Searching for a Feasible Model for the Implementation of ENRAP in China

**Experiences from Two Projects of
Utilizing ICTs for Rural Development:
PATI and ENRAP**

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December 6, 2004

Chapter 1
Introduction

As a person with an ICTs background from China, I chose International Development Studies (IDS) as my graduate study program with the idea of combining these two seemingly distinctive fields. ICTs-for-Development (ICT4D) is a new direction in the development field and has presented positive impacts since its debut. However, there remains relatively scarce quantitative evidence on the impacts of ICTs as a potential tool to change the traditional ways of implementing developmental projects. With the intention of providing input into the small database of the quantitative evidence, I decided to perform my research, in general, on ICTs development in China, especially focusing on the problem of the digital divide between rural and urban areas within China, at the beginning of my research design.

Obtaining the opportunity to conduct an internship at IDRC with PAN Asia is an important turning point for my research design. The direction of my research has been shaped by my involvement with ENRAP activities in China. ENRAP is an IFAD initiative in collaboration with IDRC. ENRAP-China has attempted to implement a variety of methods to encourage usage and diffusion of ICTs in IFAD projects in China. However, the results have been not entirely satisfactory. There are factors related to infrastructure establishment, availability of appropriate contents, personal attitudes, and many others concerning social, cultural, political and economic reasons. In addition, the specific factors are unknown to the ENRAP headquarter in Ottawa. More intensive investigations are needed in order to discern the reasons that challenge the implementation of ENRAP actions in China. As a result, I, as an ICT4D person who can speak Chinese, have become a perfect candidate. Meanwhile, I decided to combine my research with my internship responsibilities and to narrow my original research topic to the challenges facing ICTs utilization and diffusion in rural development based on the ENRAP activities in China.

With the original intention to investigate the challenges facing the current implementation of the ENRAP project in China, I planned my field trip to the IFAD project site in Guangxi, China. However, the difficulties in establishing connections with the project staff and obtaining permission from the government officials administering the Guangxi project site made the visit impossible. Fortunately, the opportunity to attend the Conference on Sharing Experience of Implementing Poverty Alleviation through Access to ICTs in Beijing introduced me to the UNDP project of Poverty Alleviation through Access to ICTs, which has helped shape my research design.

With considerable similarities between the two projects, the obvious comparisons between the UNDP and the ENRAP projects, in regards to their implementations in China, attracted my attention during the conference in Beijing. Afterwards, in the subsequent ENRAP Regional Annual Meeting/Mid-term Review Workshop held in Bangkok, the distinct attitude of the IFAD project staff as compared to that of the UNDP project staff, in regards to their understanding and acceptance to the projects, confirmed

my determination to combine the two projects into my research. With positive experiences and negative lessons from both of the UNDP and the ENRAP projects, I intend to search for a feasible model of implementing ICTs projects for rural development in China, which will be used to make recommendations to ENRAP for its future activities in China.

Chapter 2
Literature Review

Literature review is an indispensable part of a research. It provides a critical look at the existing literature that is significant to the research being carried out. In order to constitute a comprehensive context for my research, six main topics will be reviewed in this chapter: What are ICTs, ICTs and Globalization, Globalization and Development, ICTs and Development, ICTs and Rural Development, Available Models of ICTs for Rural Development, and Review of ICTs-Related Issues in China. Different sources of literature will be referred, evaluated, and related to my research.

What are ICTs?

The term 'ICT', which refers to Information and Communication Technology, has appeared frequently in various literatures during the past few years ever since its debut in 1996, when Dennis Stevenson coined this terminology in his report, promoting ICT utilization in public schools in the UK to the UK government.[1] With the identical meaning to each other, the acronyms 'ICT' and 'ICTs' have almost replaced 'IT', referring to Information Technology, which now appears to "be restricted to the more technical components or elements of the subject matter."[2]

In the early stage, 'IT' was used to signify new technologies that are mainly related to computer applications, booming since late 1970s, when microcomputers and software became available to the general public.[3] According to the definition from *Encyclopedia Dictionary Online*, IT implies "the technology required for information processing. In particular the use of electronic computers and computer software, to convert, store, process, transmit, and retrieve information."[4]

'ICT' was replacing 'IT' since the invention and popularization of the Internet in the late 1990s. Represented by the Internet, advanced communication technologies have dramatically changed people's lives in terms of economic, social and political transformations. While computer applications were largely focused on the processing of information, the Internet highlighted the communication of information. Under this circumstance, according to Stevenson, adding 'communications' to the more familiar 'IT'

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[1] *Information from the Website of Paving the Future of Advanced S&T in the Country.*
 Philippine Council for Advanced Science and Technology Research and Development.
 < http://www.pcastrd.dost.gov.ph/modules.php?name=Home&file=priorityAreas4>.
 Retrieved 30 August 2004.
[2] Etta, Florence Ebam and Parvyn-Wamahiu, Sheila Ed. *The Experience with Community Telecentres.* Ottawa:
 International Development Research Centre, 2003. Vol. 2 of *Information and Communication Technologies
 for Development in Africa.* 3 Vols. 2003. P12.
[3] *Information from Bill Gates Home Page.* The Microsoft Corporation. July 2004.
 < http://www.microsoft.com/billgates/bio.asp>. Retrieved 30 August 2004.
[4] *Definition from Computing Dictionary Online.* TheFreeDictionary.Com Website.
 < http://encyclopedia.thefreedictionary.com/Information+technology>. Retrieved 30 August 2004.

could accurately reflect the increasing role of both information and communication technologies in all aspects of society.[5] This vision has been shared by other researchers, one of whom being Heeks, who believes that 'ICT' could represent the convergence of digital computing and telecommunications.[6]

Different versions of the definition for ICTs exist, with the earlier versions tending to emphasize on the applications of new technologies, mainly computers and the Internet, which are based on digital technologies handling binary digits. An example refers to an incomplete description of ICTS from Association of African Universities - "ICTs and the Internet are used almost interchangeably."[7] Similarly, in a 1995 World Bank discussion paper, Hanna *et al.* specifies ICT as computer and telecommunication applications only:

> "ICT consists of the production-side (computer hardware and software, telecommunications equipment, and microelectronics-based industries) as well as the use-side (applications of IT in all economic sectors – including flexible manufacturing, financial transaction systems, information services, electronic publishing and management information systems.)"[8]

Although computers and the Internet have provided unprecedented opportunities to people worldwide, especially the poor, cutting-edge ICTs applications might not always be the most appropriate approach for development. Contributions from a group of authors, such as Kenny[9], Kole[10], Jensen[11] and Lamoureux[12], have justified this conclusion and suggested a combination of both old and new ICTs for poverty reduction, in view of current barriers to the use of new ICTs in poor areas. Findings of Kenny *et al.* pinpoint the significance of barriers to the use of advanced ICTs for the poor. Kole's specific study on African women's use of the Internet presented that information from the Internet was reorganized and redistributed via traditional print publications, radio, television, and even oral communication. Jensen and Lamoureux present successful cases of using low-cost radio communication systems to enhance development in developing countries. Quite illuminating, Hewitt de Alcantara has further elucidated the relationship between

[5] Stevenson, Dennis. *Information and Communications Technology in UK Schools: an Independent Inquiry.* Report to the UK Government, 1997: 12. *Literature Online.*
< http://rubble.ultralab.anglia.ac.uk/stevenson/ICTUKIndex.html>. Retrieved 30 August 2004.

[6] Heeks, Richard. "I-Development no e-Development: Special Issue on ICTs and Development." *Journal of International Development* 14 (2002): 1-11. P1.

[7] *Information from Report on The Use and Application of Information and Communication Technologies in Higher Education Institutions in Africa.* Association of African Universities. September 2000.
< http://www.aau.org/english/documents/aau-ictreport-p3.htm >. Retrieved 30 August 2004.

[8] Hanna, Nagy, Guy Ken, and Arnald, Erik. *The Diffusion of Information Technology: Experience of Industrial Countries and Lessons for Developing Countries.* Washington, D.C.: The World Bank, 1995. P xi.

[9] Kenny, C. et. al. *ICTs and Poverty.* The World Bank. *Literature Online.* August 2000.
<http://www.worldbank.org/poverty/strategies/srcbook/ict0829.pdf>. Retrieved January 2004.

[10] Kole, Ellen S. *African women speak on the Internet: Research Report Electronic Survey WomanAction Africa.* May 2000. <http://www.xs4all.nl/~ekole/public/endrapafrinh.html>. Retrieved 6 September 2004.

[11] Jensen, M. *The Wireless Toolbox: A Guide to Using Low-cost Radio Communication Systems for Telecommunication in Developing Countries – An African perspective.* IDRC. January 1999. *Literature Online.*
<http://web.idrc.ca/en/ev-10592-201-1-DO_TOPIC.html>. Retrieved 6 September 2004.

[12] Lamoureux, F. "RadioNet: Community Radio, Telecentres and Local Development". *Telecenter Evaluation: A Global perspective.* Ed. Gomez and Hunt. Ottawa: IDRC, 1999.

old and new ICTs -"The ICT revolution is lending old technologies new relevance."[13] Utilizing advanced ICTs, traditional ICTs can enhance the extent of their applications. Some examples are mobile telephones, digital radio stations, satellite television, etc.

Limitations of those definitions at the early stage have been pinpointed and analyzed by various researchers. Adeya[14], Heeks[15], and Harris[16] have classified 'old' and 'new' ICTs, and emphasized the importance of incorporating 'old' ICTs into the definition as well. According to them, it is incomplete to refer ICTs merely to computers and the Internet – the new ICTs, excluding the more traditional and usually more common technologies of radio, television, telephones, and even newspapers, etc. – the old ICTs, which are still efficient transmitters of information, especially in developing countries. Summarized by Heeks, ICTs should be composed of four components: digital technology (computers and the Internet), intermediate technology (radio, television and telephone), literate technology (books, newspapers, prints), and organic technology (brain and sound waves)[17].

There is currently not an uniformed definition of ICTs, although the term was broadly referenced in almost all areas. The more comprehensive definitions have been specified by prestigious development agencies. In 2002, ICTs were defined by the World Bank, as consisting of not only "hardware, software, networks", but also "media for collection, storage, processing, transmission, and presentation of information (voice, data, text, images.)"[18] Similarly, IDRC has summarized that the Internet is just "one more wave of ICT innovations that started long ago," and ICTs should include previous inventions such as the printing press, photography and firm, the phonograph, telephone and telegraph, radio and television, the microchip, the photocopier, the personal computer, satellites and wireless phones, etc.[19]

ICTs and Globalization

The process of globalization has been accelerated dramatically with the introduction and application of ICTs in the past two decades. Researchers such as Bhalla[20], James[21], and Rajaee[22] have confirmed the importance of ICTs on globalization, being a driving force

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[13] Hewitt de Alcantara, Cynthia. "The Development Divide in a Digital Age: an Issues Paper. " *Technology, Business and Society Programme Paper of the United Nations Research Institute for Social Development (UNRISD).* No. 4 (August 2001): P vi.

[14] Adeya, C. Nyaki. *ICTs and Poverty: a Literature Review.* Ottawa: International Development Research Centre, 2003. P30-31.

[15] Heeks. P3.

[16] Harris, Roger W. *Information and Communication Technologies for Poverty Alleviation.* Kuala Lumpur: UNDP-APDIP, 2004. P5.

[17] Heeks, P3.

[18] The World Bank. "ICTs and MDGs: a World Bank Group Perspective." December 2003. <http://info.worldbank.org/ict/assets/docs/mdg_Complete.pdf>. Retrieved 13 April 2004.

[19] The International Development Research Centres. *Facing the Screen: ICTs in Latin America and the Caribbean.* Ottawa: IDRC, 2003. P20.

[20] Bhalla, A.S. Ed. *Globalization, Growth and Marginalization.* Ottawa: IDRC, 1998. P8.

[21] James, Jeffrey. *Globalization, Information Technology and Development.* New York: St. Martin's Press, 1999. P2.

[22] Rajaee, Farhang. *Globalization on Trial: The Human Condition and the Information Civilization.* Ottawa: IDRC,

to enhance communications and interactions between people across the borders. The invention and pervasive usage of ICTs in mid-to-late 20th century have indicated a third industrial revolution – the Information Revolution. This new stage has been labeled 'informationalism' by Castells as a mode of development on the basis of knowledge and information.[23] Globalization is an international phenomenon that is created in the 'informationalism' stage. As Mittelman has defined, globalization refers to:

> "multidimensional transnational processes that allow the economy, politics and culture of one country to penetrate those of another – processes that lead to the compression of the time and space aspects of social relations."[24]

On the other hand, the reverse influence of globalization on ICTs progress cannot be ignored. As proposed by Streeten, the growth of ICTs and globalization "mutually reinforce each other."[25] Streeten's view that intensified competitions under globalization can stimulate ICTs progress has been responded by James, who deems ICTs as a source of comparative advantage between countries, in terms of their capacities to attract foreign investment and to involve into international trade.[26] Hanna *et al.* has demonstrated this conception by referring the experience of East Asian countries, such as Japan, Korea and Singapore, that rapid absorption of ICTs can increase competitiveness in conditions of rapid economic growth.[27] A more comprehensive description of the influence of globalization on ICTs is provided by Barbu *et al.*: the extent to which developing countries benefit from globalization will:

> "largely depend on the development of their 'information infrastructure' – the increasingly integrated mix of telecommunications networks, computing hardware and software, and value-added services required for the efficient transmission of information, together with the related policy, legal, and institutional frameworks."[28]

Globalization and Development

Development, as defined by Pieterse, is "the organized intervention in collective affairs according to a standard of improvement", which is constituted and evaluated variedly according to class, culture, historical context and relations of powers.[29] Agreeing with improving the situations in underdeveloped areas being the very essence of development, Schuurman has pointed out that inequality should be the main focus for development

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    2000. P7.

[23] Castells, Manuel. *End of Millennium.* Malden: Blackwell Publishers Inc., 1998. P7.

[24] Mittelman, James E. Ed. "Rethinking the International Division of Labour in the Context of Globalization." *Third World Quarterly* (1995), Vol. 16, No. 2.

[25] Streeten, Paul. "Globalization: Threat or Salvation?" *Globalization, Growth and Marginalization.* Ed. Bhalla, A.S. Ottawa: IDRC, 1998.

[26] James, P??.

[27] Hanna, Nagy, Boyson, Sandor, and Gunaratne, Shakuntala. *The East Asian Miracle and Information Technology: Strategic Management of Technological learning.* Washington, D.C.: The World Bank, 1996.

[28] Barbu, Alain, Dominguez, Rafael, and Melody, William. *Information Infrastructure: The World Bank Group's Experince.* Washington: The World Bank, 2001. P vii.

[29] Pieterse, Jan Nederveen. *Development Theory: Deconstructions/Reconstructions.* London: SAGE Publications, 2001. P3.

rather than diversity or difference - "inequality of access to power, to resources, to a human existence – in short, inequality in emancipation."[30] Various forms of inequalities, such as economic, social and political ones, pose challenges upon people who attempt to close these gaps. New challenges have been created under globalization.

As James, Bhalla and lapeyre (9), have concluded, globalization have reinforced or aggravated income gaps and technology gaps between nations since not all countries are equally equipped to benefit from this process. Persistent poverty and increasing inequality are standing features of globalization. Inequality, uneven development, exclusion, marginalization are some of the keywords summarized by Bhalla and Lapeyre, when it comes to the costs of globalization.

Globalization has changed the international division of labour and created opportunities for the poor. According to an ILO report, during the past decade, globalization has benefited 200 million poor people.[31] However, these beneficiaries locate primarily in China and India, with much of the rest of the world widening the gap between rich and poor countries.[32] According to Hoogvelt, development is dead for those who are excluded from the integrated global network, which is constituted by information and new technologies.[33] Castells's concept of "switched-off territories and peoples" is equivalent to that of Hoogvelt's.[34]

This new challenge related to globalization is the so-called 'digital divide', which has largely prevented the equal sharing of knowledge worldwide and led to "information and knowledge poverty" due to unequal access to ICTs[35]. Once the concept of the digital divide was created by the US government in 1995, it has soon become an international development issue.[36] The fear of the existence of the digital divide results from the idea that the fruits of globalization in the information age will be caught only by those people who have access to ICTs; for others, it only means greater isolation and increased poverty.

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[30] Schuurman, Frans J., ed. *Globalization and Development Studies: Challenges for the 21st Century.* London: SAGE Publications, 2001. P9.

[31] *Information from Axiomnews.* The Website of Journalism at Work for Social Change. 12 March 2004. < http://www.axiomnews.ca/2004/March/mar12.htm>. Retrieved 7 September 2004.

[32] Ibid.

[33] Hoogvelt, AMM. *Globalisation and the Postcolonial World: The New Political Economy of Development.* Macmillan: Basingstoke, 1997.

[34] Castells, Manuel. *End of Millennium.* Malden: Blackwell Publishers, 1998. Vol. III of *The Information Age: Economy, Society and Culture.* 3 Vols. 1996-98. P 354.

[35] *Information from CIDA's Strategy on Knowledge for Development through Information and Communication Technologies.* Canadian International Development Agency. 13 February 2003. < http://www.acdi-cida.gc.ca/ict >. Retrieved 19 November 2003.

[36] Servon, Lisa J. *Bridging the Digital Divide : Technology, Community, and Public Policy.* Malden: Blackwell Publishing, 2002. P 2.

One of the most comprehensive definition of the digital divide is summarized by Hewitt de Alcantara - "the enormous disparities in access to ICT equipments and services that exist between one region and another, or one country and another, as well as between groups divided by income category, ethnic origin or gender."[37] This description should be granted values in the sense that it covers not only the divides between countries, but also those within countries of various reasons. The latter is easily ignored by many researchers.

The unequal ICT development has significantly contributed to the enlarged income gaps between countries, or even with a country, due to the fact that ICTs become the essential requirement to benefit from the world market in the information era. As Castells has described, development subjects cannot afford not to be part of the informational network, because "information generation, processing, and transmission become the fundamental sources of productivity and power." [38] As the divide grows wider, it aggravates the existing divisions of power and the inequalities in access to resources between developing and developed countries. If only a select number of groups gain the benefits of ICTs while others continue to lag behind, the digital divides between countries will continue to be enlarged.

ICTs and Development

ICTs, as efficient tools for disseminating information and knowledge, have been recognized as indispensable to the process of development. Harris says, "Information and knowledge are critical components of poverty alleviation strategies, and ICTs offer the promise of easy access to huge amounts of information useful for the poor."[39] The importance of information has been confirmed by Kofi Annan in his message to the World Summit on the Information Society in Geneva, December 2003:

> "we live today in an ear in which information is omnipresent, through newspapers, radio, television and the internet; in which information is transforming the ways we live, learn, work and relate; and in which information is indispensable – for health, agriculture, education and trade, and for cultivating the engaged and learned citizenry that is essential for democracy to work."[40]

While numerous researchers attempt to demonstrate the link between ICTs and development, concerns still exist, referring to the debate on the priority of ICTs and other development imperatives. It is recognized that the need for providing ICTs in poor areas tend to be overshadowed by their sever deficiencies in necessities, such as clean water,

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[37] Hewitt de Alcantara, P17.
[38] Castells, Manuel. *The Rise of the Network Society.* Malden: Blackwell Publishers, 1998. Vol. III of *The Information Age: Economy, Society and Culture.* 3 Vols. 1996-98. P 21.
[39] Harris, P5.
[40] Annan Kofi. *Message from Kofi Annan, Secretary-General of the United Nations.* WSIS 2003: Connecting the World, The World Summit on the Information Society, First Phase: Geneva, 10-12 December 2003. London: Agenda Publishing, 2003. P1.

food, basic education, etc. As Prof Sardar has illustrated, "With the money needed to enter the Internet world, you could feed a family in Bangladesh for a year."[41]Dr. Hudson has further explained: "Until recently, telecommunications was considered a luxury to be provided only after all the other investments in water, electrification and roads had been."[42] However, this concern has been relieved from experiences of utilizing ICTs for development. One of the examples is the empirical investigation with 45 Least Developed Countries (LDCs), in regards to the link between ICT infrastructure and social development in poor regions. Through the investigation, Meso and Duncan have established a clear correlation between levels and growth rates of ICT infrastructure and social development, including economy, education and health.[43] Based on these studies, the World Bank has defined the relationship between ICTs and other development imperatives as complementarity rather than tradeoffs, i.e. ICT is a powerful tool when used appropriately as part of an overall development strategy.[44]

It has been long since the potentials of utilizing ICTs for development has been recognized. As early as in 1971, the UN proposed the utilization of electronic computers in developing countries, in view of the opportunities that they could produce.[45] IDRC is another one of the first development agencies, which have conceived and maintained programs in the information sciences for developing countries since 1970s. [46] In late 1980s, Munasinghe has stated in his writing that new technologies provide "a unique opportunity for the Third World to accelerate its development efforts"[47]. During these years, major aid agencies and donors, as well as many developing country governments, are becoming increasingly enthusiastic about the prospects for improving the effectiveness of their development activities by making ICTs available to the poor. The position of ICTs for development has been fully established since the G-8 initiated the 'Digital Opportunity Task Force' (DOC force) to harness the forces of ICTs in order to narrow social and economic inequalities in September 2000. The World Bank report explaining the link between ICTs and Millennium Development goals (MDGs), as well as the World Summit on the Information Society in Geneva in December 2003 and the coming one in November 2005 represent the acceptance of incorporating ICTs into the overall development strategy.

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[41] PanosLondonOnline. *The Internet and Poverty: Real Help or Real Hype?* June 1998. *Literature Online.*
    < http://www.panos.org.uk/global/reportdetails.asp?id=1002&reportid=1049>. Retrieved 9 September 2004.
[42] PanosLondonOnline. Retrieved 9 September 2004.
[43] Meso, Peter and Duncan, Nancy. "Can National Information Infrastructures Enhance Social Development in the
    Least Developed Countries? An Empirical Investigation." *Journal of Global Information Management* (2000),
    Vol.8 No.4.
[44] The World Bank. *ICT and MDGs: A World Bank Group Perspective.* Washingtong, D.C.: The World Bank Group,
    2003. P7.
[45] The United Nations. *The Application of Computer Technology for Development.* New York: United Nations, 1971.
[46] Akhtar, Shahid. "IDRC and Information Development: Twenty Years of Achievement." *Information Development:
    The International Journal for Librarians, Archivists and Information Specialists.* Vol. 6, No. 1. January 1990.
    P 2-3.
[47] Munasinghe, Mohan. Ed. *Computers and Informatics in Developing Countries.* Toronto: Part of Reed International
    P.L.C., 1989. P2.

However, skeptics hold their ground in regards to the impacts of ICTs on the poor. Sardar [48], Jayaweera [49], and Kaye and Little [50] have criticized the dysfunctional development pathways through ICTs based on a cultural perspective. They share the view that ICT is not culturally neutral but developed in a cultural context dominated by developed countries. Sardar sees new technologies as a new phase in a long history of the West's attempt to colonize not only the territory and the body, but also the mind of the Third World. Jayaweera warns the possibility of contradiction of ICTs with local social relations, because the West tends to create "a single dominant economy, a single polity and a single culture." Kaye and Little have provided examples that office systems assume the user's compliance with the design culture and inevitably lead to cultural clashes.

The question arises - What do ICTs mean for development? According to the Unities nations Development Programme (UNDP), the importance of ICTs is continuously growing, and they "represent a novel and effective tool to help advance sustainable human development."[51] ICTs can provide poor people an unprecedented alternative route to emerge from poverty and change their lives accordingly. The special characteristics of ICTs allow faster delivery and greater varieties of technical assistance, such as distance education, telemedicine, and e-business, etc. to even the most isolated areas. In addition, the information networks connected by ICTs can help diffuse appropriate knowledge to different communities, women, youth and the socially disadvantaged, which can contribute to achieving the final goal of empowerment. The combination of ICTs and development has the potential to decrease various inequalities between developed and developing countries. As Lanvin and Qiang has demonstrated, the correlation across countries of the human development index (HDI) and the networked economy index (NEI) is above 0.8, suggesting a link between welfare and the existence and us of ICTs in developing countries.[52]

ICTs and Rural Development

After the 1995 World Summit for Social Development in Copenhagen, the international community developed a broad consensus that reducing poverty should be one of the three main factors focused by all development actors.[53] Five years later, the development goals of the Millennium Summit determined to reduce by half the proportion of people living in

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[48] Sardar, Z. "Cyberspace as the Darker Side of the West." *Cyberfutures: Culture and Politics on the Information Superhighway.* Sardar, A and Ravetz, JR. Eds. New York: New York University Press, 1996. P14-41.

[49] Jayaweera, N. *The Political Economy of the Communication Revolution and the Third World: A Theoretical Analysis.* Singapore: AMIC, 1986. P7.

[50] Kaye, G. Roland and Little, Stephen. "Dysfunctional Development Pathways of Information and Communication Technology: Cultural Conflicts." *Information Technology Management in Developing Countries.* Ed. Dadashzadeh, Mohammad. London: IRM Press, 2002. P186-200.

[51] *Information from the UNDP Website.* The United Nations Development Programme. <http://www.undp.org/info21/index5.htm>. Retrieved 13 April 2004.

[52] Lanvin and Qiang. "Poverty 'E-readication': Using ICT to Meet MDGs: Direct and Indirect Roles of E-Maturity." Dutta, Lanvin and Paua. Ed. *Global IT Report 2003-04.* Oxford: Oxford University Press, 2003.

[53] *Information from the Website of the United Nations.* Economic and Social Development at the United Nations. 31 May 2004. <http://www.un.org/esa/socdev/wssd/index.html>. Retrieved 12 September 2004.

hunger and extreme poverty by 2015.[54] Poverty, which results from a variety of factors intertwined by economic, social, political, cultural and the others, is a long lasting challenge facing development. In order to achieve the MDGs, particularly the one relating to poverty, rural poverty should be given priority. According to IFAD, some 900 million people – 75 percent of the world's 1.2 billion extremely poor – live in rural areas.[55]

Poverty is a consequence that results from a variety of factors intertwined by economic, political, social, cultural and other issues. Traditionally, poverty has been measured based on income levels. The World Bank uses reference lines set at $1 and $2 per day in 1993 Purchasing Power Parity (PPP) terms, which measure the relative purchasing power of currencies across countries.[56] However, this definition cannot represent the multiple dimensions of poverty. As suggested by the World Bank in 2000, poverty also includes social indicators for education, health, access to services and infrastructure, and new indicators such as risk, vulnerability, social exclusion, access, etc.[57]

d'Orville raised the point that a new type of poverty – information poverty – is developing as the poor struggle to obtain the infrastructure, skills and other requisites to be participants in the information revolution.[58] The Importance of information for rural development has been illustrated by Balit and Cohen. Balit points out that the least expensive input for rural development is knowledge and information.[59] Cohen further explains the information required by rural communities includes supply of inputs, new technologies, early warning systems (drought, pests, etc.), credit, market prices and their competitors.[60] A study conducted by Mchombu from University of Namibia has demonstrated a positive linkage between rural development and the provision of health, agricultural, education and literacy, and income generation information.[61]

Market access is essential for rural development. This results from the fact that all rural households are both producers and consumers, buyers and sellers – buying agricultural

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[54] *Information from the Website of the United Nations.* UN Millennium Development Goals. 2000.
<http://www.un.org/millenniumgoals/>. Retrieved 12 September 2004.
[55] IFAD. *Enabling the Rural Poor to Overcome Their Poverty (Strategic Framework for IFAD 2002-2006).* IFAD.
Online Literature. March 2002. <http://www.ifad.org/sf/SFeng.pdf>. Retrieved 12 September 2004.
[56] *Information from the World Bank Group Website.* 20 August 2002.
< http://www.worldbank.org/wbp/mission/up2.htm>. Retrieved 9 September 2004.
[57] The World Bank Group. *World Development Report 2000/2001: Attacking Poverty.* New York: The World Bank,
2000. *Literature Online.* < http://www.worldbank.org/wbp/wdrpoverty/index.htm>. Retrieved 9 September
2004.
[58] d'Orville, Hans. *Information and Communications Technologies – A Rapidly Emerging Dimension of Development
Cooperation.* UNDP, 2000. *Online Literature.* <http://www.undp.org/info21/program/index.html>. Retrieved
10 September 2004.
[59] Balit, S. "Listening to Farmers: Communication for participation and Change in Latin America." *Training for
Agriculture and Rural Development: 1997-98.* Rome: FAO, 1998. P29-40.
[60] Cohen, J.M. *Integrated Rural Development: the Ethiopian Experience and the Debate.* Sweden: Scandinavian
Institute of African Studies, 1987. P23.
[61] Mchombu, K.J. "Information Provision for Rural Development 2: Measuring the Impact of Information on Rural
Development." Diss. University of Namibia, 1999.

inputs and consumption goods, and selling agricultural or non-agricultural products. In accordance to the United Nations Millennium Declaration, which considers trade to be an important engine of growth, both as an earner of foreign exchange, and through its multiplier effects as a generator of income and employment, IFAD asserts that assisting rural poor people in developing countries to access markets and promoting agricultural trade from which they can benefit are crucial areas of intervention in enabling them to overcome their poverty.[62]

As an efficient method to transmit information and knowledge, the access to ICTs becomes crucial to the integration of the rural poor to the global economy. With the digital divide normally existing between rural and urban areas, Chowdhury traces causes of rural poverty as lack of ICT infrastructure and appropriate skills that can be obtained through ICTs.[63] Munyua supports the utilization of ICTs for rural development and provide examples of areas where ICTs could play a catalytic role: decision-making, market access, empowerment through capacity building, targeting marginalized groups such as women and youth, and creating employment.[64] The United Kingdom Department for International Development has also contributed to the discussion of the link between ICTs and rural development. According to one of its report in 2002, the roles of ICTs, in regards to achieving MDGs of eradicating extreme poverty and hunger, include:

> "Increase access to market information and lower transaction costs for poor farmers and traders; Increase efficiency, competitiveness and market access of developing country firms; Enhance ability of developing countries to participating global economy and to exploit comparative advantage in factor costs."[65]

ICTs have become an efficient approach and basic requirement for the poor to integrate into the global market and benefit from the large-scale globalization. In addition to market access, there are other areas that can be facilitated by the introduction of ICTs. As suggested by the World Bank, ICTs can help to alleviate poverty by: 1) stimulating macroeconomic growth; 2) making markets more efficient; 3) improving social inclusion; and 4) facilitating political involvement.[66] As can be seen, the World Bank analyzes the issue from four perspectives: macroeconomic, microeconomic, social and political.

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[62] IFAD. *Promoting Market Access for the Rural Poor in Order to Achieve the Millennium Development Goals.* Discussion Paper. February 2003. *Online Literature.* <http://www.ifad.org/gbdocs/gc/26/e/markets.pdf>. Retrieved 12 September 2004.
[63] Chowdhury, N. *Poverty Alleviation and Information Communications Technologies: Towards a Motif for the United Nations ICT task Force.* Dec. 2000. *Literature Online.* <http://www.eb2000.org/short_note_19.htm>. Retrieved 10 September 2004.
[64] Munyua, Hilda. *Information and Communication Technologies for Rural Development and Food Security: Lessons from Field Experiences in Developing Countries.* November 2000. *Online Literature.* < http://www.fao.org/sd/cddirect/cdre0055b.htm >. Retrieved 12 September 2004.
[65] DFID. *The Significance of Information and Communication Technologies for Reducing Poverty.* January 2002. *Literature Online.* < http://www.dfid.gov.uk >. Retrieved 12 September 2004.
[66] The World Bank. *ICT and MDGs: A World Bank Group Perspective.* The World Bank Group. December 2003. *Online Literature.* <http://info.worldbank.org/ict/assets/docs/mdg_Complete.pdf>. Retrieved 12 September 2004.

Qiang, Pitt and Ayers have related stimulating macroeconomic growth through ICTs to high growth of total productivity in ICT producing industries, and the overall productivity growth across the entire economy arising from the reorganization of production around ICT goods and services.[67] Similarly, Dirk Pilat - senior analyst of Organization for Economic co-operation and Development (OECD) - has pointed out that capital deepening through investment in ICTs infrastructure and manufacture is important for economic growth.[68]

Rural people tend to be poor and socially isolated. Social isolation can be attributed to lack of communication and information. As summarized by the World Bank, rural people are isolated not only by geography, but by cultural barriers such as gender, ethnicity, caste and race.[69] In regards to improving social inclusion through ICTs, Gerster and Zimmermann have stated that the four characteristics of ICTs: interactivity, permanent availability, global reach, and reduced costs, have made social inclusion of the rural poor more feasible.[70]

ICTs Development in China

China has made great strides in expanding its information infrastructure during the past decade. Telecommunication is one of the fastest growing industries in China. Telephone lines have been increasing at an annual rate of 41.5% per year for the first seven years of 1990s; and by the end of 1997, 55.6% of China's villages were connected to the public telephone system.[71] The number of mobile phone users in China reached 167 million in April 2002, an increase of six million subscribers from the previous month – China now leads as the world's biggest mobile phone market, with the U.S. trailing in second place with 136 million subscribers.[72]

According to the latest statistics from China Internet Network Information Centre (CNNIC) in January 15th 2004, there were 79,500,000 Internet users, 595,550 Chinese websites; and the international bandwidth was 27,216M.[73] The number of Internet users has increased more than ten times compared to the CNNIC statistics in July 2003, being 68,000,000.[74] The Internet population has been increasing and it is estimated, according to the Trade Development's Information Technology Industries (ITI) offices within the

[67] Qiang, Pitt and Ayers. *Contribution of ICT to Growth.* World Bank Working Paper No. 26. *Literature Online.*
< http://info.worldbank.org/ict/WSIS/docs/comp_ICTGrowth.pdf>. Retrieved 12 September 2004.
[68] Pilat, Dirk. "The Economic Impacts of ICT on Firms and Economies." *WSIS 2003: Connecting the World.*
London: Agenda Publishing, 2003. P12.
[69] The World Bank. *ICT and MDGs.* P12.
[70] Gerster, Richard and Zimmermann, Sonja. *Information and Communication Technologies (ICTs) for Poverty Reduction?* Swiss Agency for Development and Cooperation. 2003. *Online Literature.*
<http://www.gersterconsulting.ch/docs/ICT_for_Poverty_Reduction.pdf>. Retrieved 12 September 2004.
[71] Tawfik, M. Ed. *World Communication and Information Report 1999-2000.* Paris: UNESCO Publishing, 1999.
P222.
[72] *News from CNETAsia.* CNET Networks Asia Pacific Co. 20 May 2002.
< http://asia.cnet.com/newstech/communications/0,39001141,39045087,00.htm>. Retrieved 13 April 2004.
[73] *Statistics from CNNIC Website.* China Internet Network Information Center. 15 January 2004.
<http://www.cnnic.com.cn/download/manual/statisticalreport13th.pdf>. Retrieved 12 April 2004. P16-18.
[74] *Statistics from CNNIC Website.* China Internet Network Information Center. 15 July 2003.
< http://www.cnnic.net.cn/html/Dir/2003/11/04/1203.htm>. Retrieved 12 April 2004.

U.S. Department of Commerce, that China seeks to nearly triple the number of Internet subscribers by 2005, bringing the online population to 200 million.[75]

In China, ICTs are producing positive fundamental changes in the ways that people live, learn and work, creating tremendous transformations within traditional organizations, societies, and institutions at the economic, social and political levels. According to Jichuan Wu, Minister of the Ministry of Information Industry, "China is very aware of the importance of increasing her ICT capabilities," and the Chinese government is encouraging strategies of cooperation between the public, private, and non-profit sectors to promote ICTs development in China.[76] "Information for industrialization" is one of China's current strategic decisions.[77] The ICTs development is expected to maintain its steady and continuous growth. As proposed by China's ex-President, Jiang Zemin in 2001, in regards to the strategies of development in China:

> "Our basic principle is proactive development, intensive management, avoiding the disadvantages and making use of the advantages, and attaining a major position in the development of the global information network."[78]

However, the country's 'e-readiness' – the World Bank measure of network access and pro-ICT policy – is still relatively low. 'E-readiness' refers to the availability and the use of telecommunications infrastructure and services that allows a community to participate in the networked world.[79] According to the Economist Intelligence Unit e-readiness rankings of 2002, China's e-readiness score was merely 3.64 out of 10, as compared to 8.41 of U.S.[80] some of the indicators are the extent of connectivity, the quality of infrastructure, the regulatory environment, and openness to trade and investment.[81]

While the digital divide between China and the developed countries is decreasing in general, through China's fast growth in ICTs as discussed above, the internal gap of the access to ICTs is increasing. For example, Internet World Stats reported that Internet users in China, as of July 2003, were 68,000,000, however, this only represented 5.2% of the population.[82] As a comparison, at the same period of time, there were 177,547,277 Internet users in the United States, representing 60.9% of the population.[83] Although

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[75] *Information from New Media Review.* European Travel Commission. October 2003.
        <http://www.etcnewmedia.com/review/default.asp?SectionID=11&CountryID=43>.
    Retrieved 13 April 2004.
[76] *Information from the GDS International Website.* The Global Development Study International Co. 2002.
    < http://www.gdsinternational.com/publishing/index.asp?pub=154>. Retrieved 13 April 2004.
[77] Ke, Huixin. "China." *Digital Review of Asia Pacific 2003/2004.* 2003. P82.
[78] Script from Speech by Jiang Zemin. *The People's daily.* 11 July 2001.
[79] Beardsley, Scott. "Networked Readiness: Unlocking the Potential of the Telecoms Sector." *InterMedia.* Vol.31
    No.4/5. (December 2003): 26-31. P26.
[80] Economist Intelligence Unit. *The 2002 E-readiness Rankings: A While Paper from the Economist Intelligence
    Unit.* New York: The Economist intelligence Unit, 2002. P5.
[81] Ibid. P10.
[82] *Statistic Information from Asia Stats.* Internet World Stats. July 2003.
    <http://www.internetworldstats.com/asia.htm#cn>. Retrieved 12 April 2004.
[83] *Statistic Information from America Stats.* Internet World Stats. July 2003.
    <http://www.internetworldstats.com/america.htm#us>. Retrieved 12 April 2004.

many people have obtained access to ICTs, most of the population still remains unaffected.

Rural Development in China

China is a country with rural population as the majority. According to official statistics, as of 1952, which was three years after the establishment of the People's Republic of China, the rural population counted to 503.19 million – 87.5 per cent of the total population.[84] Although there has been enormous increase in urban population along the years, China has essentially remained a rural society. As of 2000, the rural population was still more than 60 per cent of the total population.[85]

China is a 'binary' society to some extent. The society is divided into urban and rural areas. People in the rural areas do not enjoy the same social services as city people do, such as health care, pensions, and education for children. There is a history of aversion to agricultural population who are considered lack of education and civilized life styles. The Chinese government has gradually abolished the restrictions for migrations between rural and urban areas, due to the demand for unskilled labor in booming cities and towns since the economic reforms in 1978.[86] There are still pronounced disparities between rural and urban population.

One of the most obvious phenomena in current China is the remarkable increase in inequality of distribution of income and wealth, especially between rural and urban areas. The economy of China has increased remarkably: the GDP has been enhanced almost six times from $221.5 billion in 1982 to $1,232.7 billion in 2002.[87] However, the economic benefits have been reaped by people in the cities, especially those in the east coast areas as opposed to those in villages.[88]

ICTs for Rural Development in China

The most important factor is the economic inequality. Economic factors are significant in the sense that they are the precondition to access to ICTs. The use of ICTs is not free - from the purchase of hardware that receives information services, such as radio, TV, computer, etc., to the payment of software or services that provide information. The price

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[84] *Information from the Website of IIASA.* The International Institute for Applied Systems Analysis. 1999.
< http://www.iiasa.ac.at/collections/IIASA_Research/Research/LUC/ChinaFood/argu/trends/trend_30.htm>.
Retrieved 11 September 2004.
[85] *Information from the Website of CPIRC.* China Population Information and Research Center. 28 March 2003.
< http://www.cpirc.org.cn/en/e5cendata1.htm>. Retrieved 11 September 2004.
[86] *Information from InvestChina.Com.Cn.* 24 December 2001.
< http://www.investchina.com.cn/chinese/society/89602.htm>. Retrieved 11 September 2004.
[87] *Statistic Data from the World Bank Website. World Bank.* 29 August 2003.
<http://www.worldbank.org/cgi-bin/sendoff.cgi?page=%2Fdata%2Fcountrydata%2Faag%2Fchn_aag.pdf>.
Retrieved 31 October 2003.
[88] *Information from the Website of U.S. Department of State.* August 2004.
< http://www.state.gov/r/pa/ei/bgn/18902.htm>. Retrieved 11 September 2004.

of computers and Internet connection is still quite high for a large proportion of Chinese people, especially in rural communities, where overcoming poverty is still the first priority. The poor are deprived of the same advantages to enjoy the fruit brought by ICTs as the rich.

ICTs have already become an indispensable part of modern people's lives in the cities of China. However, some people who live in remote villages or counties of hinterlands have never made a phone call, not to mention getting connected to the Internet. Economic factors contribute greatly to the insufficient application and diffusion of ICTs for rural development.

Another factor is the geographical deployment. With the topology in western China being mainly plateau or desert and long distance from large cities in the east, where most of the ICTs services are provided, the establishment of ICTs infrastructures is full of hardship. As mentioned above, as of 2003, only 5.2% of the population in China has access to the Internet. This group of people mainly congregates in large cities of eastern China. The percentage of Internet users of the year 2002 in different areas can present an obvious comparison: Beijing (9.8%), Shanghai (9.2%), Guangdong (10.4%), Qinghai (0.2%), Ningxia (0.3%), and Tibet (0.1%), with the latter three located in western China.[89]

Moreover, language and culture are two other barriers limiting the greater diffusion of ICTs to every community in China. A special group must be mentioned – the ethnic minorities in China. China serves as home to 56 official ethnic groups, with Han, the largest group, making up over 92% of China's whole population.[90] The other 55 ethnic groups – the ethnic minorities, with 8% of the population, maintain their own rich traditions and languages, nestling on China's vast frontiers. Most of the current websites use Mandarin and Cantonese, which are the two main languages used in China. Under such circumstances, the ethnic minorities Chinese have already been deprived of the rights to gain information from the Internet even before it is invented.

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[89] *Information from IT Geography.* The American University Website. 2002.
    < http://www.american.edu/initeb/wl5521a/IT%20Geography.htm>. Retrieved 15 April 2004.
[90] *Information from Chinese Culture Center of San Francisco.*
    < http://www.c-c-c.org/chineseculture/minority/minority.html >. Retrieved 12 April 2004.

Chapter 3
Methodology

3.1 General Introduction of the Research Methodologies

Qualitative and Quantitative Methodologies

With the objective to search for a feasible model for rural development in China through ICTs in view of existing opportunities and challenges, the research required an in-depth study with inputs of varying perspectives and experiences, rather than a limited number of predetermined response categories. The characteristics of this research determined the selection of mainly a qualitative methodological approach, with the combination of small-scale involvement of a quantitative method. This was based on Patton's summary of the distinctive features of qualitative and quantitative methods: Qualitative methods produce a wealth of detailed information about a small number of people and cases, which increase the depth of understanding of the cases and situations studies; quantitative methods require the use of standardized measures to generalize comparison and statistical aggregation of a large size of data.[91] A full range of qualitative instruments will be implemented in order to search the answer for the research question. However, a small size of quantitative survey data, in regards to the socio-economic situations of the research subjects, will be collected for the better understanding towards the research context.

Case Study Qualitative Inquiry Approach

A number of qualitative inquiry approaches can be chosen. According to Miller and Salkind, there are five frequently used ones in social science: narrative research from the humanities, phenomenology from psychology and philosophy, ground theory from sociology, ethnography from anthropology and sociology, and case studies from the human and social science and applied areas such as evaluation research.[92] The case study inquiry approach, which focuses on developing an in-depth analysis of multiple cases, was chosen for this research. This resulted from the fact that two projects – ENRAP and PATI – were compared and contrasted to provide insights into the issue being studied by the research. With significant similarities between the two projects, PATI was a completed project with a positive feedback from a wide range of stakeholders and researchers, while ENRAP was an ongoing project facing difficulties and barriers to progress. Opportunities and experiences were mainly drawn from PATI, which could be used to generate a feasible model for recommending the implementation of ENRAP and

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[91] Patton, Michael Quinn. Ed. *Qualitative Research & Evaluation Methods.* 3rd ed. London: Sage Publications, 2002. P14.

[92] Miller, Delbert C. and Salkind, Neil J. *Handbook of Research Design & Social Measurement.* 6th ed. London: Sage Publications, 2002. P146.

other similar projects in the future. Moreover, the analysis of challenges and barriers of utilizing ICTs for rural development, which is similarly essential for constructing the model, will base on the case studies from both ENRAP and PATI.

Design and Analysis Strategies for Qualitative Inquiry Approach

According to Patton, qualitative designs are "naturalistic to the extent that the research takes place in real-world settings and the researcher does not attempt to manipulate the phenomenon of interest (e.g., a group, event, program, community, relationship, or interaction)" [93] . In this research, naturalistic inquiry strategy was implemented. Observations took place in daily circumstances and subjects were interviewed with open-ended questions, except ten single/multiple questions for the purpose of collecting basic socio-economic data, under conditions that were familiar to them.

As an observer, the degree of my involvement in the research settings should be mentioned. Observational strategies concern the extent to which the observer will be a participant in the setting being studies. Patton has stated that it is not merely a single choice between participation and non-participation; rather there is a continuum that varies from complete immersion in the setting as full participant to complete separation from the setting as spectator[94]. Despite this concept, the extent of my involvement still fit into the definition of non-participant observation. I was merely an onlooker during the whole period of my fieldwork.

Inductive analysis was used in the qualitative inquiry approach of this research. The strategy of inductive designs is to allow the important analysis dimensions to emerge from data collected in the research without presupposing in advance what the important dimensions will be. [95] This contrasts with the hypothetical-deductive approach of experimental designs that require the specification of main variables and the statement of specific research hypotheses before data collection begins.

There were no hypotheses were specified before the study was conducted. Understandings towards current opportunities and challenges of utilizing ICTs for rural development in China, as well as the components constituting a feasible model based on those opportunities and challenges, emerged from direct observations of PATI project activities and interviews with related people of both ENRAP and PATI.

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[93] Patton, P39.
[94] Patton, P265.
[95] Patton, P56.

Data Collection of the Research

Three kinds of qualitative data were collected through observations, interviews, and documents. Observations included fieldwork descriptions of project sites, project activities, participants' behaviours, actions, conversations and attitudes, or any other aspect of observable human experience. Observation data consisted of field notes, photographs and video clips, which present the context within which the observations were made. Interviews included open-ended questions that induced in-depth responses about people's experiences, perceptions, opinions and knowledge. Interview data consisted of verbatim quotations with sufficient context to be interpretable. Documents included written materials and photographs, either in paper or electronic versions, from organizational and project records, official publications and reports, and written responses to open-ended surveys. Document data consisted of excerpts from those sources. A small size quantitative data – forty questionnaires - depicting the socio-economic context of the research subject, were collected using ten survey questions with limited number of choices for each question.

As quoted by Tashakkori and Teddlie, Campbell, many decades ago, promoted the concept of triangulation – that every method has its limitations, and multiple methods are usually needed.[96] Triangulation strengthens a study by combing methods, data, theory, etc. Studies that depend on only one method are more vulnerable to errors linked to that particular one. This resulted in the mix of data collecting methods in this research – observation, interviewing and document analysis. There were both consistencies and inconsistencies in findings across these three different sources of data. Both of them have offered opportunities for deeper insight into the research.

Qualitative Data Analysis Software

A sequence of systematic procedures can be followed when conducting a qualitative research. This activity has been encouraged by the recent use of computer packages that are helpful in developing a detailed analysis of data in qualitative studies. These software programs have enabled qualitative researchers to systematically analyze text or image files, categorize and code information, build descriptions and themes, sort and locate important data segments, and provide visual displays of codes and categories.

The software ATLAS.ti was selected to organize the qualitative data collected in the research.

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[96] Tashakkori, Abbas and Teddlie, Charles. *Mixed Methodology: Combining Qualitative and Quantitative Approaches.* Thoursand Oaks, CA: Sage Publications, 1998. P22.

3.2 Selecting Project Sites for Fieldwork

In respect that this research required knowledge of both projects, fieldwork in each one of the two project sites would be necessary. Guangxi, as the pilot project site of ENRAP in China, was originally selected as the field research location for ENRAP while I was in Canada. However, after arriving in China, the unexpected difficulties in establishing connections with the project staff and obtaining permission from the government officials administering the Guangxi project site made the visit impossible. As a result, only the UNDP project – PATI - was observed and investigated. Pertinent research was conducted in one of its five project sites in China – Wu'an city of Hebei province.

PATI had five national level project sites across China: Wu'an City of Hebei Province, Shangcheng County of Henan Province, Huoshan County of Anhui Province, Yilin City of Shangxi Province, and Tongnan County of Chongqing City. Each project site had its own distinctive social and economic context. The final decision to select Wu'an resulted from mainly four reasons: 1) Close connections with Wu'an project staff were established, while I Attended *the Conference on Sharing Experience of Implementing Poverty Alleviation through Access to ICTs* in Beijing, China (April 22-23, 2004); 2) Wu'an had great efficiency and achievements in implementing the project; 3) Wu'an is located in Hebei province, where my hometown belongs. The degree of my familiarity with and understanding towards the situations in Hebei province facilitated the process of establishing connections and acquiring permissions to conduct the research in Wu'an; 4) Limited time and funding determined that Wu'an was the most appropriate option at the moment. With a fixed number of funding, the delay of my research schedule due to the decline from Guangxi project site shortened my total fieldwork time span. With a specified date to return to Canada and the long distance traveling to other project sites from the place where I resided in China, visiting Wu'an, which was approximately merely five hours away by train, seemed the best choice.

The PATI project in Wu'an had nine subordinate project sties: one was at the municipal level, two were at the township level, and six were at the village level. Six sites were selected in the beginning. They were Wu'an Science and Technology Bureau at the municipal level, Cishan town and Paihuai town at the township level, and six villages – Erjie, Liuzhuang, Pushang, Shangzhuang, Menwangzhuang and Shangdian. The organizational structure of these project sites can be illustrated in Figure 1. All of the nine subordinate project sites were visited during my field trip. Research subjects were drawn and data were collected from these locations.

A question may arise that why all the project sites in Wu'an were selected. In order to fully investigate PATI in Wu'an, which was based on a comprehensive layered functional structure, the interactions between these layers (national-city-township-village) were an important element for the research. As a result, investigations of all the four layers were covered. However, another question may arise that why all the project sites at each layer were included. This resulted from the different socio-economic conditions among these project sites at each layer. For example, despite great similarities among the six villages, their economic conditions varied - Menwangzhuang and Shangdian were underprivileged,

Pushang and Shangzhuang were medium, and Er'jie and Liuzhuang were comparatively better off. In order to generalize a feasible model of ICTs for rural development, based on current opportunities and difficulties, all these three categories should be analyzed. Moreover, the reason to include both villages in each category was due to the fact that there were insufficient suitable subjects to choose from in a single village.

Figure 1: Organizational Structure of PATI Project in Wu'an.
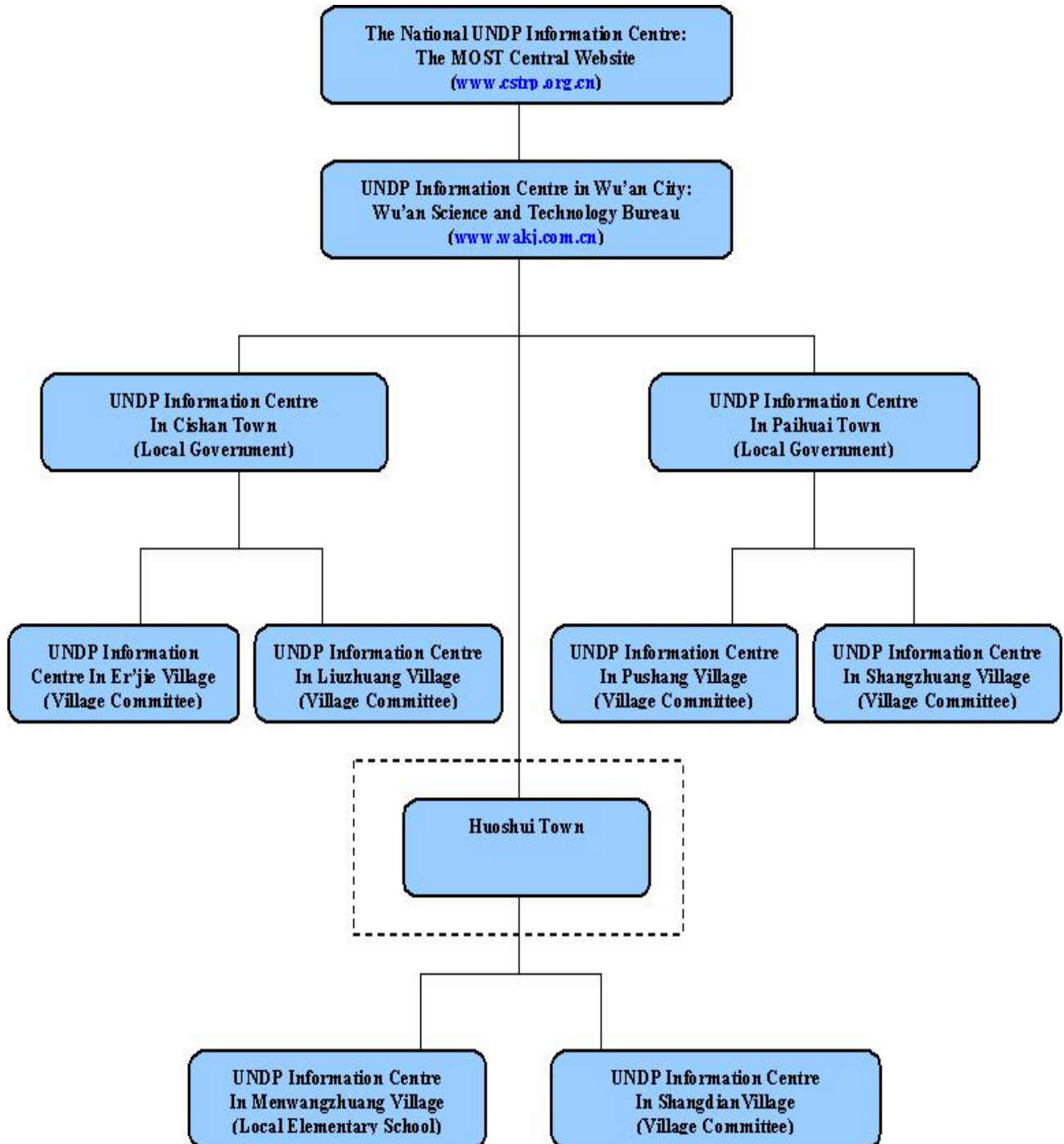
3.3 Selecting an Appropriate Key Informant

Key informants are people who are particularly knowledgeable about the inquiry setting and articulate about their knowledge – people whose insights can prove particularly useful in helping an observer understand what is happening and why.

3.4 Selecting Appropriate Interviewees – Purposeful Sampling

Interviewing is one of the most efficient methods for qualitative researchers. Through well-designed interview questions with appropriate interviewees, researchers can strengthen their studies with reliable first-hand information. Qualitative interviews focus in depth on relatively small samples, which are selected 'purposefully'. According to Patton, purposeful sampling refers to selecting information-rich cases, from which one can learn a great deal about issues of central importance to the purpose of the research[97]. There were several different strategies for purposefully selecting information-rich cases applied in this research: heterogeneity sampling, homogeneous sampling, typical case sampling, and purposeful random sampling.

Heterogeneous Sampling

Based on the involvement of various actors in related to this research, four distinctive groups of interviewees were categorized:

- PATI staffs and government officials from CRTDC of MOST and the Bureau of Science and Technology in Wu'an, regarding the implementation of the project of poverty alleviation through ICTs. (Appendix A presents the outline that was used in the interviews.)

- Local project staff from IFAD in China, regarding the usage of ICTs at different levels of the projects; the advantages and disadvantages of ICTs for development; possible problems of the utilization and diffusion of ICTs; and suggestions for resolutions and improvements of ENRAP. (See Appendix B.)

- Rural community representatives of PATI in Wu'an, Hebei Province, China, including those who had used the services provided by PATI in the six villages. (See Appendix C.)

- ENRAP related key actors, including Shalini Kala, Program Coordinator of ENRAP, India. (See Appendix D.) Mantang Cai, Local consultant for ENRAP in China, China. (See Appendix E.) Renald Lafond, Team Leader of PAN Asia, ICT4D, IDRC, Canada. (See Appendix D.)

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[97] Patton, P230.

Homogeneous Sampling

Within each heterogeneous group, the subjects sharing similar characteristics could be classified into several particular subgroups. For example, the group of rural community representatives of PATI in Wu'an was separated into subgroups of ICAs, farmers who had benefited from PATI, farmers who had not benefited from PATI, and female farmers. The homogeneous sampling was used for focus group interviews, which will be described in the following sections.

Typical Case Sampling

It describing a project to people not familiar with the setting studies, it can be helpful to provide a qualitative profile of one or more typical cases. This sampling strategy was applied in my research. Several cases were selected with the cooperation of my key informant – a Wu'an PATI project staff, which helped identify who and what were typical. For example, the interviews with the pig raiser, Fusuo Zuo and the bee raiser, Xin Liu were recommended by my informant.

Purposefully Random Sampling

In addition to the people recommended by my key informant, I also randomly selected a number of PATI service users from the Information Centres in Wu'an and farmers whom I met in the villages. This counteracted the disadvantage of completely relying on the only key informant, who had limited, selective and sometimes biased perceptions.

3.5 Selecting the Size of Sampling

There are no rules for sample size in qualitative inquiry. "The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size."[98] Following this principle, forty-three people became subjects of my research. They were:

- One PATI project staff from CRTDC of MOST, Beijing;
- One PATI project staff from the Bureau of Science and Technology, Wu'an;
- Four IFAD project staffs from Anhui, Guizhou, Gansu, and Ningxia provinces, respectively; (The interview was conducted during the ENRAP Regional Annual Meeting/Mid-term Review Workshop in Bangkok, Thailand, June 17-22, 2004.)
- Three ENRAP-related key actors, including Shalini Kala, Mantang Cai, and Renald Lafond;
- Four ICAs from four of the eight Information Centres at township and village levels;
- Five farmers from each of the six villages, including both users and non-users, both beneficiaries and non-beneficiaries, both males and females.

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[98] Patton, P245.

The small size of survey collecting data, in regards to the socio-economic conditions of the fieldwork context was performed among the thirty farmers from the six villages.

3.6 Selecting a Questionnaire Format

The questionnaire was composed of two sections: twelve close-ended questions with single or multiple choices and six open-ended questions. It was designed for the purpose of collecting socio-economic data from the thirty farmers of the six project site villages. (See Appendix C.) The analysis of the small-size quantitative data has contributed to the understanding towards the research context, and a loose correlation between socio-economic conditions and the dissemination of utilizing ICTs. The questionnaire designed by Paul Ulrich[99], who also investigated the PATI project in China, was referenced for the construction of mine.

3.7 Selecting Interview Styles

Three types of interviews were applied in the research: open-ended interviews, semi-structured interviews and informal conversational interviews.

Open-ended Interviews

This style requires carefully and fully prepared questions before the interview. Responses of these interviews are recorded verbatim. The reasons of using open-ended interviews in the research stemmed from three perspectives: 1) The interview was highly focused on a series issues that were closely related to the research; 2) The interviewee's time was limited and needed to be used efficiently; 3) Analysis was facilitated by making responses easy to find. Open-ended interviews were used on three categories of research subjects: PATI project staff, ICAs, and ENRAP-related key actors.

Semi-structured Interviews

Semi-structured interviews are a combination of open-ended and close-ended questions with choices. Structured questionnaires are needed for interviewees in this case. The group of the thirty farmers from the six PATI project site villages received semi-structured interviews, which facilitated the interview process for farmers.

Informal Conversational Interviews

The informal conversational interview is the most open-ended approach to interviewing. It offers maximum flexibility to pursue information in whatever direction that appears to

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[99] Paul Ulrich. "China's Rural Internet Information Centers: A Project to Reduce Poverty through Access to Information and Communication Technologies (ICTs) in Rural Areas." *The Electronic Journal on Information Systems in Developing Countries.* (2003) 12, 3, 1-17. < http://www.ejisdc.org>. Retrieved February 2004.

be appropriate under certain circumstances, rather than depending on a single interview opportunity. This approach works particularly well where the researcher can stay in the research setting for some period of time.

The interviews with the four IFAD project staffs from Anhui, Guizhou, Gansu, and Ningxia provinces, respectively, were conducted during informal conversations during the ENRAP Regional Annual Meeting/Mid-term Review Workshop in Bangkok, Thailand, June 17-22, 2004.

3.8 Focus-group Methods

The focus group method is, first and foremost, an interview, which comprises a small group of people on a specific topic. In another word, focus group is a special interview. The reason to introduce focus group separately from interview methods resulted from the consideration that characteristics and techniques distinguish between the two. The focus group approach is not merely a discussion, although direct interactions among participants often occur. Krueger highlights the nuances between an interview and a focus group interview:

> "The term *interviewer* tends to convey a more limited impression of two-way communication between an interviewer and an interviewee. By contrast, the focus group affords the opportunity fro multiple interactions not only between the interviewer and respondent but among all participants in the group. The focus group is not a collection of simultaneous individual interviews, but rather a group discussion where the conversation flows because of the nurturing of the moderator."[100]

With the object to get high-quality data in a social context where people can consider their own views in the context of the views of others, focus group interviews have helped collect valuable research data. Two focus groups were organized from the homogeneous sampling – a group of six female farmers (three PATI users and three no-users), which focused on the opportunities and challenges of ICTs for women empowerment and development; and a group of six farmers mixed with those that both had and had not benefited from the PATI project, in regards to the issues related to ICTs diffusions in rural areas and project sustainability. The focus groups interviews were facilitated by my informant and myself. A guide was designed for each focus group to keep the interactions focused while allowing individual perspectives and experiences to emerge. (See Appendix F.)

3.9 Limitations of the Research Methodologies

The main limitation resulted from the critics of qualitative inquiry, which is considered too subjective, in large part because the researcher is the instrument of both data collection and data interpretation.

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[100] Krueger, Richard A. *Focus Group Interviews: A Practical Guide for Applied Research.* 2nd ed. Thousand Oaks, CA: Sage Publications, 1994. P100.

Chapter 4
Research Context

4.1 The ENRAP Project

■ Introduction of ENRAP and Related Agencies

The Knowledge Networking for Rural Asia/Pacific (ENRAP) is an initiative to support and encourage Internet use among rural development programs sponsored by IFAD in the Asia and Pacific regions. It aims to develop an electronic knowledge networking linking IFAD-supported projects in those areas, with its methods being the strategic introduction and effective application of ICTs among project staff and, ultimately, by project communities.[101] This will contribute to the empowerment of rural people and help them better address their development objectives.

ENRAP initiates research and development in the area of knowledge networking and Internet applications at the local, national and international levels. Special focus is on methods and practical solutions fostering participation at the grassroots level. This means close collaboration with local organizations and consultations with potential users. Potential users of the knowledge sharing system include project staff and their partners who work directly with rural communities and help make the knowledge available at the grassroots level. ENRAP investigates strategies, processes, methods and technologies to support rural communication and knowledge networking, and develops recommendations for future activities. Local electronic newsletters, agricultural market information dissemination and shared electronic libraries are examples of ENRAP-supported activities.

ENRAP was launched in 1998 as a three-year pilot project, running of 30 projects in eight countries: Bangladesh, China, India, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, until May 2001 with total funding of USD 750,000.[102] Being approved by IFAD in September 2002, ENRAP Phase II (November 2002 – November 2005), as an extension to Phase I, is a collaboration of IFAD and IDRC. As one of IDRC's Program Initiatives (PIs), PAN Asia in the ICT4D division was selected as the implementing and co-financing agency. Other countries not receiving direct assistance from ENRAP can benefit from technical advice and free training materials, documents and databases available on the ENRAP website (www.enrap.org). It is expected that in the future all IFAD projects in Asia/Pacific will participate in ENRAP activities and contribute to the knowledge sharing system

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[101] *Information from ENRAP Website.* Knowledge Networking for Rural Development in Asia and Pacific Region. <http://www.enrap.org>. Retrieved 13 December 2004.

[102] IFAD Evaluation Committee. "Thematic Evaluation: Electronic Networking for Rural Asia/Pacific (ENRAP), Executive Summary." 4 December 2001. *Literature Online.* <http://www.ifad.org/evaluation/public_html/eksyst/doc/thematic/pi/enrap.htm>. Retrieved 10 November 2004.

IFAD was established in 1977 as an international financial institution to conquer rural hunger and poverty in developing countries. IFAD projects embrace large populations with multi-annual programs that pursue goals ranging from building micro-credit operations to forestry, fishery and agriculture development. The Fund's target groups are the poorest of the world's people – small farmers, the rural landless, nomadic pastoralists, artisanal fisherfolk, indigenous people and, across all groups, poor rural women.[103]

In response to the need for a coordinated international effort on development and knowledge-sharing in the information era, IFAD has established extensive electronic regional networks: FIDAFRIQUE in Western and Central Africa, FIDAMERICA in Latin America and the Caribbean, and ENRAP in the Asia and Pacific region. These electronic networks focus on improving communication among IFAD projects, partners and IFAD headquarters by providing access to the Internet and e-mail, which encourages better exchanges and sharing of information, experiences and results among projects and partners. [104]

The International Development Research Centre (IDRC) is a public corporation created by the Parliament of Canada in 1970 to help developing countries use science and knowledge to find practical, long-term solutions to the social, economic, and environmental problems they face.[105] Established at a time when international support for development was flagging and a climate of disillusion and distrust surrounded foreign aid programs, IDRC was Canada's "revolutionary, if strange" innovation to search for new directions of development apart from conventional approaches – to build the development research capacities of developing countries themselves to discover solutions to development problems they themselves identify.[106] The Centre programs have been categorized into three areas of enquiry in the Corporate Strategy 2000-2005: Social and Economic Equity, Environment and Natural Resource Management, and Information and Communication Technologies for Development (ICT4D).[107]

Pan Asia Networking (PAN) is a program initiative in the area of ICT4D, which helps researchers and communities in the developing world find solutions to their social, economic, and environmental problems, using ICTs. Building on IDRC's 25 years of supporting research on information sciences in the developing countries of Asia, the PAN Asia Networking program initiative has helped institutions to adopt ICTs as a means to address development problems. All its activities are based on the premise that ICTs can

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[103] *Information from IFAD website.* The International Fund for Agriculture Development.
<http://www.ifad.org/governance/ifad/ifad.htm>. Retrieved 25 November 2004.
[104] *Information from IFAD Website.* The International Fund for Agriculture Development.
<http://www.ifad.org/partners/network>. Retrieved 12 December 2004.
[105] *Information from the IDRC Website.* International Development Research Centre.
<http://web.idrc.ca/en/ev-1-201-1-DO_TOPIC.html>. Retrieved 10 April 2004.
[106] IDRC. *With Our Own Hands: Research for Third World Development; Canada's Contribution Through the International Development Research Centre, 1970-1985.* Ottawa: International Development Research Centre, 1986. P27-28.
[107] IDRC. *IDRC in a Changing World: Program Directions 2000-2005.* Ottawa: International Development Research Centre, 2000. P22.

offer people living in poverty an opportunity for better lives. IDRC has two regional offices located in Singapore and India, respectively. These two regional offices manage most of PAN Asia activities in the region.

In the ENRAP phase I, a hub-and-spokes model was implemented. The regional IDRC office in Singapore was responsible for key ENRAP activities as the central implementing agency. The central ENRAP website (www.enrap.org) and regional resource team were based in Singapore, providing administrative and assistant activities to ENRAP participating members in the region. In a nutshell, each project was directly connected to the IDRC regional office in Singapore, via which connected to each other.

In the ENRAP phase II, a model of network of networks was proposed by IFAD Interim Evaluation. This refers to a national or several sub-national networks within each ENRAP member country, formed by IFAD-supported projects.[108] The reconfiguration of the implementing model came from the consideration that projects from the same locality, serving similar communities, often face comparable challenges and need to cope with analogous circumstances such as social structures, market constructions, regulatory regimes, etc. These projects have stronger motivation and more relevant basis for sharing information and field experiences.

These local networks can also be extended beyond IFAD projects to other like-minded projects and organizations working on the same development problems or with the same communities. These national and sub-national networks can be connected to each other and can be connected to sub-regional networks such as the South Asian Association for Regional Cooperation (SAARC) or the Association of South East Asian Nations (ASEAN) and East Asian Countries, thus forming the regional ENRAP network. This decentralized configuration emphasizes national and sub-regional developmental areas. (Models can be illustrated in Figure 1 & 2.)

■ **Introduction of ENRAP in China**

Due to the fact that the existence of ENRAP is to facilitate the implementation of IFAD projects in China, an introduction of these projects is necessary in order to fully understand the opportunities that ENRAP could bring and the challenges that ENRAP could face.

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[108] IFAD. "Electronic Networking for Rural Asia/Pacific (ENRAP) – Interim Evaluation – Agreement at Completion Point: Eleven Insights." *Literature Online.* January 2002.
<http://www.ifad.org/evaluation/public_html/eksyst/doc/agreement/pi/enrap.htm>. Retrieved 12 December 2004.

IFAD Projects in China

There are currently five active and one appraisal-completed IFAD-supported projects, which covers areas in nine provinces of China. (Figure 3 presents the IFAD project areas in China.) The cooperating institution of these IFAD project in China is United Nations Office for Project Services (UNOPS). In China, the Ministry of Finance (MOF) acts as lead agency for IFAD projects at the national level. Originally, a central Project Management Office (PMO) of the Ministry of Agriculture (MOA) managed all IFAD-funded projects in china. At the provincial level, the Department of Agriculture in each province undertakes the responsibilities for general implementation in that province, which is comprised of project cities/counties. Similarly, Bureau of Agriculture in each city/county is responsible for project implementation at inferior township level. Moreover, village implementation groups are established in each project village under each project township. The IFAD projects are listed as follows:

1) **Environment Conservation and Poverty-Reduction Programme in Ningxia and Shanxi (Total programme cost: USD 90.3 million)**

The target group comprises 300,000 households in the 126 poorest townships of 12 of the poorest counties in Ningxia Hui Autonomous Regsion and in Shanxi Province in Western China. Hui ethnic minority population forms a majority in Ningxia and Shanxi is inhabited almost exclusively by Han people. Most villages are in isolated upland areas with inadequate access roads, obsolete health and education facilities, low-yielding arable land and harsh living conditions. At lease 90% of the households are poor, with an average income per capita of USD 82, which is far below the poverty line defined by the World Bank - $1 a day. The target group is composed of poor farmers, especially women, and children. Farmers cannot take advantage of improved technologies due to lack of funding and training. The cost of education prevents many children from attending school in the project areas.

Expectations of the target households, which were obtained through a Participatory Rural Appraisal (PRA), include food security, increased income through investing in production activities, and improved health and education facilities. A vast literacy and training programme, mainly for women, will be conducted with the intention to build capacity for participating in training of technical skills and related productive activities.

2) **West Guangxi Poverty-Alleviation Project (Total programme cost: USD 107.3 million)**

This is an IFAD-WFP initiated project. The target group comprises 260,000 households, representing 1.3 million persons, in the 74 poorest townships of ten of the

poorest counties in the Guangxi Zhuang Autonomous Region. The population consists of several ethnic minorities, with the Zhuang people forming the vast majority in most counties. Average annual per capita income is USD 140. Women, who contribute most to farm production, livestock-raising and household tasks in local communities, constitute a significant part of the target group – poor farmers.

The goal of the project is to achieve sustainable and equitable poverty reduction in the project area by securing a sustainable increase in productive capacity, both on and off farm; and offering increased access to economic and social services, including rural finance, agricultural technologies, market information, education, health and social networks. Professional farmer associations will be created to benefit from detailed market and marketing studies.

3) Qinling Mountain Area Poverty Alleviation Project (Total programme cost: USD 106.3 million)

This is an IFAD-WFP initiated project. The project covers 310,000 households in 128 poorest townships, with a population of approximately 1.5 million, within nine contiguous counties in the northwest of Hubei Province and southeast of Shanxi Province. Five counties are located in Shangluo Prefecture of Shanxi Province, which is a devastated area affected by the August 1998 floods of Yangtze River. In those areas, farms lands are extremely limited and production systems are subsistence-oriented.

In this project, technologies are directly delivered to the target group people. Technologies such as reducing post-harvest losses, improving soil conservation, increasing levels of waster management and organic farming, etc. are demonstrated in the farms of project areas. Project monitoring is another key focus of the project. A self-monitoring programme was initiated by beneficiaries. This requires biannual submission of written reports from rural communities, outlining services received and outcomes created.

4) Wulin Mountains Minority-Areas Development Project (Total programme cost: USD 107.3 million)

The project targets approximately 390,000 households, mainly ethnic minority Chinese, in 92 of the poorest townships of 16 counties in densely populated minority areas of the Wulin Mountains in East Guizhou and West Hunan Provinces. Some characteristics of the project areas are: agricultural production resources are limited; health and education levels are low; most areas lack communication facilities; off-farm employment opportunities are scare; most households have no financial basis to invest in productive activities.

The project aims to increase household food security through land development and higher productivity; raise income through crop diversification, livestock production and promotion of small businesses; provide training in health care, functional literacy, etc. Special groups, including village leaders, farmers and at least two women, are formed in the target villages to disseminate information and mobilize their communities.

5) Southwest Anhui Integrated Agricultural Development Project (Total programme cost: USD 55.7 million)

The target group comprises approximately 500,000 people of 125,000 rural households in 5 poorest counties in Anhui Province. Similar to the other IFAD project areas, this project area is characterized by limited agricultural production resources, low education levels, insufficient communication facilities, financial basis and off-farm employment opportunities.

In addition to similar measures conducted by other IFAD projects in China, the Southwest Anhui Integrated Agricultural Development Project focuses on promoting women's development, through literacy training for approximately 30,000 women and technical training in agriculture and income-generating skills for approximately 70,000 women.

6) South Gansu Poverty Reduction Programme. (Estimated total programme cost: USD 79 million)

This is an IFAD-supported project that has completed appraisal and is expected to start in 2005. The project will be implemented in the southern part of Gansu Province – 109 townships in ten counties in the zone between the Qinghai-Tibetan Plateau and the Loess Plateau. The project townships are mostly situated in mountainous areas, which are less accessible and more economically backward.

The project will be structured around five main themes: land-based activities to increase the income-generating potential of beneficiaries and improve environmental conditions; financial services with a poverty and gender focus for sustainable development; development of essential social services, including health, primary education

Figure 3: IFAD Project areas in China.

ENRAP Activities in China

China joined ENRAP in its phase II. A four-hour ENRAP-China national start-up session for all IFAD project staff in China was first organized on November 15, 2003 in Guilin, Guangxi Zhuang Autonomous Region of China, as part of the Project Management Workshop held by IFAD, World Food Programme (WFP) and Ministry of Agriculture (MOA) of China. However, the activities of ENRAP-China can be traced to July 2003, when a local consultant based in Beijing, China was hired to help ENRAP-China implementation at the national level, with a commitment of five days per month. The hiring of a local consultant came from the consideration that China was a county with large-scale IFAD projects covering different provinces. More importantly, to have someone with Chinese language skills to work with IFAD project staff in China, where English is not a commonly understood and used language, could effectively contribute to ENRAP activities.[109]

During the ENRAP-China national start-up session, the objective and philosophy of ENRAP was introduced to participating IFAD project staff. Some of the key ENRAP related issues raised during the workshop include:

- capacity building for project officers;
- better communication and knowledge management among projects;

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[109] "Learning to Network: Annual Progress Report, 2003, ENRAP II." IDRC, March 2003. *Internal Documentation.*

- cooperation and participation from project offices at all levels;
- increasing quality of reporting project outputs;
- necessary training of documentation skills and use of ICTs in project activities;
- difficulties of communicating with the IFAD headquarter in English;
- alernative ICTs in addition to the Internet should be identified, especially for remote areas.

A field visit to IFAD project site in Mingrun township, Huanjiang county, Guangxi Province was conducted by the ENRAP coordinator, the Chinese local consultant, and IFAD project staff of Guangxi Province, following the workshop. During the trip, it was discovered that at the township level, computers and Internet connection through dial-up were available and the price was comparatively cheap – approximately four to five Yuan, which is equal to USD 0.5 per hour. However the usage of these ICTs were not efficient. For example, project data were collected and stored mainly in hard copy. Also, project staffs were not able to locate useful marketing information through the Internet to see their products and requested supports in this regards from ENRAP. No other IFAD project sites were visited.

Based on the feedbacks from project staffs and the ENRAP II's focus on building national networks, an ENRAP-China website in Chinese was planned as the first ENRAP activity in China after the national workshop. The local ENRAP consultant in China submitted a national implementation plan in December 2003, identifying four activities:

1) creating the ENRAP-China website for strengthening communication among IFAD projects in China and between IFAD and China IFAD projects, and sharing news, stories and experiences of projects in different locations of China;
2) training project staffs on documentation skills;
3) developing online reporting system for project monitoring and evaluation purpose;
4) effective information dissemination at grassroots level.

The timetable for these activities was also designed by the Chinese consultant as shown in Figure 4.

Activity	Jan - March	April - June	July - Sept	Oct - Dec
Activity 1: Website				
Planning	☺			
Purchase of equipment and installation	☺			
Programming and testing	☺	☺☺		
Organization for use with individual projects		☺☺	☺☺☺	☺☺☺
Maintenance		☺☺	☺☺☺	☺☺☺

Activity				
Activity 2: Doc Skill Training				
Communication with projects	◔	◔		
Preparation		◔◔		
Training		◔		
Feedback and report			◔◔	
Activity 3: Online Reporting System				
Identification of pilot project	◔	◔◔		
Preparation of proposal/plan		◔◔		
System Development			◔◔◔	
Testing and improvement			◔	◔◔
Evaluation				◔
Extension				◔
Activity 4: Info Dissemination Research				
Identification of pilot projects		◔		
Preparation of proposal/plan		◔◔		
Field data collection and analysis		◔	◔◔	
Testing of different ICTs			◔◔	◔
Evaluation and Recommendations				◔◔

Figure 4: Timetable for ENRAP activities in China, as proposed by the local consultant in the National Implementation Plan (Internal Documentation).

Progress of ENRAP Implementation in China

The progress of ENRAP implementation in China is not significant. In effect, there has almost been none movement in regards to the proposed national activities since the national start-up meeting in Guilin in November 2003. The Chinese ENRAP-China website, which was discussed as the first initiative of ENRAP in China, has not been developed until December of 2004, when a trial version of the website was put online for testing and feedback. Also, there were no field data collection and analysis, no awareness-raising and training activities, and no networking and communications with IFAD project staff in different provinces and relative government officials, have been conducted since China became a member of the ENRAP family. Accordingly, no outcomes or impacts of the project can be observed and evaluated. The ENRAP project in China is in a totally stagnant status.

The attendance to the 2004 ENRAP Regional Annual Meeting/Mid-term Review Workshop held in Bangkok, Thailand from June 17-22 provided me the opportunity to conduct comprehensive interviews and focus group discussions, either formal or informal, with the IFAD Chinese project staffs, in regards to the progress of ENRAP in China and possible reasons underlying. The workshop involved approximately forty ENRAP-related members from IDRC in Canada and India, IFAD headquarter in Italy, and the eight ENRAP member counties, including China, Vietnam, India, Pakistan, Sri Lanka, Laos,

the Philippines, and Nepal. Figure 5 is a photo including all members attending this workshop. There were five Chinese members from four provinces attended this workshop, including the Chinese local consultant.

Based on the interactions with these Chinese IFAD project staffs, it was discovered that their understandings towards ENRAP, such as its philosophy, objective, and what it could be used for facilitating IFAD projects, etc. were quite limited. They deemed that ENRAP was a separate project from IFAD, because ENRAP was implemented by IDRC. As a result, their attitude for cooperation was lukewarm rather than active. In addition, they simply equated ENRAP activities in China with the building of the Chinese website. They were not aware that building of the website was merely one of the many innovative approaches using ICTs to enhance IFAD implementation in China.

The collaboration between ENRAP and MOF, which is the administrative government branch for IFAD projects in China, was not solid. Supports from MOF were insufficient and hesitant. This was demonstrated when I was declined a field visit to one the IFAD project locations in China. Their reason was that there was no official relationship between ENRAP and MOF. Moreover, they claimed that direct contacting and cooperating with provincial and lower-level IFAD project staffs without MOF's awareness and permission was 'illegal'. As a result, a field investigation to IFAD project locations was cancelled and discussions with Chinese IFAD project staffs and other ENRAP-related actors during the workshop became the main input of the research in regards to the ENRAP-China.

4.2 The PATI Project

■   **Introduction of PATI and Related Agencies**

PATI was a three-year project that started in February 2001. Being sponsored by UNDP, administered by China International Centre for Economic and Technical Exchanges (CICETE), Department of Foreign Trade, Ministry of Commerce of the People's Republic of China (MOC), and implemented by China Rural Technology Development Center (CRTDC), the Ministry of Science and Technology of P.R. China (MOST), it aimed to contribute to poverty alleviation in China through access of the rural poor to technical and market information by means of ICTs. It was expected to provide valuable inputs and recommendations to the formulation of national policies and programmes, which integrate the use of ICTs as an effective approach to reduce rural poverty in China.

The project established Information Centres in five different pilot counties, which represented distinct geographical and socio-economic conditions. They were Wu'an City of Hebei Province, Shangcheng County of Henan Province, Huoshan County of Anhui Province, Yilin City of Shangxi Province, and Tongnan County of Chongqing City.
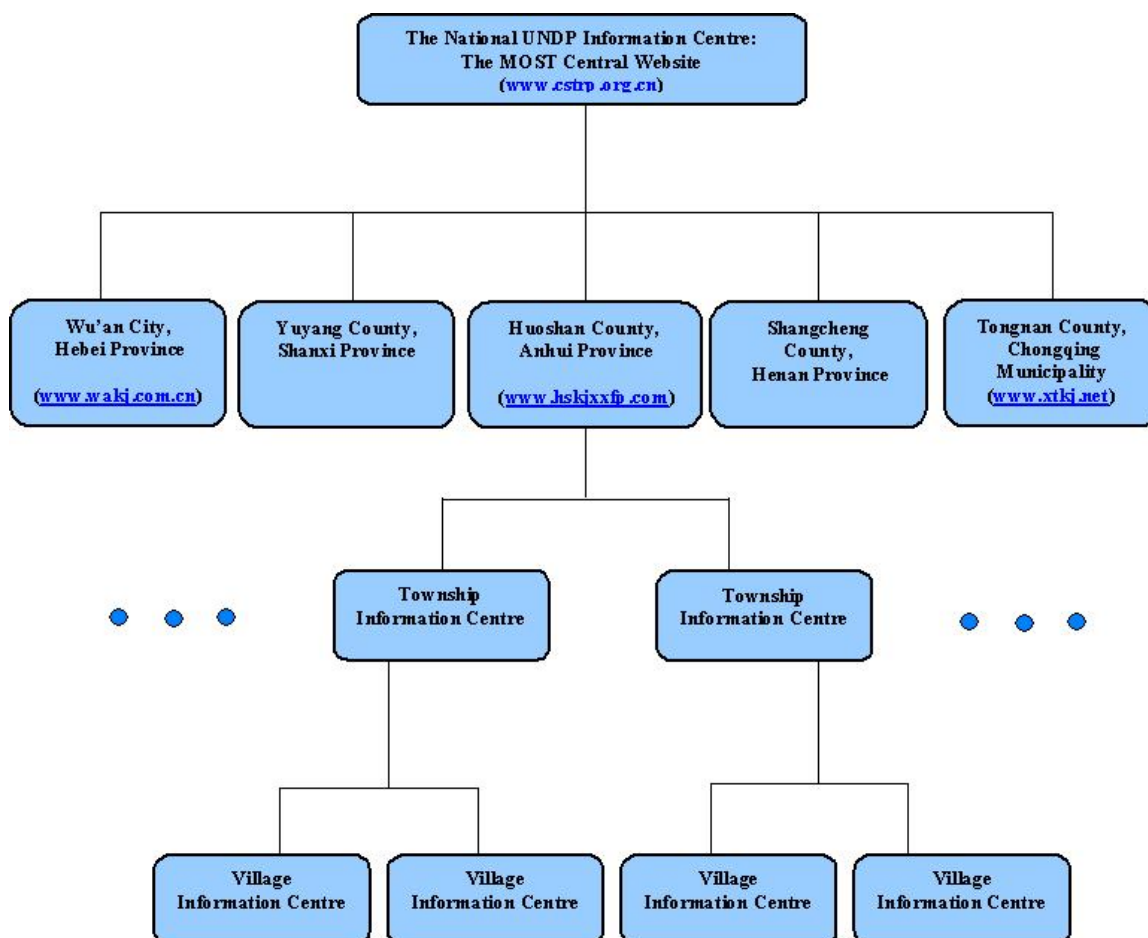
Figure 6 below shows the approximate locations of the five Information Centres, which are highlighted as red solid boxes.

Figure 6: Approximate Locations of the Five Information Centres of the UNDP Project

Four levels of thirty-six project Information Centres in total were established, including: 1) a MOST central Information Centre; 2) five country Information Centres; 3) ten township Information Centres; and 4) twenty village Information Centres. All the Information Centres were managed according to a series of uniform rules and regulations designed by CRTDC of MOST. Every Information Centre at the village level was equipped with two computers, Internet connection, a phone with fax functions, a printer, a TV, and a VCD player. Information Centres at township and county/city levels were equipped with more facilities, including more computers and peripherals, such as scanner, photocopier, etc. The MOST and the five county/city Information Centres created their own websites respectively. Information Centres searched relevant information mainly from their upper level websites. All the services provided by these Information Centres were free. The organizational structure of the UNDP project can be illustrated as follows in Figure 7.

Figure 7:

The National UNDP Information Centre:
The MOST Central Website
(www.cstrp.org.cn)

| Wu'an City, Hebei Province (www.wakj.com.cn) | Yuyang County, Shanxi Province | Huoshan County, Anhui Province (www.hskjxxfp.com) | Shangcheng County, Henan Province | Tongnan County, Chongqing Municipality (www.xtkj.net) |

Township Information Centre   Township Information Centre

Village Information Centre   Village Information Centre   Village Information Centre   Village Information Centre

■ **Implementation of PATI in China**

The UNDP project was completed in February 2004 after the duration of three years. According to feedback from the diverse stakeholders of the project and evaluations from various experts and researchers, both national and international, the project has achieved its original objectives and created positive effects within the local communities in all of the five pilot counties. In order to achieve a closer examination of PATI, one county was chosen out of the five. Wu'an of Heibei Province was selected as the research location.

Choosing Wu'an as the Research Location

Wu'an, located in the northwest of Hebei Province, has a population of 720,000 and an area of 1822.26 square kilometres. As a county-level city, Wu'an has 22 subordinate townships and 502 villages. A county-level city refers to those counties that have been upgraded to the municipality level due to their comparatively faster development pace, in response to the urbanization strategy of the Chinese government.

Enjoying advantages from the convenient geographical location at the congregate section of Shanxi, Hebei, Henan and Shandong Provinces, and plenty of natural mineral resources such as coal, iron ores, marble and almost twenty other products, Wu'an has received enormous economic increases since the economic reforms in the 1980s, in China. It was once accredited in the top ten cities of Hebei Province in 1993. The convenient geographic and transportation conditions, as well as the allocation map of abundant mineral resources of Wu'an can be illustrated in Figure 8 and 9, respectively, as follows.

Figure 8: Geographic Location with Transportation Systems   **Figure 9: Allocation Map of Mineral Resources**

However, Wu'an is also a city with 33.36 percent being mountainous areas, where 46.8 percent of the whole population reside. As a result of an underdeveloped transportation infrastructure and a lack of sufficient mineral resources, these mountainous people mainly depend on agricultural activities such as growing crops and raising livestock for living. This has created a massive income gap between the mountainous people and the rest.

According to a report by the Bureau of Wu'an Science and Technology in July 2003, the income of the mountainous people was less than 30 percent of the average personal income of Wu'an. In western Wu'an where the mountainous geology is dominant, the average annual income of the local people was less than 1,000 RMB (approximately US$120) as of March 2004, compared to the eastern region where the aggregate reached more than 4,000 RMB (approximately US$482). There are currently 9 identified poor townships, 210 poor villages, and 45,000 poor household in Wu'an, with most of them locating in the west. The phenomenon of 'rich east and poor west' in Wu'an has become a characteristic of its development. This has obtained the attention of both local and national governments. The following Figure 10 and 11 present the comparison of the unbalanced development between the east and the west in Wu'an.

Figure 10: Poor townships locate in the West.

	The West	The East
Number of Poor Households	32,000	2,300
Annual Per Capita Income	4,600	1,100
Information Items Gained Per Village Per Day	3,200	380

**Figure 11: Comparison between the East and the West.**

Six sites were selected in the beginning. They are Cishan town and two of its subordinate villages – Erjie and Liuzhuang, as well as Paihuai town and two of its subordinate villages – Pushang and Shangzhuang. During the implementation of the project, it was recognized that two of the four villages had comparatively better economic basis and consequently could not reveal the pure effects of reducing poverty through ICTs. As a result, two 'real' poor villages were added in early 2002 – Menwangzhuang and Shangdian of the Huoshuixiang town. This enabled Wu'an to possess eight township and village Information Centres, more than the average of six in the other four counties. The organizational structure of the UNDP project in Wu'an can be illustrated in Figure 12.

Figure 12: The UNDP Project Organization in Wu'an.
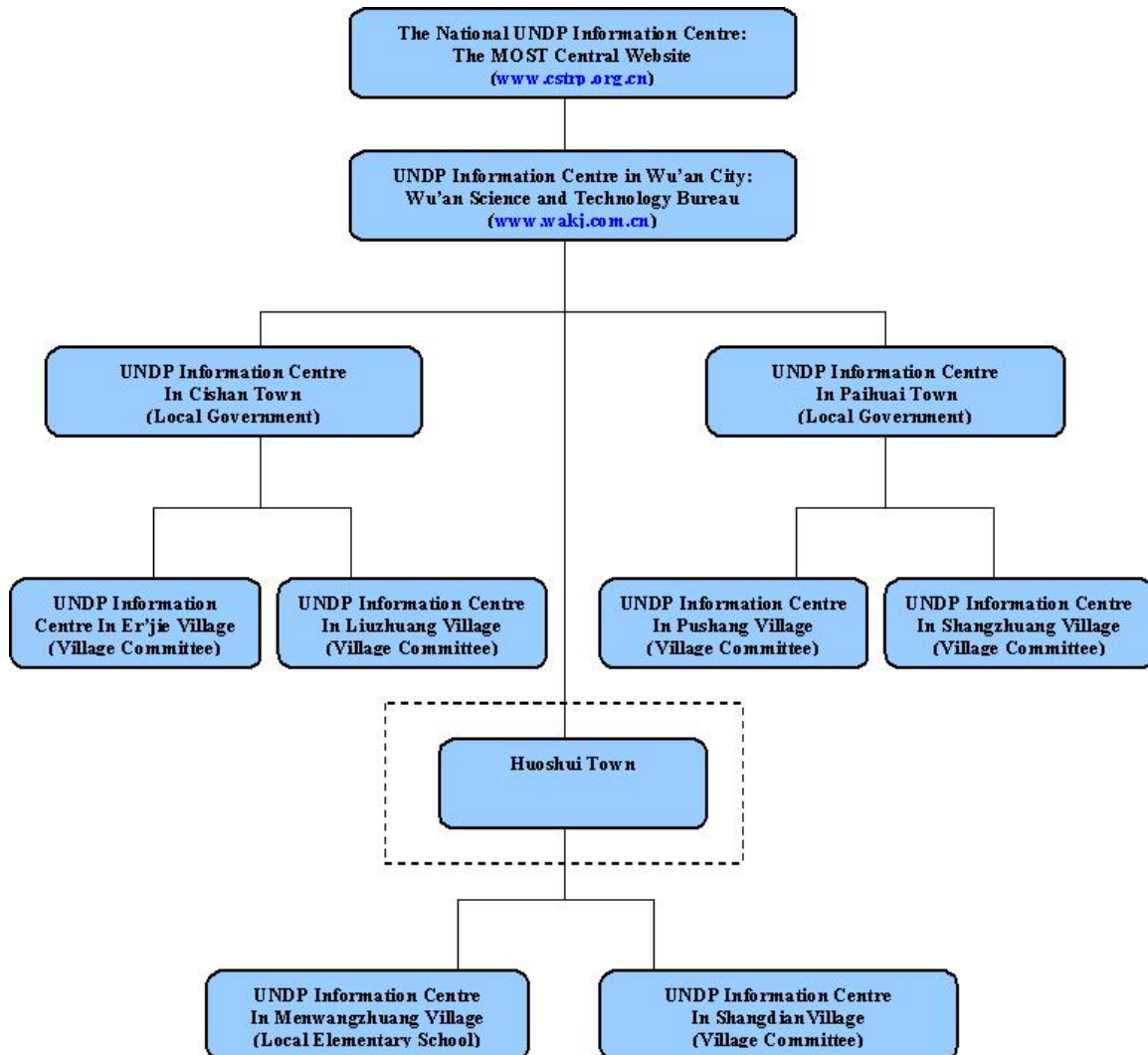
Within the six villages, three levels of economic conditions existed: the better-off level with an annual average income of approximately RMB 12,000 or US$1,000 (Erjie and Liuzhuang), the regular level with an annual average income of approximately RMB 5,600 or US$ 700 (Shangzhuang and Pushang), and the poor level with an annual average income of approximately RMB 1,000 or US$125 (Menwangzhuang and Shangdian). The UNDP Information Centers in four villages and one township were visited during my filed trip. They were Erjie village, Pushang village, Menwangzhuang vilage, Shangdian village, and Paihuai town. These villages have an average of 200 households and 1,000 villagers. Their locations can be illustrated in Figure 13.
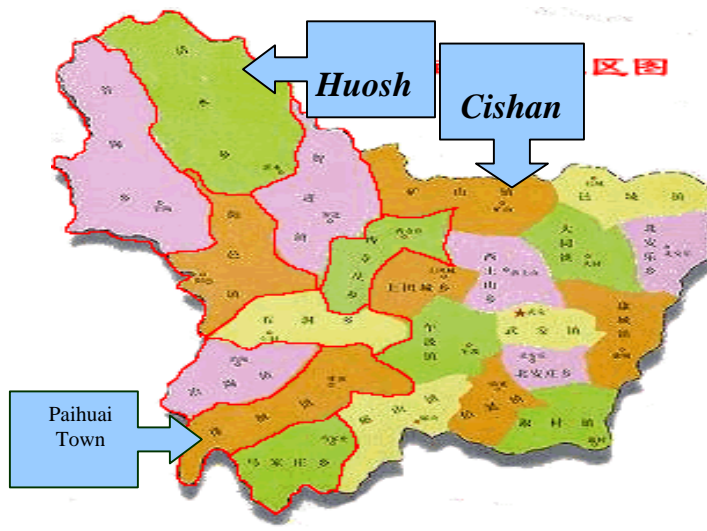
Figure 13: Locations of Visited Towns.

Implementation of PATI in Wu'an

Originally, Laishui County was considered as the potential location for the UNDP project in Hebei Province. However, due to financial and other reasons, Wu'an was finally chosen in virtue of its previous experiences of implementing science and technology projects. The UNDP project was not commenced in Wu'an until August 2001, which was almost six months after the project started in other provinces. Nevertheless, the local government and related government officials of Wu'an paid great attention and provided significant support to the implementation of the UNDP project. As a result, within a short period of three months, the UNDP Information Centre of Wu'an and six subordinate Information Centres at township and village levels were established and equipped with both necessary 'hardware' and 'software'.

The 'hardware', in the city Information Centre, consisted of an 80G server, ten PCs, a hub, a router, an UPS, a printer, a scanner, the LAN establishment, the 2M DDN connection, and other required items. In the subordinate levels of Information Centres, 'hardware' referred to those that were provided uniformly by the UNDP project - two computers, a dial-up Internet connection, a phone with fax functions, a printer, a TV set, and a VCD player.

The 'software' included Chinese version computer application soft wares installed on the computers in Information Centres, such as MS Office, Typing Practice, Audio/Video Player, etc., and a website – *Wu'an Science and Technology Information Online* (www.wakj.com.cn), which was designed and developed by the Architecture Institute of Hebei Science and Technology. The 'software' also referred to the twenty Information Centre Assistants (ICA) – six at the city Information Centre and eighteen at inferior Centres - those were responsible for managing the Information Centres and providing assistances to local communities, in regards to the usage of computers, the Internet, etc. There were on average three ICAs for each Information Centre at township and village levels, with one of them being full-time and the other two being part-time. These ICTs

received periodical training from the UNDP Information Centres at both national and city levels.

After three years' implementation, the effects of the UNDP project have become explicit. As of the end of August 2003, there were 89,000 visitors to the city UNDP project website, 16,800 persons who have visited the Information Centers at the municipal level, and 8,600 at the township or village levels. Their main purposes were to search for useful information in terms of market price, agricultural knowledge, health information, employment opportunities outside villages, etc. There are six major achievements of the UNDP project.

Achievements of PATI in Wu'an

1) Increasing the Income of Rural Communities

In the information era when access to information is crucial for income generation, access to the Internet and other ICTs that are provided by the Information Centers of the UNDP project have granted the rural communities in Wu'an unprecedented opportunities to alleviate poverty and create economic growth. The increased income can be obtained through cost reduction resulting from alternative channels of supplies from the Internet, or through a greater variety of buyers, connected through the information online, of agricultural products or livestock.

Since the commencement of the project, more than 300,000 items of useful information about farming technology, market price, supply and demand, etc. have been distributed from the Information Centers at different levels in Wu'an during the three years. It is recorded that more than 2,000 items of information have created positive effects. Approximately 35,000,000 RMB has been gained either directly or indirectly through the access to information. More than 500 households have alleviated poverty through the access and application of valuable information from the project website and the Internet.

There are many representative cases in regards to the income generation through the access to facilities of the UNDP project. One of them concerns the pig-raiser, Fusuo Zuo, in Paihuai town. Fusuo started to raise pigs since 1985. He currently possesses almost 150 pigs, which can be regarded as large-scale in his village. Upon the encouragement from the ICAs of Paihuai town, he regularly goes to the Information Centre in Paihuai town and checks for information concerning livestock technologies, disease protection knowledge, and fodder price. In May 2002, he obtained information from the website of *China Feed Online* (www.chinafeedonline.com) that the price of corn had the tendency to rise. He bought in 2,000 Jin (1 Jin equals to 1.1 Pounds.) corn with a price of 0.45 Yuan per Jin shortly after. Afterwards, the price of corn did go up to 0.52 Yuan per Jin. As a result, the cost was reduced by 1,400 Yuan. Through this practical gain, he further understood the importance of information and became more acceptable towards the UNDP project. Figure 9 shows Fusuo Zuo and his pigs.

Figure 9: Fusuo Zuo and his pigs.

Another encouraging example occurred in Pushang village. The Internet has provided the local rural communities with alternative and more efficient approaches to search for market information. In early 2002, the village committee of Pushang decided to establish 50 Mu (1 Mu equals to 1/15 hectare.) high-efficiency pilot farmland. They selected 'Ziguang' eggplant as the crop. After cooperation with Handan Agricultural University, the 'Ziguang' eggplant harvest was successful. However, with the significant production of 50,000 Jin per Mu, they could not find satisfactory buyers. Local markets were not aware of this new type of eggplant and were not willing to offer a fine price. Finally, they posted selling information online at the Information Center. Beyond their expectations, within three days, a businessman from Shandong Province visited their field and purchased all of the eggplants at a wholesale price of 1.6 Yuan per Jin. The net income generation from this sale accumulated to more than 10,000 Yuan RMB per Mu. Figure 10 presents a view of the pilot field in Pushang village.

Figure 10: Pilot Field in Pushang Village.

2) Diversifying the Channels of Poverty Reduction

Diversifying income-generating channels is especially important to rural communities. This results from the low economic turnout of single farming activities and many unpredictable factors that may affect the output of one single farming, such as natural disasters and severe weather. However, for most farmers, they do not possess the necessary knowledge to invest in higher income generating activities. There are a great amount of cases showing how the Internet and other services provided by Information Centres have helped farmers obtain advanced knowledge and confidence to invest in activities other than traditional farming performance in Wu'an.

One of the most known examples is from Xin Liu, who is a famous bee raiser in Shangdian village of Huoshui town. Xin had previously had a poor household, with only two Mu mountainous fields to support his sick mother, four children and the whole family. He had interests and basic knowledge toward bee-raising; however, he did not have the confidence to invest in it. After the establishment of the Information Centre in Shangdian village, he learned from ICAs to search for useful information about bee-raising technology and its market from the Internet. After learning that honey products have a quite promising market in China, he was confident to invest in eight boxes of bees. He continued to check useful information in regards to raising technologies and flower sources at different places on the Internet, and practiced them in his bee-raising activities. After a short period of three years, as of 2003, his bee boxes have been increased from eight to ninety-eight, with a total honey output of 8,000 Kilograms. This brought him more than 50,000 Yuan annual income that same year. He currently focuses on bee raising and does not conduct traditional farming any more. His family has emerged from poverty due to the Internet that provided the knowledge to diversify income-generating activities. Figure 11 is a picture of Xin and his bee boxes.

Figure 11: Xin and his bee boxes.

Another good example is the case of He Liu from Menwangzhuang village, Huishui town. He is a regular farmer but was searching for new opportunities to gain extra economic growth. After learning basic computer usages and mastering the techniques to search online, he started to search for an appropriate product to grow or livestock to raise. With the intention to conduct activities with low risks, he selected to raise Ben chickens, because their eggs have a huge demand from different areas in the country. He obtained relative raising technologies and disease protection methods from the Internet. This guaranteed the healthy growth of the chickens. With the fodder ingredients downloaded from the Internet, the egg output of these Ben Chickens was considerably improved. Afterwards, he contacted a super market in Handan city through the Internet and signed a selling contract with it. The total income growth so far was 2,000 Yuan.

There are currently many non-traditional agricultural activities being conducted by farmers in different villages in Wu'an. Other examples are growing mushrooms, raising scorpions, selling antiques, etc. These activities are either initiated or improved by the access to the Internet and other ICTs provided by Information Centers of the UNDP project.

3) Improving the Quality of Local Education

Compared to education in large cities of China or counties of Wu'an, the quality of education in these villages is far behind. This results from several reasons varying from geographical isolation from outside, where up-to-date knowledge and teaching styles are available, to an inimical village environment that attracts few competent teachers. General factors in regards to economic, social and cultural background also contribute to the unsatisfactory educational conditions in the villages of Wu'an. The Internet and other ICTs provided by the UNDP project have delivered an alternative approach to improve the quality of local education.

Firstly, the presence of computers and the Internet has helped bridge the gap between the students in the villages and those in the cities. In the information society, the original development gap between rural and urban areas can be enlarged by the unequal access to ICTs - the digital divide. The training from ICAs has enabled the students in the villages to attain the necessary skills to compete with their urban counterparts, which would likely not have been imagined by their predecessor generations, in the ever-connected world. In Menwangzhuang village, more than 80 percent of the elementary school students have received training on basic computer usage and the application of the Internet. Through the special media, they can access the same resources that can be acquired by urban students. This has tremendously encouraged students' initiative and inspired their innovation. Figure 12 presents a group of cheerful elementary school students after their ICTs training sessions from their teacher and the ICAs of the village.

Figure 12: Elementary school students after ICTs training sessions.

In addition, in Erjie village, distance learning has been incorporated into traditional teaching. They selected reliable national websites that offer advanced Mathematics and English courses for elementary and junior high schools to download numerous teaching notes, conduct online tests, and to obtain answers from experienced online teachers, which otherwise cannot be reached. This has improved the capacities of both the local teachers and students. In the 2002 general examination for elementary schools in the entire Cishan town, the students of the Erjie elementary school has been ranked top, in regards to their general capacities. (Figure 13 is a photo taken when China Central Television – CCTV - visited the Information Center in Erjie village for its usage of distance learning within elementary school students.) In addition to the Internet, in

Shangzhuang village of Paihuai town, the local school has attempted using the satellite cable education channel of Hebei Province to enhance the quality of both teaching and learning. This can be deemed as another utilization of distance learning.

Figure 13: CCTV visited Erjie Information Center in regards to their distance learning in the elementary school.

4) Transforming Conventionally Negative Opinions

The introduction of information networking through computers and Internet has transformed the traditional and deep-rooted opinions in the villages that people in undeveloped regions are doomed to be underprivileged, and that the condition cannot be changed. Through the assistance of the Internet and other ICTs, and actual benefits from participating in the project, rural people in Wu'an have recognized that this powerful alternative can generate income and improve their lives efficiently. They become more confident and determined to change the disadvantaged situations.

According to a study – *Rural Informationalization and Community Development in China*, which was conducted by the Institute of Social Development of China Agriculture University, the project villages have recognized the importance of information towards rural development and have more demand in regards to the information for generating extra incomes and improving the quality of lives. There are many more cases of utilizing information for poverty alleviation in project villages than those in non-project ones. In addition, Professor Gubo Qi of China Agriculture University has pinpointed that, in regards to the degree of advancement of opinions, the non-project villagers are left behind at least three to five years by the project villagers. The UNDP project has accelerated the process of transforming rural communities. Figure 14 shows Professor Qi and two other researchers while they conducted investigations in Wu'an.

Figure 14: Professors from China Agriculture University.

5) Enhancing Capacity Building of Local Communities

Capacity building is one of the most frequently mentioned terms in China when it comes to transforming the current situations in rural areas. This is closely related to the long-standing insufficient education coverage within rural communities on various topics ranging within technical, social, hygienic, cultural and political issues. Defined by the Global Development Research Centre, which is a virtual online organization, capacity building includes the following:

> "Human resource development, the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively; Organizational development, the elaboration of management structures, processes and procedures, not only with organizations but also the management of relationships between the different organizations and sectors (public, private and community); Institutional and legal framework development, making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities."[110]

According to the description, the UNDP project has contributed to the capacity building of local communities in Wu'an, especially in human resource development and organizational development. Capacity building activities have been facilitated by the availability of the Internet and other ICTs in the Information Centers. In regards to human resource development, knowledge, skills, and access to information have all been equipped to rural communities through trainings provided by ICAs. (Figure 15 exposes a busy scene during a computer usage training session in Pushang village, Paihuai town.) There are many examples, as listed previously in the report, that have demonstrated that the access to ICTs can enable the rural people in Wu'an to perform their activities more efficiently.

Figure 15: A busy scene during a computer usage training session in Pushang village, Paihuai town.

As of organizational development, the UNDP project has elaborately-designed management structures, processes and procedures. This can be illustrated in its four-level management organization from national, county, and town, down to village levels. The uniformed project regulations and procedures were defined by the national level and adjusted by the county level to fit specific local situations. The implementation of the

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[110] *Information from the Website of GDRC.* The Global Development Research Center.
<http://www.gdrc.org/uem/capacity-define.html>. Retrieved 10 August 2004.

project was performed from higher levels down to lower ones. The project organizations also managed relationships between different sectors, such as public, private and community. To take the Bureau of Wu'an Science and Technology as an example, as the implementing unit of the UNDP project at the county/city level, it has cooperated with different role-players including government departments, academic institutions and companies, such as the Bureau of Finance of Wu'an, the China Telecom Company in Wu'an, the Information Center of Wu'an Municipal Government, the Handan Agriculture University, etc. In addition, it should be pointed out that the Bureau of Science and Technology of Wu'an has recruited and organized national volunteers and international researchers to assist with the implementation of the project.

6) Presenting a Recommendable Model of Poverty Reduction through ICTs

Poverty is a consequence that results from a variety of factors intertwined by economic, political, social, cultural and other issues. Poverty reduction is one of the most important challenges facing development. As an increasingly powerful tool for participating in global markets, promoting political accountability, improving the delivery of basic services, and enhancing local development opportunities, ICTs has been gradually incorporated into the field of development. ICTs have significant potentials to empower people, especially those in rural areas, being an efficient approach to facilitate the sharing of information and knowledge, which is crucial in the information society of the new millennia.

China has received great achievements in regards to poverty alleviation and other development activities since its economic reforms in the 1980s. In the information era, the Chinese government has recognized the importance of incorporating ICTs and has encouraged the implementation of various ICTs projects for development, especially for rural development. The rapid development of China's information and telecommunications industry, including the declining cost of facilities and Internet connection, has enabled the possibility of utilizing ICTs for rural development.

ICTs projects have recently been designed and carried on by various development agencies in different locations of China. However, due to the fact that incorporating ICTs for development is a comparatively new approach, there are problems and challenges facing the implementation of these projects. A feasible and successful model for implementing ICTs projects in rural China will be beneficial for the efficient utilization of ICTs for poverty alleviation.

Cooperated mainly between UNDP and MOST at the national level, PATI has established a referable model in regards to large-scale projects of ICTs for development in China. Many valuable experiences of the project, both positive and negative, have been collected during the process of implementation. Due to the representative situations of the five pilot counties, the model of the networks of four-levels of multi-media Information Centers can be extended into similar projects in other areas of China. In the case of Wu'an, correspondingly, due to the representative cases of the eight townships and villages, their implementation can be used in other townships and villages of Wu'an.

The achievements of the project have been disseminated through both local and national media. For example, *Handan Daily* reported the experiences of poverty reduction through ICTs in Wu'an on 19 April 2004 (Figure 16). On December 20, 2003, *Science and Technology Daily* introduced the UNDP project in Wu'an (Figure 17). The successful implementation and solid results of the project have not only convinced the project participants, but also attracted adjacent rural communities. The importance of information and the informationalization model of development have become more recognized and accepted by local people in Wu'an. Non-project townships and villages have indicated their intentions to develop similar projects and welcome both national and international assistances. Various telecommunications companies, such as China Telecom and Unicom have observed the possibilities of investing in rural areas and were more confident to expand their business in these regions subsequently. Moreover, the municipal government of Wu'an was determined to invest in ICTs projects for poverty alleviation in a broader range including more disadvantaged townships and villages.

Chapter 5
Analysis and Results

As an initiative to facilitate the implementation of IFAD projects in China through access to ICTs, ENRAP in China has shared tremendous similarities with PATI. Firstly, both focus on poverty alleviation for rural communities using new technologies. Secondly, both face a broad range of subjects located in different provinces – five for the UNDP project and ten for the IFAD project. Thirdly, both of the projects are based on a layered infrastructure of national-city/county-town-village. Fourthly, the implementation of both projects involved collaboration with appropriate departments of the Chinese government. Fifthly, both are sponsored by prestigious international development organizations. Furthermore, even their durations coincidently fall into a three-year term

Despite these similarities, the performances of the two projects can be readily distinguished from each other. Compared to the UNDP project in Wu'an specifically, ENRAP has not achieved any tangible advancement ever since the kick-off ENRAP meeting in Guilin, China in November 2003. In Wu'an, the project website had been completed and the large-scale awareness-raising activities had been conducted within the first three months. In the case of ENRAP, when I spoke with the Chinese project staff of IFAD, in the ENRAP Regional Annual Meeting/Mid-term Review Workshop in June 2004, all of them were still perplexed by the mandate and objectives, and suspected the validity of ENRAP. As a result, the question rises: What are the reasons underlying and what experiences can be learned from both projects. To search for the answer to the question is the main task for this chapter.

5.1 Analyzing Reasons for the Successful Implementation of PATI

The successful implementation of the project is not an accidental phenomenon. Instead, it is a contribution from diverse role-players and a consequence mixed with various factors. An analysis of the reasons resulting in the achievements of the project and an illustration of the experiences that can be learned from the project will be conducted in the following section of the report.

■ **An Efficient Organizational and Management Mechanism**

The UNDP project had a four-level project structure: country – county/city – township - village. Appointing the MOST in Beijing as the top implementing entity, the Science and Technology Bureaus of different counties (in the case of Wu'an, city) have accordingly become the implementing institutions of the UNDP project. Each superior level directly administered the immediate inferior organization and indirectly administers all the subordinate levels. People that were responsible for the implementation of the project were assigned at each level.

Based on the level administration structure, a more elaborated implementing mechanism has been designed in Wu'an. It involved the entire key players of the project –

government officials, project staff, and ICAs – with their clearly specified responsibilities respectively. An overall setup can be referred to Figure 24.
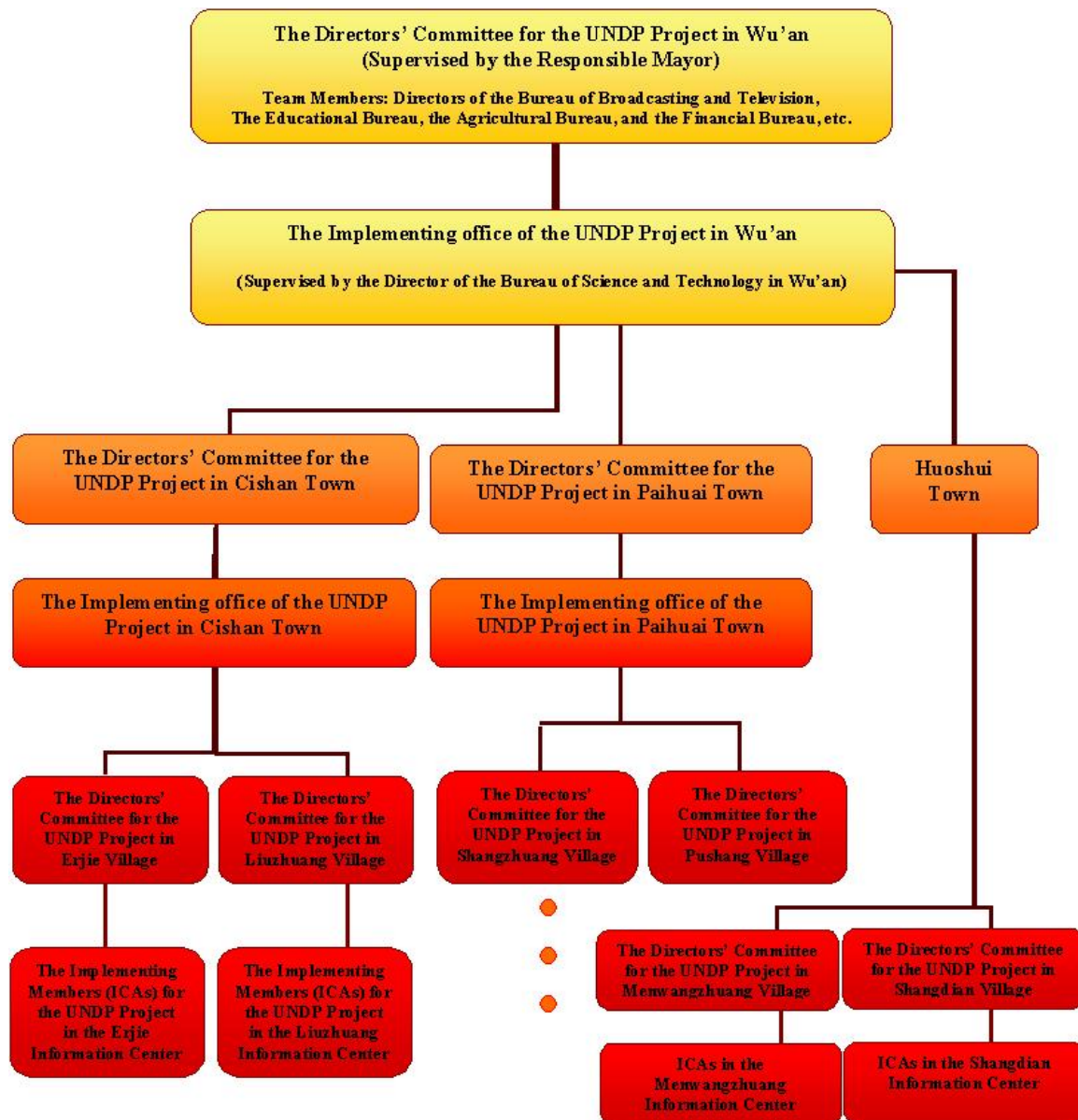

Figure 24: An overall setup of the implementing mechanism for the UNDP project in Wu'an.

Special Committees and Offices were established specifically for the efficient implementation of the project. As Figure 24 has illustrated, at each level, there were both a supervisory unit to ensure the smooth implementation of the project, and an implementing unit to execute relative activities. Members of the units varied according to different levels. In general, supervisory units were composed of heads of relevant government departments or village committees, and implementing units of project staff and ICAs.

The top supervisory unit in Wu'an – the Directors' Committee for the UNDP Project in Wu'an - was comprised by chiefs from different government departments, whose cooperation and support was necessary for the implementation of the project. The chiefs were from the Bureau of Broadcasting and Television, the Education Bureau, the Agricultural Bureau, the Financial Bureau, and the other government institutions in Wu'an. One of the vice-mayors of Wu'an, as the head of the Committee, was responsible for the overall administration and implementation of the UNDP in Wu'an. The establishment of the Directors' Committee has guaranteed the efficient project implementation without lengthy and uncooperative responses from related institutions, which are common in non-government activities. The implementing office at the city level was composed of project staff selected from the Bureau of Science and Technology, with its head being the Chief of the Bureau.

Similar to the municipal level, a Directors' Committee for the UNDP Project at the township level was a gathering of related township government departments, with its head being the chief of the township government. Special implementing offices for the UNDP project were also established at the township level, with their members being project staff selected from township governments. At the village level, a Directors' Committee is equivalent to a village committee, which was composed of heads of the village. The implementing unit of the villages were comprised by ICAs at Information Centres.

Based on the well-organized physical infrastructure, a series of management measures were conducted at all levels of the project. There were concrete project plans, cost auditing policies, and other regulations related to the project. Project plans and periodical reports were completed and submitted every six months to the higher-level project units for assessment and evaluation. Five main regulations were designed and formalized: "Regulations for the Wu'an UNDP Project's Financial Management", "Regulations for the Management of the UNDP Information Centers", "Regulations for the Management of the UNDP Information Center Assistants", "Regulations for the Reward and Punishment of the UNDP Information Center Assistants", "The Implementing Elaborations of the UNDP Project". In addition, there was a regular meeting on every 10th day of each month, which was not missed under any circumstances such as weather or holiday. Project staff, ICAs and related government officials discussed project-related issues during the regular meetings. The combination of the all-included regulations and appropriate management measures with the levelled organizational structures ensured the efficient implementation of the project.

■ **The Cooperation with Government Departments**

Cooperation with governments is always beneficial in regards to the convenience and supports provided to the implementation of projects. This is especially correct in the case of China, where the top-down approach is still the most efficient and powerful tool to inspire and activate people. The distinctive political structure and cultural background of China have positioned the government as the core of the society. Lesser degree of privatization of different industries also solidifies the importance of the government. A

project, more specifically an international project, will require more permission and supports from the government for its 'pleasant' implementation in China.

Cooperation with the Chinese government was essential to the success of PATI. UNDP has selected the appropriate departments of the Chinese government. The project was administered by CICETE, MOC, and implemented by CRTDC, MOST. Possessing many previous experiences of international cooperation in regards to science and technological projects in China, the two departments were the most appropriate institutions to be collaborated with. They have significantly contributed to the efficient operation of the project, due to their administration authority and close connections with the relevant implementing departments at project locations.

Similar justifications apply to the lower levels of the project. In the case of Wu'an, government institutions, such as the Bureau of the Science and Technology, township governments, and village committees, were the main actors to activate the progress of the project. Without the support and cooperation of the government, both local and national, it would be almost impossible to complete the establishment of the eight Information Centers and the project website, and several large-scale awareness-raising activities, within a period of merely three months in Wu'an.

Another benefit from cooperating with the government is the possibility to absorb more funding. The total investment of the UNDP project was US $2,500,000. However, the funding from UNDP was merely US $650,000, with the rest of the amount being shared by the MOST and the five county/city level local governments – US $850,000 from the MOST and US $200,000 for each of the five local governments. China's economy has become more and more prosperous since its economic reforms in the 1980s. Recognizing the importance of information and the emergency of rural development, China has determined to invest enormously on projects of ICTs for development. However, lack of experiences and advanced development principles, China is looking for international partners with strategic plans in this perspective. The cooperation between the Chinese government and international development organizations can significantly extend the number of project beneficiaries.

■ **Partnerships with Various Institutions and Actors**

With the intention to alleviate poverty through the assistance of new technologies in rural China, PATI related to a broad range of fields and disciplines, such as agriculture, telecommunication, education, media, science and technology, etc. In order to achieve a solid supporting basis, which could facilitate the progress of the project, the Wu'an UNDP project has established an extensive cooperation with multidisciplinary institutions and actors during the project period. These included the Agricultural Bureau, the Forest Bureau, the Livestock Bureau, the Public Health Bureau, the Cultural Bureau, the Municipal Library, the Information Centre of the Wu'an Municipal Government, the Bureau of Broadcast and Television, China Telecom, and quite importantly, a series of academic institutions and researchers that provided technology and research assistance.

Cooperation was an integral part of the efficient complementation of the project. China Telecom in Wu'an has offered favourable prices to the UNDP project, in regards to the cost incurred by Internet connections and other communication services. This action has reduced the project-related expense and will lessen the pressure on sustainability of the project after its closure. Suggestions from professors and students of the Institute of Hebei Construction, Science and Technology, China Agricultural University and others have resulted in a series of appropriate regulations and measures for the operation of the project. In addition, they have assisted ICTs trainings to project staff and ICAs in Wu'an, who were able to manage the Information Centres shortly after the well-designed training. The support and contributions from professionals of various institutions have created an expert reservoir, which enabled activities such as Expert Online and others. Through investigations conducted by both national and international researchers, the UNDP project has been introduced to a wider population.

■ **A Combination of Diverse ICTs**

PATI is a Telecentre project. One of the main reasons for the effective transmission of information and knowledge through these Telecentres is the application of diverse ICTs. Compared to conventional media such as television, radio and newspapers, the Internet can be a more efficient and powerful tool in terms of communication and dissemination. However, the current conditions in rural areas, such as insufficient communication infrastructures and limited access to computers and the Internet, determine the fact that alleviating poverty through merely the Internet is unrealistic.

ICTs, as defined by the World Bank group, consist of "hardware, software, networks, and media for collection, storage, processing, transmission, and presentation of information (voice, data, text, images)."[111] Some examples of the most frequently used ICTs nowadays include telephones, televisions, computers, word-processing software, E-mail, the Internet, etc. UNDP has recognized the necessity of incorporating multimedia into the implementation of the project. It has suggested, in the project description text that, in regards to information transmission media and technologies, not only the most advanced technologies will be utilized, but also traditional communication methods, such as television, radio, and village level networking systems.[112]

The Wu'an UNDP project has integrated various methods as the media for disseminating knowledge and information to rural communities and project related people. First of all, as the core of information source, the Wu'an Science and Technology Information Online (www.wakj.com.cn) was established at the beginning of the project to provide information including practical technologies such as growing crops, raising livestock, planting vegetables, fruits and other various crops, market prices of different agricultural products, and other valuable sources. The forum of demand and supply information, BBS of asking and answering questions, and other efficient functions were designed as part of the website as well.

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[111] *Definition from the Website of the GICT.* Global Information & Communication Technologies Department, The World Bank Group. 2002. < http://info.worldbank.org/ict/ICT_ssp.html>. Retrieved 11 August 2004.
[112] Project Report from the Bureau of Wu'an Science and Technology.

Consulting and requesting technical assistance services from CRTDC, in terms of transforming the website into a highly focused and information-driven portal that provides users with tangible content and useful data, were conducted regularly. The website has been updated twice during the past three years in order to better meet the needs of different users. (Figure 18 reveals the layout of Wu'an Science and Technology Information Online.) Moreover, the Office of the UNDP project in Wu'an has collected and summarised approximately 100 practical websites for the reference of ICAs and farmers. Some examples are China Agricultural Information Networking (www.agri.org.cn), China Cattle Networking (www.chinacattle.net), China Farmers Networking (www.farmer.net.cn), and other websites that are closely related to farmers' daily lives and activities.

Figure 18: Wu'an Science and Technology Information Online (www.wakj.com.cn).

There is another initiative conducted by the Wu'an UNDP project – Experts Online, is worthy of being introduced in the report. Organized by the Wu'an Science and Technology Bureau, the activity was performed on July 2, 2003, from 9:30 am to 12:00 pm, at the Information Centre of the Bureau. Based on the project website (www.wakj.com.cn/bbs), a group of ten agricultural, medical and development experts were recruited to answer online questions proposed by farmers of Wu'an on a real-time basis. Farmers who wanted to ask questions went to one of the eight UNDP project Information Centers during the specified time slot. They submitted their questions either by themselves or by ICAs who collected and entered questions more rapidly. 155 questions in total were answered during the session. Feedback from participant farmers was affirmative and the almost simultaneous authoritative responses from experts have amplified their enthusiasm towards the project. This is a good example of using the advantages of new technologies to promote the project within rural communities. Figure 19 presents the Expert Online activity. A summary of the questions and answers can be referred to in the Appendix (in Chinese).

Figure 19: The spot of Expert Online activity.

In addition to the utilization of the Internet, the Wu'an UNDP project has also combined the potentials of traditional media, which were an efficient supplement to disseminate knowledge and attract a wider range of farmers into the project before the availability of computers and the Internet could meet the needs of most rural communities. For example, the project relied on existing cable television systems to broadcast science and technology programs. Farmers could either watch those from home, if televisions were available, or at the Information Centers. They could select specific programs of their interests to be played through the telephone ordering system. The Information Centers had a collection of VCDs and videotapes of topics related to agriculture, science and technology, etc. ICAs sometimes organized a group of people to watch these programs together. Individual farmers could also visit the centers to watch the VCDs or tapes by themselves. Figure 20 shows an organized watching activity in Liuzhuang village.

Figure 20: Farmers of Liuzhuang village are watching videotapes at the Information Center.

Periodicals, blackboards, window displays were all information carriers of the UNDP project. Every project site has created its own periodicals, normally bi-weekly. The contents of these periodicals were from information downloaded from the Internet by ICAs. Materials on blackboards and window displays at the Information Centers were changed regularly, approximately every ten days, by the ICAs. Brochures were created occasionally at special circumstances. For example, during the SARs period, brochures of Preventing SARs were created and transmitted to rural community households. In a few villages, the old fashioned broadcasting system, using loudspeakers to transmit notices and information within the villages, was still used. It was estimated, by the Wu'an Bureau of Science and Technology, that information transmitted by the multiple media had covered 87 percent of the rural communities in the UNDP project sites.[113] Figure 21-23 present a variety of information carriers of the UNDP project.

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[113] The Wu'an Science and Technology Bureau. *Reports on Implementing the Project - Poverty Alleviation through Information.* March 2004. P5.

Figure 21: Wall, blackboard, and window displays of information from the Internet.

Figure 22: Periodicals created by ICAs at different Information Centers.

Figure 23: The SARs Brochure.

■ **Utilizing Existing Facilities**

One of the key strategies PATI was to build on the existing ICTs facilities and community level communication networks so that the project could benefit the greatest number of households, including even the poorest and most disadvantaged in the pilot areas. As suggested in the project description text,

> "Existing computer facilities in middle schools in targeted townships can serve as communication links bridging gaps of information infrastructure between the county/township level and the community/households level. Students can also serve as voluntary information conveyers from the Internet to home." [114]

Inspired by the suggestions, the Information Centres in Wu'an were established at either local schools or village committee offices, where space was available and basic facilities were equipped. In Menwangzhuang village, the Information Centre was located at the local elementary school, where four non-networked computers were accessible to all the teachers and students. Due to the fact that only two computers were provided to each Information Centre from the UNDP project, the four computers definitely extended the reaching scope of the project in the village. Conversely, the local elementary school has

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[114] China Rural Technology Development Center. P5.

mutually benefited from the UNDP project in regards to the improvement of educational conditions with the Internet connection and other multimedia facilities.

Moreover, some of the teachers have been hired as part-time ICAs. By training the students at school, these teachers requested students bring printed copies of information downloaded from the Internet to their family members, who might not be interested in the project otherwise. As easy acceptors of new concepts, students have indeed become the important conveyors between households and the Internet. Figure 25-27 show the Menwangzhuang Elementary School, its computer room, and the UNDP Information Centre, respectively.

Figure 25: Menwangzhuang Elementary School.

Figure 26: Computer room of Menwangzhuang Elementary School.

Figure 27: The Menwangzhuang Information Center, which is located at Menwangzhuang Elementary school.

While complying with the principals defined by UNDP, the Wu'an project has conducted appropriate adjustments in order to adapt to local circumstances. Not all Information Centres were established at local schools in Wu'an. In effect, six out of the eight UNDP project Information Centres were positioned at the village committee offices or township government offices. This is on account of their more favourable infrastructures compared to schools. For example, in Erjie village, which is economically better-off compared to other project sites, a computer room with fifteen PCs has already been set up at the village committee office building for general use of the entire village. (Figure 28 presents a view of the computer room.) In Paihuai town, the Information Centre was located at the township government, which was quite close to a local school and had better management and facility basis. The locations of the Information Centres in Wu'an were selected elaborately in order to make the best use of available facilities and achieve a more effective project outcome.

Figure 28: The computer room at the village committee office of Erjie village.

■ **A Commitment to Awareness Raising**

ICTs as a new approach for poverty reduction and life improvement remained unknown to most of the rural communities in Wu'an three years ago. Those in rural communities, they neither understood the potential nor the importance of the project. Furthermore, many of them were intimidated by new technologies, especially the Internet, which for them was complicated and the only privilege for city residents. Also, few, if any, knew what UNDP represented. Awareness raising activities among the rural communities were necessary, and in effect, were essential to the implementation of the project.

The purposes, plans and expected results of the project were introduced to rural communities for their understanding. These were the preconditions for implementing the project successfully. The benefits that might be incurred from the project were also presented to rural communities in order to obtain active cooperation from them. These included timely information relating to market prices for agricultural products, advanced and appropriate technologies, education and medical knowledge, supply and demand requests, etc. In addition, the very special feature of the Internet - two-way communication, was introduced to rural communities as well. It was pointed out that the project could enable local communities to access information on public services, regulations and policies and to relay their concerns back to the relevant administrative unit. In order to facilitate the process of awareness and understanding of new technologies and the project, a series of large-scale awareness raising activities were carried out by UNDP project staff and their diverse partners.

The methodology of 'three combinations' was applied during the process: the combination of awareness raising with 'Science and Technology Going to Villages', the combination of awareness raising with individual-general approach, and the combination of awareness raising with basic education. The combination of awareness raising with basic education, as explained previously, focused on school students who became the bridge between the Internet and rural households. This will not be reiterated, more description can be referred to in the Taking Advantages of Existing Facilities section. Emphasis will be provided on the remaining two 'combinations'.

'Science and Technology Going to Villages' was an initiative of the Wu'an UNDP office that organized government departments including health, education, agriculture and others to teach practical rural technologies in villages. During these teaching sessions, the UNDP project was propagandized among rural communities. Based on farmers' pervasive recognition and acceptance towards teaching of rural technologies from the government, the project has reached almost all of the local households in the project areas. The attendance of some experts and professionals from China Science Academy, which were invited by the UNDP project at the national level in Beijing, has enhanced the authority of the UNDP project within local rural communities in Wu'an. During the three years, there were totally twelve large-scale teaching sessions being conducted, with approximately 90,000 copies of relevant materials being distributed to rural households. Figure 29 presents a scene during one of the teaching sessions in Pushang village.

Figure 29: One 'Science and Technology Going to Villages' teaching session in Pushang village.

The individual-general approach was designed according to the psychological status of farmers, in order for a more efficient implementation of the project. Due to the limited living sphere, farmers are familiar with each other and normally are keen to learn from others when the latter have obtained improved living conditions, especially when economic factors are involved. This may either result from jealousy or admiration, both of which elicit the desire to improve. During awareness-raising activities, representative examples of poverty alleviation through the access to ICTs were emphasized to educate and encourage farmers, such as the example of the pig raiser, Fusuo Zuo, who reduced the cost of feeding materials after obtaining valuable price information from the Internet. As Fusuo became famous all over Paihuai town, where he lived, the 'magic' and significance of the Internet and the UNDP project has been transmitted to almost every household in town. The number of people who visited the Information Centre and experienced the Internet at Paihuai town was doubled within a month after the diffusion of the example.

The Wu'an UNDP project has recognized the importance of representative cases and designed appropriate measures. For example, as prescribed in the *Regulations for the Management of the UNDP Information Centre Assistants*, ICAs were supposed to closely connect ten of the most potential information users within farmers every month in order to generate more successful cases of using information, and consequently, attracted more farmers into the project. Every project site had a record of representative cases, which were used in various awareness-raising sessions. The increasing number of farmers who became believers and supporters of the UNDP project can demonstrate the validity of the innovative individual-general approach, using individual cases to promote the general acceptance of the project. Figure 30 shows a discussion session conducted by ICAs and representative households.

Figure 30: A discussion session conducted by ICAs and representative households.

In order to intensify recognition towards the UNDP project, six awareness-raising conferences targeted the leading group, especially those at the township level. These were performed as a supplement to the 'three combinations' approach. Although rural communities are the potential beneficiaries of the project, awareness raising among the leading level cannot be ignored and underestimated. Their understanding towards new technologies and the project were not much better than that of rural communities. As the essential actors to organize and implement the project, awareness raising was indispensable for this group of people. Figure 31 shows one of the awareness-raising conferences.

Figure 31: An awareness-raising conference among leaders at the township level in Wu'an.

■ **An Emphasis on Training and Capacity Building**

One of the most important factors that resulted in the achievements of the UNDP project in Wu'an should be attributed to its determination and devotion on training and capacity

building. Training, as a direct and efficient method to enhance capacity building, is especially required for local communities due to their limited capabilities to utilize information technologies, which were essential for the implementation of the UNDP project, and furthermore, for involvement into the information society.

The subjects of training included project staff, ICAs and rural community members. Training was provided from higher to lower levels. Project staff of the Wu'an UNDP project received regular training from the national level UNDP project in Beijing. With improved capabilities, these project staff have conducted six training sessions, in total, for all the ICAs in Wu'an. Each session lasted for approximately ten days. (Figure 32 shows the ICAs of one training session.) Similarly, ICAs took the responsibilities of training local communities at the eight demonstration project locations, using the skills obtained from the project staff at the municipal level.

Figure 32: Participating ICAs of one training session at the Bureau of Wu'an Science and Technology.

The content of the training was carefully designed for each group with coverage of various practical computer applications that were most needed by these three groups respectively. For project staff and ICAs, with senior training requirements, more advanced topics of both application and administration levels were included. Some examples were network knowledge, computer operating system knowledge, Microsoft Office suite software (Word, Excel, PowerPoint), Internet knowledge, Website building skills, Internet security, Database operating knowledge, Hardware basics, troubleshooting techniques for both software and hardware, and ongoing system maintenance skills, etc. For rural communities, basic training on typing and searching information online was most necessary. More advanced applications were offered upon request from rural communities members, such as the usage of e-mail and how to post a message on the Internet, etc.

The outcomes of the training were improved proficiencies in ICTs applications for people at all three levels, and enhanced competency in management and training skills, especially for project staff and ICAs. Through these systematic trainings, project staff at the municipal level could be able to operate and maintain the Information Centre at the Bureau of Wu'an Science and Technology, also to design and organize training sessions of medium size including approximately thirty ICAs. Figure 33 shows one of the UNDP project staff training ICAs at the Information Center of the Bureau of Wu'an Science and Technology.

Figure 33: One of the project staff at the municipal level is training ICAs at the Information Center of the Bureau of Wu'an Science and Technology.

The improved capacities for ICAs were essential for the effective dissemination of ICTs application among rural communities. ICAs were the immediate instructors for rural community members. Their qualities of training farmers and operating the Information Centers, to a great extent, decided the efficiency of the project. With the necessary computer-related applications, operational and teaching skills attained from the project training, they were able to self-sustain the operation of Information Centers and provide relevant guidance and training to local residents.

Capacity buildings of rural communities were indispensable for the UNDP project, if the result of poverty reduction through access to ICTs needed to be achieved. Training from ICAs has enabled improved capacities of farmers to comprehend the importance of ICTs in the information era, and to search necessary information online using ICTs application skills. Improved capacities have empowered rural communities consequently. They became more confident in the future process of alleviating poverty with the assistance of ICTs.

■ **A Consistence of Encouraging Women's Participation**

Gender issues were granted great consideration from the beginning of the project. The Wu'an UNDP project has recognized that, in addition to male farmers, only with the vast involvement of women can the project be deemed as a genuine success. Various activities have been designed to encourage the participation of women into the project during the project term. For example, in Cishan town, a training session was conducted particularly for women each week. This activity has provided additional opportunities for women to learn ICTs applications and practice the techniques to surf the Internet, without concerns such as being laughed at by men who are likely more proficient at learning computer-related applications. The specified frequent trainings from the official UNDP project office at the township level also justified rural women's participation, which might otherwise be affected by endless housework.

Moreover, in Wu'an, several Information Centers were operated by young women from villages. These female ICAs have attracted the participation of other women farmers from the villages. In addition, the presence of these women ICAs was a convincing representation for attracting women's active participation. Figure 34 is a full-time ICA of Shangdian village at the Information Center.

Figure 34: A full-time ICA of Shangdian village at the UNDP Information Center.

The participation of women from the Wu'an villages has enormously changed their unenlightened minds, which had only concentrated on housework in the past. With the Internet being the powerful tool, they have the opportunities to expand their limited living spheres to the infinite outside world, where they can find the most advanced concepts nowadays, in regards to educating children, family healthcare, and thoughts on women' empowerment, etc. In addition, through the Internet and other ICTs, some women have discovered new roles as family income generators. For example, in Menwangzhuang village, a female farmer has helped her family develop connections with antiques buyers in other provinces through information obtained from the Internet. Figure 35 is this confident female farmer and her daughter.

Figure 35: A female farmer who has benefited from the Internet in Menwangzhuang village.

■ **Upgrading Networking Infrastructures**

The success of the UNDP project resulted from various reasons, within which the organizational structure, management styles, well-designed regulations and trainings, and its commitments to awareness raising and women's participation, etc. have all significantly contributed to the achievements received by the project. However, there is another factor related to physical facilities that cannot be ignored – the constant upgrading of hardware and networking infrastructure, when financial conditions permit.

The importance of hardware is easily underestimated by project practitioners in many cases, either due to financial reasons or the compliance to the mandate that minimal requirements are sufficient. However, the updating of hardware and networking infrastructure have greatly accelerated the acceptance of the UNDP project among rural communities, taking into consideration of the psychological factors.

At the early stage of the project, in 2001, 64K dial-up Internet connections were installed at all Information Centers in Wu'an. The slow dial-up speed and its deficiency of frequently going-offline have created many inconveniences and frustrations among both project staff and rural community members. For the farmers who had no other experiences of using the Internet, some of them held opinions such as the Internet might be good, but it is not easy and comfortable to use. This had diminished their enthusiasm to some extent following the extensive awareness-raising activities.

The Wu'an UNDP office has recognized this problem. In order to eliminate the barriers of implementing the project, they negotiated with China Telecom to install ISDN for several project sites at a reasonable price. This action has greatly increased the number of people who visited those Information Centers and used the Internet. In early 2003, when the price of ADSL became affordable to the general public at RMB 720 Yuan (approximately CAD 120) per year, the project managed to update the networking infrastructure again, although only in a few project sites. The rest of the project sites have been updated to 128K ISDN. When I visited the project sites in July 2004, I was told that all the eight project sites had been updated to ADSL. Figure 36 presents the upgrading progress of the networking infrastructure in the eight project sites of Wu'an.

	2001	2003	2004
Cishan Town	64K Modem	128K ISDN	1M ADSL
Paihuai Town	64 Modem	1M ADSL	1M ADSL
Erjie Village	64K Modem	1M ADSL	1M ADSL
Liuzhuang Village	64K Modem	1M ADSL	1M ADSL
Pushang Village	64K Modem	128K ISDN	1M ADSL
Shangzhuang Village	64K Modem	128K ISDN	1M ADSL
Menwangzhuang Village	64K Modem	128K ISDN	1M ADSL
Shangdian Village	64K Modem	128K ISDN	1M ADSL

Figure 36: The upgrading progress of the networking infrastructure in Wu'an.

In addition to the networking connection, constant upgrading activities were conducted at the Information Center of the Bureau of Wu'an Science and Technology, where the server of the project website is located. Five updates were performed within the three years. As a result, the hard drive was enlarged, the software functions were improved, anti-virus systems were established, and the quality of server was guaranteed. The stable access to the website by the project participants was ensured.

5.2 Analyzing Reasons for the Difficult Implementation of ENRAP-China

■ **Lack of an Appropriate Implementing Agency**

As compared to PATI, which was sponsored by UNDP, administered by CICETE, Department of Foreign Trade, MOC, and implemented by CRTDC, MOST, ENRAP-China merely depended on a single local consultant. Hiring local consultant is feasible under certain circumstances, especially when there is a lack of understandings towards local conditions. However, for a large-scale project that is covering ten provinces, completely relying on one individual is not reliable, especially when there is no monitoring system existing to measure the work of the local consultant. Moreover, the local consultant for ENRAP-China worked only on a part-time basis with a commitment of up to five days each month. As proposed by Chinese IFAD project staffs, this local consultant was not quite familiar with IFAD-related issues, although he had experiences in utilizing ICTs, such as website-building. The inefficient work of the local consultant has become one of the most barriers in the implementation of ENRAP in China.

According to the Interim Evaluation for ENRAP by IFAD, the national ENRAP coordinators should fulfill the following responsibilities: 1) building a community of professionals around a few key themes relevant at the national level; 2) organizing capacity building activities and promoting information exchange on project execution; 3) coordinating budgetary allocation to projects; and 4) running discussion in specific thematic areas and moderating publication of project material on the ENRAP website.[115] The Chinese local consultant hired has fulfilled none of the activities above. Moreover, it was also suggested in the Interim Evaluation that organizations which have technical competence in knowledge management and understand the domain of poverty alleviation work can be selected as implementers, which can help in integrating ENRAP with the core activities of the IFAD-supported projects.[116]

There was a pronounced gap in the organization of ENRAP in China. There were sponsoring agencies – IFAD and PAN Asia, IDRC; administering institutions – MOF; and facilitating unit – the local consultant. However, there was not an agency or actor to undertake the main responsibilities of implementing the project. No concrete national plans were ever constituted, neither general nor periodical ones, for the implementation of ENRAP in China, since November 2003. Without the guidance of specified plans, and consequent monitoring of the progress of ENARP, many activities were delayed indefinitely.

Efficient monitoring activities towards the local consultant should be carried out if this single person would be the implementing unit. Due to the fact that the local consultant is the only representative of ENRAP in China, more monitoring measures should be designed to ensure his responsibilities being performed. There were no measurable

[115] IFAD. "Electronic Networking for Rural Asia/Pacific (ENRAP) Interim Evaluation –agreement at Completion Point: Eleven Insights." January 2002.
<http://www.ifad.org/evaluation/public_html/eksyst/doc/agreement/pi/enrap.htm>. Retrieved 8 November 2004.
[116] Ibid.

references for his performance in regards to the ENRAP progress in China. There is a clear need for auditing the productivity of such local consultants to ensure funds are spent prudently and achieve maximal results. IDRC should not hand over all responsibilities, such as the design of national plans, to the local consultant. A concrete national plan for the implementation of ENRAP in China, and personal working schedules should be negotiated and agreed between IDRC and the local consultant. These documents can be used as powerful reference when it comes to evaluating the performances of both the ENRAP project and the local consultant.

■ **Lack of Close Cooperation with Relative Government Departments**

The loose and unofficial connection with the Ministry of Finance has resulted in the unsatisfactory progress of ENRAP in China. No follow-up contacts or communications with the activities were conducted with MOF since November 2003, according to the telephone discussion with one of the officials from MOF, who administers the IFAD projects in China. No official meetings were held between MOF and ENRAP, which could have formalized the ENRAP activities in China, except an electronic letter forwarded from IFAD to MOF, informing the existence of ENRAP as an IFAD initiative. According to the explanation from this official, new connections and commitments should be discussed and established between ENRAP and MOF, rather than IFAD and MOF.

Likely, it will be proposed that the exchange of administrative responsibilities of IFAD from originally the Ministry of Agriculture (MOA) to MOF at the end of 2003 could affect the progress of ENRAP in China. However, establishing tight associations with the correct government department seemed even more necessary in order to solve this confusion. Under this circumstance, the local consultant for ENRAP in China, who is supposed to propose valuable suggestions to the project, using his/her resourceful understandings towards local distinctive conditions, has failed on this mission.

The engagement of governments as key stakeholders in ENRAP, where appropriate, was considered important, according the IFAD Interim Evaluation report. It says that "it is necessary to build ownership and buy-in within government structures in programmes like ENRAP. This would not only facilitate ENRAP implementation, but also pave the way for future possibilities for replication and upscaling of ENRAP-type initiatives by the governments themselves." [117] This is extremely important for international projects in China, where the government oversees and manages these types of projects. In most cases, the cooperation of the government significantly affects the outcomes of these projects.

IDRC should have established formal connections with MOF, following the kick-off meeting in 2003. The involvement of government officials always can facilitate the

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[117] IFAD. "Electronic Networking for Rural Asia/Pacific (ENRAP) Interim Evaluation –agreement at Completion Point: Eleven Insights." January 2002.
<http://www.ifad.org/evaluation/public_html/eksyst/doc/agreement/pi/enrap.htm>. Retrieved 8 November 2004.

implementation of projects in China, especially for those with international association. Agreements should be reached between IDRC and MOF at the leadership level before the project commences, in regards to the assistance that can be provided by MOF, the detailed cooperation plans between the two for the efficient implementation of ENRAP in China, etc. After the official collaboration, the local consultant can step in to work as either advisor or facilitator. Being the administrative unit of IFAD, activities can be organized and implemented more easily and efficiently by MOF, compared to the efforts attempted by the single unauthorized local consultant.

■ **Lack of an Experienced Development Team for the Website**

The work of establishing the Chinese version ENRAP website was also contracted to the local consultant, who had previous experiences of website-building. Although it was a different contract work from the consulting for ENRAP-China, it made the responsibilities of the Chinese local consultant more complicated. As the core and basis of the ENRAP project, the website should be carefully designed and developed with the collaboration of a professional web-developer team after seeking advice from potential users - project staff and rural communities. Due to the fact that all other ENRAP activities in China depend on the completion of the website, the speed of developing it and its reliability are required. The consultant's insufficient technical capabilities of developing the website have fatally affected the ENRAP progress in China. In addition, the main responsibilities of the local consultant to facilitate the implementation of ENRAP in China was mixed with and overshadowed by the task of professional website development. It is risky to depend both of the main activities to merely an individual.

■ **Lack of Awareness-raising and Training Activities**

Raising people's awareness of ENRAP means that helping them to understand more about the mandate, objectives and other related issues such as what kinds of projects can receive funding and procedures to apply for funding etc. As an innovative project to encourage the usage of new technologies and the sharing of knowledge and experiences among IFAD projects, awareness-raising is an indispensable part of the successful implementation of ENRAP. To convince people fully understand and accept the concept of the project can facilitate the implementation of ENRAP. However, the IFAD project staffs in China only had limited understandings on and interests in ENRAP. The only introduction about ENRAP was presented at the national start-up meeting in November 2003. There were no other awareness-raising activities conducted afterwards. The suspicious attitude and lukewarm response from Chinese IFAD project staffs are one of the outcomes of lacking awareness-raising activities.

Training activities are as important as awareness-raising. This is directly related to the capacity building of project stakeholders, such as project staffs, local communities and even government officials. Some of the necessary capacity buildings include, according to the ENRAP II annual Progress Report, writing, documentation and computer skills, which are essential to ensure information and experiences sharing using ICTs, especially

the Internet. None ENRAP-China training sessions were organized at any level of the project up to now.

Chapter 6
Recommendations to ENRAP-China

6.1 Experiences from PATI

Many valuable experiences can be learnt from the UNDP project. A feasible UNDP model for poverty reduction through access to ICTs in China can be referenced for future activities of ENRAP in China. As illustrated previously, the model is a combination of various factors, including cooperation with government departments, partnerships with various institutions and actors, an efficient organizational and management mechanism, a combination of multimedia technologies, taking advantages of existing facilities, commitments to awareness raising, training and capacity building, a consistence of encouraging women's participation, and constant upgrading networking infrastructures. In the case of ENRAP, which in effect has not yet begun its implementation in China, strictly speaking, this model will provide valuable suggestions for its strategies and activities.

6.2 Recommendations from IFAD to ENRAP

In the ENRAP Interim Evaluation report by IFAD, eleven insights were proposed for the better implementation of ENRAP. Six of them are applicable and can be referred as recommendations for the following activities of ENRAP in China: Better Integration, Coordination at the Project Level, Expanding ICT Access and Operational Funds, Empowering Communities, Documentation of Local Knowledge and Innovations, and Governments and Private Sectors.

Better Integration

Firs of all, a greater integration is necessary between ENRAP and the participating IFAD-supported projects. ENRAP was normally seen as a technical project, which was less integrated with the core poverty alleviation IFAD projects. Most of ENRAP's stakeholders perceived ENRAP as a separate initiative with peripheral relation with IFAD projects. As a result, IFAD suggested converging ENRAP and IFAD project processes, in particular in areas related to knowledge management, monitoring, evaluation and supervision. Three steps were recommended: 1) holistic approach to computerization, which means full-range of computer-related applications required by IFAD projects while building technical capacity of project teams; 2) ownership building, which encourages key functionaries at country focal points to accept the concept of promoting knowledge sharing; 3) communicating ENRAP objectives clearly, which is to facilitate the deployment of ICTs in IFAD-supported projects, and should be used for a variety of purposes, including sharing knowledge to make the implementation of poverty alleviation projects more effective and efficient.

Coordination at the Project Level

The Interim Evaluation recommended that ENRAP coordinators should be mainline project functionaries with experiences and responsibilities in implementing poverty alleviation programs. Also, they should have an interest in using technology and building networks. However, it was pointed out that the position should not been viewed merely as a technical job, such as creating and maintaining web pages, which could be performed by a trained assistant. Quite importantly, the Evaluation proposed that in countries and regions where project staffs lack capacities or motivations, outsourcing coordination work to NGOs or other local institutions could be explored.

Expanding ICT Access and Operational Funds

Resulting from the fact that the beneficiaries of IFAD projects are the poorest and most disadvantaged groups, which locate in the most marginalized zones and across vast geographic areas, access to ICTs, especially computers and the Internet, is quite limited. As a result, a successful combination of new digital media with traditional media, such as person-to-person interactions through workshops and publications of newsletters, should be adopted. IFAD also suggested that ENRAP should consolidate activities in the basic access to ICTs and skills to use ICTs with strategic project budget, such as provision of operational funds for a limited duration.

Moreover, telecentres were proposed to be experimented by ENRAP. This practical approach can provide Internet connection to communities in poor regions through multifunctional public access points that offer a variety of services. Also, previously established telecentres by governments or other agencies can be utilized to deliver relevant information and services.

Empowering Communities

This insight stemmed from the recognition that in general, even rural communities of IFAD projects had access to computers and the Internet, they are deficient in the skills required to filter through the vast information available on the Internet and identify useful information relevant to them. As a result, the Evaluation recommended that ENRAP build the capacity o grassroots assistants, who can act as the bridge between rural communities and useful information from the Internet. They should be provided opportunities to obtain information from the internet and interpret it for rural communities. Conversely, they should collect and process ideas, needs and feedback from the communities.

Documentation of Local Knowledge and Innovations

The Evaluation highlighted the need to ensure that ENRAP build on documenting and sharing IFAD project experiences from the field of rural communities. It was pointed out that these experiences and knowledge should be translated into local languages to reach a

wider range of audience. This underscored the need to emphasize different language requirements in Asia and Pacific Regions.

Governments and Private Sectors

The Evaluation considered the engagement of governments and private sectors as key stakeholders of ENRAP important. The Evaluation revealed that it was necessary to build ownership and supports within government structures. This would not only facilitate ENRAP implementation, but also pave the way for future possibilities for replication and upscaling of ENRAP-type initiatives by the governments themselves. Similarly, private sectors not only have financial resources that could be utilized for the implementation of ENRAP, but also their experiences in ICTs can be incorporated with ENRAP activies.

6.3 Recommendations to ENRAP-China

In many ways, ENRAP was truly a pilot project. Due to the distinctive national conditions of each other, there was significant variation in the way ENRAP was coordinated in different projects and different countries. Project approaches in connectivity, documentation and sharing of knowledge, as well as impacts of these activities on poverty alleviation, also varied across projects and countries. As a result, models of implementing ENRAP in different projects and countries differ from each other. China, as an unique country with its distinctive political, social and economic structures, needs an appropriate model to implement ENRAP. Based on the experiences from both PATI and ENRAP-China, as well as recommendations from IFAD, a model is proposed in the following section.