PAN ASIA NETWORKING (PAN)

PROSPECTUS REVIEW

2006-2011

April 1st , 2010

I- BACKGROUND

PAN's current prospectus was developed following a consultation with Asian stakeholders in Cambodia (PAN, 2005)[1] and approved by IDRC's Board of Governors in 2006. Its three main themes – Policies, Technologies, and Effects – are summarized in the table below in terms of their objectives, research activities, and expected outcomes.

Themes	Policies	Technologies	Effects
Objectives	Understanding which policies are most appropriate for creating knowledge societies in Asia	Learning from technology pilots to improve connectivity and develop appropriate development applications	Building research capacity in Asia to better understand the socio-economic effects of the information society on different user communities
Research Activities	Regional research networks, policy dialogues that support building evidence for influencing and informing policy on access to networks and knowledge	Action research pilots and technological R&D in the areas of health, education, governance, and livelihoods through either small grants programs or country pilots	• Developing appropriate methodologies for understanding the positive and negative impacts of ICTs • Training in appropriate methodologies • Undertaking socio-economic impact studies
Expected Outcomes	A body of evidence, increased dialogue and awareness that serves to instigate change within the telecommunication policy and intellectual property policy spheres	A body of evidence that serves to better understand which technological innovations are best suited to solve development problems in the areas of health, education, governance, and livelihoods; Development of innovative ICT applications that help solve development challenges	• A better understanding of the most appropriate research methodologies for understanding the interaction between ICTs and development • Increased capacity of Asian researchers and ICT practitioners in the area of ICT for development research • Enhanced knowledge of the positive and negative effects ICTs are having on Asian communities

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PAN largely followed these thematic and programming directions. For example, the prospectus identified three principal means of delivering programming: supporting the development of research networks, building country programs, and establishing competitive grants.

Networks ended up being the largest of these categories, accounting for 54% of PAN's budget.[2] PAN supported the development of networks in communications policy, distance learning, e-governance, ICTs and livelihoods, e-health and localization.[3] PAN had originally intended to support a network on intellectual property rights, but

[1] In addition to the Cambodia consultation, the prospectus was the result of PAN's own reflections on ICT4D priorities in the region, as well as PAN's history and experience, which is summarized in Annex 1.
[2] Annex 2 provides a map of the projects by grantees` host countries.
[3] Communications policy: LIRNEasia; distance education: PANdora; e-governance: PAN e-Gov; e-health: PANACeA; ICTs and livelihoods: ENRAP; localization: PAN Localization (PANL10n).

circumstances forced a change of course.[4] PAN further helped to initiate two research networks that had not been explicitly mentioned in the prospectus: one on privacy and another on censorship.[5] In many cases, PAN played a central role in establishing and fostering these networks, although its degree of involvement varied from project to project.[6]

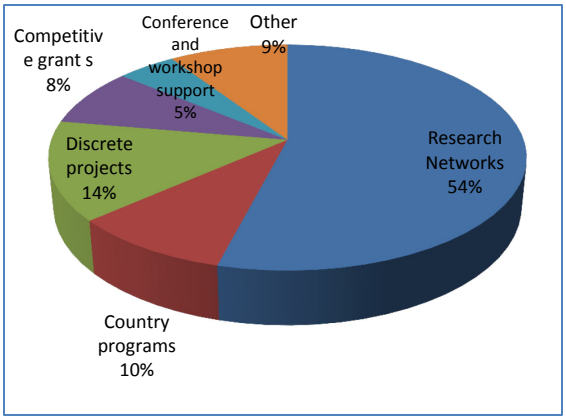

Figure 1 Percentage of Funding by Project Modality

Country programs launched in Cambodia and Mongolia accounted for 10% of PAN's budget. Developing these programs proved to be a struggle. The challenges were summarized in a memo outlining the reasons PAN decided not to extend country programming to Sri Lanka, Bhutan, and Indonesia, as envisaged in the prospectus (PAN, 2009b). Lack of human resources within PAN to support capacity building in these countries in an effective and on-going manner played an important role in this decision. This further explains why PAN ended up focusing more on research networks as a key means of delivering its objectives.

PAN supported **competitive grants** programs, which took up 8% of its budget. These included the PAN R&D grants project, which evolved into the Information Society Innovation Fund (ISIF)[7], and the Strengthening ICTD Research Capacity in Asia (SIRCA) competition.

In addition, PAN commissioned three program-level external evaluations: one on PAN`s networking approach looking at four of the largest research networks[8] (Real & Wilson-Grau, 2008), one on a case study of LIRNEasia with respect to policy influence (Ofir, 2010), and a third on gender integration (Sachdeva & Peebles, forthcoming). These recently completed studies were learning-oriented and intended to inform PAN's programming as well as its grantees.[9] The evaluation on networks, for example,

[4] PAN attempted to create the building blocks for an IPR network to be formed through organizing an Asia Commons conference (http://en.wikipedia.org/wiki/Asia_Commons). However, in the absence of a champion institution, such a network was not formed. The conference did, however, lead to the funding of a groundbreaking project on media piracy.

[5] This was essentially the result of opportunistic programming, where new partners came to the fore during the prospectus period.

[6] LIRNEasia, Privacy in Asia and ONI Asia were largely driven by their lead organization, whereas PANACeA and PAN eGov were strongly driven by PAN itself. PANdora and PANL10n were established before this prospectus. The PAN approach to developing networks was summarized in the PAN Network evaluation (Real and Wilson-Grau, 2008).

[7] Following a management evaluation of the PAN R&D grants program, the program funders (UNDP, Asia Pacific Network Information Centre (APNIC), and IDRC) decided to end the collaboration with the Asia Media Information Centre, the competition's administrator. Subsequently, APNIC offered to administer the competition (under the name of ISIF), to which IDRC agreed.

[8] These networks are: PAN Localization, PANdora, PANACeA, and ONI-Asia.

[9] PAN had intended to commission an evaluation on country programming. However, since PAN decided to discontinue country programming, a learning evaluation on the topic was felt to be unnecessary.

encouraged PAN and PAN's recipients to develop sustainability plans for their networks, which was done, and also established a model for network building that was used in the case of Privacy in Asia.

PAN forged strategic partnerships with several donor agencies, which helped to expand the reach of its programming. The most significant of these alliances was with the UK's Department for International Development (DFID), which increased PAN's core funding by approximately 1M GBP over five years. This partnership also led to PAN putting more emphasis on research communications, a key DFID focus. The other principal donor partnership was with the International Fund for Agricultural Development (IFAD), which supported a third phase of the Knowledge Networking for Rural Development in Asia Pacific Region (ENRAP). Originally, PAN had intended to seek funding for an "Asian Connectivity Institute," to supplement its program budget. However, with the support from DFID helping to expand PAN and PAN grantees' funding base, PAN did not actively pursue this plan.

II- RESEARCH FINDINGS

The following overview presents a sample of research findings from PAN-supported research projects. These examples are intended to give a sense of the type of evidence that has been gathered by partners under PAN's three main themes (Policies, Technologies, and Effects). Given constraints on the length of this document, examples are only included if the research findings were considered significant (for example, cited in the media or in the academic literature) and/or were of peer-reviewed quality.

1) Building a body of evidence to help inform ICT policies

Policies and regulations arguably play the most important role in determining whether, in what manner, and to what extent people access ICTs. For this reason, PAN supported the development of a body of evidence that could help inform, and potentially reform, two areas considered crucial in the development of knowledge societies: telecommunications and intellectual property rights policies.

Much of the research on communications policy was undertaken by LIRNEasia, and focused on better understanding how people at the "bottom of the pyramid" (BOP) use ICTs. This research aimed to encourage the development of pro-poor ICT policies. Teleuse surveys in India, Pakistan, the Philippines, Sri Lanka, and Thailand generated some of LIRNEasia's most important findings, and provided groundbreaking insights into the patterns of telecom use by people at the bottom of the pyramid (Samarajiva & Zainudeen, 2008). The surveys revealed that while ownership of phones is low at the BOP (20% to 50%), access to phones is much higher (about 90%) due to heavy use of shared, borrowed, and public phones. Furthermore, BOP mobile-phone users adopt various cost-cutting techniques, including making "missed calls," using a mobile phone

exclusively for incoming calls, making only mobile-to-mobile calls, and phoning at off-peak hours. More recent research from Pakistan shows that mobile-phone ownership has surpassed radio ownership and that about 7% of Pakistanis actually listen to radio on their mobile phones (LIRNEasia, 2009). Based on the findings of several surveys, LIRNEasia advocates strongly for mobile phones as being the most transformative and viable ICT tool for developing countries. It also recommends regulations that facilitate private investment in network infrastructure as the best means of achieving pro-poor access to ICTs.

Research also found that ICTs have a positive impact on economic growth in developing countries. A 1% increase in a country's Infodensity index[10] resulted on average in a 0.1% increase in per capita GDP in 1996 and 0.3% increase in 2003 (Orbicom, 2005). The research found a tenuous relationship between the gender divide and the overall digital divide (Orbicom, 2007). For example, the study concluded that women's rates of Internet access and use will not automatically rise along with the corresponding national rates.

In the sphere of access to knowledge, a compelling study revealed imbalances in copyright legislation, and its enforcement, across 11 Asian countries. Although the current global copyright regime provides for limitations and exceptions to copyright, most of the countries included in the study had not taken advantage of the flexibilities legally afforded to them (Consumers International, 2008). As a result, copyrighted educational materials in these countries are expensive, and consumers are being priced out of access to knowledge. A comparative survey of book prices revealed that imported books are prohibitively expensive for most people in Indonesia and Thailand.

A study of software, film, and music piracy in developing countries, has been critical of the evidentiary base for the Office of US Trade Representative's (USTR) decisions regarding which countries should be on the US intellectual property watch list (Karaganis, 2010). It found, for example, that the methods used by the various agencies involved in compiling data on piracy, such as the International Intellectual Property Alliance (IIPA) and the Business Software Alliance (BSA), lacked transparency. In addition, the methods used were likely inflating levels of media piracy in the countries studied. Consequently, the proponents of the study called for the development of more legitimate, peer-reviewed, methods to assess the extent of global media piracy, similar to the ones the study used in select countries. In the case of India, for example, it was found that despite the focus on online piracy of Bollywood movies, television programs are actually the most popular category of shared content. Moreover, the Pakistan component of the study concluded that while piracy is rampant in that country, where it is a highly profitable and lucrative profession, it is probably on the decline.

PAN has also focused on an emerging, yet increasingly important area of research in Asia – privacy and censorship. A scoping study concluded that the advent of new and more sophisticated technologies means that security and privacy are not mutually

[10] Infodensity represents the ICT productive function of an economy and is composed of ICT-enhancing capital and labour.

exclusive. The call for decreased privacy to enhance security may be misleading and, in fact, personal security may be strengthened through greater privacy measures, as the case of the loss of health data in the UK revealed (Privacy International, 2009).

2) How do ICTs make a difference in education, health, livelihoods, and governance?

For ICTs to promote sustainable development in Asia, the technologies need to be relevant, appropriate, and useful. Therefore, it is important to create and test new uses for technologies that can have a direct effect on improving people's lives. To that end, research on technologies has focused on several key domains, including education, health, livelihoods, and governance.

PAN's distance education research network (PANdora) played an important role in demonstrating the relationship between technology and educational outcomes. For instance, Internet-based techniques have become standard in international distance education, but PANdora research findings demonstrated their limitations in the Asian context, due to their inaccessibility (Baggaley & Belawati, 2007; Baggaley, Belawati & Malik, 2009). In contrast, newer technologies such as mobile phones and personal hand-held devices are beginning to have wider appeal because of their low cost and convenience (Valk, Rashid & Elder, 2010). Studies have shown conclusively that technology-supported distance education could positively impact learning. One pilot project in rural Mongolia found that students who used different technologies (television, the Internet, and mobile phones) in the learning process performed significantly better in exams than those who did not (DREAM–IT, 2010). For example, in the English-language exam written after the completion of the pilot project, 26% of students who used the technologies received an A grade; 47% got a grade of either C or D; and 26.5% got an F. By contrast, only 1.8% of the control group students received an A, 14.3% got a C or D, and 83.9% got an F. PANdora findings underscore the need for blended learning, in which face-to-face instruction is combined with computer-mediated instruction for a more effective learning experience (Baggaley & Belawati, 2007).

PAN support provided some of the earliest telemedicine and health informatics activities in the Asian region, through small grants programs (Elder & Clarke, 2009; Rao & Raman, 2009). However, many of these projects failed to demonstrate health benefits due to inappropriate methods or lack of capacity (Scott, 2007). The PANACeA network was created in response to the scarcity of sound outcomes-oriented e-health research. The network is nurturing an emerging e-health research community in Asia and building capacity to produce more rigorous evidence of e-health initiatives influencing health outcomes. Although much of that research is still underway, the network has already produced several research outputs of interest. For example, a systematic review of the literature found that most telehealth applications in Asia were based on the store-and-forward modality (43%), with 35% using videoconferencing and 15% using a hybrid approach (Durrani & Khoja, 2009). Most of the studies were descriptive (75%), and only

eight included a control group against which telehealth was compared, which points to a definite lack of empirical research in this field.

Some preliminary evidence of technologies improving efficiency of health administration has also been documented. One study on computerization in hospitals is building a flexible, scalable, and simple framework (Cost Benefit Analysis Tool) to determine if computerization leads to cost savings in hospitals in developing countries (Lakhani et al, forthcoming). The study examined costs associated with computerization of registration and laboratory reporting in two hospitals in Pakistan, and showed that the cost for a glucose test is 14 cents in the computerized hospital, but 26 cents (86% higher) at the hospital using manual records. Furthermore, the direct cost of computerization is only 11% of the total cost of the glucose test in the computerized hospital.

PAN`s ENRAP project provided concrete evidence of how ICTs can help to improve rural livelihoods. ENRAP scoping studies on the issue demonstrated a measurable impact on income and savings through the use of ICTs (ENRAP, 2010). For example, market information transmitted via mobiles helped farmers in Bangladesh reduce transport costs by 33%. In India, advice on crop status using digital photography reduced farmers' transaction costs by about $60 an acre.

In a pioneering study, de Silva (2008) was able to quantify the "cost of information" to show how information asymmetries in agriculture markets result in high transaction costs for farmers. By estimating that the cost of information constitutes 11% of farmers' total costs from the time of deciding what to grow to the time of selling (costs incurred as a result of poor information availability along the agriculture value-chain), the study underscored how ICT tools can help farmers make more informed decisions.

Another project, which explored how ICTs can support urban micro-enterprises in India, found evidence that the small-business owners who used a mobile phone for work increased their incomes faster than those who did not (Ilavarasan & Levy, 2009). The study also found that while micro-entrepreneurs who had owned a mobile for two years or less saw some growth in business income, those who had used their mobile for more than two years experienced even greater business growth. This finding suggests that the real impact of mobile phones on businesses emerges only after two years of use.

Much of PAN's research on the way in which ICTs are changing the relationship between the citizen and the State is ongoing. However, work on censorship and surveillance undertaken by ONI-Asia has already shown how prevalent surveillance is, particularly in totalitarian regimes, and how warfare has now shifted to the Internet. ONI discovered, for example, that a vast electronic spying operation had infiltrated computers and stolen documents from hundreds of government and private offices around the world, including those of the Dalai Lama (New York Times, 2009). The system, known as Ghostnet, was being controlled from computers almost exclusively based in China. ONI researchers have also discovered a huge surveillance system in China that monitors and archives certain Internet text conversations that include politically charged words (New York Times, 2008). The system tracks text messages sent by customers of Tom-Skype, a joint venture between a Chinese wireless operator

and eBay. By examining the text messages, the researchers reconstructed a list of restricted words, which includes terms related to the religious group Falun Gong, Taiwan independence, and the Chinese Communist Party.

3) How can we better understand the ways in which ICTs affect Asian society?

PAN has endeavoured to provide a more nuanced understanding of the impacts of ICTs on individuals and society. More specifically, PAN has sought to discover not only how ICTs are positively affecting social and economic development, but also how they can hinder the development opportunities and capabilities of people, communities, and countries.

Measuring the impact of ICTD projects poses particular challenges. For example, a PAN study found limited conclusive evidence of downstream impacts of public access to ICTs. This was not necessarily because public access has had no impacts, but because its impacts are particularly difficult to identify and measure (Sey & Fellows, 2009). Thus, building rigour into research on understanding the impacts of ICTs has been an important aspect of PAN's work.

Against this backdrop, PAN has funded research to generate a framework that can be used by ICT4D practitioners, policy-makers, and consultants to understand the impact of informatics initiatives in developing countries (Heeks & Molla, 2008). The framework uses an ICT4D value chain as a guiding model for understanding the assessment of ICT4D projects.

Several studies have been undertaken to investigate how ICTs have a differential impact on different socio-economic groups, notably women. One survey in rural Pakistan underscores the drastic differences in levels and quality of ICT access that remain between men and women despite the exponential increase in the availability of ICTs (Siegmann, 2009). The study found that more than 40% of all female respondents needed permission from their husbands, fathers and brothers, who typically owned the ICT equipment. Negative perceptions of women's technological skills were also evident: Interestingly, female respondents have an even more negative perception of their own technological abilities compared to male interviewees. The iReach project in Cambodia found that women used ICT hubs less frequently than men in part because of the presence of monks, as women showed a reluctance to sit close to them (Grunfeld & Hak, 2009).

Another study, investigating the impact of business process outsourcing on call centre workers in the Philippines, found significant physical and psychological effects, including lack of sleep and exercise, and increased susceptibility to colds and flu. Urinary tract infections were also widespread because the workers' access to restrooms was restricted to scheduled breaks (Hechanova, 2009). Similarly, a scoping study on Internet addiction – a perceived concern in Asia, where it is considered a serious threat to public health – summarized the research findings on the incidence, antecedents, outcomes, and treatments of this phenomenon (Hechanova & Czincz, n.d). Studies conducted in China, Hong Kong, Taiwan, and Korea suggest that about 12% of Asian

youth are addicted to the Internet. However, the review also points to some serious flaws and gaps in the research, questions the definition of internet addiction and highlights the need for more theoretical and rigorous studies to establish a better understanding of this phenomenon in Asia.

III- PROGRAM OUTCOMES

Introduction

PAN's prospectus summarizes a set of outcomes based on its three themes, Policies, Technologies, and Effects. For the purpose of this report, we have presented how PAN has contributed to achieving these expected outcomes. Consequently, this section is divided into four program level outcome areas[11] that relate to the objectives PAN set for itself in its prospectus: influencing the reform of ICT policies; catalyzing technological innovation for social benefits; building research capacity in ICT4D through generating more credible knowledge and expanding the capacities of ICT4D researchers; and contributing to strengthened gender integration in ICT4D.[12]

1) Influencing the Reform of ICT Policies

PAN's prospectus spells out the intention to instigate change in two principal policy areas of importance to ICT4D: telecommunications policy, which generally influences whether people get access to technology, and, intellectual property rights, which relates to whether people get the right to use the information that these technologies convey. Given the complexities of policy development and implementation, demonstrating conclusively how PAN support is contributing to policy change is a challenge. However, PAN has been able to catalyze change in ICT policies through two principal means: First, through supporting research findings to help inform policy debates[13] and, second, through supporting advocacy for particular policy positions.

[11] Outcomes were chosen on the basis of the following criteria: (1) the outcome needed to represent a significant change, characterized by either a change in a policy or practice, a change in state or a change in behaviour, and (2) preference was given to outcomes that had been validated by either external evaluators or other studies/reports on the particular issue. Consequently, certain outcomes were not included, although we have referenced these as much as possible. We have also included certain outcomes or changes that had been expected but were not achieved.

[12] The evidence for PAN's contribution to these outcome areas stems from project technical reports, project publications and evaluations, personal communication with project leaders and third party reports. However, the three program-level evaluations on networks, policy influence and gender integration mentioned above provide the most important source of data.

[13] See Carden (2009).

Table 1 Summary of Policy Outcomes

Projects involved	Policy Outcomes	Elements and activities that facilitated the achievement of outcomes
LIRNEasia MSSRF Consumer's International	- Policy changes: Flat tax on mobiles rescinded in Sri Lanka; leased line costs in Indonesia lowered; wifi spectrum in Indonesia unregulated; Indian government support for knowledge centres - broadening policy horizons: Sri Lanka, Mongolia, WIPO, Indonesia - expanding policy capacities: Sri Lanka, Indonesia, Mongolia	- credibility of research findings - visibility and positioning of organization or individual; - targeted and effective policy engagement (communications strategy) - flexibility of funding and long term engagement form IDRC

a) Supporting research that leads to ICT policy reform

LIRNEasia, a regional think tank on ICT policy and regulation, has been among PAN's most adept grantees in terms of an ability to leverage research findings into policy changes. Its successes led PAN to commission an evaluation to help better understand the extent to which policy changes were attributable to LIRNEasia's research work, and also to develop a set of lessons that might help others learn from this group's experience. The evaluation report found that "in two of the five case studies, in Sri Lanka and Indonesia, LIRNEasia had impacts on policy that are clearly and directly attributed to their efforts, and that effected specific policy changes." (Ofir, 2010, i) In the other cases, it was more difficult to identify direct influence on policy change, as LIRNEasia's voice was one of many influential voices in the policy arena.

In a first case[14], the Sri Lankan government was considering a proposal to raise the tax on mobile usage from 2.55% to 7.5% and to institute a monthly flat tax on all SIM cards. During a brief consultation conducted by the Ministry of Finance, LIRNEasia sprung into action, and opened a dialogue with the media and government. LIRNEasia researchers pointed to household data they had compiled on the level of mobile expenditures that indicated that the proposed flat tax would not only place an unfair burden on the poor, but also slow growth in the sector. As a result, the government abandoned the idea of a fixed charge on SIMs, opting instead to increase the more progressive tax on usage. LIRNEasia's pivotal role was confirmed and recorded in government records (Ofir, 2010 p, 30-31). This case not only demonstrates LIRNEasia's policy influence, but also its ability to inform policy actors, such as industry and government representatives, the Minister and the Opposition leader, who as a result were able to better understand the effects of taxation on the mobile sector. Dr Ofir refers to these outcomes as "expanding policy capacities" and "broadening policy horizons" (Ofir, 2010, 31).

[14] Although the details of the various case studies can be found within the aforementioned study, we feel it is valuable to summarize the achievements of the two cases of direct policy impact

LIRNEasia's work in Indonesia represents another successful case of research influencing policy, and has likely played a role in helping to ensure Indonesians have more affordable access to the Internet. After studying the cost of leased lines – a key element of Internet connectivity – across various countries, LIRNEasia found that costs were 48 times higher in Indonesia than in India. LIRNEasia's results were shared with the Indonesian media and the Ministry of Communication in late 2005. Under continued pressure from local bodies, which frequently quoted LIRNEasia's figures, the Indonesian government in 2008 finally forced operators to drastically lower their leased line prices (Ofir, 2010). In making this decision, the government publicly acknowledged the role LIRNEasia had played. As in the case of the flat tax, LIRNEasia helped bring about a policy change, while also broadening policy horizons by introducing new evidence to frame debates and inform numerous policy actors (Ofir, 2010, 49).[15]

In both cases, LIRNEasia's success stemmed from the credibility and legitimacy of their research results,[16] the positioning and visibility of their organization, as well as effective communications strategies. These successes can also be attributed in part to the policy environment having been receptive to LIRNEasia's message at that time. Moreover, LIRNEasia has mentioned that IDRC's acceptance of the "rapid response"[17] modality was also key to their success.

PAN had identified intellectual property rights as the other principal policy issue – in addition to communications policy and access – in which it would attempt to promote change. PAN had expected the influence of copyright and patent law, as well as technological practices such as digital rights management (DRM), to be among the most prominent issues. However, influencing policy debates on these issues has proved to be a challenge. The field of technology and law is nascent in developing Asia, so there are few researchers with whom to work. In addition, many of the groups involved in these debates are change advocates, and have had difficulty separating their roles as activists and researchers. Finally, opportunities for evidence to actually inform policy were rare.

One of those rare opportunities involved attempts by Consumers International (CI Asia Pacific Office) to influence the World Intellectual Property Organization (WIPO) and various national governments. CI shared with WIPO the results of research on the extent of the use of IP flexibilities in international treaties for national IP legislation in Asia, which led to a commitment by WIPO to change draft laws (Consumers International, 2008).[18] Moreover, in India, the Alternative Law Forum used data and recommendations from CI's research for a submission to the copyright office of India. Finally, the project's biggest impact likely came when the Intellectual Property Office of

[15] Another consequence of LIRNEasia's influence on change in this field is exemplified through the selection of Rohan Samarajiva, its founder and CEO, as the winner of the award for Communications Research as Agent of Change from the International Communications Associations.

[16] An example of this is that LIRNEasia's research on Universal Service work was quoted in a representation to the Committee on Energy and Commerce Subcommittee on Communications, Technology, and the Internet of the US House of Representatives on Using Competitive Bidding to Reform the Universal Service High Cost Fund

[17] "Rapid response" gives LIRNEasia flexibility to opportunistically commission research or implement a communication strategy, whenever a policy window opens

[18] PAN has not been able to follow up with the partner to find out whether WIPO accepted CI's recommendations.

Mongolia sought the assistance of Consumers International to comment on its draft Copyright and Neighbouring Right Law (PAN, 2009c, 24). In conclusion, although PAN cannot cite specific changes in the intellectual property rights domain attributable to this work, it can, however, point to a broadening of policy horizons, as well as expanded policy capacities. As a result, new data and fresh ideas have been put on the agenda and helped to inform various policy actors.

b) Supporting advocacy to catalyze ICT policy reform

A few of PAN's long-standing collaborators have influenced changes in policy, although less from a research-influencing-policy perspective than from an advocacy one. Such policy change frequently seems to have stemmed from IDRC facilitating certain actors to voice their positions on local and international stages. For example, Onno Purbo, an Internet and open source activist who has a long association with IDRC, has worked tirelessly to bring the Internet to the people in Indonesia. However, much of his work was, as he describes it, "unlegal" in his country, since the 2.4GHz spectrum used by wifi was restricted and regulated. With PAN's support, Dr. Purbo participated in major conferences, such as the World Summit on Information Society (WSIS), which helped to highlight the issue of using wifi to spread low-cost bandwidth. These international activities were well reported in the Indonesian media, particularly as international communities were acknowledging the practical Indonesian way of getting low-cost broadband access. As a result, on Jan. 5, 2005, the Minister of Transportation signed the Ministry Act that legalized 2.4GHz in Indonesia (PAN 2009a, 10). The significance of this policy change is as much that the 2.4GHz (wifi) spectrum was legalized as the fact that IDRC never provided direct funding for Dr. Purbo's training or research work in Indonesia, but rather, facilitated his advocacy in international forums. He believes that his association with IDRC lent him credibility in the eyes of the government and media, which, in turn, helped him quietly spur the regulatory change.

PAN also supported the continued advocacy in India of the National Alliance for "Mission 2007: Every Village a Knowledge Centre"[19] that included government, the private sector, and civil society. MS Swaminathan Research Foundation's[20] leadership in the alliance resulted in a commitment by India's Ministry of Finance, in 2005, to allocate 100 Crore rupees (about 20M USD) from the Rural Infrastructure Development Fund to finance the building of knowledge centres in 600,000 Indian villages. Since then, Mission 2007 has also influenced similar initiatives in other countries, such as the Information and Communication Technology Agency in Sri Lanka, the Telecentre Network in Bangladesh, PhilCeCNet in the Philippines, and Mission Swaabhimaan in Nepal.

In these two earlier cases of influence on the ICT policy sphere in India and Indonesia, their success was probably due more to the positioning and visibility of the

[19] A case study on this activity can be found here.
[20] PAN has supported MSSRF since 1997 and funded three phases of work on Knowledge Centres. In this current prospectus, PAN has focused its support to MSSRF on institutional capacity building (Project no.105308), but the policy achievements of MSSRF occurred during PAN's current prospectus.

organizations and individuals involved than to the legitimacy or credibility of their research results. The fact that the success of more recent PAN-supported endeavours in the policy sphere can be attributed to the credibility of research results, points to a certain change in the choices PAN now makes when deciding on the type of projects it will support to promote policy changes.

In conclusion, the success of certain PAN recipients in catalyzing change in ICT policies, as well as expanding policy horizons and capacities of policy actors, is due to the credibility of the organizations involved, the legitimacy of their research results, as well as their targeted approach to policy engagement. PAN has added value through allowing for funding flexibility (including simply funding a grantee to attend a conference) and, more importantly, by taking a longer-term approach to supporting grantees. Clearly, projects that PAN supported did not always contribute to policy influence, in large part because of the challenges related to the lack of an enabling environment for those changes to take place (Ofir, 2010). PAN had originally expected, for example, that its work in Cambodia through the iREACH project would directly influence the government's communications policy. However, that did not come to pass. This was largely due to the fact that the government was not yet receptive to any policy and regulatory changes, but also, possibly, because the institutions involved did not yet have the credibility and legitimacy to influence government. This may, however, only be a matter of time, as the earlier cases suggest.

2) Catalyzing ICT Innovations for Social Benefits

PAN's second objective seeks to foster technological innovations that can help solve development problems, while also attempting to develop a learning environment for this innovation to occur. ICT innovation, which we define as the development, adoption or adaptation of ICTs to solve various development problems, is fraught with challenges. This is particularly true if success is defined as the ability to demonstrate that a technology was utilized, either through commercialization or other forms of scaled-up adoption. The challenges include a general scarcity of capacities and resources among those working in social sectors,[21] hindering their ability to conduct effective tests and learn from these interventions. If the pilots are successful, these same people generally do not have the skills or resources to change policies and practices related to technology. This is the principal reason the developing world is littered with telemedicine, e-government, and e-agriculture pilots that failed to demonstrate value to the donors, communities, or governments involved.

Despite these challenges, some PAN-supported innovations have succeeded, largely because PAN and its grantees made efforts to fill these resource and capacity gaps. However, part of our challenge in this report has been to determine how we should evaluate the success of the innovations PAN supported. Indeed, many experts perceive this to be an extremely complex area to evaluate.

[21] Here we include health, education, government services, and agricultural extension.

Many would point to successful technological innovation as being characterized by its utilization – either patenting or successful commercialization of the innovation or a scaling-up of its use by, for example, accepting the technology as a standard (Perrin, 2000). However, given that we are dealing with innovations in social applications, one can expect that scaling up, or adoption in government policy or practice, would be more prevalent than commercialization. We have also included recognition of the innovations by peers as another form of outcome, although an intermediate one, given that an award could be expected to lead to greater ability in the future to influence technological practice.

Successful innovation is also characterized by the ability to be knowledge-intensive and, notably, open to learning from failure (Bozeman, 2000). Consequently, we have highlighted, in a first instance, examples of outcomes related to successful scaling of technological solutions supported by PAN. In a second instance, we have discussed the outcomes related to how PAN built learning into its fostering of innovation, notably through the creation of research networks.

Table 2 Summary of Achievements in Innovation

Projects involved	Innovation Outcomes	Elements and activities that facilitated the achievement of outcomes
Pan Localization LIRNEasia ONI Asia PANACeA PANdora	- Influence on the development of localization capacities and standards (Cambodia) - adapting censorship circumvention application - adoption by Sri Lankan government of early warning system approach - research networks create a learning environment for innovation to take place	- capacities developed to test, learn from innovations, as well as engage with users - capacity building and knowledge sharing (through networks) - engagement of IDRC in networks

a) Innovations scaled in linguistics, disaster warning, health, and governance

The issue of translating and localizing software and other computer peripherals is of the utmost importance in a region where about 3,500 languages are spoken. In light of this, PAN decided to provide multi-phase support, including a significant investment (4.5 M CAD over two phases) to a research network on the issue. The network has been instrumental in developing tools that should enable people in Afghanistan, Pakistan, Nepal, Bhutan, Cambodia, Bangladesh, Tibet (China), Indonesia, Lao, and Sri Lanka to use computers and the Internet in their local languages. This project has developed an

extensive list of technical outputs,[22] many of which have been the subject of accolades.[23]

Other important accomplishments of the network have been the creation of technical standards that have generally been accepted by the countries involved, as well as the development of capacities to continue working on localization needs in the country. In Cambodia, for example, the government issued a policy in January 2010 making it mandatory for all ministries to use the Khmer Unicode.[24] Before issuing the policy, the government had consulted closely with the Cambodian PAN Localization team about the reliability of the Unicode applications. As the researchers had completed work on editing several thousand pages of Khmer Unicode articles, they were able to recommend that the government issue the long-awaited policy on the standard for the country. Since the policy announcement in January 2010, the PAN Localization project in Cambodia has trained IT representatives from 24 provinces and cities, who, in turn, have used PAN Localization Khmer applications to train district officials across the country. However, technologies developed by the PAN Localization network in Cambodia were in use long before this official policy came about. For instance, the National Election Committee (NEC) had used an application to sort more than 6 million registrations for the Communal Election in 2007 and the National Election in 2008. In addition, the Extraordinary Chambers in the Courts of Cambodia (ECCC) used applications and a font created by the network as a standard for all official communication. A key element of the network's success in Cambodia has been the ongoing technical support and mentoring that PAN Localization's more experienced partner, the National University of Computing and Engineering Sciences (NUCES) in Lahore, was able to provide. For example, a member of NUCES stayed in Phnom Penh for an extended period to train his Cambodian counterparts.

PAN's support in helping to adapt Psiphon[25] –software that helps human-rights groups circumvent Web censorship in totalitarian regimes – is another example of successful technological adaptation. Partners in the Open Net Initiative Asia (ONI-Asia), a PAN-supported network on censorship, provided feedback and field testing of Psiphon. In Myanmar, for example, researchers helped to determine how circumvention technologies would work in an environment of heightened censorship and surveillance.

[22] These can be found on the PAN Localization website

[23] The Sri Lankan team won an award for a Sinhala Text-to-Speech System – the "Most Innovative Product" at the Biennial Infotel Trade Exhibition held in Colombo, Sri Lanka, on Nov. 1, 2008; Afghanistan won the award for E-Localization category for Pashto SeaMonkey, 2009; Bangla TTS won the 2010 innovation award announced by BASIS (Bangladesh Software Industries Association); NepaLinux won the prestigious international APC Chris Nicol FOSS Prize, 2007; PAN Localization Cambodia Component team lead nominated as "Legendary Man" by Natural Magazine, 2009.

[24] "**Unicode** is a computing industry standard for the consistent representation and manipulation of text expressed in most of the world's writing systems." http://en.wikipedia.org/wiki/Unicode

[25] The application has won a number of impressive awards including the 2009 Index on Censorship Freedom of Expression Awards' Economist New Media Award; the Netxplorateur of the Year Grand Prix and the "Best and Brightest Ideas of 2008" by Esquire Magazine

These technical adaptations may have played a part in the software being used in China and during recent protests in Iran.[26]

Another example of a technological practice change came about when, in 2007, ONI-Asia uncovered censorship and surveillance of TOM-Skype, a popular online messaging application in China. This discovery led to a commitment to resolve the issue from the president of Skype (New York Times, 2008). A year later, the Citizen Lab uncovered another massive surveillance activity, which saw computers at embassies and companies around the world infected by a virus that could retrieve documents from a computer's hard drive and even turn an infected computer's Webcam on without the user's knowledge. ONI's subsequent report, Ghostnet, which was cited by The New York Times and Le Monde (New York Times, 2009), led to changes in technological practice of the targeted governments and organizations. (Due to the confidential nature of this type of activity, it is difficult to point to direct evidence of this.)

A key reason the 2004 Asian Tsunami caused such a high death toll was the fact that the early warning of the impending disaster did not reach small coastal villages in time. With this problem in mind, a LIRNEasia project focused on developing a community-driven approach to disaster risk reduction in Sri Lanka aimed at ensuring that warnings actually reach potentially affected communities. As a result, the government of Sri Lanka incorporated these community training and simulation approaches into their early warning systems. LIRNEasia also "contributed to studying, testing and promoting cell broadcast technology"[27] used in a Disaster and Emergency Warning Network (DEWN), developed by MicroImage, which has received local and international awards for innovative designs. LIRNEasia has since used a similar methodology to test the feasibility of mobile phones as tools for bio-surveillance, in order to develop early tracking systems for disease outbreaks in Sri Lanka and India.[28]

b) Creating a learning environment for successful innovation

Studies on the evaluation of innovation have highlighted the fact that successful technological innovation generally occurs in a context of knowledge generation and learning (Bozeman, 2000). In light of this, PAN sought to facilitate the development of research networks around innovative ICT interventions in the areas of e-health, ICTs and livelihoods, e-government, distance learning, and localization. The intent of these networks was to build a robust learning infrastructure around various interventions to ensure that one could infer whether, and how, these interventions had potentially led to development outcomes. The impetus for this came in part from our own analysis that PAN-supported projects funded through small grants competitions had not (other than in a few rare cases[29]) been successful in demonstrating social and technical impacts. This

[26] Moreover, Ron Deibert's (ONI research director) credibility in the area is such that he was asked to testify on the issue of digital censorship and surveillance before the US Congress

[27] Ofir (2010,26). Based on Project "Evaluating Last-Mile Hazard Information Dissemination" (No 103553).

[28] PAN project "Evaluating a real-time bio-surveillance program: A pilot project" (No. 105130).

[29] For example, the Community Health Information and Tracking System (CHITS), a small pilot project that used open-source computer tools for a child injury surveillance system in Pasay City, has since been adopted by many government health clinics across the Philippines, and was named a Stockholm Award finalist.

was confirmed by an evaluation undertaken on PAN-supported e-health interventions, which found that the "performance of structured evaluation, or measurement of discrete outcomes, to demonstrate value to IDRC or local communities was absent, or poor if present" and that "there was little formality or rigour in strengthening the evidence-base for the application of e-health solutions in Asia" (Scott, 2007, 5). Although this evaluation focused on the health field, the conclusions could also likely be generalized to other fields.

An external evaluation in 2008 of four PAN-supported research networks – on health, distance learning, localization, and censorship – helped shed light on whether these networks were meeting their objective of being vehicles for knowledge sharing and learning. With respect to ensuring greater knowledge sharing, the evaluation found that "all four networks are successfully achieving the goal of enabling Asian researchers to access a wider pool of knowledge with the effect of, in PANL10n's words, reducing re-invention and redundantly spending resources" (Real & Wilson-Grau, 2008, 13). The evaluation further assessed the extent to which these networks helped expand the scope of research activities. It found that it had done so in three ways: first, geographically, as the networks were able to add new country partners fairly easily (as was the case with the Tibet Autonomous Region in PANdora and Afghanistan in PANACeA); second, they innovated in their use of research modalities (PANL10N and gendered outcome mapping methodology, for example) and, third, they allowed for greater research quality (as PANdora's collaboration with MIT LINC underscores) (Real & Wilson-Grau, 2008, 17). Research networks were also seen as having been instrumental in ensuring greater capacity building, as this was the area where networks had had the most positive outcomes. For example, PANL10n has "served as a catalyst for research centres to develop their training capacity, which will contribute to more systematic and sustainable support for language computing (Real & Wilson-Grau 2008, 18)". These research networks also innovated in the use of mentoring as an important element of research capacity building, particularly in the case of PANACeA, which created an "Advisory and Monitoring Team" to support and follow up with network members in the field. Moreover, a characteristic outcome of networks was the way in which they facilitated interdisciplinarity. This was certainly the case in PANL10N, where, for the first time, computer scientists and language experts collaborated to develop local language computing.

Finally, PAN maintained that research networks were a means to ensure the administrative resilience of projects, and helped mitigate potential risks. The evaluation found generally high levels of satisfaction with the "adaptability of the network leaders and PAN team to respond to problems and learn from them" (Real & Wilson-Grau 2008, 41).[30] This came to the fore when political instability in Pakistan, where three of the four networks are based, became so intense that PAN asked the project leaders to develop potential contingency plans. All three responded quickly and effectively, using their

[30] One of the network leaders remarked that,"The PAN team provides support to the project as requested by the project network leader. This generally involves participating in network activities, commenting on draft outputs, leveraging contacts and resources, and advising the project leader on how to deal with tensions and problems that arise within the network from time to time" (Real & Wilson-Grau 2008, 43)

ability to move the overall project's administration to another network node in another country (PAN, n.d.).

Although these networks had been developed to help foster technical innovation and learning in one particular theme or discipline, PAN also attempted to build networking across disciplines and regions. An example of this was the All Partners Conference (see PAN, 2009a), where a collaboration was formed between members of a research network on privacy and PAN's health network, which has resulted in a project being developed and funded on issues related to privacy and e-health (PAN, 2009a). In addition, intra-regional knowledge sharing was fostered by IDRC, and has led to a budding collaboration between the aforementioned health network and an African network on health information standards,[31] involving concept dictionaries for maternal health.

In conclusion, PAN has been able to demonstrate that its support for technological innovation has made a difference through the creation of technical standards, broad use, as well as competencies to innovate. Moreover, the network modality seems to have been instrumental in creating a knowledge intensive environment that acts as a catalyst for innovations to succeed. This was the case for localization and anti-censorship tools, and will likely be the case for health applications, once the health network matures.

3) Capacity Building in ICT4D: Generating more Credible Knowledge and Expanding the Capacities of ICT4D Researchers

One of the ways in which this prospectus attempted to evolve from PAN's previous programming was to ensure that research activities produced high-quality evidence that could help build knowledge in the ICT4D field. PAN-supported research also aimed to be relevant and rigorous enough to influence policy debates and attract media attention. High-quality[32] research findings, however, are difficult to foster where research capacity is scant. Most researchers in the developing world struggle with limited funding, decrepit institutions, dated training, and the lure of the developed world. In this context, it is always a challenge for research outputs from the developing world to find their way into peer-reviewed journals based in the developed world, or to have them influence global policy debates.

This becomes an almost gargantuan task when attempting to produce high-quality research in the context of a newly constituted field. ICT4D is just starting to produce graduate students and programs and is often thought to be plagued by research that is atheoretical and of little rigour (Heeks, 2007). A PAN-supported project on ICT4D

[31] OASIS: http://www.idrc.ca/en/ev-116782-201-1-DO_TOPIC.html

[32] There is some debate as to what constitutes high-quality research. For the purpose of this report, "high quality" refers to a certain quality standard defined by peers, through peer review, and/or through citations (i.e., impact factor) and use by other organizations or individuals. See a relevant discussion here.

programs in Asian universities, as well as a workshop on ICT4D research methodologies, confirmed that this is a nascent field, which therefore suffers from a lack of accepted definitions and nomenclature, explanatory theories, academic programs and graduate studies, as well as researchers. This was the main impetus for PAN deciding to focus one of its principal objectives in its "Effects" theme on "building research capacity in Asia to better understand the socio-economic effects of the information society on different user communities."

The result of this emphasis on research capacity building has been the generation of knowledge that could be considered more credible or of higher quality by ICT practitioners or junior researchers; as well as an expansion of capacities of local or young ICT scholars and practitioners to conduct, manage, and put research to use. However, to date, PAN has had more limited success in creating a set of methodologies and research tools that could help improve the way in which ICT4D research is conducted.

Table 3 Capacity Building Outcomes

Projects involved	Capacity Building Outcomes	Elements and activities that facilitated the achievement of outcomes
SIRCA Living the Information Society workshop LIRNEasia DECI PANdora DirAP	- acceptance of research in peer-reviewed journals or published manuscripts and citation of the research - development of capacities in conducting, managing, and communicating research for policy and/or practice influence	- ongoing mentorship - offer opportunities to present research at conferences - training and tutorials on research methods, communicating for influence, utilization focussed evaluation, resource mobilization

a) Generating more credible ICT4D knowledge

Overall, during this prospectus period, PAN contributed to the development of nine published monographs, 33 articles published in peer-reviewed journals,[33] and at least 170 conference papers. The work of PAN's distance-learning research network (PANdora) is an interesting example of the manner in which this took place. Through support from the network, ICT practitioners and academics in developing Asia evolved and developed to the point where they were published in a peer-reviewed journal. This process was nurtured through the assistance of various mentors in the network,

[33] A list of the monographs and peer-reviewed articles is given in Annex 3. Of the journal articles and monographs produced, the average number of citations is 4.64 according to Google Scholar (although some monographs have been heavily cited, such as Alampay, E. (2009) and Samarajiva, R & Zainudeen, A (2008), which has raised that average). It is also worth noting that many of these publications are recent, and so their citation count will likely be much higher in a few years.

including one based at Athabasca University in Canada, as well as academics in Pakistan and Indonesia. The culmination of this work was the development of a monograph (Baggaley & Belawati, 2007), as well as a special issue of the "Distance Education" journal, which allowed the research findings to garner widespread international attention. The managing editor of the journal, Prof. Som Naidu from the University of Melbourne, considered the special issue a "landmark edition."[34] Prof. Naidu also says that articles from that issue are being heavily cited in new submissions to the journal.

PAN also decided to focus on strengthening the basic social science research skills of Asian ICT practitioners and academics, who generally come from technical or other disciplinary backgrounds. The result was the creation of the Strengthening ICT Research Capacity in Asia (SIRCA) research grants program. SIRCA targeted emerging researchers based in Asia who are relatively new to ICTD research and interested in undertaking theoretically grounded and methodologically rigorous research. To do this, SIRCA included an extensive mentorship program, which helped established ICT researchers mentor research grantees, in a similar manner to the way a thesis director mentors a graduate student. The program is currently supporting the first round of competitive grant awardees; therefore, we do not yet have any evidence of its success in helping to build research capacities. One sign, however, that the program might be having some success is the fact that some of the grantees have had their papers accepted at the next International Communication Association pre-conference workshop on mobiles and development in June 2010. Moreover, there are plans to prepare the papers for a special edition of the peer-reviewed journal Media Asia.

The need for ongoing mentorship as a key success factor in helping to build sustained research capacity, rather than one-off training workshops, has been highlighted in several IDRC evaluations (see Real & Wilson-Grau, 2008). This is the main reason SIRCA took this approach, but PAN has infused this model into numerous capacity building projects. For example, mentoring is a feature of all of the research networks PAN has supported (as discussed in Outcome 2). Other activities, such as the Digital Review of Asia Pacific (DirAP), have used a “buddy system” to help the country authors write their sections. The authorship of the Digital Review is a noteworthy outcome, as most of the country authors are local ICT practitioners or government employees who had never published an academic article before. For example, country writers in Afghanistan and Laos, who have been involved in the publication from its first through to its fourth edition, have become key ICT decision-makers in their countries. Other authors, who work in academe or with NGOs, have enhanced their authority in the ICT field by virtue of their long-standing association with the well-regarded DirAP (Spence, 2009).

[34] Distance Education (Vol 28, 2), August 2007. For reference to the quote from Prof. Naidu, see email communication.

b) Expanding capacities to conceive, conduct, manage, and communicate ICT4D research

PAN-supported projects help to build ICT4D research capabilities in a number of ways. LIRNEasia, for example, seeks to increase skills in the sphere of communications policy through a fairly traditional academic conference model. It organizes an annual event, called Communications Policy Research South (CPRSouth), which provides a space for networking and learning among scholars engaged in ICT policy and regulation research, mainly through panel discussions. By engaging in this way with young scholars interested in the field, LIRNEasia is helping to develop a new cohort of communications policy experts. Conference participants are encouraged to submit papers, go through a peer-review process, present their papers, and take part in tutorials – on research methods, communicating for influence, and specific ICT policy issues – with established communications policy experts. In all, 84 young scholars were trained in tutorials and 59 were given a chance to present their papers at the conference. Surveys of these young scholars demonstrated significant improvements from 2007 to 2009, notably there was a 50% increase in the number who had published papers in peer reviewed journals; a 50% increase in the number who wrote policy briefs or made presentations to policy-makers, and a 600% increase in those who received grants (LIRNEasia, 2010). Although these improvements are not solely attributable to the activities of CPRSouth, it would seem that the conference is playing a part. IDRC's involvement included peer reviewing proposals, acting as respondents at the conference presentations, and helping to set thematic directions through participation in CPRSouth's Board.

In light of DFID's emphasis on research communications, and PAN's interest in helping grantees boost their policy-influence skills, PAN organized a training workshop on "communicating for influence" in Hyderabad, India, in 2008. In addition to several of PAN's main grantees, the workshop brought together the Overseas Development Institute (RAPID – Research and Policy in Development); Tactical Technologies Collective (Visualizing Data); Panos (RELAY); and TVE Asia Pacific (Television and New Media). Participants were helped to design or enhance project-specific communications strategies. They were also encouraged to seek further help from research communications specialists, to continue improving their projects' communications strategies. As a result, the censorship and surveillance network ONI-Asia decided to work with Tactical Technologies to improve their visual advocacy for example.

In accordance with IDRC's belief in empowering its research grantees to undertake their own project evaluations, PAN, along with the Centre's Evaluation Unit, hosted a two-day workshop on utilization-focused evaluation (UFE). The modular and interactive workshop included sessions on Utilization Focused Evaluation (UFE), as well as a selection of different UFE-based evaluation approaches, such as Most Significant Change (MSC), Outcome Mapping (OM) and Gender Evaluation Methodology (GEM). Based on demand stemming from the workshop, a decision was made to support a two-year research project to further develop evaluation capacity among select PAN partners (LIRNEasia, ISIF, PANACeA, DREAM-IT, and SIRCA). This project, called Developing

Evaluation Capacity in ICTD, seeks to build utilization-focused and outcomes-oriented evaluation capacity among the PAN partners mentioned, with a view to increasing the quality and utility of evaluation. Accordingly, the project provides training and mentoring to boost researcher's evaluation knowledge and skills. As an interesting offshoot, LIRNEasia has decided to focus on evaluation as one of its new core competencies.

c) Developing trans-disciplinary ICT4D methods and research tools

One of the biggest challenges in ICT4D has been the development of appropriate research methods and theories to help ascertain the impact ICTs are having in society. As has been suggested by several researchers (notably, Heeks, 2007), much of the research work on ICT4D issues has been atheoretical or has lacked frameworks to help better understand the impact ICTs are having. PAN's prospectus raised this issue and saw the need to spearhead work that fostered trans-disciplinary methods and engage the various disciplines that have a hand in ICTD research (such as economics, development studies, sociology, political science, computer science, and engineering). Much of the challenge, in our view, of elucidating the mystery of the impact of ICTs on development, particularly from broader societal and historical perspectives, was the siloed approach to research in the field. With this challenge in mind, PAN organized two workshops on the issue, one in Manila, which was adjacent to the "Living the Information Society" conference, and another after the ICTD 2007 conference in Bangalore. Although these workshops were successful in helping to better explain the problems faced by ICT4D research, and also suggested a way forward, PAN has had limited success in finding institutions and researchers in Asia willing to take the issue forward. This was the main reason the ICT4D research guidebook, which was mentioned as an important potential output in the prospectus, has not yet materialized.[35]

4) Contributing to Strengthened Gender Integration in ICT4D

PAN's prospectus recommends that all projects include a gender analysis to ensure the findings capture how, and to what extent, gender influences the diverse development outcomes being examined. A learning-oriented evaluation study to examine the level of gender integration across a selection of projects was commissioned in the fall of 2008 and completed in 2010 (Sachdeva & Peebles, forthcoming). The study evaluated gender integration at the program level and also within a sample of 10 projects.

Table 4 Summary of Achievements in Gender Integration

Projects involved	Gender Outcomes	Elements and activities that facilitated the achievement of outcomes
Pan Localization	-development of the GEM framework, and its adaptation gendered outcome	-systematic approach to gender mainstreaming

[35] It should be noted, however, that as a result of these workshops PAN commissioned a paper titled "Compendium on Impact Assessment of ICT-for-Development Projects" (Heeks & Molla, 2008) although the funding flowed through Project no. 104714. The compendium has been used by several projects, including ENRAP.

GEM	mapping -majority of projects demonstrate a high quality commitment to gender	-simple gender monitoring tool

a) PAN program-level outcomes

At the program level, the study (Sachdeva & Peebles, forthcoming) found that "PAN pursued a systematic approach to gender mainstreaming." The evaluators commended the development of a simple gender monitoring tool.[36] However, they also noted that "not all of the project team was systematically using it to monitor the level of gender integration into projects." An outcome from this utilization-focused study – where the PAN team comprised the primary intended user group – was a commitment from the team to be more diligent in updating the tool based on monitoring activities, discussing the tool as a group once or twice a year, and refining the tool itself to include four categories with modified descriptions.[37] Moreover, PAN's investment and involvement in developing the Gender Evaluation Methodology (GEM), a methodology that integrates a gender analysis into evaluations of ICTD initiatives, has been used in several projects within PAN and beyond. The GEM framework has highlighted the importance of integrating gender considerations when assessing and learning from an ICTD project.

b) Project-level outcomes

Ten projects were examined within the gender evaluation study (Sachdeva & Peebles, forthcoming). The report found that "the vast majority of the projects reviewed had a substantial commitment to examining gender concerns and including them in their research methodologies in the proposals" and that "the quality of the gender commitments in the proposal was, in most cases, of high quality (Sachdeva & Peebles forthcoming). However, it also reported that despite high levels of commitment to gender considerations at the time of approval, there were varying degrees of implementation between the different projects and also within the sub-projects.

Within the PAN Localization network, which examines highly technical matters related to local language computing, the evaluation found that PAN's substantial effort to dialogue with grantees, develop the capacity of a gender champion, and provide guidance vis-à-vis technical assistance, contributed significantly to the way in which gender issues were handled in the multi-country network. As an adaptation of the GEM framework, the network developed and tested the gendered Outcome Mapping (OMg) tool, which has more than 70 user groups worldwide. Moreover, a paper describing the approach won a competition run by the OM community (Shams, 2009).

[36] The gender monitoring tool includes five categories of analysis and criteria to measure the level of gender inequality/inequity in research work: gender transformative, gender-focused, women inclusive, women specific, and women incidental.

[37] The revised tool contains the following categories: women incidental, women focused, gender integrated and gender transformative.

IV- CONCLUSIONS AND STRATEGIC LESSONS

PAN has been able to meet most of the objectives and expected outcomes it set for itself, while also achieving some that were emergent – e.g., networks on themes that had not been anticipated. The research supported through the program helped contribute to changes in policy and practice, supported technological innovations that made a difference to development areas and built research capacity, and strengthened the research field of ICT4D. Much of this was corroborated by external evaluations on PAN's approach to networks, on the policy influence of one of its flagship projects, and on gender integration. That said, many of PAN's contributions to the various outcome areas, particularly in the domain of policy influence, stem from activities, or at least ideas and momentum, that started prior to the official prospectus approval.

This would likely have been a much shorter report if PAN had begun only in 2006. Some of this is due to the nature of the project cycle in PAN, which generally sees it developing a preparatory scoping stage for 12-18 months, which then culminates in a research project – most often a research network – that is implemented for two to three years. As research outputs only start to trickle in at the end of the project, one generally cannot expect findings to have any kind of influence on policy debates until some time after the project has ended. When one considers the fact a prospectus lasts five years, and that new projects start during each one of those years, it is no surprise that many of the most important policy and practice changes occur after the prospectus period.

This is a crucial lesson, as IDRC's single biggest advantage – other than its staff engagement and competencies – is the way in which it supports ideas and partners for the longer term. This has certainly been the case for PAN, which has given multi-phase support to LIRNEasia, PANLocalization, PANdora, and MSSRF (among others), all of which have demonstrated significant outcomes. PAN expects the same type of outcomes in due course from the networks it supports in health, governance, privacy, and even the country programs in Cambodia and Mongolia. However, much will depend on the ways in which continued support of such projects is nested within IDRC's new program framework.

As mentioned in the outcomes section, the engagement and competency of PAN staff has been critical to PAN's achievements. Our small team of five became involved in every facet of the major activities PAN supported. Most of the research networks PAN helped create consider PAN staff to be integral parts of the network, through being involved in strategic planning, peer review, research mentorship, and administrative problem solving. The same can be said of the country programs and competitions PAN has supported. PAN staff, with the help of a "team IDRC" approach, was also involved in helping to develop the capacities of partners through organizing, training and mentoring on issues such as communicating for influence, evaluation, resource mobilization, and project management. Moreover, staff members were involved in helping to build the field through publishing meta-assessments of findings from IDRC-

supported projects in peer-reviewed literature.[38] These elements of the "Grants +" model are crucial to the way in which IDRC operates, and makes a difference.

However, certain choices had to be made to ensure a small team could actually achieve all this: PAN had to abandon its country programming strategy. It also had to ensure that its portfolio of projects included higher-capacity institutions, such as LIRNEasia, which needed less active engagement. This certainly raises an issue for IDRC more broadly: a balanced portfolio of projects, which includes higher and lower capacity partners, is crucial to ensuring IDRC meets its various objectives related to generating cutting-edge research, influencing policy and practice, and building research capacity.

PAN has attempted to meet its objectives through three main means: research networks, country programs, and research competitions. Of these, the research networks have had the greatest impacts, particularly in terms of capacity building, research generation, technological innovation, and field building. However, networks generally suffer from growing pains and hence take a significant amount of time to demonstrate policy or practice changes. Nevertheless, most of PAN's current networks generally have the capacity base and, increasingly, the body of evidence, to eventually catalyze changes in their respective domains. This assumes, obviously, that PAN is able to support some form of financial sustainability for these networks. It seems clear, however, that IDRC should continue to regard the competency to build networks as one of its key assets.

With respect to country programs, PAN's experience has been less convincing. For example, the project in Cambodia, iREACH, had hoped to inform and influence communications policy, as well as generate important findings on policy, community access, and technological adoption and adaptation. It came up short in both areas, although it did make great strides in helping to build capacity in the communities in which it worked. It also fostered technological solutions that improved the well-being of those communities. Most of the shortcomings, however, can be attributed to the lack of research capacity, as well as the rigidity of the countries' political structure. In Mongolia, although the project faced daunting challenges, it is already yielding interesting research findings. Again, because of the shortage of local research capacity, PAN had to spend inordinate amounts of time and resources helping to develop basic research skills. The strain on resources led PAN to discontinue the expansion of country programs to Sri Lanka, Indonesia, and Bhutan. Although it is possible these country programs could yield important longer-term results, IDRC would need to support the human resources required to properly engage and mentor the partners there.

PAN's experience with granting competitions has been limited but, nevertheless, useful in meeting some of its objectives. The PAN R&D grants program, and its successor, ISIF, were never formally intended to build the research field, influence policy, or build capacities. True to their intent, these programs documented few achievements in that regard. First and foremost, they were meant to seed innovation. However, innovation is

[38] This included six articles that were published by PAN staff in peer-reviewed journals, one (Rashid & Elder 2009) of which has been included in the reading list for a course at the London School of Economics (IS475/483 - IT and Development), taught by Prof. Shirin Madon during the Lent term 2010.

difficult to measure concretely, and hence PAN staff are still grappling with the effort to demonstrate the extent to which these small grants spurred innovation. Documenting awards based on the programs, as well as a few cases of uptake, is a start, but there is still more to be done. Monitoring seed grants can often seem like less of a priority for Program Officers who are also dealing with the day-to-day complexities of developing and monitoring country programs, networks, and other larger project activities. IDRC's engagement with grants competitions has tended to be limited to peer review. Will these competitions yield the same kind, or same level, of outcomes as the other modalities? Are they true to the spirit of the "Grants +" approach for which IDRC is known? Does one get more "development bang for the buck"? This is not yet clear, and a larger evaluation comparing the different project modalities may therefore be warranted. The results of such a meta-evaluation could have broader implications for IDRC's business model, particularly in view of the fact that competitive grants have become more prominent recently at IDRC.

A concern raised by the evaluation of PAN networks was the lack of focus on their sustainability, which indeed is relevant for most of PAN's projects. Given that this is likely PAN's last prospectus, the team has dedicated its final year to ensuring that networks and activities have incorporated strategies to either wind down, if that makes sense, or to develop sustainability plans, when that is more appropriate. In addition, PAN will focus on documenting as much as possible of the knowledge and evidence it has helped to generate over the years, to ensure that this informs the ICT4D field. It is our firm conviction, however, that well after the prospectus has ended, PAN-supported activities will continue to produce cutting-edge research results, to influence changes in policies, and to build capacities in the areas of privacy, censorship and surveillance, localization, communications policy, intellectual property rights, health, governance, gender and livelihoods.

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ANNEX 1: A Short History of PAN

PAN's evolution largely mirrored the evolution of the ICT4D movement as a whole. In the early 1990s, people had put great faith in the positive role of the Internet and digital technologies. The Internet "boom" had begun. An information economy, made up of computers and the Internet, was considered the foundation of continued economic growth. Not surprisingly, IDRC received requests from developing country partners to help set up basic connectivity in their countries. As a result, PAN-supported projects broke new ground by helping to establish the first ISPs in countries such as Bhutan, Mongolia, Laos, Vietnam, and Cambodia.

It quickly became apparent, however, that the biggest challenge in building information societies in the South would be to ensure that computers and the Internet reached marginalized communities. As a result, "bridging the digital divide" became a central concept and community telecentres emerged as a potential means of solving problems of access to the technology. At this point, PAN supported the pioneering work of MS Swaminathan Research Foundation (MSSRF), which has since become synonymous with the concept of "village knowledge centres." At the turn of the millennium, the G8 meeting in Okinawa[39] spurred the development of myriad ICT4D initiatives among UN and donor nations. These culminated in the World Summits on the Information Society (WSIS) and the Global Knowledge Partnership (GKP) conferences, which brought together thousands of government, private sector, and civil society participants to discuss pressing ICT4D issues. IDRC, again, played a major role in these activities, sitting on the Digital Opportunities Task Force (DOTForce), chairing GKP, informing WSIS, and benefitting from initiatives started by the Canadian and British governments.

During this period, PAN had started to push the idea of the digital divide into new areas, such as the need to focus on software localization to ensure that people who speak languages such as Dzongkha, Khmer, or Pashto could enjoy the benefits of computers and the Internet. This was also a time when open source software was perceived as a possible solution to the software and software development divides. PAN was among the first donor agencies to support such activities through, for example, the International Open Source Network (IOSN) project.

By 2005, however, the ICT4D world had changed. The Internet bust, and the ensuing recession, had engendered increasing scepticism with regards to the transformative nature of the Web. Moreover, the private-sector-led mobile revolution, which resulted in the exponential growth of mobile access in developing countries, made some observers question subsidized access models, such as telecentres. Debates raged as to whether

[39] ICTs were discussed in the third point of the G8 meeting communiqué and included the following point that summarizes the feeling around ICTs at that time: "IT empowers, benefits and links people the world over, allows global citizens to express themselves and know and respect one another. It also has immense potential for enabling economies to expand further, countries to enhance public welfare and promote stronger social cohesion and thus democracy to flourish. Access to the digital opportunities must, therefore, be open to all." (http://www.g7.utoronto.ca/summit/2000okinawa/finalcom.htm)

there was actually a role for governments and donors in ICTs, particularly in light of the fact that researchers had had difficulty demonstrating clear evidence of the development impact of new technologies. Much of this debate took place in what was now a new academic field, generally referred to as "ICTD", which encompassed computer science, development studies, communications studies and the social sciences.

It is against this backdrop that PAN developed its current prospectus with the vision of *empowering communities to address their key development challenges through effective access to information and communication technologies.*

ANNEX 2: A map of main projects by grantees' host countries

(Note: does not include network partners)

PANACeA (E-health)
- Aga Khan University

PANL10n II
- National University of Computer and Emerging Sciences (NUCES)

Pandora (Distance education)
- Virtual University of Pakistan (VUP)

ENRAP III

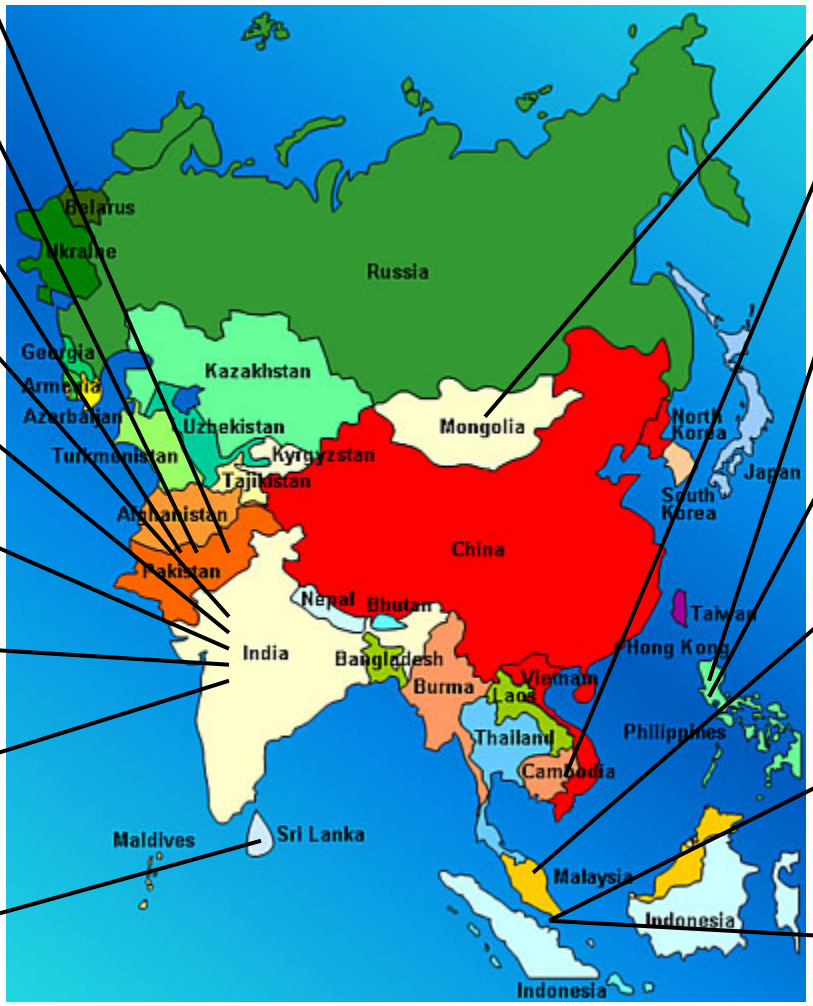
MS Swaminathan Research Foundation
- Organization/Capacity Building

Towards Détente in Media Piracy
- Centre for Study of Developing

Information Society for the South
- IT for Change

ICTs and Micro entrepreneurs
- IIT-Delhi

LIRNEasia
- Evaluating Last-Mile Hazard Information Dissemination ($0.6m)
- Evaluating real time Bio surveillance (0.3M)



DREAM – IT
- Datacom Co Ltd

iReach
Ministry of Comm

PAN eGov
- IdeaCorp

Gender Evaluation
- Assoc. for Progr (APC)

Access to knowled
- Consumers Inter

PAN R&D grants
- Asia Mec (AMIC)

SIRCA
- Nanyang Techno

Privacy in Asia
- Privacy International

ISIF
- APNIC
-

ONI –Asia
- SecDev Group
- Canada

Digital Review of Asia Pacific (DirAP)
- Orbicom
- Canada

Developing Evaluation (DECI)
- New Economy

ANNEX 3: List of monographs and peer-reviewed journal articles by PAN grantees and staff from 2006-2010 including number of citations[40]

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