

What Villagers think of iREACH

Report on participatory evaluation conducted in February 2009

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1. Introduction and executive summary

The purpose of this document is to report on participatory research conducted at the two iREACH¹ pilot sites in Cambodia during February 2009. The objective of the research was to explore whether and how iREACH has contributed to the quality of life within the coverage areas of the pilot sites and whether villagers have encountered any problems in making effective use of iREACH's facilities.

Despite the use of the term 'evaluation' in the title of this document, this is not a traditional monitoring and evaluation report. It does not investigate the extent to which iREACH has achieved its objectives or the cost-benefits of the initiative, but could be used as one of many inputs for such an evaluation.

Evaluation of impacts is an inherently difficult task, particularly in the short run, when a project of iREACH's magnitude has been in operation for less than three years. The results of this study represent preliminary findings, reflecting the views of the participants at this time. This research was the first wave of a planned 3-wave longitudinal study over a 2 to 3 year period. The longitudinal nature of the study will enable a comparative analysis over time and should provide insights into how the influence of iREACH on livelihoods is evolving.

The research approach is based on documenting and interpreting the views and perceptions of community members who participated in the research, which focused on exploring whether and how iREACH has improved their livelihoods and other aspects of well-being and agency. Rather than using pre-determined indicators, attention was placed on the perception of participants, who provided subjective views, rather than on objective measurable 'facts'. For a more complete picture of iREACH other documentation on this initiative, including outputs from OM/SPEAK², the six-monthly reports, and more detailed statistics from the hubs, available in reports prepared on a regular basis, should be read.

Many aspects of iREACH have contributed positively to livelihoods of users and other villagers, who benefit through the knowledge passed on by users. Participants from diverse backgrounds illustrated capacity for internalising the information they obtained through iREACH in ways that enabled them to use the resulting knowledge in productive ways. Many villagers have applied their new skills to agriculture and animal husbandry in their daily work on their farms and to improve their and their children's health through a better understanding of hygiene and other disease prevention measures. Benefits of REACH have also played an important role in focusing attention on social issues, including domestic violence and security.

In summary, it emerged that there is a widespread view that the benefits of iREACH have been manifold and that it has been responsive to the needs of the community. Some of the key findings are:

1. iREACH has become part of the social infrastructure in the communities and has driven many positive changes. It has promoted positive social capital in different ways e.g. by encouraging volunteers to become involved in a variety of activities, ranging from research to preparing audio programmes. For example, a group of volunteers in Kep implemented the question framework from this participatory study for a survey; and students at the university in KCM have conducted similar surveys on a voluntary basis.

¹ Informatics for Rural Empowerment and Community Health

² a tool for systematic reflection on the use of resources to achieve ongoing goals

2. There are different motivations for and contextual frameworks within which individuals are attracted to iREACH. The pilot sites are catering to this diversity of requirements within the boundaries of its operational constraints.
3. The presence of iREACH has sparked interest in learning among participants. Students have become more inquisitive and adults are keen on learning through informal education.
4. iREACH has contributed to improvements in farm practices through informal education, primarily in the form of the village-to-village broadcasts and lectures.
5. Some farmers have improved their bargaining position through the use of CAMIP pricing information disseminated by iREACH.
6. Participants in several groups considered that iREACH has contributed to economic and community development.
7. Members of the elected local management committee have expanded their capacities and capabilities through training programmes and their iREACH responsibilities.
8. iREACH's 'infomediary' role has been pivotal, with many participants unable to find sufficient useful information in Khmer.
9. iREACH has facilitated communication, interaction, and cooperation between villages equipped with hubs and between villagers and their families overseas through the Family Link-up service.
10. Community members perceive that they have improved their health, through sharing health information and discussions on topics dealing with related areas, such as family violence.
11. Local institutions, including district administrators, commune council members, village leaders, teachers, and NGOs, have provided an enabling environment. They also promote iREACH among their constituencies.
12. iREACH has had an empowering influence, particularly on women, who, being better informed, are in a stronger position to effect improvements in their quality of life. Using iREACH as a meeting place has contributed to this.
13. Participants provided many examples of how community members have harnessed the resources of iREACH in different ways, from information about the importance of boiling drinking water, to the female student who had used the Internet to find details of a mathematical formula her teacher had been unable to explain.
14. The research did not indicate that iREACH had any influence on governance or entrepreneurial activity.

2. Summary of iREACH

This section includes a brief overview of iREACH for the purpose of placing the research in its context, with sufficient information to enable this report to be read as a standalone document.

The Canadian International Development Research Centre (IDRC) awarded the Cambodian Ministry of Commerce a three year grant of USD 1.3 million to conduct a three year (1 May 2006 – 31 April 2009) pilot project as a community based ICT enterprise. The overall objective of iREACH is to build evidence and capacities to help inform Cambodia's rural ICT and telecommunications policies and, subject to proving the suitability of this type of operation in the Cambodian environment, to mainstream this type of ICT project to all provinces throughout Cambodia. iREACH launched most services, somewhat delayed, in 2007. IDRC has since granted an extension until 2010 and plans are underway for the pilots to continue beyond that time, albeit in a scaled-down version, unless funds can be sourced from other

donors. There are two pilot sites, in Kep and Kamchai Mear (KCM), both 3 to 4 hours drive from Phnom Penh in southwestern and eastern directions, respectively. iREACH has pioneered Internet access in the areas covered by the pilots.

Kamchai Mear and Kep were chosen as pilot sites for a number of reasons: their higher than average level of poverty; their reasonable proximity (daytrip distance) to, but different directions from, Phnom Penh; diverse livelihoods (Kep is a coastal fishing and farming area in the south and Kamchai Mear an agricultural district of Prey Veng province); and expressions of support from local administrative institutions and Cambodian partners interested in participating in the project. Concrete support from the local government authorities and other local partners included the provision of HQ premises in each pilot at no charge.

Located 176 km from Phnom Penh, the province of Kep had a population of 34,000 in 2005. It comprises two districts, one of which is Kep town, the provincial capital, with a dispersed population of approximately 4,000. The other district, Damnak Chang Eur, has five communes. Fishing and small-scale agriculture are the main livelihood sources in the area. The iREACH project is based in the district of Damnak Chang Eur, and covers the more rural communes of: Pong Tuek, Ang Koal and Ou Krasar.

One of 12 districts of Prey Veng province, Kamchai Mear (KCM) consists of eight communes, comprising a total of 129 villages. The district capital, Kamchai Mear, is approximately 45 km east of the provincial capital of Prey Veng. The population of the district of Kamchai Mear was approximately 85,000 in 2005. The catchment area for the pilot project covers 56 villages within the three communes of Smoang Choeung, Smoang Tbaung and Kranhoung, all of which are adjacent to the district capital. The population within the catchment area represents 45% of the total population of the Kamchai Mear district, over 38,000 people.

With the exception of television, radio, mobile coverage, and the occasional landline service no other ICT facilities are within walking distance from any of the hubs. The nearest Internet café in Kep is some 20 minutes by car and 60 to 90 minutes from KCM.

Each pilot site is designed as a mini rural network, covering a wide geographic area and consists of a headquarters (HQ), which serves as a co-ordination centre for nine village hubs within its area. A central office in Phnom Penh coordinates the activities of the two pilot sites, which have a high degree of autonomy. The hubs are located in publicly accessible buildings, such as commune offices, pagodas, schools, and private homes, within a radial distance of up to 20 kilometres from the HQ. There are wireless links between the hubs and the HQ at each pilot. A satellite connection at the HQ connects the whole network to the Internet. Elected local management committees at each site are responsible for the strategic direction of respective pilot site. A paid community facilitator (CF) manages each hub, which is equipped with one laptop, a table and a few chairs. Staff at the HQs comprises a pilot coordinator (PC), a research coordinator (RC), a multimedia coordinator (MC), a technical support person (TS), and several content developers (CDs).

The ability to build partnerships with the local communities was a critical element in selecting the sites and existing local organisations are overseeing the pilot sites - the Chea Sim University of Kamchai Mear (CSUK) in Kamchai Mear and the Cambodian NGO, Center for Social Development (CSD), in Kep. iREACH also collaborates with several other partners at the local level, including commune and district administrations.

iREACH offers training in computers, the Internet, e-mail, and skype, overseas calling through its Family Linkup service. It also operates as an infomediary through its daily 'broadcasts' from the HQ to hubs, and training through its village-to-village service and assists with information in response to requests from village members. The 'broadcasts' are distributed from the HQ to the hubs, where villagers can listen to computer speakers and loudspeakers (in the few hubs equipped with those). The initial project proposal included community radio, but as the government has not granted a license, the 'broadcasts' to the hubs serve as a substitute for the provision of local information, customised for the local population.

iREACH is also used to a large extent by school children who come to hubs to do their homework and learn typing. It is not unusual for them to travel 30 minutes to the nearest hub.

Training in diverse community development themes offered under the village-to-village umbrella include: agriculture, such as various aspects of rice production (soil types, application of fertilisers, worm and insect protection) and mushroom growing, animal husbandry (e.g. chicken and pig raising), healthcare (e.g. hygiene and protection from mosquito transmitted diseases), domestic violence, and English language. Similar subjects are also covered in mobile video shows screened at villages throughout the districts where iREACH operates. Priorities for content are decided by members of the management committees, who consult with other community members and also take into account results from a needs analysis survey conducted at the beginning of the project, to ensure that it meets the demand for local information. The preparation of this material plays an important part of the activities, as there is dearth of relevant local content.

This also applies to broadcast topics, which include news, educational material, and agricultural market prices for produce grown in the area. Prices are obtained from the Cambodia Agricultural Market Information Project (CAMIP), an initiative funded by the Canadian International Development Agency (CIDA) and the Cambodian Ministry of Agriculture, Forestry and Fisheries (MAFF). The daily 'broadcasts' have become an institution in the communities and many villagers now rely on this information source. It has also provided an avenue for villagers to participate in scriptwriting, reporting, announcements, and other functions of these programmes.

3. Methodology

This report draws primarily on information generated in focus groups conducted with different stakeholders in the Kep and Kamchai Mear pilot areas. One benefit of the focus group method is that participants can engage with others in the group when formulating and expressing their views.

Victoria University, Melbourne, Australia, granted ethics approval for the research. Using a qualitative methodology, data was collected through 149 participants in 22 focus groups, representing diverse groups and interests in the communities. There is overlap in some of the groups, e.g. village leaders may also be farmers and women. Nobody was participating in more than one group.

Table 1 shows the number of participants and gender composition of the focus groups. As described in section 3.1, a gender strategy was applied only to a limited extent to the recruitment of participants. Women constituted 42% of all participants, 50% in Kep, and 38% in KCM. All groups in Kep and eight of 12 groups in KCM

included women. Slightly less than 50% of those who attended had used computers and/or the Internet.

	Kep		Kamchai Mear				Women	Men	Total
			Users		Non-users				
	F	M	F	M	F	M			
Teachers	3	3					3	3	6
NGO employees	3	1					3	1	4
Joint teacher, NGO, government				6		6	0	12	12
Village leaders	1	4					1	4	5
Commune council members	1	4					1	4	5
Village leaders/commune council members				8		9	0	17	17
Farming community	2	3	4	5	4	5	10	13	23
Fishing community	4	1					4	1	5
Business	3	2					3	2	5
Youth	2	3	2	7	4	5	8	15	23
Women	4	0	7		8		19	0	19
Management committee*	4	6	4	4	3	4	11	14	25
Total	27	27	17	30	19	29	63	86	149
Total Kep/KCM	54			95					
Percentage women	50%			38%			42%		

* The management committee in KCM included representatives from the business community

Table 1 - Gender composition and number of participants in the different focus groups

Almost 90% of participants gave details of their age group. As shown in the age distribution in Table 2, although not all age groups were equally represented, there was a good representation of different ages. Less than 50% were below 35 years.

	Age group							
	18-20	21-25	26-30	31-35	36-40	41-45	46-50	>50
% of total participants	20%	8%	10%	7%	16%	8%	14%	17%
Cumulative		29%	39%	45%	61%	69%	83%	100%
% of Kep participants	13%	13%	13%	2%	15%	4%	20%	20%
Cumulative		26%	39%	41%	57%	61%	80%	100%
% in KCM participants	24%	6%	8%	9%	16%	9%	10%	16%
Cumulative		30%	38%	48%	64%	73%	84%	100%

Table 2 – Age profile of participants

3.1 Process of invitation

Project staff at both pilot sites were responsible for inviting participants to the focus groups. In Kep, a letter was first sent to the District Governor, informing him about the research and asking him to inform the village leaders and commune council members of the study. The Governor responded favourably to the research and copies of his letters were attached to invitations to focus group participants. Based on the two criteria that there be at least two women and three iREACH users in every group, iREACH decided who of the village leaders and commune council members should be invited. Of the 11 village leaders in the coverage area, five were invited based on the above criteria. iREACH gave priority to those who had shown strongest support for the project. The five commune council members invited had also shown strong support. All of the three communes in the district were represented: two of the communes had two representatives each, and one commune, had one representative. Ability to contribute to the focus group discussions was the main selection criterion for teachers. The NGOs nominated participants from their organisations. Invitations to other groups were arranged by the CFs in respective hub

areas on the basis of set numbers per hub. One of the CFs was responsible for inviting one participant from a village without a hub.

At KCM, users and non-users participated in separate groups. The principals of primary schools in all communes received letters, asking for nominations of one user and one non-user per school. NGOs, MFIs and government agencies also nominated participants. Among government institutions invited were agencies dealing with health, agriculture, and education (including the Chea Sim University of Kamchai Mear, and an administrator from the high school (class 9-12). Village leaders and commune council members were invited by writing to the three communes, asking each of them to nominate two users and two non-users, as well as one village leader who is using iREACH and one who is not. The other users were nominated by members of the management committee, which was asked to nominate three users and three non-users for the farming, women's and youth groups respectively, from each of the communes. The district governor and chiefs of communes received official letters informing them about the research.

As participants were not invited through any form of purposeful or probabilistic sampling methods, other than representing the defined groups, the sample is not representative and the views expressed during the sessions are not necessarily representative of the wider population. It is unlikely that they are, given that the majority of villagers had not yet visited iREACH hubs, whereas more than 50% of participants had done so. The study is more interpretive in nature, endeavouring to understand perceptions of whether, how and why iREACH has benefitted individuals and communities, not only the participants in the focus groups.

Usage statistics or other information to substantiate some of the views are not included in this report. Such data are collected separately, e.g. in the form of usage statistics reported by the pilot sites. Together with this report they can give a more comprehensive view of iREACH's contribution.

Consistent with the provisions of the ethics approval, participants received an information sheet and consent form, prepared in English and translated into Khmer by iREACH staff. iREACH staff also translated the question framework, which avoided issues that could be sensitive from a personal or political perspective. Participants with limited literacy skills had the details of the information sheet explained to them.

All focus group sessions were held at iREACH premises, either the HQs or village hubs. Each session started with welcoming the participants, thanking them for making time available to participate, and an explanation of the purpose of the project. Participants were encouraged to express their views, by emphasising that no views or answers could be wrong. It was also emphasised that no promises could be made about implementing any of the suggestions that might arise during the discussion.

3.2 Data collection and analysis

The nature of the focus group sessions was semi-structured, based on a question framework, which was used in a flexible way, with adaptations to fit the circumstances. Depending on the group and the duration, some of the questions were not addressed and others were expanded by seeking clarification. iREACH staff facilitated the sessions, with whispering translations to the external researcher. Staff also interpreted between English and Khmer for clarifying questions. Probing was avoided to the greatest extent possible to enable views to reflect the priorities of the participants. Where something was raised in one, but not another group, it does not

mean that the other group would have disagreed, but only that they did not raise the issue. The duration of each session was approximately two hours for users and less than one hour for non-users. This duration was considered the maximum possible under the prevailing climatic conditions and was also sufficient to cover the whole question framework, when the session started on time.

The report is based only on verbal responses from participants, i.e. non-verbal cues were not used. Notes taken manually by the external researcher constitute the main input to this research. Notes from iREACH staff have complemented this source, and constitute the total input from the non-user groups in KCM, which the external researcher did not attend.

Notes were transcribed into a matrix, making it easy to compare responses to a question from different groups. A spreadsheet was used to code the responses, giving a tick for each group that had given a similar reply to a question. The frequency of each response was summed, to aggregate the number of groups that had given similar responses to a question. In section 4, which details the responses, only the most common views and those that were considered to be of particular interest are covered.

3.3 Data quality, reliability, and triangulation

In undertaking research of this nature, there is a danger that responses can be misleading, particularly when participants believe that certain replies may bring benefits. This could particularly have been the case in this research, as many of them were aware of iREACH's precarious funding situation. As the research deals with perceptions, rather than facts, the issue of errors is not relevant.

Several groups, representing broad and diverse segments of the community in terms of age, gender, and occupation in both Kep and KCM, expressed similar views on many issues. This makes it reasonable to assume that the results reflect their genuine perceptions of their communities and of iREACH. The broad spectrum of participants indicates that the sample was not limited to a privileged few, but it may also not have included the most disadvantaged. The inclusion of stakeholders such as teachers and NGO representatives would have provided indirect access to these groups.

The main method of triangulation was to invite stakeholders with varied interests to the different focus groups. With the exception of some minor issues, responses were consistent within and between groups. None of the groups contested views expressed by a different group. A separate survey in Kep, using a similar questionnaire, applied to a randomly selected sample, will complement this study.

It is reasonable to question the objectivity, representativity, and reliability of the information provided by the participants when considering the active involvement of staff in the sessions. Their presence at the focus groups could have influenced participants to express views considered favourable to the staff members and to avoid critical comments. There was also a risk of bias arising from reliance on interpretation between Khmer and English by staff members. Despite this potential, some of the responses were critical of several aspects of iREACH. Where bias was suspected, it was possible to probe further. In any case, participants would have understood from the questions that this was not an evaluation of staff performance, so bias from that perspective is not a relevant concept.

Common themes as well as diverse views on some aspects emerging from the different groups appeared to be spontaneous, thereby providing a high degree of confidence that the responses reflected genuinely held views.

4. Research results

The question framework and conduct of the focus groups were structured around first identifying strengths in the communities, followed by recent changes and a discussion of the contributing factors to these improvements. The aim of this questioning was to explore the role of iREACH in any improvements. The next part encouraged participants to talk about aspirations for their communities and the role iREACH could play in fulfilling them. During this stage of the sessions, participants were encouraged to suggest possible indicators that would be useful in measuring the extent to which the suggested changes have been achieved.

The second part of the session dealt with participants' use of iREACH and other ICT facilities used for their information and communication activities. This part was aimed at giving an overview of the extent of ICT use in the group, as well as reminding participants that ICT is more than iREACH. Discussion topics related to iREACH ranged from participants' use of facilities to their views on what iREACH offers, including its services and quality. The last part of the sessions focused on iREACH's contribution to different aspects of life in the villages.

This section reports on responses in chronological order, following the flow of the question framework and associated discussions. In section 5, key findings are synthesised into categories to provide an overview of the contributions made by iREACH in different functional areas.

4.1. Views and perceptions about the community

4.1.1 Major strengths and assets of the community

The overall approach to the study is strength based, i.e. focusing on the strengths and assets of the communities, rather than vulnerabilities or needs. Accordingly, the discussions started with asking the participants to identify major strengths of their communities. This set the scene for later discussions on how iREACH can build on those strengths.

In ranking order, the most frequently listed strengths were education, including schools, agriculture, roads, and health, including health centres. There were noticeable differences between Kep and KCM, with only three groups in Kep mentioning health. Water resources, including dams and irrigation systems, which received a very high rating in Kep (eight groups) was only raised in two groups in KCM. Six of the 16 groups mentioning agriculture, also included animal husbandry. This may have also been intended by the other groups, as most farmers keep animals. In Kep, which is located close to the coast, good marine resources were raised by half of the groups. However, the participants in the fishing community considered that fish stocks are diminishing and it is becoming increasingly difficult to make a living from fishing. Some of the groups in Kep, where there are extensive salt farming operations, included these among the strengths.

Almost half of the groups, spread across both sites, mentioned human resources, a general term referring to skills available in the communities, and NGOs operating in the area, to be major strengths. The extensive NGO activities in the areas are a relatively new phenomenon, as there were hardly any NGOs when iREACH started its operations. When mentioning NGOs by name, some groups included microfinance

institution (MFI), but only the management group in KCM specifically differentiated between NGOs and MFIs.

Over half of the groups in KCM considered pagodas and the Buddhist faith to be major strengths, but only participants in the Kep teacher group included these in their response, despite several village hubs being located at pagodas and three of the sessions were held at such hubs. A similar number of groups, mostly in KCM, that had identified pagodas, saw community participation, cooperation, collaboration between people, and sharing experiences, as key strengths. Only one group in Kep, the business group, referred to these aspects. Of the four groups mentioning 'support from authorities' all were from KCM, one of them the group with village leaders and commune council members and another was the group with NGOs and government officials.

Four of the non-user groups in KCM attached importance to ICT in general and iREACH in particular. This could have been a case of them expressing what they expected the researchers wanted to hear. With the exception of three groups that brought up mobile services, no other groups in Kep referred to ICT or iREACH. There was no discussion on whether mobile services had been or how they could be used for community development purposes.

Four groups mentioned security, but only one included gender equality as a major strength.

4.1.2 Recent improvements in the community

A question about recent improvements was a pre-cursor to exploring iREACH's contribution to the achievement of these. Views about improvements varied across groups. The ratings for the four most frequently mentioned improvements were closely interwoven with opinions about strengths, as described in section 4.1.1. They included, schools and education, agriculture (incl. animal husbandry), road infrastructure and health. There was a dissenting voice in the KCM women's group about health. A participant considered the increased use of chemicals has led to deteriorating health. After some discussion, the group agreed that it was difficult to know whether there had been an improvement, as there is insufficient historical information on this matter.

Whereas eight groups referred to ICT infrastructure, including iREACH, as a major strength, participants in 11 groups considered this infrastructure to be a major improvement, placing ICT among the ten most commonly stated improvements. NGO and pagoda activities were also among the top ten in terms of both strengths and improvements. Improvements in pagodas were associated with monks becoming increasingly involved in education.

The five most frequently identified improvements were spread relatively evenly across Kep and KCM. This was not the case with improved housing. While six of the groups in Kep held the view that housing had improved, nobody in KCM mentioned housing. The Kep groups also showed more emphasis on improvements in water infrastructure, including dams and irrigation, compared to only one group in KCM. Three groups suggested that the security situation has improved, but a female participant in one of them objected, pointing to a recent murder in the area. Two groups raised improvements in gender equality and two in domestic violence education.

Several groups in KCM referred to improvements in credit facilities, rice banks, and knowledge in the community, especially about computers, ICTs and the English language.

4.1.3 iREACH's contribution to these improvements

It is difficult to attribute improvements objectively to a particular project, particularly where several interventions operate simultaneously. There are now many active NGOs operating in Kep and KCM. Rather than expecting an objective assessment, the purpose of the question was to understand whether and how participants attribute any of the improvements to iREACH.

Participants recognised the contribution iREACH has made to enabling villagers to learn skills and gain knowledge that can increase yields and improve animal husbandry productivity. Providing several examples, e.g. pig raising, weather information, and home composting, 16 groups attributed, at least partially, the improvement in farming activities to iREACH. Four of these referred specifically to market price information, which has the potential to result in higher prices for farm produce. Nine groups recognised iREACH's contribution to improved health.

There was almost consensus that iREACH had contributed to improvements. However, with the exception of concrete benefits associated with agriculture and health, participants did not offer concrete examples other than referring to diverse uses of iREACH services, whether learning computers, the Internet, e-mail, skype or English, typing Khmer, using family link-up, contacting people overseas, obtaining information, or knowing what goes on locally and around the globe. Despite several attempts at probing, it was not easy to understand whether and how participants perceived any relationship between the improvements and the use of computers. It was easier to comprehend the relationship participants saw between improvements and the use of other iREACH services, such as the village-to-village service and Family Link-up, as mentioned in sections 4.4 and 5. It could be that the reference to computer use was an expression of increased self-confidence resulting from this newly acquired skill. This in turn could have contributed to general individual and community well-being. At least three groups in KCM supported this assumption by mentioning that iREACH has contributed to community development and poverty reduction. They did not specify how. Many comments dealt with the potential of computers for improved future quality of life for the children through better employment opportunities available to those who have computer skills and English language.

4.1.4 Main contributors to improvements in communities

The purpose of this question was to place the role of iREACH into a perspective that includes other factors to which improvements could be attributed. Participants placed much emphasis on the centrality of civil society in community improvements. Just about every group named several NGOs operating in their areas and others referred to NGOs in more generic terms. In eight groups, including four with non-users in KCM, iREACH was among the NGOs named. As in section 4.1.1, some participants used the terms NGO and MFI interchangeably. They mentioned 'government', 'authorities', and various departments interchangeably, making frequent references to agriculture, health, education, and infrastructure agencies.

In Kep, most groups referred to village and commune leaders, but this was not the case in KCM. Also in Kep, but not in KCM, participants identified their communities, through more engagement, as agents for improvements. They had noticed an increase in the activities of communities.

A sprinkling of other factors arose in a few groups, e.g. teachers, the police force, monks, and greater community awareness.

4.1.5 Desirable changes

This question deals with aspirations of participants for their community. It is useful in understanding what role iREACH can play in fulfilling them. Responses ranged from improved agriculture techniques to a reduction in human trafficking.

Most responses fell within the broad categories of rural development, improved livelihoods, poverty reduction, and food security. Better agriculture techniques for higher yields, combined with better knowledge in animal husbandry was the most frequent response. Some of the groups included agriculture markets, a rice banks, and irrigation systems in the improvements sought. Marketing of agriculture produce is a complex issue. Access to market prices provided by iREACH represents an important, but not sufficient condition to enable farmers to get a better return. They can only benefit from this information if they are able to store their harvests until they can obtain better prices. There is also an issue of market power between farmers and traders, when small farmers act on their own.

Improved health and education facilities were on the wish list of most groups. The reference to health included more education and knowledge on preventive health care as well as health facilities, such as properly staffed health centres. The same applied to education. Participants would like to see more and better equipped schools and teachers, as well as enhanced education in English and Khmer literacy. The group with NGO staff in Kep identified a need for special educational arrangements for early school leavers.

One of the groups suggested that village and commune leaders assist with getting the community together to identify knowledge requirements for informal education.

Participants in many of the groups also desired better infrastructure. Going by the frequency of different responses, better roads and bridges seemed to have a higher priority than electricity and water systems for irrigation and sanitation. Four of the six groups of non-users in KCM listed better communications and information infrastructures.

Five groups mentioned local employment opportunities in the context of reducing migration. There were two suggestions for sector-specific industries: a garment factory and tourism, both of them made by groups in Kep, which already has activities in these sectors. The identification of dressmaking, hairdressing, and beautician as desirable skills in the women's group in KCM could have been an indirect way of expressing the need for more local employment.

Four of the groups referred to improved security and three to a reduction in domestic violence, including the two groups in KCM with village leaders and commune councils, none of which had any female participants. Only the village leaders and commune councils group with users in KCM raised the issue of gender equality. Other aspirations, which arose in only one or two of the groups included: strengthening Khmer culture in the light of influences from Vietnam and Thailand, more micro-finance institutions to bring lower interest rates, environmental improvement, and reductions in human trafficking and substance abuse.

4.1.6 Methods and action for achieving desired changes

The reason for a question about how participants would go about achieving the changes outlined in section 4.1.5 was to understand the context within which participants think about change, in preparation for the subsequent question, which explored the potential role of iREACH in this matter.

In general participants would collaborate with NGOs and other local organisations and identified similar organisations and institutions as those to which they had attributed improvements (ref section 4.1.4). Eight groups, all of them in KCM and four of which consisted of non-users, mentioned that they would approach iREACH in the first instance.

4.1.7 Skills, capabilities, and resources required to achieve improvements

Computer and IT skills in various forms were by far the most prevalent (identified in 20 groups) capabilities perceived as being necessary for achieving the desired changes. It appeared as if ICT and associated capabilities would form a platform, from which participants could launch a range of other, first-order areas to meet more immediate priorities, such as agriculture, health and education.

Most groups (16) considered better agriculture skills to be an essential element in ameliorating the lives of villagers. Several groups mentioned specific farming skills, such as composting, land preparation, plant protection, and application of fertilisers.

English language skills, suggested by half of the groups, was the third most frequently stated skill requirement. The importance of English was explained by its usefulness for retrieving relevant information from the Internet and for communicating with representatives of foreign NGOs.

Several responses can be classified under the general heading of better 'management skills', a term used by four groups. When adding related responses to this category, e.g. good communication, marketing and policy development skills, small business knowledge and the ability to generate creative ideas, the number of groups that would have implied better management skills grew to 12.

Two groups in KCM mentioned the importance of beautician, dressmaking, and hairdressing skills to improve their livelihoods. Because of lack of work in their communities, many of community members have to migrate to find work to support their families. These skills will enable them to get better jobs. They would also be useful for local employment, as mentioned in section 4.1.5, reporting on how participants referred to these skills in response to the question about desirable changes.

Access to funds, equipment, and materials, together with improved education, human resources with engineering and technical skills, were also relatively common responses.

Only one group referred to good governance, but none of the groups brought up the issue of property rights in the form of secure landholdings. One participant told the group that somebody had approached her about selling land, but she had managed to use her empowerment skills gained at iREACH to withstand the pressure of selling at what she considered an unreasonably low price.

4.1.8 The potential of iREACH to contribute to improvements

Rather than exploring how iREACH has already contributed to improvements, as was done in section 4.1.3, this section deals with how participants thought iREACH could contribute to the desired changes and the expertise required to implement them.

The greatest expectations of the role of iREACH in improving livelihoods were in the form of improving agriculture yields and output from animal husbandry, using information obtained from iREACH, including market price information from CAMIP and technical methods from some websites, including MAFF, CARDI, CEDAC and other NGOs. Access, whether directly or via iREACH staff, to details on various aspects of agriculture provides farmers with an informational base for decision-making on farming techniques and prices.

Participants also thought that iREACH could contribute to improved employment prospects for youth. They considered familiarity with ICT to be a prerequisite for participating in the 'formal' workforce. Using Internet when searching for employment opportunities is another way iREACH could contribute. Several participants, particularly the youth groups, were aware of how organisations advertise vacancies on the Internet.

Understanding and learning to use computers also appeared to have intrinsic value for improved livelihoods. Participants in some groups illustrated this by their reference to the importance of adults being able to learn computers. They also thought iREACH could contribute to enhanced livelihoods through general information, including news. Listening to news and communicating, both with other villagers through the village-to-village service and with relatives overseas appeared to have intrinsic as well as instrumental value.

Other ways in which participants in some of the groups saw a role for iREACH in improving their livelihoods included more information on health and family violence to reduce their family problems.

4.2. Communication and information use and sources

The question framework included several questions about existing communication patterns, ICT use and information sources. This report does not include information on the complex web of communications links with family, friends, public officials, and others. It only covers some key findings of ICTs used for obtaining and disseminating information.

Every group included radio as an important source of information for their daily lives. Television followed closely. Participants in more than half of the groups mentioned the Internet and newspapers. Slightly fewer (6-8 groups) referred to mobiles, iREACH broadcasts, and magazines. Other sources that got a mention included word of mouth, 'house to house', meetings, commune bulletin boards, letters, village and commune leaders, and NGOs. The difference between 'house to house' and word of mouth (also translated as face-to-face) is that there is more of a deliberate visit to somebody's house, whereas dissemination through word-of-mouth can occur through a coincidental encounter.

Mobile services, followed by 'house to house', word of mouth, and letters, emerged as the highest scoring media for disseminating information. There was no discussion of how mobile services could be used to improve conditions in communities. Two-way radio was also a popular medium for disseminating information among iREACH users and non-users in KCM, but not at all in Kep.

4.3. Use and views of iREACH

The third part of the sessions canvassed participants' use and views about iREACH, e.g. for how long they have been coming to iREACH, how often and what services they use and why, what they use iREACH for and why, which services they find most useful, and whether they would be prepared to assist iREACH on a voluntary basis. In summary, a few participants had used iREACH since its inception and others were relative newcomers, with most having attended for less than one year. The frequency of attendance also varied considerably, from daily to irregular visits and from a few minutes to an hour per visit.

Most groups found the information and services offered by iREACH very relevant for their livelihoods, but the expressions of satisfaction were in most cases qualified with complaints about the quality of service and coverage, i.e. insufficient number of hubs, speed of the Internet connection and frequent Internet disconnections.

4.3.1 Most useful applications

Family Link-up, village-to-village, computer and other ICT training, and Internet use in its various forms, including information searches, email and skype were the most frequently mentioned services in terms of utility. Of the village-to-village services, training in agriculture, health, and English were each mentioned by participants in three groups.

Participants in four groups, three of which are in Kep, were using iREACH to charge their mobile batteries.

4.3.2 What villagers use iREACH for and why

Participants indicated that they use iREACH to improve their knowledge, learn, communicate, get more information, and skills. Furthermore, the youth group of KCM had used the iREACH service for job applications for positions in NGOs and local organisations. To quote one of the commune council members in Kep: 'we are hungry for information'. As shown in Table 3, groups expressed this in different ways.

Most useful services	Kep	KCM	Total
Family Link-up	2	5	7
Village to Village services and meetings	3	4	7
ICT training	3	4	7
Internet searching	2	4	6
Email	2	3	5
Skype	2	3	5
Health training	1	2	3
Learning English	0	3	3
Agriculture training	0	3	3
Typing	1	1	2
Listening to news and other information broadcasting	1	1	2
Word	1	0	1
Excel	1	0	1
Photocopying	1	0	1
Poverty alleviation	1	0	1
Audio production	1	0	1
Traffic laws	0	1	1
Information on domestic violence	0	1	1

Table 3 – Responses to a question on most useful services

4.3.3 Payment for iREACH services

Most of the participants had not paid anything for using iREACH. The prevailing view was that, as a community facility, it should be free of charge. Most participants considered the non-chargeable nature of iREACH a key benefit to the community. They mentioned this as one reason for parents being happy for their children to go to iREACH. The youth group in KCM was the only group in which a substantial proportion, 50%, of participants had paid for using the Internet - 1,000 riels/hour. In another group, someone had been paying for using Internet, but no longer did. Others had paid for typing and copying.

There was a wide price range in response to a question about how much participants would be willing to pay for different services. In general, the suggested prices were significantly less than the market rates for commercial services, despite considerable distances involved in using alternative Internet facilities.

4.3.4 Volunteering

Many villagers are already volunteering with iREACH. A young student is helping with the preparation of the daily broadcasts and a group of youth, including many women have assisted with surveys in Kep. Just about all participants expressed an interest in volunteering for iREACH. The only exception was in the business group in Kep, where only the men were prepared to assist. The women did not think they were ready yet. Even participants in the non-user groups in KCM showed an interest.

4.3.5 Reasons for non-use

Most of those who do not use iREACH responded that they are too busy, whether with home duties, income generating work, or schoolwork. Participants in two groups saw no need for and/or benefits of using iREACH. Other reasons included: 'did not know about iREACH, afraid to damage computers, insufficient literacy and other skills and knowledge, cannot speak English, and want to give opportunities to children'. A few considered they lived too far from the hub, but not everyone living in the proximity of a hub was a user. For example, someone in the women's group in Kep had never visited the hub located just across the road from her house.

4.3.6 Suggested improvements at iREACH

This section deals with responses to a few questions that in different ways resulted in suggested improvements of iREACH. In addition to a direct question about ideas for improvements, one question explored whether there was anything the participants had hoped to do, but were unable to. Another question invited participants to identify any problems they had faced and explain how these might have affected their interest in iREACH. Answers to these three questions yielded similar responses, summarised below.

- a) **More computers in the hubs.** This was the most frequently recurring theme. With only one computer (laptop) per village hub, many users considered they were wasting time waiting, sometimes after having travelled for up to 30 minutes to reach a hub. Some of the adult participants said that they had given up on coming, as the hubs were always full of students.
- b) **More space, furniture, and equipment in the hubs.** Participants in most groups considered the single table and only a few chairs in most hubs to be inadequate for the long waiting times. The KCM village leaders and commune councils wanted printing and copying facilities at each hub.
- c) **Additional hubs.** The wish for additional hubs was particularly strong in KCM. This would reduce the distances users have to travel.

- d) **Family Link-up and domestic calling.** Family Link-up, which enables users to call family members overseas, is not available at every hub and many participants wanted it extended and better quality of service. They also wanted a similar service for calls within Cambodia.
- e) **Community radio** is a service eagerly awaited by many participants, who were aware that it was included in the original plan. They did not know why it was not available.
- f) **Loudspeakers – public address system.** Many participants suggested a public address system to cater for those who cannot attend the hubs.
- g) **Improved infrastructure.** There were several complaints about power interruptions, slow Internet connections and frequent disconnections. With the hubs relying on solar power, the power situation is particularly precarious during the rainy season. Participants in the Kep management committee group were concerned over several complaints from community members. Someone in the group reported what she considered an embarrassing incident involving the provincial head of monks. He wanted to make a Family Link-up call during a visit to a hub at a pagoda, but the service was out of order at the time. This was also the case when one of the participants in the Kep fishing group arrived to make a call after having travelled a long distance. She was so disappointed that she told her friends not to bother with the service. Management committee members pointed out that if the hubs had alternative communication facilities, e.g. the LAN CHAT program, a local network chat program that does not rely on the Internet) at hubs, community facilitators could communicate with the HQ and may be in a better position to advise users when the service is likely to be restored.
- h) **Additional training.** Topics for which participants wanted more training included agriculture techniques, English language, computer skills and general skills, such as management, report writing, communication, leadership, and facilitation.
- i) **Hub closures.** Some participants living far from hubs had found the hubs closed when they arrived. They wanted a system of advance notice of such closures.
- j) **Problem in one of the hubs in Kep.** There was a specific problem at a hub located in the library of a school. The principal of the school did not allow visitors to use his chair and as a result, the hub is underutilised. Following unsuccessful attempts at mediation, action is now underway to relocate that hub.

The problems leading to these suggestions have so far not created any noticeable disaffection with iREACH. On the contrary, participants in many groups were aware of the sustainability issues of iREACH and expressed great concern about its future. The request for continued support for iREACH came across loud and clear. Going by the most frequent and vocal issues raised, additional computers at existing hubs and improvements in the quality of service are the highest priorities. Attention to these matters would of course also require additional furniture.

4.4. Participants perception of the impacts of iREACH

This section deals with the core issues of the research. It covers questions about:

- most significant changes resulting from iREACH,
- main benefit(s) of iREACH,
- new and useful knowledge and how this had been applied,
- whether participants were able to do anything they did not realise they could do,
- influence on equality, especially gender equality, and
- impact on relationships between parents and children.

Most participants shared the view that iREACH has had significant impact in several spheres of their daily lives and is likely to positively influence future opportunities. No

responses were mutually exclusive, e.g. there was no limit to how many items participants could include as most significant changes or benefits.

4.4.1 Most significant change and main benefit of iREACH

Responses to questions about the most significant change and the main benefits of iREACH almost mirrored each other. This section covers both questions to minimise duplication.

In both cases, participants overwhelmingly referred to access to information and newly gained understanding of and ability to use computers and other ICT facilities. They often mentioned the children's opportunity to learn and ability to use ICTs: 'it is important for the children to understand ICT', and 'it is good to see them learn computers and other skills, such as English and Khmer typing instead of playing games in the streets'. Some participants noted the benefits of children teaching other children and adults as well as volunteering in other ways at the hubs, and of them finding new friends overseas.

The ability to learn new farming methods also ranked highly in response to both questions, with ten groups mentioning this. iREACH was frequently associated with improved communication facilities. Participants referred to better communication in different ways, including: maintaining contacts with family and friends and access to improved communication systems for communities. Some participants made specific reference to Family Link-up and others just used 'access to communication'. The fact that Family Link-up is cheap compared to the most convenient alternative, which is to use their own or a time-shared mobile service, was an important consideration. Participants in several groups identified as a key benefit, savings resulting from not having to travel to other ICT facilities and the free or cheap nature of iREACH's services.

Six groups, four of which were non-users in KCM, attached great importance to local and overseas news, and four groups referred to positive changes in livelihoods, poverty reduction, and higher incomes.

The only group in which the majority could not identify any discernible change was the business group in Kep, but at least one of the participants in that group identified better ICT knowledge and better information on agriculture market prices as key benefits.

The youth group in KCM estimated that 10-20% percent of the population in the coverage area can use computers and type in Khmer, thanks to iREACH, as they did not understand computers previously.

4.4.2 New useful knowledge and application of that knowledge

A series of questions were designed to explore the extent to which iREACH has offered new and useful knowledge; how participants have applied what they have learnt; and whether iREACH has enabled them to do anything they did not realise they were capable of. Because of the similarity of the answers to these questions, they appear together in this section.

The most frequent response related to knowledge of and ability to use computers and the Internet. It was often necessary to use prompts to find out how they have used these skills. For some, the mere exposure to computers and the Internet was a revelation. Many participants perceived their ability to find information as a major achievement. For children, ICT had greater instrumental value. The youth and older

participants, on behalf of the younger generations, were eager for them to learn ICTs, because they associated this capability with income-earning opportunities.

Several users have applied their new ICT skills to typing and communicating beyond the village level, using email and skype. Participants in five of the groups, specifically referred to typing, which they explained is a difficult task with the large number of signs in the Khmer script. They considered the ease with which many can now communicate externally, another achievement. Audio editing by a young man volunteering with preparation of broadcasts in Kep is another example of a new ICT skill with a practical application.

The second most common response related to the application of new farming techniques. Participants attributed better living conditions to improved practices and higher yields resulting from this knowledge. One woman remarked how she has a much healthier pig after learning about feeding, watering, and cleaning it. Using knowledge obtained through the Internet, some participants in the farming community group in KCM have established an experimental mushroom growing plot. This is a community project at one of the hub sites. Chea Sim University of Kamchai Mear supplied the spawn culture and supervised the project. Villagers primarily learned about new farm practices through village-to-village lectures and training and other forms of information mediation, rather than from accessing the Internet by themselves.

Knowledge about computers and improved livelihoods through agriculture information were also the most common responses in the non-user group at KCM. As they are non-users of iREACH, they would have learnt this from others. Participants in four of the six non-user groups in KCM considered iREACH had been useful for community development. Only two groups among the users in KCM, and none in Kep referred to community development. The views of non-users indicate that iREACH has spillover effects, beyond its actual users.

Participants in several groups thought that iREACH has provided useful knowledge on health. One of the outcomes mentioned was that more women are now availing themselves of pre-natal care at the clinics.

The younger participants were more confident to apply for jobs with their computer skills and thought they would be able to find vacancies more easily on the Internet. They knew of someone who had gained employment with an NGO after finding the vacancy on the Internet.

Management committee members, who have received special training, e.g. in script writing, minute taking, facilitation, communication, and project management referred to their new skills as something they had not expected they would be able to learn.

4.4.3 Impact on equality and gender empowerment

The purpose of a question relating to the impact of iREACH on equality was to explore the perception of iREACH with respect to improving the conditions of the most disadvantaged and other aspects of equality. However, most participants did not relate to the concept of impact, but instead pointed to iREACH's policies and practices. Despite an absence of a specific gender analytical dimension in this research, the discussion on equality focussed almost exclusively on gender equality.

The initial response to the question on equality in nearly every group was that iREACH is 'transparent', which meant that iREACH does not discriminate against

anyone. Some of the groups went further and expressed the view that iREACH has encouraged women to participate actively in its activities, through gender awareness that has been promoted throughout the project's history. Someone in the Kep NGO group gave the example of a community facilitator visiting homes, specifically inviting women to attend regular training. As a result, in that hub, five women were attending a typing course on Saturdays. They considered typing a useful skill for women, e.g. for employment in NGOs and for typing job applications.

Participants in the farming group in Kep referred to the election process for the management committee as having led to greater gender awareness. However, members of the management committee in Kep did not highlight any gender equality improvements in their communities. Participants in other groups had noticed that women have become more active in their communities, but did not attribute this solely to iREACH, and commented that other NGOs also promote gender equality.

One of the outcomes pointed out by two groups in KCM was that previously women had nowhere to go outside their homes and therefore rarely ventured out other than to attend to necessities. Using iREACH as a meeting place, in combination with the information and communication opportunities at the hubs, they noted that the lives of female users have become easier and more enjoyable. Many women have developed skills in using computers, including typing and finding information by themselves, skills they never thought they would be able to acquire.

Several participants considered women's ability to use ICT a sign of improved equality. Some women in the farming group aspired to use their ICT skills in working with NGOs and for teaching computers to others. There were some very outspoken female students in the youth group in KCM, explaining how the resources of iREACH had helped them in their studies. One of the female students in KCM became somewhat of a legend after managing to find an explanation to a mathematical formula on the Internet after the teacher had been unable to explain it to the satisfaction of some of the students. In addition to the youth group, participants in the village and commune leader group mentioned this incident.

Three groups in KCM (commune council members and village leaders, women, and farmers) talked about what men think about women's participation in iREACH. The consensus was that, although sometimes worried about the security of women leaving their homes, men are supportive of their wives attending iREACH and the opportunity for learning this represents, as long as they do not neglect their home duties. Participants in the KCM women's group added a different perspective. They graphically illustrated how, equipped with knowledge about domestic violence learned at iREACH, they had lectured their intoxicated husbands when returning home from iREACH.

Where women do not have time to attend, many of them benefit from their children and others attending, as someone in the KCM women's group commented: 'we delegate to our children to learn and bring home knowledge'.

No socio-cultural issues emerged that would prevent women from making use of iREACH per se. The only exception was the reluctance of women to sit close to monks. According to the business group in Kep, with increasing number of monks attending hubs at pagodas, many women shy away.

4.4.4 Impact on family relationships

A question on the impact of iREACH on family relationships was included to explore whether parents had any concerns about their children attending iREACH. Contrary to being concerned, many parents encouraged their children to use iREACH and were proud that they had acquired ICT skills. Participants illustrated several ways in which iREACH has improved family relationships.

Firstly, it has made it easier to be in contact with family members living overseas. The Family Link-up service and, to a lesser extent e-mail and skype, have facilitated links with overseas family members. Secondly, relationships between parents and children have strengthened by children passing on knowledge and news to their parents. Many adults learned new agricultural skills and obtained international, national, and local news, e.g. security alerts, in this way. Some parents found out about Family Link-up from their children, who often encouraged their parents to attend iREACH. Some parents had asked their children to obtain information from the hub that they could apply in their households, especially on agriculture techniques.

5. Further analysis of findings

This section classifies the findings into categories that are of interest because of their potential to contribute to improved well-being. These categories represent economic and other factors, some of which intertwine and reinforce each other. Economic factors refer to income generating activities and cost savings.

5.1 *Agriculture and animal husbandry*

Many community members have embraced the opportunities provided by iREACH to enhance technical and allocative efficiencies of their farming activities. With the application of new methods, farmers have improved technical efficiency. Villagers have primarily learnt better techniques at village-to-village agriculture training sessions and to a lesser extent, by accessing information on the Internet. Several participants remarked that iREACH has played an important role in increasing yields through knowledge. An agriculture officer, who participated in one of the focus groups, supported the usefulness of iREACH. He wanted to use its facilities to broadcast specific information in a timely manner, e.g. methods for dealing with rice brown plant hopper outbreaks.

Participants also recognised iREACH's contribution to higher allocative efficiency, which refers to the ability of farmers to manage resources in other ways to improve economic returns. iREACH has taken two initiatives designed to increase incomes from farm produce: disseminating CAMIP price information and educating farmers to avoid selling non-perishable produce immediately after the harvest when prices tend to be lowest.

5.2 *Other income generating activities*

Participants identified two ways in which iREACH has the potential to contribute to improving employment opportunities. Most important were the ICT and other skills they learnt at iREACH. Participants considered capabilities associated with the informational labour market essential for decent employment. Secondly, by having access to the Internet, jobseekers can look for vacancies on special recruitment websites and on the websites of NGOs, government and private companies. At least one young man was working in an NGO, in a position he had found on the Internet, accessed from an iREACH hub.

In communities where very few jobs are available for school leavers, iREACH, which employs some 20 people at each pilot site, most of whom are locals, would have had

some impact on the employment market. There would also be some multiplier effects from the staff's purchasing power. Participants in only a few groups recognised this contribution.

There was no reference to iREACH having generated any entrepreneurialism, spawned any new business opportunities or been used to improve existing businesses. The only exception was one man in the Kep management group, who had used the project management skills he learned in an iREACH course, for his business. Nobody in the business group had used iREACH for any business purpose.

5.3 Education

Teachers, parents, and students considered iREACH useful for both formal and informal education. The female student who found a mathematical formula on the Internet illustrates how iREACH has complemented the knowledge of teachers. Parents and teachers noted that iREACH has sparked an interest in learning among children and has encouraged them to take greater interest in their schoolwork. Teachers have used iREACH to prepare lectures. Participants particularly appreciated education and training in agriculture, the use of ICT, English language, and Khmer typing. iREACH's contribution to education also extends to the marketable skills of the staff and volunteers, gained while working and learning at iREACH.

5.4 Innovation

Using the concept of innovation in a broad sense to apply to activities that are new, whether relating to introduction of new products or processes, this section identifies innovative activities associated with iREACH. Examples include:

- in the absence of a community radio license, iREACH staff broadcasts to the hubs, using computer speakers. Many villagers suggested that loudspeakers be used for extended reach, at least until iREACH receives a community radio license. Whereas loudspeakers are already used at pagodas, it is a novel idea to broadcast regular news and educational material via loudspeakers in the pilot site areas,
- the mushroom growing trial plot at one of the hubs. Mushroom growing is not innovative in itself, but that the community has taken the initiative to start such an experiment is an innovation,
- one of the commune council members in Kep had for a long time wanted to learn best mango growing practices and after finding information from iREACH had started planting mango trees,
- some of the young users were searching for Khmer names on skype and had established contact with Khmer nationals in different countries, including Denmark,
- a female participant mentioned that she was singing together with a man at another hub.

There was no indication of income generation or cost savings resulting from innovations, other than those related to farming.

5.5 Empowerment

Empowerment in this context refers to the capacity of individuals and communities to effect change, by removing roadblocks that may prevent them from exercising this capacity. This section deals with empowerment, other than from a gender perspective, addressed in section 4.4.3.

As the concept and terminology of empowerment was difficult to convey, participants did not explicitly address this issue. The views presented here are therefore an interpretation of what emerged with respect to empowerment throughout the discussions. Responses to different questions implied that the iREACH has had an empowering influence. The experiences of using computers and accessing the Internet have in themselves been empowering in that they have made community members familiar with a technology they would have heard about, but not been exposed to. For example, that many villagers are no longer afraid of computers and can understand their benefits, as mentioned by someone in the Kep management group, is empowering.

A participant in the KCM farming group said that 'we have gone from information poverty to so much knowledge.' New agricultural knowledge has empowered farmers to make decisions on farm management changes. Being able to influence when to sell farm produce, using the CAMIP market information was also empowering. The incident of how a female management committee member withstood pressure to sell land at an insufficient price (section 4.1.7) is an example of empowerment. The member admitted that prior to her involvement with iREACH she did not know how to find out what an appropriate price was. She also lacked the courage to withstand the pressure from someone considered very powerful.

5.6 Capacity building through capabilities

Capacity in this context refers to the ability of communities to expand their range and scope of activities. Capability means skills in a more qualitative sense. The results indicate that iREACH has assisted the communities to build capacity for improving their livelihoods. In some cases, this resulted from intentional capacity-building courses, particularly for management committee members. They have acquired capabilities in areas such as management, facilitation, communication, leadership, and scriptwriting. Other villagers acquired capabilities primarily in two areas: use of farming methods and ICT. Village leaders and commune council members in KCM made specific mention of how iREACH has contributed to building the capacity of the communities, particularly of children, through their ICT skills. Once able to use the Internet, they have acquired new skills from the content available on the Internet and from using applications such as e-mail and skype. The capacity for improving health conditions has also increased.

5.7 Community building and social capital

Many users have adopted iREACH as a social community space through which they have established new links within and between villages with hubs. Villagers who would probably not meet otherwise have found common ground in iREACH activities, whether as passive listeners to the news or active volunteers. The experimental mushroom plot is an example of this and of a 'productive' aspect of social capital, where community members, who otherwise may not have much in common, work together on a constructive project.

The existing level of volunteering and the positive responses with respect to willingness to volunteer in the future (section 4.3.4) bode well for the expansion of the positive aspects of social capital. The conditions for negative aspects of social capital, associated with peer pressure, e.g. for anti-social activities, have diminished, with many in younger generations preferring to spend time at iREACH rather than on the "streets".

Another example of social capital is how some users have established networks of overseas contacts with relatives and others in the Khmer diaspora. As their

proficiency with the English language grows, such contacts are likely to extend beyond those speaking Khmer.

5.8 Impact on traditional local culture

No specific question relating to this issue was included in the question framework, but sufficient information emerged to suggest that iREACH has contributed positively in support of the local culture.

References to pagodas and Buddhism as major strengths by participants in seven groups (section 4.1.1), reflect pride in the traditional culture. There were several examples indicating the utility of iREACH in protecting local cultures. The management committee group in KCM referred to how the daily broadcasts have been beneficial for preserving Khmer culture. By learning how to type in Khmer, users are building the foundation for combining traditional knowledge and ICT, e.g. skills that enables them to prepare websites in Khmer script. The youth groups considered iREACH, including Khmer typing, a tool for protecting Cambodian culture from Thai and Vietnamese influences. Neither they nor any other group expressed similar concerns over the English language, or the influence of western culture. This could be an indication that the extensive interest in learning English is not at the expense of the Khmer culture. Those eager for improved proficiency in English had specific objectives for this capability. They wanted information not available in Khmer, for studies beyond secondary and high school, and for communication with overseas NGOs.

5.9 Infrastructure and convergence

The focus of this research was not on technologies or the technical infrastructure. These aspects nevertheless became a recurring theme, whether in the form of complaints about the quality of the Internet connection, lack of community radio, power outages, or insufficient computers at the hubs.

On a more positive note, iREACH has blended different information technologies in a way that reflects convergence. With the exception of learning the mechanics of using computers, participants did not think in terms of technology. Their attention was on learning, knowledge, information, and communication. Training and knowledge in diverse fields were important, whether delivered through printed pamphlets, village-to-village lectures, mobile video shows, or individual searches on the Internet. Participants were hungry for knowledge, regardless of its source or the method of dissemination.

6. Concluding remarks

The findings of this study indicate that iREACH has made significant progress in adapting ICT to local needs of different population segments in Kep and KCM. This has resulted in many positive outcomes. Most participants could identify improvements in their livelihoods and well-being, particularly from better agriculture and health knowledge. They have noticed benefits on children's education and their interest in learning. There were high expectations that iREACH will be useful in finding employment and increasing the employability of the youth.

Throughout the sessions, participants implied that their exposure to iREACH was empowering, particularly for women. Many of the individual and community capacities and capabilities participants attributed to iREACH have created conditions for further empowerment. Through its community engagement and community centred activities, iREACH has gained the trust of participants.

The management team of iREACH has received a set of recommendations resulting from this research.

The approach to learning about the contribution of iREACH to the well-being of the communities it serves, as presented in this report is only one method through which it is possible to understand the contribution of the project. Together with OM/SPEAK and regular reports, a more complete picture of the contribution should emerge, perhaps in the form of a report integrating findings from report and other sources. In addition, more research would be required to assess how a project of this nature could be scaled at cost levels that are more sustainable than the investments made by IDRC.

The next step is for the key aspects of this report to be communicated to participants and other interested community members to advise them of the preliminary results of the study, give them an opportunity to correct any misunderstanding or misrepresentation, and inform them of what action, if any, iREACH will take in response to their recommendations. This community engagement is particularly important as an element of a longitudinal study, which should be an interaction between iREACH and community members. The social learning resulting from this process will benefit participants, users, other community members, iREACH staff, and others interested in understanding how ICT can contribute to capabilities and other aspects of development.