuing funding including private-sector money continue.

The TRE research will be repeated in the countries that were assessed in 2006 and in three new countries (Afghanistan, Bangladesh and Maldives) will be added to bring the total to nine. The Maldives represents a significant extension because it is a micro state (population ~ 300,000) with only two operators plus a specialized ISP. The TRE methodology has to be modified to deal with micro states. In terms of the questions, it is proposed that the fixed and mobile distinction be maintained (until the scores merge, indicating that regulation has indeed converged); a third sub-sector on broadband be added; and a seventh dimension (that on quality of service) be added. Because a manual for the conduct of TRE assessments has been prepared and field tested, the workload, especially in countries where the research is being undertaken for the second time and by the same researchers (India, Indonesia, Pakistan, Philippines, Sri Lanka and Thailand) will be much less. However, Afghanistan and Bangladesh are difficult countries to work in, where we have had trouble mobilizing effective internal capacity, and will therefore require significant additional resources.

1.3.2. Regulatory website assessment

In 2005-06, we conducted a systematic assessment of regulatory websites in the Asia Pacific region. The results of this work have been sent to various regulatory agencies, published, and disseminated at various events such WSIS and GK3.[65] In conjunction

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emerging economies" paper at the 35th Telecom Policy Research Conference, Fairfax VA, September 28-30.

64 The index, based on a meta analysis of data reported to the ITU by NRAs has proved to be so controversial that it was pulled from presentation at the Barcelona Ministerial Program at the last minute.

65 Wattegama, Chanuka (2007). Benchmarking national telecom regulatory authority websites of the Asia Pacific region, in *Diversifying participation in network development*, eds. A.K. Mahan and W.H. Melody (Montevideo: WDR). http://lirne.net/2007/09/diversifying-participation-in-network-development/ and http://www.regulateonline.org/content/view/1094/102/. Catalyzing change: Strategies to achieve

with related efforts in the sister organizations RIA and DIRSI, we plan to conduct another regulatory website assessment for the Asia Pacific in 2008. This was the first instance the three units agreed to take on a common project under the new coordinating arrangements and is therefore important from a LIRNE.NET perspective.

A preliminary study of the set of National Regulatory Authorities (NRAs) studied in the last survey revealed that at least five more countries (Azerbaijan, Kazakhstan, Kuwait, Qatar and Uzbekistan) have introduced sites. There are significant improvements in at least another five that received low scores (Bangladesh, Brunei Darussalam, India, Myanmar and UAE). Indonesia, which lacked an English version, has added one. This signifies recognition by NRAs of the value of their websites. TRAI's then Chairman Pradip Baijal publicly remarked about the survey findings which may be correlated to the subsequent improvements of the Telecommunication Regulatory Authority of India site.[66] The Pakistan Telecom Authority acknowledged the study in its annual report of 2006.[67] The UAE regulator has formally acknowledged the value of the study.

1.3.3. Banded forbearance

LIRNE*asia* has commenced the development of a new regulatory instrument called "banded forbearance" that has the potential to simplify telecom regulation to a level that can be implemented effectively by countries with limited capacity, for example micro states.[68] Banded forbearance required the identification of a peer group of countries, benchmark prices in defined services, and the setting of upper and lower bands around the benchmark. Operators, including incumbent operators, would be exempted from tariff regulation as long as they stay within the bands. The criteria of the investigation into prices that fall outside the band would be clearly specified. Banded forbearance differs from asymmetric regulation; the latter applies only to non-dominant operators while the former applies to all operators. It requires the availability of reliable, accurate and timely data using common definitions on matters such as leased-line prices and

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connectivity and convergence, A course on telecom reform LIRNE*asia*, Singapore, 26-30 September, 2005 'Hello Regulator? : Regulatory Authorities' Communication Practices', GK3 parallel session, Third Global Knowledge conference, Kuala Lumpur, Malaysia, December 13, 2007.

66 http://www.lirneasia.net/2006/03/workshop-on-ict-indicators-for-benchmarking-performance-in-network-and-services-development/

67 http://www.pta.gov.pk/annual-reports/annrep06.pdf

68 http://www.lirneasia.net/2007/04/intelligent-benchmark-regulation-forbearance-within-benchmark-limits/ and http://www.lirneasia.net/2007/12/benchmarking-and-regulation-workshop-in-the-maldives/

tariffs charges to consumers so that the appropriate benchmarks can be developed, from which the regulators can define the bands.

The intention here is to work up presentations for regulatory agencies and articles for publication in peer-reviewed journals. This activity will also include visits to regulatory agencies, especially in the micro-states that are the primary target.

1.3.4. Broadband and mobile benchmarks

Based on the research conducted in 2006-07, LIRNE*asia* developed two products with demonstrated demand: Broadband Benchmarks and Mobile Benchmarks. Both products have now been published twice. Active engagement by the relevant NRAs on methodology as well as specific data points has been seen when drafts were circulated prior to publication. It is proposed that these two products be web-published every six months.

It is interesting that our sister organization DIRSI has also developed and published mobile benchmarks for Latin America, using an adaptation of the OECD basket methodology in straight USD and PPP (purchasing power parity).[69] It is noteworthy that these basic decisions were taken at the New Delhi indicators meeting in 2006 which was attended by representatives of both DIRSI and RIA. Based on comments from key stakeholders, LIRNE*asia* has diverged somewhat from the classic OECD approach (for example, we no longer use the same minutes of use for prepaid and postpaid comparisons).[70] A retrospective assessment of the development of this product in the two regions will be conducted as time permits.

In light of the new work done on developing broadband quality of service (QOS) indicators, it is proposed that this data too be gradually incorporated into the Broadband Indicators (this is being done in the second edition of Broadband Benchmarks south Asia, published in mid March 2008). However, QOS testing for broadband is a tedious task that at present requires significant researcher time. It is possible to develop a

69 http://www.regulateonline.org/content/view/1060/63/.
70 http://www.lirneasia.net/projects/benchmarks/

software application which, in the first instance, would be manually activated by designated persons in multiple locations.

In the second instance, the application would run in the background of previously-designated computers/servers and dynamically report the QOS data in real time to a server that would immediately aggregate the incoming data and publish it. Such an application would greatly enhance the scalability (increase in the number of countries, operators, service plans) as well as accuracy (more QOS indicators sampled more times each day). This is, to our knowledge, the first time public-resource computing[71] is sought to be applied to consumer protection and improved regulation. Funds are requested to develop such an application.

The proposed model exploits the inherent features of the Internet which allows far greater control by the end-user. In circuit-switched networks where all the intelligence is centralized, requiring QOS monitoring to be undertaken at the center. In the Internet this is not so. However, broadband connectivity is not an end-to-end service, which results in endless debates and blame shifting when QOS concerns are raised. The proposed methodology, which will be unveiled at a seminar conducted at the Sri Lanka Institution of Engineers in March 2008 with the participation of Professor Timothy Gonsalves of IIT Madras and local operator representatives, proposes a multi-dimensional approach which can in later version be done by users. The more users participate in monitoring the better because the idiosyncrasies of individual terminal devices and locations will be averaged out.

The proposed approach limits the role of regulation to ensuring that consumers have choices and that switching costs are not high. With real-time QOS being reported on public sites, the consumers will no longer be at the mercy of extravagant claims made in advertisements but will instead see for themselves what the upload and download speeds etc. are for various broadband services on a real-time basis.

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[71] Anderson, David P. (2004). BOINC: A system for public-resource computing and storage. http://boinc.berkeley.edu/grid_paper_04.pdf ; Marquina, M.A. (2005). Public-resource computing: GRID for the rest of us. https://twiki.cern.ch/twiki/bin/viewfile/LHCAtHome/LinksAndDocs?rev=1.1;filename=20051116.pdf

Internet access through mobile phones (or other mobile devices) too need to be tested – not just because more and more people will be accessing the internet through mobile devices (Mobile 2.0@BOP), but also because utilization of other value-added services is dependent on a reliable connection (e.g., online government services or payment through GPRS based applications will not be possible if the connection drops unexpectedly). However, specific indicators for measuring mobile-broadband QOS are as yet undefined. Even more than in the case of fixed broadband, the capacity of the terminal device influences throughput and overall QOS.

Therefore, an expert meeting on the topic is proposed. The goal is to bring together leading technology/solutions providers, operators and researchers to develop a robust methodology and identify specific indicators to measure mobile-broadband QOS. The possibility of developing a software application that can be loaded onto mobile phones and works in a manner similar to the application for (PC based broadband) mentioned earlier will also be discussed at the expert meeting. If such a technological solution is feasible (there are significant problems), it is proposed this software be developed and deployed on multiple mobile phones across multiple countries to test for mobile QOS.

1.3.5. Participation in regional and international indicator events

Continuation of the indicators work requires that LIRNE*asia* personnel keep engaged with the inter-governmental processes for standardizing sector performance indicators. Therefore, it is proposed that funds be allocated to several interventions in NSO-NRA events dealing with indicators. In October 2006, LIRNE*asia*, together with colleagues from DIRSI, participated in the ITU ICT Indicators Meeting. To advance the adoption and timely production of standardized indicators by Asia Pacific NRAs and NSOs it is necessary to have a presence at similar meetings, especially within the region. Examples are the South Asian Telecom Regulators' Council (SATRC), the ASEAN Telecom Regulators' Council (ATRC), the Asia Pacific Telecommunity (APT) and UNESCAP, in addition to selective participation in ITU meetings.

1.3.6. International conference on regulatory efficacy

The TRE is a parsimonious and effective instrument for measuring regulatory efficacy. It has been well received in academic settings[72] and by regulators and media.[73] The recent commissioning of a regulatory performance study by the GSM Association testifies to the need for reliable methods of assessing regulatory performance. The proposed conference seeks to advance knowledge in the larger field with hopefully beneficial effects on the further development of the TRE instrument.

Agreement in principle has been reached with the Lee Kuan Yee School of Public Policy at the National University of Singapore (LKY School), which actively recruits students from across the Asia Pacific and is building a regional profile, to co-organize an international conference on regulatory efficacy that will examine the relative merits and positionings of various instruments and approaches to regulatory efficacy, including Regulatory Impact Assessment (RIA), the Waverman meta index and TRE. Discussion has been initiated with the Regulation and Governance Division of TERI [The Energy and Resources Institute] and the Center for Regulatory Impact Assessment (CRIA) within it to, among other things, examine the possible extension of TRE methodology to assess the efficacy of electricity regulation across Indian states. Conversations are also ongoing with the International Finance Corporation which is driving the investment climate studies, which are also based on collating the perception scores of key stakeholders, but has a macro scope, quite different from the TRE, which focuses on a single sector. Co-organizing the event with the LKY School will allow us to attract leading scholars from across the world and also consolidate the relationships that are being built up at NUS.

The proposed international conference is different in form and structure from CPR*south* conferences and serves an entirely different function. CPR*south* is now a highly structured, broad-spectrum ICT policy and regulation conference. Its purpose is not to advance knowledge in a specific area, but to create a platform for fruitful interaction among young, mid-career and senior scholars working on a broad range of ICT policy and regulation relevant topics in the Asia Pacific in the first instance and the South in the long term. Participation is through a complex selection process that includes double-blind peer review. In contrast, the proposed international conference is intended to advance knowledge in a specific area, regulatory efficacy (at most, CPR*south* will allocate

72 http://www.lirneasia.net/2007/08/lirneasia-researchers-to-present-at-tprc/

73 http://www.lirneasia.net/2007/06/lirneasia-presents-its-research-in-pakistan/ . See also Annex 8

one of its eight sessions to this topic; in actuality, the time devoted to this topic is even less). Participation will be by invitation, though we may include a small window for young scholars who may still not be wired to the relevant networks. The geographical coverage in the international conference will be global, and not limited to the Asia Pacific or the South.

The conference has been tentatively scheduled for October 2008, which would require the TRE studies to be conducted in April-May 2008.

The total requested for the "Indicators, Continued" component is USD xxxx.[74]

1.4. Mutual learning among members of LIRNE.NET

In conjunction with a double session at the International Telecom Society biennial conference that is scheduled to be held in June 2008 in Montreal, it is proposed that a meeting be organized to explore opportunities of mutual learning and collaboration among the constituent entities of LIRNE.NET. This will be followed by interactions with Canadian government and other organizations in Ottawa, coordinated by IDRC.

Building on the outcome of this meeting, another follow-up meeting involving a greater number of researchers will be held to deepen cooperation between LIRNE*asia* and one or more regional units of LIRNE.NET. If all the units of LIRNE.NET can mobilize funds for this purpose, a full network meeting can be held. It is proposed to take a minimum of five researchers to a location outside the Asia-Pacific (assumed to be in Africa because of its central location) for this meeting.

LIRNE*asia* seeks funds in the amount of USDxxxx[75] for LIRNE*asia* expenses related to this sub project. It is expected that the other units will look after their own costs.

74 Inclusive of 13 per cent overhead.
75 Inclusive of 13 per cent overhead.

2.0 Capacity building

2.1. CPR*south*

During the previous cycle of funding LIRNE*asia* initiated the establishment of a capacity building initiative known as CPR*south*. This activity is intended "to facilitate the creation, sustenance and continuous advancement of policy intellectuals capable of informed and effective intervention in ICT policy and regulation processes in specific country and regional contexts in the south" and "to develop capacity, stimulate interest, and promote research and systematic study in information and communication technology (ICT) policy and regulatory issues in the South, broadly constituted to include the Asia-Pacific (AP), Africa (AF), Latin America and the Caribbean (LAC), the Middle East and North Africa (MENA) and Central Asian regions (CIS)."

In the first instance, and using funds allocated to LIRNE*asia*, the focus has been placed on the Asia-Pacific. The founding Board of Directors comprises senior scholars from the Asia-Pacific and the two conferences have been held within this region, in Manila and in Chennai. The Charter that was adopted by the Board makes provision for chapters to be created as and when administrative partners representing regions other than the Asia-Pacific mobilize the necessary resources and so request. In the interim, papers have been accepted from scholars based on a focus on the South, irrespective of relevance to the Asia-Pacific.

Over the two conferences, the quality of the papers has improved. Persons who attended as young scholars have submitted papers and got their papers accepted in a double-blind and competitive process. Repeat participation is also evident. A sense of community is developing. In addition, there is evidence that the participants at the CPR*south* conferences are becoming active in the policy and academic arenas.

Table 3: Activity by young scholars who attended CPR*south*1

	CPR1	CPR2
Applied	102	42
Selected	18	33
Applied as presenters at a following CPR	-	3
Selected as presenters at a following CPR	-	3
CPR1 Presenters with research outputs as of October 2007	-	
Academic outputs only	6	-
Public interest outputs only	1	-
Academic plus public-interest outputs	2	-
No responses	10	-

Table 4: Activity by presenters who attended CPR*south*1

	CPR1	CPR2
All applicants	52	66
Repeat applicants	-	11
Selected Applicants	19	21
Repeat applicants who were selected	-	5
CPR1 Presenters with research outputs as of October 2007	-	
Academic outputs only	5	-
Public interest outputs only	0	-
Academic plus public interest outputs	4	-
No outputs reported	11	-

The strategy of locating the conference in countries with large concentrations of potential participants has paid off, with a strong Filipino presence in Chennai. The single biggest shortcoming in the founding configuration, the lack of an organic connection to China, has been remedied, with the Beijing University of Post and Telecom offering to partner by hosting CPR*south*3 in Beijing in December 2008. It is expected that a scholar from China will join the Board in 2009, when the first set of vacancies is scheduled to be filled.

From the beginning, CPR*south* was not seen simply as an administrative task, but as a research project as well.[76] Knowledge mapping was done to identify active researchers and sites of research and teaching activity. After CPR*south*1, a census was conducted to assess how the participants had done in terms of development as policy intellectuals and the web presence and citation records of the participants tracked. Similar activities will continue in relation to CPR*south*3 and CPR*south*4.

Despite a stated commitment to identifying and fostering Mode 2 intellectuals,[77] universities continue to play an important role in CPR*south*, generating the bulk of submissions to the conferences and acceptances, especially among the paper givers.

Table 5: University applicants and participants at CPR*south*2

	Applicants	Accepted	Applicants	Accepted
	Young scholars	Young scholars	Paper presenters	Paper presenters
From universities	68%	60%	63%	88%

Therefore, funding is sought to continue the activity of building up institutional relations with emphasis on university relations, something that was done with significant success in 2006-07, as shown by the strong commitments displayed by the CPR*south* Board, as well as National College of Public Administration and Governance of the University of the Philippines, the Indian Institute of Technology—Madras and the Beijing University of Posts and Telecom, among others. The payoff from the work done with certain other entities such as the National University of Singapore and a whole cluster of universities in Taiwan ROC will take a little longer to be visible.

Funding is sought in the amount of USDxxxx[78] for two CPR*south* conferences, the first in Beijing in December 2008 and the second at a location to be determined in December

[76] Gamage, S.N. & R. Samarajiva (2008), Internet presence as knowledge capacity: The case of information and communication technology infrastructure reform**,** *Information Technology and International Development*. Forthcoming; and Samarajiva, R. & S. Gamage (2007), Bridging the digital divide: Building Asia-Pacific capacity for effective reforms, *The Information Society*, 23(2), 109-117.

[77] Gibbons, M, Limoges, C, Nowotny, H, Schwartzman, S, Scott, P and Trow, M (1994). The New Production of Knowledge, in *The Dynamics of Science and Research in Contemporary Societies*. Thousand Oaks CA, London, New Delhi: Sage.

2009, possibly in conjunction with the conference described in 3.3 below. The overall request includes the holding of board meetings as part of each conference, knowledge mapping and university relations.

It is fully recognized by LIRNE*asia* as administrative partner and by the Board that IDRC cannot continue to be the sole funder of CPR*south*. A Board Paper has already been drafted to lay the groundwork to bring in KADO [Korea Agency for Digital Opportunity and Promotion] as a funder for CPR*south* 5. Commencing with the 2nd Board meeting held in Chennai in December 2008, Board members will be challenged to attract resources in cash or kind for CPR*south* related activities. For example, host organizations will be requested to make some form of contribution to the conference and individual Board members are being challenged to develop resources for at least one Young Scholar to attend the conference and the tutorials. Board members will also be invited to participate in the internship program described in 2.3 below, by hosting interns under a program to be managed by LIRNE*asia*. For the first time, the local hosts of CPR*south*3 have obtained funds from a sponsor to organize a bit of sightseeing.

2.2. Tutorials for young scholars

In conjunction with CPR*south*1 and CPR*south*2, LIRNE*asia* conducted tutorial sessions for young scholars. The costs were kept down by using CPR*south* board members and others attending CPR*south* as speakers as much as possible. Speakers are not paid any fees. The tutorials also contribute to the success of CPR*south*, by supplying an international audience for the paper givers in the first instance and by creating a pool of potential paper givers for subsequent conferences. It is proposed that up to 15 scholarships for young scholars from the country/region where the CPR*south* conference is being held and up to 15 scholarships for young scholars from outside the host country be provided. A total of USDxxxxx[79] is requested for the two events.

2.3. Internships

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78 Inclusive of 13 per cent overhead.

79 Inclusive of 13 per cent overhead.

Capacity building requires a range of approaches and actions. Internships have been used successfully, albeit not regionally, by LIRNE*asia* in the previous cycle. An internship program that will enable the creation of a mentoring relationship over a long period of time is an essential component of a comprehensive capacity-building program.

The Board of CPR*south* has discussed a major internship program as part of the actions being taken to develop policy intellectuals. While it is unlikely that all nine members will be able to actively participate in this program, we believe that a subset will, and LIRNE*asia* is committed to being within that group. A questionnaire on the commitments the Board Members are willing to make with regard to internships has been formulated and is being circulated in March 2008.

Funds are sought to support 10 intern-months per year, for two years. Based on experience, we find that it is necessary to set apart mentoring fees and some management fees as well. The latter is especially important when we have interns from outside the country. A total of USDxxxx is requested.

2.4. NRA/NSO capacity building

Indicators are critical to evidence-based policy making. Without data, we are all groping in the dark. For example, the true power of the TRE in unleashed only when the TRE results are combined with qualitative and quantitative indicators data to explain why certain outcomes (higher/lower scores over time or in relation to other countries/sectors) have occurred.

A start was made in the 2005-06 and 2006-07 research cycles to improve the quality and quantity of ICT indicators in the Asia Pacific. While significant progress was made, a major conclusion that was reached was that capacity building among the responsible officials in the National Regulatory Authorities (NRAs) and National Statistical Offices (NSOs) is critically important and is something that has to be done over a relatively long period of time and over iterative interactions.

Convincing all the regulatory agencies in the region to act on common standards for indicators within the parameters set by the Partnership for Measuring the Information

Society and in a manner that is appropriate for the regions (defined as the SAARC region falling within the purview of the South Asian Telecom Regulators Council (SATRC) and the ASEAN region falling within the purview of the ASEAN Telecom Regulators Council (ATRC)) has not been easy despite their enthusiastic participation in indicators workshops convened by LIRNE*asia* in collaboration with regional entities, the Telecom Regulatory Authority of India (TRAI) in the first instance and the Institute for South East Asian Studies (ISEAS) of Singapore in the second instance.[80]

Despairing of getting timely action from the top down, LIRNE*asia* changed tactics in midstream and is now working on developing a database embodying regional indicators based on acceptable standards in collaboration with the NRAs of Pakistan and the Maldives. Funds are requested to continue this work, through one more Indicators Workshop in 2008 to disseminate the results achieved through the bottom-up approach including banded forbearance. The event will also be used to engage the NRAs on the findings of the regulatory website assessment.

In the overall engagement with NSOs, small successes have been achieved. In Sri Lanka, LIRNE*asia* was consulted on formulation of an IT literacy question.[81] In India, LIRNE*asia* has been recognized as a source of knowledge on ICT indicators and has served as the interface between the Indian NSO and the OECD.[82] Because of constraints on what can be included in a national survey and the fact that T@BOP research is not comprehensive but only focuses on SEC groups D and E, it is unlikely that the T@BOP research will be integrated into national surveys. The sustainability of T@BOP rests on private-sector participation.

It is also proposed that one additional NRA-NSO training event be organized over the duration of the project. USDxxxx[83] is requested for a training workshop where the importance of demand-side ICT usage data collection is communicated and the

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80 For example, the Indicators Expert Forum held in March 2007 in Singapore was attended by 88 people from 23 different countries. All SAARC countries, a majority of ASEAN (except for Brunei and Vietnam) and a number of countries outside Asia were represented. Of the participants, 30 were from National Regulatory Agencies, 13 from National Statistical Organizations, 18 Operators/Industry Associations and 6 from international organizations (such as the ITU and World Bank) and 19 from Civil Society/ Research Organizations.

81 http://www.lirneasia.net/2006/08/sri-lankas-computer-literacy-survey-questionnaire/

82 http://www.lirneasia.net/2007/07/documenting-the-capabilities-of-measuring-ict-statistics-in-india/

83 Inclusive of 13 per cent overhead.

possibility of including at least one or two specific ICT-related questions in national level household surveys is discussed.

2.5. Training-course scholarships

With the establishment of LIRNE*asia* in 2004, the management and the location of the LIRNE.NET regulatory training course that was offered from Europe in locations in Africa, the Caribbean and Latin America has been shifted to the Asia Pacific, the fastest growing region in terms of ICTs. From offering courses in response to various manifestations of demand (necessarily irregular), LIRNE*asia* has moved to an annually scheduled course offered in Singapore, a convenient hub location in the region. The course has continued to attract African participants. The LIRNE.NET/LIRNE*asia* courses are designed to cover their costs, though certain implicit subsidies from the instructors continue to exist.

The courses that were offered in 2005 and 2007 in Singapore were supported by scholarships from IDRC, 20 in 2005 and 14 in 2007. The scholarships allowed the greater inclusion of civil society, academic and media participants and improved gender balance.[84] Some of the scholarship-based participants in the course have shown high levels of activity in, for example, CPR*south*, producing high-quality papers and participating in their national policy processes. It is requested that the scholarships be continued, though at a level lower than in 2005. A total of USDxxxx for two courses (this is USDxxx, less overhead, for a course, half that requested for the 2005 course), is requested.

3.0 Advocacy and dissemination

Serious and systematic attention to the problem of moving research findings to policy and regulatory practice has been a signature of LIRNE*asia*'s work so far. The overall

[84] In 2007, among the participants were 13 persons from regulatory agencies, including three members of regulatory collegiums. Eleven persons from the management of telecom operators, and nine from research organizations, universities and civil society made up the balance. Twenty were men; and 13 women.

approach which knits together elements from all the components of our work is described in more detail in Annex 9.

3.1. Rapid response program

Doing policy relevant research and developing policy intellectual is not enough for the achievement of LIRNE*asia*'s mission. The ability to utilize the windows for policy intervention that open up in the countries that LIRNE*asia* works in is important for the success of its overall mission. The Rapid Response Program that has been in place from the beginning of the existence of LIRNE*asia* should be continued. The rules of its operation, which, for interventions that include visits, include a formal invitation from an entity in the host country; participation by public-sector, private-sector and civil-society participants; and the bearing of local costs by the inviting entity, keep the costs down and the impact high. In a few cases, the rapid-response interventions do not involve a visit to a country, but a strategically placed newspaper article or a submission to a public consultation. A total of USDxxxx[85] is requested over the two years.

3.2. General dissemination

From the beginning LIRNE*asia* has placed great weight on the effective use of media to disseminate its research results in ways that change the symbolic environments within which decision-makers function. This requires several types of actions:

- Continually training researchers to communicate in ways that will be effective with media;
- Conduct of media interactions facilitated by professional communication consultants, where essential (as in India);
- A concerted effort to get researchers to actively engage with collectively authored media such as Wikipedia and widely read blogs that deal with relevant topics. Building on the success of the LIRNE*asia* website (see Figure 5), we intend to actively engage in getting our research findings into Wikipedia in at least 10 subject headings and comments in at least five active and relevant blogs. An example of a nationally focused blog is http://telecompk.net/. This

[85] Inclusive of 13 per cent overhead.

is a frequently updated blog that deals with all aspects of the Pakistan telecom industry. A globally focused website with blog features is http://www.nextbillion.net/blogs/topic/telecommunications-and-it. The other blogs will be identified in consultation with the researchers who will be assigned the tasks of contributing.

- The making of a documentary video to document T@BOP3 research results and more effectively communicate them;
- The commissioning of a documentary photographer to tell the tale of Mobile 2.0@BOP and
- Participation in international and regional conferences, workshops and dialogues that will serve to broadly disseminate LIRNE*asia* research.

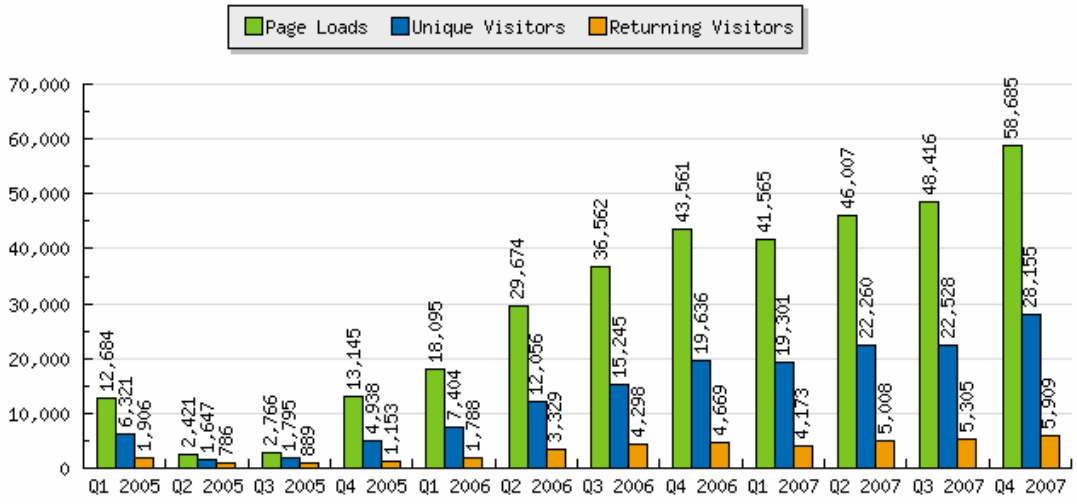


Figure 5: Page loads, unique visitors and returning visitors, LIRNE*asia* website, 2005-07

Source: StatCounter

Based on the experience with T@BOP2,[86] a documentary video producer with expertise in development topics will be commissioned to selectively film the project at various stages and in various countries, with the objective of developing a high-quality video documentary that can be used as part of a comprehensive dissemination campaign. . This addresses a problem encountered with presenting T@BOP2 at GK3 where we had to retroactively film footage.

[86] http://www.lirneasia.net/2007/12/documentary-film-highlights-telephone-revolution-in-asias-emerging-markets/

Most of LIRNE*asia*'s research is not photogenic, being focused on numbers and facts and generated through desk research and filtered through research meetings. However, it is likely that some of the mobile 2.0 subject matter will be conducive to depiction in modes other than reports and slide presentations. Therefore, it is proposed that we select a photographer to document the research and the use of mobile 2.0@BOP in at least some of the countries where the research is done. What is proposed is that we cover the expenses of the photographer, not pay professional fees. The photographer will be encouraged to solicit pictures from teleusers at the BOP, reflecting their personal narratives about teleuse. The photographer will be selected through a jury process. The jury will comprise of LIRNE*asia* research staff in Colombo.

The selected photographer will be invited to participate in planning meetings and interact as closely as possible with researchers. The intention is to foster productive cross-fertilization among artistic and research activities. The final output will be a web display of photographs plus an exhibition in conjunction with the 5th anniversary research conference in December 2009 and CPR*south*4.

The proposals re photography and videography being included in the dissemination activities emerged from our efforts to respond to IDRC's urgings (especially Steve Song's) about presenting our work at GK3. We did not abandon the standard 15 minute talk with powerpoint, but in the process of engaging with the demand for non-conventional presentations came to appreciate the value of stretching beyond the conventional for certain audiences. There appears to be potential in photography, for example, as a research tool. We found that users' photographs of various experiences and depictions of aspirations were being used for user research at Telenor consumer research. The relatively low-cost option of covering expenses of an emerging photographer (who else would work for no fees?) is a good way of familiarizing our researchers with this research tool.

The total amount requested for general dissemination of research is USDxxxx.[87]

[87] Inclusive of 13 per cent overhead.

*3.3. International Conference in 2009 to mark the first five years of LIRNE*asia*'s work*

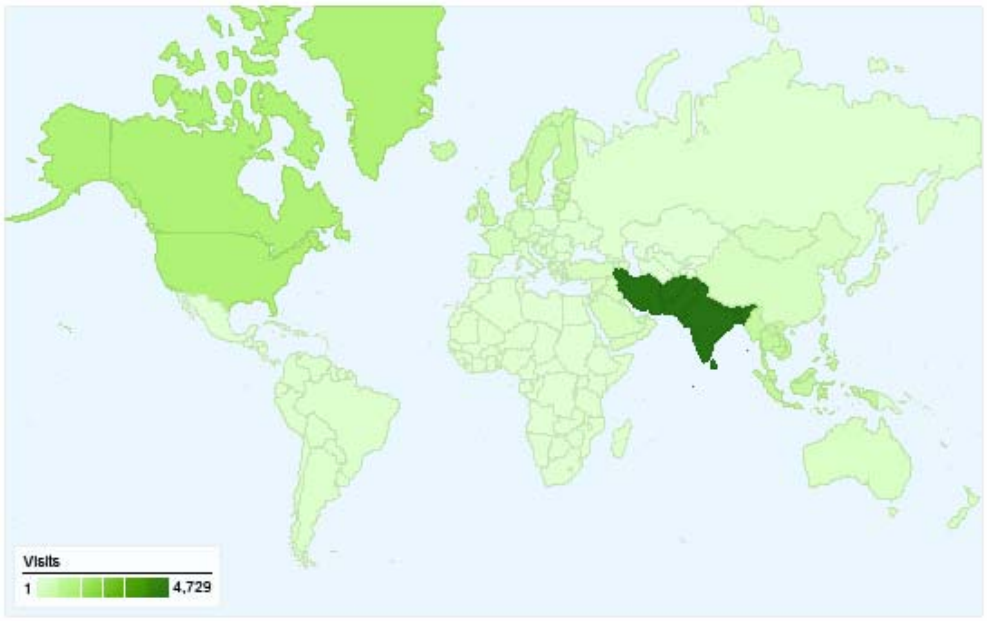
Five years is a significant marker for a young organization. It is especially significant when it is planned to effect a leadership succession at the end of the first five years, namely on or around September 2009. It is felt that the organization of a major international conference on this occasion will enable the consolidation of the learnings of the first five years and the dissemination thereof among influentials in peer organizations, partners and key consumers of LIRNE*asia* research. In order to exploit synergies and minimize costs, it is proposed to hold this conference back-to-back with CPR*south*4, if the CPR*south* Board agrees to hold the latter in Sri Lanka. If this arrangement can be worked out, the conference will be held in early December 2009. Reflecting the nature of LIRNE*asia*'s web audience (see Figure 6), the event will be designed to draw an international audience, with emphasis on South Asia.

www.lirneasia.net

Map Overlay

Jan 3, 2008 - Feb 2, 2008

Comparing to: Site



8,885 visits came from 22 sub continent regions

Site Usage

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
8,885 % of Site Total: 100.00%	2.24 Site Avg: 2.24 (0.00%)	00:02:05 Site Avg: 00:02:05 (0.00%)	73.02% Site Avg: 73.00% (0.03%)	71.76% Site Avg: 71.76% (0.00%)

Sub Continent Region	Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
Southern Asia	4,729	2.42	00:02:41	62.53%	67.14%
Northern America	1,322	2.02	00:01:03	85.40%	79.43%
South-Eastern Asia	714	1.82	00:01:29	81.09%	76.75%
Northern Europe	603	2.06	00:01:10	91.38%	80.10%
Western Europe	281	1.81	00:01:16	81.85%	76.16%
Eastern Asia	263	2.27	00:02:40	78.33%	65.78%
Western Asia	249	2.32	00:01:23	85.14%	74.30%
Australia and New Zealand	197	2.47	00:01:40	80.20%	70.56%
Southern Europe	140	1.59	00:00:53	92.14%	75.00%
South America	105	1.90	00:01:32	94.29%	88.57%

1

Google Analytics

Figure 6: Geographical spread of visitors to LIRNE*asia* website, with analytical details, Jan 3-Feb 2, 2008

Source: Google Analytics.

The requested amount is USDxxxx.

4.0 Evaluation

Systems will be created to regularly collect data on performance on the inter-related components of the proposal and to conduct a running evaluation of the project. By the time the project commences, LIRNE*asia* will have three persons trained in outcome mapping. This is significant progress from the previous round when we had none. The Outcome Mapping / Evaluation Plan is given as Annex 10. The amount requested is USDxxxx over two years.

5.0 Budget

Please see Annex 11.

6.0 Personnel

Please see Annex 12.