



# Technical Assistance Consultant's Report

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Project Number: 41078  
May 2010

## Lao People's Democratic Republic: Piloting Community e-Centers for Better Health (Financed by the Republic of Korea e-Asia and Knowledge Partnership Fund)

Prepared by XMG Global

For National Authority for Science and Technology and  
Center for Information and Education for Health, Ministry of Health

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**Asian Development Bank**



# **Project Completion Report**

## **TA 7058 LAO: Piloting Community e-Centers for Better Health**

**Prepared for the:**  
National Authority for Science and Technology, Lao  
PDR  
Ministry of Health, Lao PDR  
Asian Development Bank

**May, 2010**



An ICT Research & Advisory Company

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**To request a briefing of this report, kindly e-mail:**

**Lauro L. Vives**

CEO and Chief Analyst, XMG Global

Suite 203, 3994 Shelbourne Street

Victoria, British Columbia

V8N 3E2 Canada

[lauro.vives@xmg-global.com](mailto:lauro.vives@xmg-global.com)

**Or contact:**

Toll Free: 1.866.824.8320

Asia-Pacific: +632 893.8286

<http://www.xmg-global.com/>

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## Abbreviations and Acronyms

ADB	Asian Development Bank
CIEH	Center for Information and Education for Health
CEC	Community e-Center
DH	District Hospital
DHS	District Hospital Staff
DMF	Design and Monitoring Framework
EA	Executing Agency
HCS	Health Center Staff
IA	Implementing Agency
ICT	Information Communication and Technology
MOH	Ministry of Health
M&E	Monitor and Evaluation
NAST	National Authority of Science and Technology
PC	Provincial Coordinators
PCR	Project Completion Report
PHD	Provincial Health Department
SOE	Standard Operating Environment
SVK	Savannakhet Province
TA	Technical Assistance
TNA	Training Needs Assessment
VHW	Village Health Workers
XK	Xieng Khuang Province

## I. Executive Summary/Assessment of Overall Project Performance Versus Plan

1. The Project Completion Report for TA 7058 (LAO), **Piloting Community e-Centers for Better Health**, concludes the TA and acts as an evaluation<sup>1</sup> of how the undertaking met the desired objectives and expected outcomes.

2. The TA commenced in June 30, 2008 and was completed on April 30, 2010. The original timeline<sup>2</sup> was extended, with the agreement of ADB and the IAs, in order to complete and maximize TA investments given the implementation delays.



3. The EA is the ADB, Southeast Asia Department, Social Sectors Division and the IAs are NAST and MOH of Lao People's Democratic Republic (PDR). Throughout the TA, ADB and members of this project promoted collaborative and consultative approaches to minimize risks that often accompany arrangements of project 'shared responsibilities' between government agencies. This includes the potential lack of cooperation and governance among inter-government agencies or the lack of visibility and accountability as to who owns and is leading the TA.

4. Outside of the EA and IAs, responsibility of the delivery of the TA rests on:

- 1) ITEM Interactive for development of health content on CD ROM
- 2) ECOS Laos for providing the independent monitoring and evaluation for the TA; and
- 3) XMG Global for the implementation of the CECs and the design and deployment of ICT and health education training

5. Key progress during the TA are as follows:

- 1) The CEC Technical Architecture embodying the implementation standards, technical support and principles of the CECs and Health Education portal has been discussed, defined and agreed upon by all stakeholders.
- 2) The CEC for Health Education portal (i.e. <http://www.health-ecenter.gov.la/>) has been developed and is operational.<sup>3</sup>
- 3) The establishment of CECs in XK and SVK provinces has been successful despite infrastructure challenges in the beginning.
- 4) The CDROM developed by ITEM Interactive was installed as a local standalone application at each CEC.
- 5) The training program has been completed. A key issue was the shortened pilot period due to project delays and the lack of full engagement<sup>4</sup> by one of the IA due to other internal priorities.

<sup>1</sup> The recipient assessment of project conduct and results will be reported by the Monitoring and Evaluation Specialist separately from this report

<sup>2</sup> Original timeline for completion was December, 2009

<sup>3</sup> See Appendix E: Health Education Portal screen

<sup>4</sup> Lack of engagement citing other internal priorities in MOH making it difficult to bear focus on designing training requirements, deciding on health education content, etc. Furthermore, there was initially confusion in the roles and responsibilities to prepare and provide the needs for the TA.

- 6) Training materials were developed and disseminated to DHS, HCS, VHW, PSTO, PHD, MOH, and NAST. Given that several of the training materials, particularly those related to health education were either new or supplementary, the constant provision of health education content is a key factor in the use of the CECs.
  - 7) Pre-implementation baseline data for computer literacy and health education has been collected from the outset of the CEC implementation and training. Post-implementation data was collected at the end of the second set of training<sup>5</sup> in April 2010, although the short implementation and monitoring period makes this data quite limited and inconclusive on whether it has fully satisfied the performance targets/indicators as outlined in the DMF.
  - 8) Technical training has been delivered to the IAs to ensure adequate knowledge in the administration of the CEC equipments, servers and Health Education portal.
6. Nearly all outputs<sup>6</sup> have been completed, each with its lessons learned and good practices during the various phases of the project:
- 1) All sixteen (16) health facilities have been provided with ICT services and a network established.
  - 2) Appropriate e-health content and services have been installed in all sixteen (16) health facilities.
  - 3) Staff was provided with new or upgraded technical skills in accessing (and updating) health education material, ICT use and basic CEC maintenance.
  - 4) Although there has been several lessons learned throughout the project that would be beneficial to ADB and the IAs now and into the future, there was not sufficient time to fully assess and disseminate learnings amongst the CECs due to the short duration of the pilot.
7. ICT projects are not without their inherent risks and this TA is not an exception (see Appendix A for risks<sup>7</sup> identified during the Inception Phase). There have been a number of issues which affected the desired outcome and output, namely:
- 1) Initial lack of strong project governance and coordination between NAST and MOH.
  - 2) Lack of time to run the pilot and determine if indicators from the TA design will be met by the project.
  - 3) Lack of budget, particularly in under estimating the magnitude of training needed to skill and re-skill users and technical personnel.
  - 4) ICT competency and absorption capacity of users of the CEC was either non-existent or low.
  - 5) Lack of local capacity in ICT in MOH, PHD and PSTO.
8. There are several encouraging aspects of the TA despite some unrealized output that may have affected the overall impact of the project.

<sup>5</sup> Also known as the Refresher Training Courses (RTC)

<sup>6</sup> From Appendix 1 Design Monitoring Framework, TAR Project Number: 41078, January 2008, Lao PDR: Piloting Community e-Centers for Better Health

<sup>7</sup> From Section 3.6 Risks Identified, Inception Report TA 7058 (LAO): Piloting Community e-Centers for Better Health, July 31 2008

- 1) The TA was designed delineating the responsibilities between ITEM Interactive, Ecos Lao and XMG Global.
- 2) The site location of the CECs turned out to be positive due to tremendous community involvement and accessibility by road.
- 3) The CEC staff and VHWs are committed to the CEC concept.
- 4) Uncertain at the beginning of the TA, MOH has acknowledged its benefit in the advancement of improving health for the citizens of Lao PDR. Case in point, physicians have expressed to MOH they would like to take an active part in accessing health content and applications through the Health Education portal.

9. All training activities under the TA were completed by April 9, 2010.<sup>8</sup>

10. The concept of the TA is promising, especially for a country like Lao PDR where a 'little bit' of technology can be used as a transformational step to help improve the delivery of healthcare in the rural areas, particularly given the ongoing development in telecommunications (albeit slow). If the project is supported well into the future, the model will appreciably benefit the rural healthcare providers, its care recipients and the broader community.



11. The results of the TA go beyond a study on paper. There are currently 16 active pilot CEC sites from which future development can be realized to enhance health education, and in turn, rural health care. Ignoring the current use and deployment of the CEC will ultimately result in taking something away from the community and disappoint citizen expectations within the community. A sustainable CEC for Health consists of a series of continuous investments over time. Therefore, recommendations are made in this PCR for ADB or other donors to consider further initiatives and expand the scope of this project further.

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<sup>8</sup> Web Administration Training and Basic Administration Training was rescheduled to start April 5 and completed on April 9, 2010 in VTE.

## II. Introduction/Project Description

12. In developing countries, preventable diseases are still endemic and result in a considerably high mortality rate particularly among infants and children. Lack of information and coordination among key stakeholders, inaccessibility to health care services, lapses in facility and equipment maintenance and inefficient allocation of scarce resources are core issues in this widespread problem. Government and social groups continuously search for better and more efficient solutions in managing health care services through reliable information and effective communication. With the integration of ICT in health education, the quality of both information and communication is enhanced.
13. CECs are not new concepts in both developed and developing nations. For the past few decades, governments worldwide are moving to the forefront of government-to-constituent (G2C) and constituent-to-government (C2G) service delivery.
14. NAST of the Office of the Prime Minister of the Lao's People's Democratic Republic (Lao PDR) asked ADB to support the piloting of CECs in rural areas to help reduce the urban digital divide and ADB focused on the improvement of the health sector<sup>9</sup>. The TA entitled the "Lao Piloting Community e-Centers for Better Health" will demonstrate the use of CECs in rural health facilities to improve the skills of health staff and promote health in rural communities.
15. In any development and exploration projects such as CECs, the risks inherent in realizing the TA objectives are high. This is particularly so when the objective is to measure the effectiveness of ICT in providing expanded or enhanced health services where critical factor conditions such as (1) basic infrastructure (telecommunications and power) is limited or unreliable; (2) citizens' level of ICT maturity and capability in technology use is still at its infancy; and (3) time to monitor effectiveness of ICT in improving healthcare.

### A. Outputs

16. The EA and IAs commissioned XMG Global to complete the TA and meet its objective and expected outcome. The outputs of the TA are briefly as follows:
  - 1) Develop CEC networks in XK and SVK provinces (16 health district hospitals and health centers in total).
  - 2) Develop practical health information and skills training for rural health staff and communities through e-health services.
  - 3) Build local capacity in ICT use and sustainable operation of the CECs.
  - 4) Monitor and evaluate activities and outcome.

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<sup>9</sup> A priority sector of the Government of Lao PDR (6<sup>th</sup> National Socio-Economic Development Plan, 2006 – 2010)

The locations of the CEC sites in XK are show in the map below:

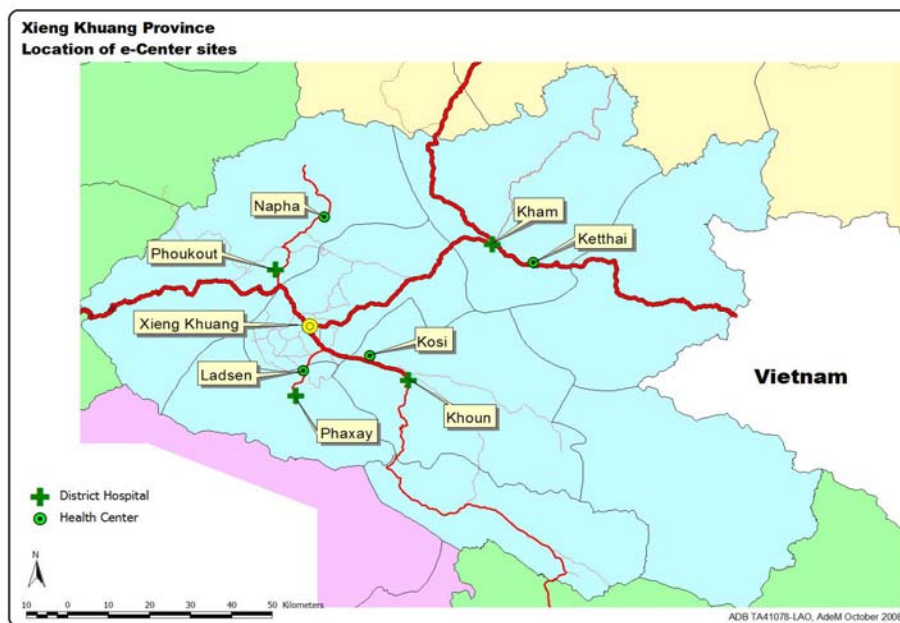
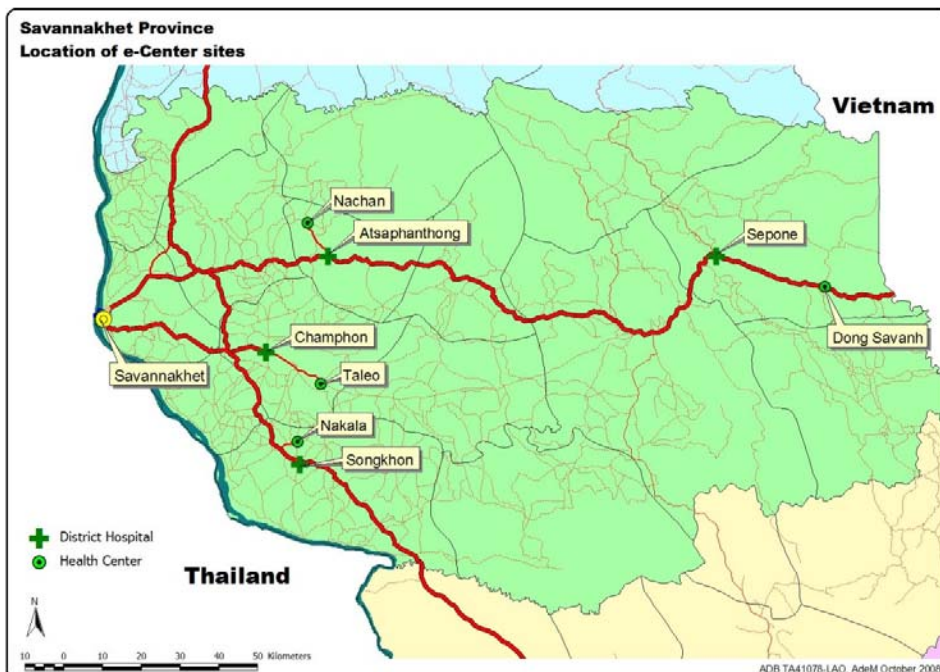


Diagram 1 Xieng

Khuang CEC Sites

The locations of the CEC sites in SVK are show in the map below:



## B. Suboutputs

17. The suboutputs of the TA are as follows:
- 1) Development of CECs in XK and SVK provinces. Implementation coverage will include deployment of ICT in the following sites for each province:
    - 4 District Hospitals
    - 4 Health Centers
  - 2) Using the CEC website as a vehicle for information access and education, work with ITEM Interactive in the development of e-Health Content and Services to develop the medium for:
    - Skills training and development
    - Enhancing health education of VHW (and others in the community)
  - 3) Capacity Building
    - ICT-based health education and skill training
    - Training of CEC facilitators for sustainability
    - Basic computer literacy training, technical and system management training
  - 4) Monitoring and Evaluation
    - Measure improved quality and utilization of health workers through increased use of ICT services.

## III. TA Activities and Results

18. Overall, the TA was successful in achieving the desired outcomes despite considerable delays. The delays has impacted the project as follows:
- 1) Implementation of the CECs in XK and SVK was delayed by 9 months. The original schedule of turn-over was December 31, 2008, but was moved to September and October, 2009.
  - 2) CECs were turned-over between September and October 2009. The TA ended by 30 April, 2010. CEC operations only lasted a maximum of 6 months instead of the planned minimum of 12 months making it difficult to gather significant qualitative and quantitative data.
19. TA milestones reflect completion and approval of the following key deliverables. The revised<sup>10</sup> milestones, other than the Final Report, have been approved and accepted by the EA and IAs:
- 1) Inception
  - 2) CEC Technical Architecture
  - 3) ICT and Health Education Curriculum and Plan
  - 4) ICT and Health Baseline Survey
  - 5) CEC Web Design Framework
  - 6) Health Education Portal
  - 7) Training and Implementation of CECs

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<sup>10</sup> Milestones revised from the original milestones published in Section 4.2 Project Schedule and Milestone, Inception Report TA 7058 (LAO): Piloting Community e-Centers for Better Health, July 31 2008

- 8) Refresher Training Courses<sup>11</sup>
- 9) Web Administrator Training<sup>12</sup>
- 10) Final Report<sup>13</sup>

20. Signoff sheets have been used as a basis for agreement of completion of the milestones. Signatories acknowledging completion are as follows:

- 1) Keonakhone Saysuliane, Deputy Director General (NAST)
- 2) Dr. Anothay Kongsayasak, Director of CIEH (MOH)
- 3) Susan Kerr, Principal Human Resource Development Specialist (ADB)
- 4) Lauro Vives, Team Leader and IT Specialist (XMG Global)

21. During the Inception phase, the team undertook extensive consultation with the selected pilot communities. The fact finding process clearly showed that the skills and capacity, particularly at the community level, is close to or is at 'ground zero' due to lack of basic English for computer literacy and no general knowledge of computer use.

22. ICT and health baseline data<sup>14</sup> was gathered to plan for ICT provisions, ICT training, health content development and project monitoring and evaluation. Specific objective of the baseline data are as follows:

- 1) Determine actual state of existing ICT equipment in the PSTO, PHD and potential CEC sites.
- 2) Capture knowledge maturity of ICT of the health staff in general.
- 3) Gathering of health indicators and health content maturity to measure the impact of the TA.
- 4) Needs of health staff at every level (i.e. PHD and CEC) and IT staff at PSTO, NAST and MOH.

23. From the very beginning and upon completion of the Inception phase, the TA execution closely followed the XMG Global CEC for Health Framework (also known as the 5Cs) to provide the implementation with a set principles and guidelines. The 5Cs will be used in the PCR as a guide for presenting activities, issues and results.

Five (5) Cs	Description
<b>Connectivity</b>	<ul style="list-style-type: none"> <li>• Availability, reliability and access of CECs to basic and alternative telecommunication infrastructure to allow transmission (file transfers) and/or collaboration (email, chat) of information between offices, hospitals and health centers.</li> <li>• Availability of viable telecommunication alternatives.</li> </ul>
<b>Common Infrastructure</b>	<ul style="list-style-type: none"> <li>• Availability, reliability and access of CECs to common infrastructure such as power.</li> <li>• Availability of viable infrastructure alternatives.</li> </ul>
<b>Computer Application and Hardware</b>	<ul style="list-style-type: none"> <li>• The need to deploy computer applications and hardware that:               <ol style="list-style-type: none"> <li>a. Is appropriate to the connectivity and common infrastructure available (e.g. highly localizing information of health content via CD ROM due to limited and cost prohibitive real-time connectivity).</li> </ol> </li> </ul>

<sup>11</sup> Added as part of the contract variation (February 22, 2010)

<sup>12</sup> Added as part of the contract variation (February 22, 2010)

<sup>13</sup> Project Completion Report (PCR)

<sup>14</sup> From Lao Piloting Community e-Centers for Better Health: Report on Baseline Survey

Five (5) Cs	Description
	<ul style="list-style-type: none"> <li>b. Can be architected for scalability as connectivity, common infrastructure and user proficiency of CECs improves.</li> <li>c. Has a common-look-and-feel applications using thin client technology with a single Web browser interface.</li> <li>d. Enable true collaboration amongst CECs (e.g. email, chat<sup>15</sup>, discussion boards).</li> <li>e. Can scale as the requirements of the CEC users evolve (e.g. improved search access to health and medical libraries via the internet).</li> <li>f. 'Tried and proven' technologies that is commercially available and supportable.</li> <li>g. Future-proofs the CEC for at least 5 years.</li> </ul>
Content	<ul style="list-style-type: none"> <li>• Web site and multimedia that provide health information and other relevant content) to CEC users in a combination of text and graphic formats.</li> </ul>
Care	<ul style="list-style-type: none"> <li>• Improvement in health services through: <ul style="list-style-type: none"> <li>a. Improved Administration (e.g. appointment setting, reporting)</li> <li>b. Better Patient Care (e.g. patient information, health assessment, telemedicine, etc)</li> <li>c. Better access to information (e.g. health content)</li> </ul> </li> </ul>

Diagram 3 (XMG Global CEC for Health Framework)

24. **Connectivity.** The limited telecommunications infrastructure determined the selection of the CECs, although some CEC sites were selected knowing that network accessibility could be an issue. It was felt by the IAs that the community benefits far outweighed the technical challenges and have made certain assumptions on the technology solutions<sup>16</sup> to overcome these issues.

25. The original design of the CEC sites was to use Winphone to provide external connection given the limited, but the need for access to the most basic telecommunication infrastructure. However, at the time of equipment procurement, there was no Winphone available for purchase and therefore the use of GPRS<sup>17</sup> devices was used as an alternative. The project decision to go with GPRS was worthy in the long term given the ability to scale to 3G and with the assumption of faster connectivity in rural areas sometime in the near future. However, reliable accessibility continues to be a major and ongoing problem<sup>18</sup>. In the short term, GPRS in Lao PDR means a 50% reduction in Internet access bandwidth from 128 Kb/s to 56 Kb/s.

26. At the start of the project in 2008 and to this day, the telecommunication maturity in Lao PDR remain below its Asian Pacific counterparts to provide ubiquitous and reliable connectivity. ICT projects must plan to contend with poor and unreliable connectivity, particularly in mountainous provincial regions such as XK. The problematic issues surrounding delivery of ICT solutions to rural areas necessitate the need for pervasive wireless strategy such as the use of GPRS.

<sup>15</sup> This includes the ability for moderated expert chats and user-to-user chat rooms/message boards

<sup>16</sup> Several assumptions were made regarding development of telecommunications in the rural areas. This included the roll out of new fiber optic links and Wimax technology throughout the country by the end of 2009 under the Lao e-Government Program. China is assisting with the funding and resourcing of the project. At the time this report is being written, the telecommunication links provisioned by the e-Government project are not functional.

<sup>17</sup> General Packet Radio Service allowing users with access to 2G and 3G cellular service to transmit data packets

<sup>18</sup> Phaxay, XK and Dong Savanh, SVK has reported the highest incidence of interconnectivity problems

27. Being a highly regulated telecommunication market with insufficient competition and local demand has made the cost of mobile data communication relatively expensive since all transmission costs are charged using variable<sup>19</sup> pricing. To date there is no independent regulatory agency overseeing fair pricing and competition. In addition, the government has announced that no more telecommunication licenses are expected to be awarded, therefore limiting the competition to the four (4) existing telecom providers for the foreseeable future.
28. Lao's telecommunication limitations in both connection speed and reliability require a "step back" from implementing an aggressive and highly technology dependent solution that require bandwidth for information access and delivery.
29. The ongoing need to address Lao PDR's digital divide and remote access issues will require redesigning solutions to its most basic and simplest form to minimize the amount of data traffic and in turn, costs. Given that this is one of the early CECs established in the country, the model implemented by the TA provides a useful template for a workable solution and identifying service provider partners. No discussion was held with any network operators for long term discounted network access arrangements since not one provider was able to reliably provide high quality of service. For the most part, the quality of service is location dependent served by different network operators.
30. **Common Infrastructure.** The CEC site selection was made with the assumption that there would be electricity available. By the start of implementation in September, 2009 electricity one CEC, Ketthai, did not have electricity and is currently running on solar power supplied by MOH, hindering its CEC operations to approximately 2 hours<sup>20</sup> per day.
31. Due to ongoing intermittent power outages and power spikes, the Technical Architecture has made it standard for all CECs to run all computing devices through a surge protector.
32. Road accessibility was not so much of an issue given the distances that need to be travelled to support the CECs. Other than the Ladsen road in XK province which was muddy and difficult for travel, the CECs were accessible under normal driving conditions
33. **Computer Application and Hardware.** With rapid advancement in technology, particularly in the desktop computing environment, the TA was mindful of the need to make 'snappy' technology decisions. The need to be agile and flexible to deploy the appropriate applications and hardware that the CEC Health Network can support is important for the long term sustainability.
34. From the time the equipment specifications were written to the time of actual procurement, only one major change was made: the selection of Microsoft Office over



<sup>19</sup> At the time this report has been submitted, all data transmission is charged using variable rates. There are no 'unlimited use' rates. Charges are 1 Kip per 1 Kb of data. For example, for a 2 minute video at 30 Mb, the cost will be approximately \$3.

<sup>20</sup> The high energy consumption of laser printers has also made running a CEC using solar technology difficult. Printing has been limited to extend electricity supply in Ladsen.

open source (e.g. Open Office<sup>21</sup>) for its desk top environment. The decision to go with commercial software rested on the possibility of future support issues in the country using open source.

35. A study was also conducted as part of the CEC Technical Architecture development to conduct a comparison of desktop and laptop purchases<sup>22</sup>. Although laptops showed more durability, budget and security constraints made it difficult to purchase laptops.



36. Given the technical limitations and cost of connectivity, the use of streaming videos to update and share health education content between CECs was not technically feasible or economically possible. Therefore, the computer specifications included the ability to run multimedia applications on standalone computers that come standard in all Microsoft-based environments.

37. Desktop computers purchased are also scalable for increasing computing resources such as the need for additional RAM and removable storage device.

38. **Content.** The efficient creation/capture, life-cycle management and in-context delivery of health information to improve information sharing, communication and teamwork from MOH to the CEC levels to improve community health cannot be accomplished by technology alone. Up to date health content is needed to be contextually delivered to the right parties.

39. Aside from the two multimedia CD ROMs developed by ITEM Interactive, a CEC website was developed (also known as the Health Education portal <http://www.health-ecenter.gov.la/>) by XMG Global.



40. With feedback from the CEC staff, VHW and physicians from the PHD, additional healthcare content (curative and disease prevention) was developed by the Health Education Specialist for the portal and CEC workstations. Since content was not in electronic format, several of the documents had to be transcribed electronically and uploaded to the website. Additional content posted on the Health Education portal included updates to the status of the TA, community events, health alerts and other information that would draw the community closer and improve health education.

41. Since content delivered during the pilot was primarily targeted for CEC staff and VHWs use, it was raised by the PHD and physicians that the Health Education portal should be extended to physicians and provide more in-depth medical content relevant to practicing doctors. The demonstrated effective use of content by CEC staff and VHW in the villages raised positive feedback on how to provide better health care. Therefore, to increase the effectiveness of health education, traffic utilization to the website and draw a larger user

<sup>21</sup> The Lao version of Open Office is Xangdao Open Office

<sup>22</sup> From Appendix D: Comparison of Desktop and Laptop, CEC Technical Architecture, January 9 2009

base, it is recommended that additional content be developed (or transcribed) and uploaded to the portal. XMG Global anticipate this will encourage many health practitioners and professionals (CEC staff, VHW, physicians and health administrators) to share ideas, develop ties, work on solutions together and heighten the overall value of the portal.

42. As health content are accessed electronically through portals, and more so as connectivity matures (enabling other transfer mechanisms such as email or chat), content will continue to grow exponentially with the proviso that in-context health information aids in patient care and decisions. The Health Education portal has a propensity to need more capacity as the user base increases and connectivity improves.
43. **Care.** Computing power and the Internet have enabled new forms of providing care. The biggest contribution to healthcare has been the Internet - from remote patient monitoring<sup>23</sup> and telemedicine in developed countries like Canada and Sweden to its simplest form of increasing productivity for efficient care through automation and integration of health administrative activities. Unfortunately in Lao PDR, it will be a slow evolution from content-oriented CEC to a direct care-oriented CEC due to connectivity issues.
44. Prior to the establishment of the CEC, PHD had to fax or manually send data to MOH. The receiving data had to also be manually transcribed and aggregated making it an inefficient process for analysis. Furthermore, the cumbersome reporting has resulted in several delays, limiting communications and feedback to PHD and rural areas. With the intent of increasing productivity through health administration during the pilot, submission of CEC reports was required regularly. However, during the evaluation, it was determined that in many instances reporting was not possible either due to lack of knowledge/experience in using the electronic format of the report, or connectivity was not available.

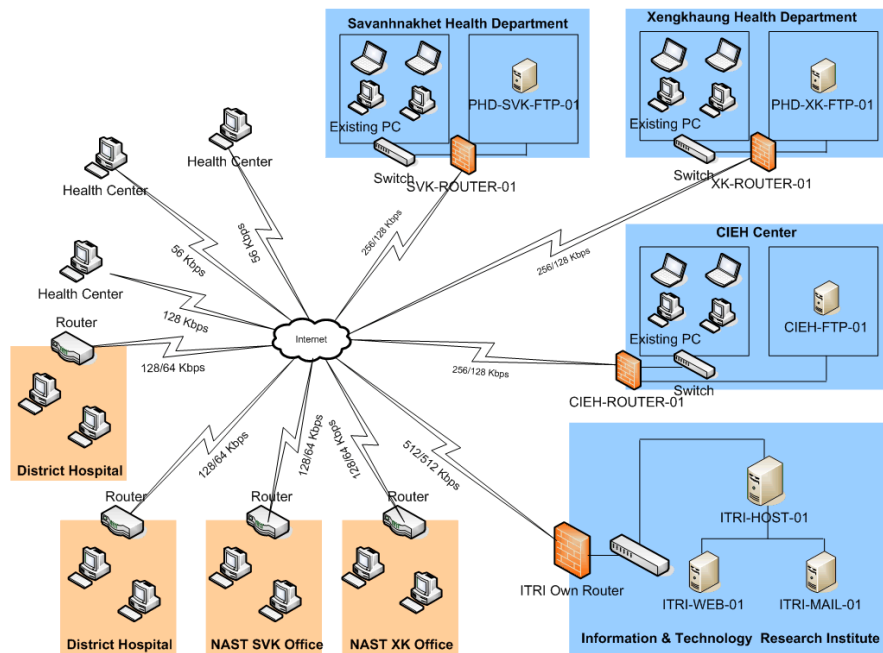
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<sup>23</sup> For example in Canada, a diabetic's blood-glucose monitor can connect to a PC, and blood glucose values can be sent via a website to be monitored by the patient's physician

## IV. Description of Project Success and Lessons Learned

### A. Model Concept of e-Center for Health Network

45. The old cliché that technology is nothing more than a business or process “enabler” resonates. As an enabler of Government, NAST - the government agency responsible for promoting the ‘art of the possible’ must effectively collaborate and nurture ongoing partnerships amongst other government agencies (e.g. MOH). From the outset of the TA, this is one of the quintessential pre-requisite for ensuring success and minimizing risks.
46. Reliability of computing and network resources is integral to the ongoing operation of the CEC. This includes the ability to connect to different network operators to ensure continuity of service. Therefore, the decision to abandon Winphone and use GPRS and have the option to connect to any four (4) network operator was the right choice. Cost of transmission is the same at 1 Kip per 1 kilobyte. Unfortunately, GPRS performance is half the speed of Winphone. However, the team anticipates better bandwidth performance by 2011 due to increased competition in the GPRS-space amongst the 4 domestic telecoms.
47. Although the TA can be implemented without a portal, it would have tremendously undermined the value of the TA. Not only did the Health Education portal become a common medium for communication, but in many instances, the portal has improved the quality of content and presentation of health information. Furthermore, it has provided a common reference point amongst CEC staff, and physicians as they provide care to the community.
48. Each CEC has an email account for sending email and Internet access. It has become the ‘center piece’ demonstrating the power of technology. It was clear during the TA that the lack of access to information or information exchange is a major deterrent to empowerment to innovative health care workers.
49. Based on the TA activities accomplished, an output is the implementation of a CEC for Health network that is integrated from rural HC and DH in XK and SVK to MOH and NAST in VTE. From a technical standpoint, the design is much easier to expand as the prospects for better availability of broadband in the very near future materialize. High level diagram of the final network connectivity and hardware deployed is as follows:



**Diagram 4** (Network and Hardware Configuration)<sup>24</sup>

50. The general consensus between MOH and NAST is that the technical design is appropriate for now and that the Health Education Portal capacity is sufficient. It was also agreed that the solution as deployed is cost-effective with the need to manage the connectivity costs better. The intent in the future is to have the Health Education portal be technically administered either in the Government Data Center or Government Internet Center as part of its long term Government Shared Services model. Under this model, CIEH will work with the government technical shared service entity to provide subject domain expertise and health content.

## B. Implementation Guidance

51. All projects, particularly those that span multiple years, require all participants in the TA to work in close cooperation and collaboration. This also includes the need to be flexible. From the outset of the TA, there have been a number of instances of cooperation between XMG Global and IAs. This included, but is not limited to: sharing transportation costs due to the high cost of renting vehicles, collecting several health information and transcribing health content in digital format, providing support to address skills deficiencies of existing technical support staff, and adjusting to the needs of the TA. One of the learning of the TA is the need for patience, agility, flexibility but yet continue to marshal the project to completion. Altogether, the relationship remained strong despite several setbacks and delays.

52. With the introduction of change where many have never seen a computer, the increase of buy-in at the CEC level was critical. Rather than forcibly using technology alone as the

<sup>24</sup> Taken from CEC Configuration Handbook

reason for change, the TA focused on the type of health information CEC staff and VHWs needed to assist them in being better healthcare providers. Furthermore, it was critical to find out what kind of information they needed, rather than supplying what is currently available on hand. Listening to and responding to the HC and DH staff needs in a tangible manner helped increase the immersion of technology with their work.

53. To ensure the TA delivers on its intended purpose, the CEC (and its evolution) can only occur with connectivity. With connectivity, a phenomena known as the ‘multiplier effect’ will be invoked and in essence create the critical mass or tipping point for change and adoption. If CEC users are connected reliably and has access to the right tools and knowledge, it is possible to improve health care even in rural areas.
54. Procurement of equipment from or through a local supplier not only provides warranty for the equipment, but can also provide ongoing maintenance support beyond the life of the warranty period. This is important, particularly when the frontliner<sup>25</sup> of providing technical support still needs to build their skills.
55. With the introduction of the Internet to exuberant new users, there is a tendency to want access to as much information within the shortest span of time possible. Until the cost of connectivity and budget constraint can be addressed, it was clear that health information found over the Internet must be repackaged to ensure local suitability and relevance.

### **C. Health Education and ICT Training**

56. The IAs and the CECs in particular have been very pleased with the training materials. These are the first of its kind provided to healthcare staff and there is considerable interest in making this available to all rural centers and offices of MOH. Post-training evaluation survey results conducted by the Evaluation Specialist showed a 25% to 300% improvement in computer use and 50% to 400% improvement in email usage among health staff who participated in the trainings.
57. One of the biggest challenges with the training is determining the number of training participants from each province. The approval of the training plan was delayed by determining appropriate course content for specific groups and related costing exercise.
58. The delay, however, provided the team an opportunity to fine tune the training modules and develop additional materials. For example, the team redesigned its training approach to include some interactive training that would allow participants to interact with the computer. Furthermore, training videos were developed to allow CEC users to reference at a later date in time knowing that very few will have access to these technologies at home to further develop their computer knowledge.
59. The training modules developed under this TA was designed to target different levels of users recognizing their roles and needs. The training modules<sup>26</sup> delivered under the TA are as follows:
  - 1) Basic Computer and Application Training
  - 2) Application Training

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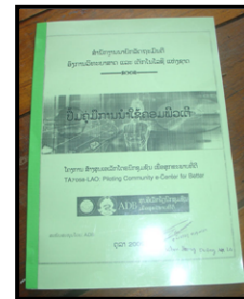
<sup>25</sup> CEC staff is provides the 1<sup>st</sup> level support. PSTO provide 2<sup>nd</sup> level of support.

<sup>26</sup> For more detailed description of the modules and recipients of the training, refer to Appendix B

- 3) Health Education and Computer Exploring Training
- 4) Basic Computer Troubleshooting and Network Maintenance Training
- 5) Web Content Update Training
- 6) Basic Administrator Training

60. Different methods of delivery may have enhanced the training further if the demographics of the participants were known sooner. For example, although there are no official statistics to back up this claim, it would appear that the XK participants were much more eager to learn and had the capacity to learn. Furthermore, XK participants showed to have developed their own teaching resources for their own self-paced learning. Participant age group in XK appears to be younger than those in SVK. And it would appear that interactive learning using the computer was more accepted in XK in general than in SVK. Regardless of age group, both XK and SVK participants all understand the advantages of ICT in healthcare and are eager to develop computer skills.

61. Training and reference manuals were developed for each level of training, printed and hard copies supplied to all sites for use as reference material. Training materials are also accessible on the Health Education portal (<http://www.healthcenter.gov.la/index.php/2009-02-12-06-14-44>). Since level of English proficiency is low amongst participants, all training materials were translated to the Lao language. Training videos were loaded on the desktop computers at each CEC.



62. There was a low turnout of VHWs during the RTC. The lesson learned was the need to give ample time for TNA and mobilization of participants. Furthermore, a system of sharing with colleagues is required since many of the VHWs are often in the field and will not be able to participate in ongoing training.

63. Upon completion of the TA, the CECs and PHD will be left on their own. Given the volume of training materials delivered under the TA and the need to disseminate, manage and keep them current, CIEH should be appointed to be responsible for the management of these learning objects.

#### D. CEC Model Sustainability

64. **Partnerships.** The TA must identify and pursue partnerships that can add value<sup>27</sup>. To cite an example where partnership worked recently, a Japanese mining company brought ADSL to Songkhon. In discussions with the company, the PHD was able to gain access to 64 Kbps ADSL line for \$30 per month. Otherwise, the cost of ADSL would have been cost prohibitive.<sup>28</sup> In an environment where there is never enough budget or resources, partnership will continue to play a major role in sustainability. It is also



<sup>27</sup> The development of the partnership is measured regularly, and potential adjustments are made

<sup>28</sup> The cost of bringing ADSL to a site is estimated at 5M Kip

recommended that exploratory partnership talks be held with the telecommunication companies to negotiate a better rate and help determine the future of interconnectivity in the rural areas.

65. **Cost recovery model.** The TA was not able to explore this model in any depth given the short duration of the pilot. However, development of a cost recovery model could be a separate component of a future TA to ensure it does not get missed. Just like how cost recovery builds greater investor confidence in the private sector, cost recovery builds greater confidence not only with the funding agencies such as the ADB, but by the community as well.
66. **Government support.** The ongoing operations of the CEC Health Network is expected to fall under the Lao e-Government Program. To date the CECs is not officially under the support of the e-Government Plan. It has been discussed during the TA closure with NAST that support of the CEC be made a priority to ensure continuity of service.
67. **Integration with e-Government Master Plan.** The Lao e-Government Program is a response by the government of Lao PDR to align local and national government, bridge the digital divide and build an “electronic tomorrow” for its citizens. The CECs, however, have not been defined as part of the e-Government infrastructure or as an access point for government services in the rural areas. For e-Government to flourish in the rural areas and for the CECs to increase in value, it is recommended that the CECs become one of the key infrastructures to access government services. The CECs would also act as one channel of serving its rural constituents,

## V. Call to Action

68. For the most part, the pilot model developed by the TA is considered the right way to proceed despite the delays and the limited amount of data gathered during the TA. To this point and with or without delays, all sixteen (16) sites are fully functional with benefits to the community. Since a number of lessons have been learned, the following section addresses what the future initiatives must include in the design and address.

## VI. Future Considerations and Recommended Approach

### A. Considerations

69. **Measuring the value of CEC.** With the CECs up and running, the IAs must continue to measure the value of the CEC to the community. The IAs must move toward an ROEV (return on economic value) measurement model by continuing to measure against the baseline conducted at the start of the project. Engaging a joint task force of NAST and MOH in developing value measurements greatly increases the recognition of success and creates the synergy that was initially missing at the outset of the TA. This will also align the goals of the project, improve dialog and clearer expectations, and increase overall continuing implementation success.
70. **Sustainability.** With limited funding, the TA must be designed in a manner promoting ways of delivering sustainable environments in the shortest period of time. Focusing on rolling out new CECs without balancing an approach on how to sustain them is a misstep. Upfront work must be done by the partners in designing and developing programs and linkages that address sustainability before the actual physical implementation of the

CECs. Since sustainability is an ongoing issue that always appears over time, any future work must at least develop a strategy to address points highlighted in paragraphs 64 to 67.

71. **Portfolio Management and Program Approach.** There are several development agency funded projects in Lao PDR at any given time, particularly in a country where the ICT absorption capacity is small with limited population. In other words, there is more project demand than the capacity to fulfill. An improved consolidated and coordinated approach to ICT intervention in the country is needed to address the needs of a longer term sustainable approach from the Government and the donors. This PCR proposes the setup of a portfolio management approach as part of the ongoing planning process. There is also a need for the IAs to adopt a program approach in running any potential future work from this TA alongside other government projects.
72. **Training.** Given the level of ICT competency is low, additional training must be planned for existing and additional CECs. Characteristics of future training must include additional time for interactive learning and mentoring. Proficient users must be identified from the initial training and nurture them to become Super Users that can provide technical leadership in each site. Future initiatives must also allocate budget for instituting a cycle of continuous or refresher training every 4 months between 12 to 18 months after initial implementation. As user proficiency increases over time, the initiative must also build an intervention program to conduct regular polls across stakeholders of the CEC Health Network and adjust the refresher training to include higher level learning.
73. **Health Administration.** Future initiatives should consider a number of health administration-centric projects:
  - 1) Patient appointment setting through Office Calendar.
  - 2) Automating more of the reporting requirements between the HC, DH, PHD and MOH while taking into consideration the limitations of connectivity. This requires revisiting the current process and redesigning the future state for future efficiencies.
  - 3) Creation of health analytics gathered from reports submitted with the option of being published on the Health Education portal. The analytics provided will provide forward looking insights that can proactively manage healthcare in rural areas.
74. **Demonstration of Good Governance.** The final and mandatory component prior to taking it a step further for another initiative is to institute an effective governance model. Successful government models must incorporate hands-on leadership, representation from the community and communication and coordination by government staff. The initiative must be able to demonstrate to the donor agencies that it will not abdicate its responsibility for cross-jurisdictional government projects irrespective of whether the projects cut across government “silos”. Additionally the governance model must structure accountability with outcomes and consequences for not meeting anticipated results.

## B. Recommended Approach

75. At a high level, the recommended approach for a future initiative is as follows;

- 1) **Phase 0: Preparatory Activities.** Project preparatory activities, including but is not limited to:
  - i. Reviewing items discussed under Considerations
  - ii. Partnership discussions (e.g. telecom providers)
  - iii. Defining and establishing Government of Lao's commitment
  - iv. Establishing project governance process
  - v. Reviewing areas of improvement and lessons learned from the sixteen (16) sites. This includes collecting data to measure against the baseline of this TA.
  - vi. Stakeholder analysis, inclusion of doctors as target recipients of Health Education portal
  - vii. Define areas for additional improvements
- 2) **Phase 1: Site Improvement and Selection.** This includes, but is not limited to:
  - i. Consolidation of and development of existing CEC sites
  - ii. Site selection criteria development
  - iii. Site identification assessment
  - iv. Revisit SOE and technical architecture
- 3) **Phase 2: Implementation.** This includes, but is not limited to:
  - i. Rollout of CECs
  - ii. Development of training materials and learning objects
  - iii. Development of health content based on stakeholder analysis
  - iv. Training and RTCs
  - v. Monitoring and evaluation
  - vi. Improvement of Health Education portal
  - vii. Development of health administration applications and analytics

## Appendix A: Risks Identified During Inception Mission

Risk Item	Risk Level	Risk Mitigation
1. Lack of governance and integrated management between NAST, MOH, ADB and XMG.	High	<ul style="list-style-type: none"> <li>• Establish strong governance between NAST and MOH.</li> <li>• MOH must be visibly seen owning and leading this Pilot.</li> </ul>
2. Disagreement on technology standards <sup>29</sup>	High	<ul style="list-style-type: none"> <li>• Develop a common and agreed on principles between NAST and XMG satisfying the following criteria:                             <ol style="list-style-type: none"> <li>1. Emerging business and technology trends</li> <li>2. User skills, capacity and knowledge in the use and support of ICT</li> <li>3. Definition and qualification of 'tried and proven' technology</li> </ol> </li> </ul>
3. Considerable amount of training required for health staff consequently affecting time and budget allocated to the Pilot	High	<ul style="list-style-type: none"> <li>• Determine number of training days required and re-scope effort.</li> <li>• Reallocate work packages including compensation and per diems of consultants affected.</li> <li>• Determine from ADB amount of training budget and per diems of training participants and re-scope effort to suit budget.</li> <li>• Set selection criteria on individuals that will be provided training to ensure suitability, aptitude and capability.</li> </ul>
4. 'Digital divide' and lack of telecommunication infrastructure availability/stability in health centers	High	<ul style="list-style-type: none"> <li>• Immediately test feasibility of alternative methods of communication (e.g. test Winphone).</li> <li>• Select health centers with telecommunication infrastructure.</li> </ul>
5. Impact to project mobilization to travel to rural areas due to exorbitant cost of gas, airfare and van rental	High	<ul style="list-style-type: none"> <li>• Develop business case whether it is feasible to purchase a van for the Pilot</li> <li>• Determine if budget is available for the purchase of a van</li> <li>• NAST or MOH to dedicate a van full or part-time for the Pilot.</li> <li>• Real transport needs to be carefully assessed.</li> </ul>
6. Limited budget to successfully fulfill TA objectives	High	<ul style="list-style-type: none"> <li>• Reduce scope of Pilot by reducing the number of project activities (for example: number of training days) and deliverables.</li> <li>• NAST, MOH and ADB must jointly conduct a Scenario Planning session to determine impact of budget to originally planned TA objectives.</li> </ul>
7. Lack of and instability of power infrastructure	Medium	<ul style="list-style-type: none"> <li>• Consider alternative sources of power such as solar.</li> </ul>

<sup>29</sup> This includes all hardware, software, peripherals and auxiliary equipment such as UPS, power supplies (e.g. surge protectors and power adapters).

Risk Item	Risk Level	Risk Mitigation
		<ul style="list-style-type: none"> <li>Select health centers with power.</li> <li>Provide additional funding to connect power to health centers.</li> </ul>
8. Political and 'change management' issues particularly with the introduction of technology to the office environment	Medium	<ul style="list-style-type: none"> <li>Raise profile and awareness of the Pilot in Government with full support from senior government executives.</li> <li>Continually communicate and provide updates to senior members of Government</li> <li>Implement Change Management program to:               <ol style="list-style-type: none"> <li>Assist health workers cope with change.</li> <li>Minimize disruption due to office politics.</li> </ol> </li> </ul>
9. Length of time for decision making and approval at Management and Committee levels	Medium	<ul style="list-style-type: none"> <li>Project Office must develop a Project Charter that includes procedures on how to handle and respond to Change Requests, Decision Requests and Approvals.</li> <li>Committees and sub committees (i.e. working committees) structure to be simplified with full understanding of committee roles, responsibilities and authority.</li> </ul>
10. Sourcing the appropriate talent to act as Provincial Coordinators and MOH Technical Support based on skill sets	Medium	<ul style="list-style-type: none"> <li>Since MOH currently does not have an IT Team, ensure that Provincial Coordinators and assigned Technical Support personnel have experience with use of computers.</li> </ul>
11. Length of competitive bid procurement process following ADB Guidelines	Low	<ul style="list-style-type: none"> <li>Competitive bid to be adopted is a simplified bidding process based on lowest qualified bid price submitted.</li> <li>Ensure technical specifications and service level agreements (and warranty) are clearly laid out to ensure quick comparison and evaluation.</li> </ul>
12. Integration and leverage requirements with other related	Low	<ul style="list-style-type: none"> <li>Be informed of other MOH related programs and projects that can either positively or adversely impact the piloting of e-Centers.</li> <li>Project Steering Committee agenda must include updates from other MOH or NAST projects.</li> </ul>
13. Misalignment of metrics between XMG, ITEM and ECOS Lao	Low	<ul style="list-style-type: none"> <li>All parties to agree to proactively work together with ESCO.</li> </ul>

Diagram 5 (Risks Identified During Inception Mission)

## Appendix B: Health Education and ICT Training Modules

The health and education ICT training delivered under the TA can be divided into two categories: user-centric training and technical training.

A description of the user-centric provided were as follows:

Course Title (Duration)	Recipients	Description
Basic Computer and Application Training (5 days)	HC	Provide the participants with the knowledge and abilities to: <ol style="list-style-type: none"> <li>1. Manipulate a computer (mouse, operating system interface)</li> <li>2. Use a word processing software and print documents in Lao language</li> <li>3. Use the basic function of spreadsheet and presentation software</li> <li>4. Manipulate files (copy, rename, delete, compress, attach)</li> <li>5. Connect to the Internet and Send/Receive email message in Lao language</li> <li>6. Transfer digital image from camera, scanner to computer and write CD-ROM</li> </ol>
Application Training (2 days)	DH, PHD, PSTO	Enhances the existing abilities of the participants allowing them to: <ol style="list-style-type: none"> <li>1. Use advanced functions for word processing, spreadsheet and presentation software</li> <li>2. Create basic statistics and accounting report using spreadsheet software</li> <li>3. Transfer digital image from camera, scanner to computer and write CD-ROM</li> <li>4. Internet and email usage skill</li> </ol>
Health Education and Computer Exploring Training Courses (1 day)	DH with IT experience	Provides the participants with the: <ol style="list-style-type: none"> <li>1. Understanding CEC project's objectives, inputs, outcomes and impacts.</li> <li>2. Ability to use computer and CD-ROM for showing health contents.</li> <li>3. Knowledge to educate the communities using computer as a channel for delivering selected health contents.</li> <li>4. Knowledge on community involvement in CEC usage.</li> <li>5. Opinions and lessons on revolving fund or cost recovery for the sustainability of the CEC.</li> </ol>
Basic Computer Troubleshooting and Network Maintenance (3 days)	DH, PHD, PSTO	Provide the participants with the knowledge and abilities such as: <ol style="list-style-type: none"> <li>1. Installing operating system, software/removing software</li> <li>2. Backup and restoration of users data</li> <li>3. Managing network printers and shared internet connection</li> </ol>

Course Title (Duration)	Recipients	Description
		<ol style="list-style-type: none"> <li>4. Managing network equipments (hubs, Winphone<sup>30</sup>) and software<sup>31</sup></li> <li>5. Replacing basic computer hardware components (Power Supply, CPU, Fan ...)</li> <li>6. Management of security, access rights and remote technical support</li> </ol>

A description of the technical training<sup>32</sup> provided as follows:

Course Title (Duration)	Recipients	Description
Web Content Update and Administrator Training <sup>33</sup> (2 days)	Administrative Staff with IT experience	<p>Provide the participants with the knowledge and abilities such as:</p> <ol style="list-style-type: none"> <li>1. Joomla! Software</li> <li>2. Uploading and updating articles</li> <li>3. Creating, managing and moderating forums</li> <li>4. Managing and monitoring FTP</li> <li>5. Managing user accounts</li> <li>6. Managing shared folder</li> <li>7. Managing network and sharing printers</li> <li>8. Managing data and system backup</li> <li>9. Customize web environment</li> <li>10. Troubleshooting</li> </ol>

**Diagram 6** (Health Education and ICT Training Modules)

<sup>30</sup> Winphone is an integrated communications software that uses the cellular, broadband or basic telephone infrastructure to transmit and receive voice or data.

<sup>31</sup> Winphone training was replaced with GPRS device training

<sup>32</sup> The focus on the technical training was primarily on web administration and simple system administration.

<sup>33</sup> Web Administration Training (WAT) is an abridged training course, which included the Web Content Update and Basic Administrator Trainings.

## Appendix C: Report on Training Statistical Analysis (Initial Session)

The training plan was not fully implemented as agreed. During training conduct and implementation, there were variations from the planned target participants. Most participants attended all the courses provided not just those specifically designed for their needs. This resulted in more people in each course than expected and desirable. As a result, trainings slowed down and two (2) courses were delayed until the implementation of the second wave of training in March/April at no extra cost. Prior to this formal training, XMG Global analysts provided informal on-the-job support to MOH and NAST.

### ICT Training Participants (Planned)

	PSTO	PHD	DH	HC
Basic Computer Troubleshooting & Networking Maintenance	4	4	8	
Application Training	4	4	16	
Health Education & Computer Exploring Training				8
Basic Computer and Application Training				8

**Diagram 7** (Distribution of Planned Target ICT Training Participants in XK and SVK)<sup>34</sup>

In addition, as some of the targeted PHD and DH staff could not attend, but additional PSTO attended instead. This diluted some of the expected gains for health staff. As detailed in the Baseline Survey Report, PSTO staff in the pilot areas possess limited ICT skills. This explains why they were anxious to attend these trainings and subsequently made up a larger than expected portion of the participants in the ICT trainings conducted.

While all HC staff attended as planned, only about 40% of expected DH staff attended. However the objective of this TA - which is to provide ICT education and skills to the 'frontliners' or field implementers, led by the HC and DH was in the main achieved. While capacity-building for decision-makers (NAST, PSTO, PHD and MOH) is as critical as training the frontliners, health staff at the district and village/community levels should be prioritized because they directly provide healthcare services to the TA beneficiaries - the rural communities in XK and SVK. A total of 60 staff participated in the ICT trainings; 43 men and 17 women. See diagram 8.

Participants of the health education trainings in both XK and SVK were as expected mostly DH and HC staff in addition to VHWs, which is in keeping with the TA's objective of improving the frontliners' skills on health promotion and education to rural community members. A total of 290 staff and community members participated in the health education training, 164 men and 126 women. See diagram 9.

<sup>34</sup> Same number of planned target participants for XK and SVK.

## ICT TRAINING

XK	PSTO	PHD	DH	HC	NAST	MOH
Basic Computer Troubleshooting & Networking Maintenance	9	2	8	8	2	1
Application Training	9	2	8	8	2	1
Health Education & Computer Exploring Training	9	2	8	8	2	1
Basic Computer and Application Training	9	2	8	8	2	1
<b>TOTAL</b>	<b>9</b>	<b>2</b>	<b>8</b>	<b>8</b>	<b>2</b>	<b>1</b>

SVK	PSTO	PHD	DH	HC	NAST	MOH
Basic Computer Troubleshooting & Networking Maintenance	9	1	9	8	2	1
Application Training	9	1	9	8	2	1
Health Education & Computer Exploring Training	9	1	9	8	2	1
Basic Computer and Application Training	9	1	9	8	2	1
<b>TOTAL</b>	<b>9</b>	<b>1</b>	<b>9</b>	<b>8</b>	<b>2</b>	<b>1</b>

*\*Conducted: XK- from 7 September to 2 October 2009; SVK- from 12 October to 6 November 2009*  
*\*\* Total Participants: XK- n=120, SVK- n=120*

**Diagram 8** (Distribution of ICT Training Participants in XK and SVK)<sup>35</sup>

## HEALTH EDUCATION TRAINING

XK	PSTO	PHD	DH	HC	NAST	MOH
Latsene, District Phaxay	1	1	2	27	1	1
Khetthai, District Phoukout	1	1	3	11	1	1
Napha, District Kham	1	1	1	10	1	1
Khet Gnoun, District Khoun	1	1	2	67	1	1
<b>TOTAL</b>	<b>4</b>	<b>4</b>	<b>8</b>	<b>115</b>	<b>4</b>	<b>4</b>

SVK	PSTO	PHD	DH	HC	NAST	MOH
Dong Savanh, District Sepone	2	1	2	24	2	0
Nachan, District Atsaphangthong	2	1	1	21	2	0
Taleo, District Champhone	2	1	2	24	1	0
Nakala, District SongKhon	2	1	2	57	1	0
<b>TOTAL</b>	<b>8</b>	<b>4</b>	<b>7</b>	<b>126</b>	<b>6</b>	<b>0</b>

*\*Conducted: XK- from 7 September to 2 October 2009; SVK- from 12 October to 6 November 2009*  
*\*\* Total Participants: XK- n=139, SVK- n=151*

**Diagram 9** (Distribution of Health Education Training Participants in XK and SVK)<sup>36</sup>

<sup>35</sup> The same staff attended each of the courses offered.

<sup>36</sup> Figures are actual individual participants. HC figures include staff, VHWs and members of the community.

## Appendix D: Report on Training Statistical Analysis (Refresher)

The Refresher Training Course (RTC) and Web Administration Training<sup>37</sup> (WAT) began in March 2010, almost six (6) months after the initial trainings in XK and SVK.

The refresher trainings enhanced the use of ICT for quality healthcare service delivery primarily among DH and HC staff, and secondarily among PHD and PSTO personnel. One hundred and seventeen (117) staff attended the RTC (59 women and 58 men). In addition 6 VHWs (2 women and 4 men) also attended the refresher trainings for the HC staff. It was disappointing that more VHWs did not attend this additional on-site training.

XK	Total No. of Participants	SVK	Total No. of Participants
<b>District Hospitals</b>		<b>District Hospitals</b>	
Kham DH	10	Songkhon DH	5
Phaxay DH	9	Atsaphanthong DH	8
Khoun DH	3	Champhon DH	14
Phoukout DH	7	Sepone DH	3
<b>Health Centers</b>		<b>Health Centers</b>	
Napha HC	6	Nakala HC	2
Ladsen HC	6	Taleo HC	3
Khet Gnoun HC	3	Nachan HC	5
Ketthai HC	7	Dong Savanh HC	4
<b>PHD</b>	<b>3</b>	<b>PHD</b>	<b>5</b>
<b>PSTO</b>	<b>7</b>	<b>PSTO</b>	<b>7</b>
<b>Total</b>	<b>61</b>	<b>Total</b>	<b>56</b>

Diagram 10 (Number of Refresher Training Participants, XK and SVK)

A total of 8 (3 women and 5 men) NAST and MOH staff, meanwhile, underwent the 5-day Basic Administrator and Web Administration trainings to further enhance the IT and administrative support needed for continued CeC operations and sustainability.

	No. of Participants
NAST	5
MOH	3

Diagram 11 (Number of Basic Administrator and Web Administration Training Participants)

<sup>37</sup> Web Administration Training (WAT) is an abridged training course, which included the Web Content Update and Basic Administrator Trainings.

## Appendix E: Health Education Portal (Snapshot of Website)

