

# **Final Report to Map Asia 2007**

## **“Housing the Poor in Urban Economies in Battambang, Cambodia”**

### Contents

Abstract

I. Introduction

II. Method

    II.1. Data Creation

        II.1.1 Geodatabase Development

        II.1.2 Data Collection

        II.1.3 Data Analysis

        II.1.4 Data Presentation

III Result

IV. Conclusion

## **Abstract**

In many countries, especially in the developing countries, informal settlement is considered to be the main problem to be solved for any governments. By understanding the importance of such an issue, Cambodian government has collaborated with UNESCAP and other organizations to conduct a pilot project by choosing the locations where the real problems are occurring. The main objective of the project is to enhance the understanding of the policy makers and other urban actors on potential approaches for low-income housing and to use the lessons learnt from the implementation of the pilot project in refining the draft Housing Policy for Cambodia.

Battambang town was selected to be the case study of the project based on the emergence of low-income informal settlements and a scale that facilitates the replication of the model in other urban areas of the country.

As the first step for the implementation of the pilot project, physical documentation is needed on the selected site. Physical documentation requires detailed mapping of the pilot project site, existing houses and the distribution of service utilities. To achieve this first step, GIS was used for data creation, analysis, and presentation with the help of the ArcGIS Desktop 9.0 and Microsoft Access 2003 software.

At the end of the step, a Geodatabase containing various feature classes along with their own attributes were completed. This data was then be used for further analysis and presentation to the stakeholders in the workshop. It is a good example proving that GIS plays a very important role in solving urban problems, particularly in informal settlement management.

## **I. Introduction**

According to statement of an official decision of Cambodian government, Center for Economic Social Development that focuses mainly on informal settlement was created. To better understand and to solve this problem, Royal government of Cambodia has collaborated with UNESCAP and other organizations to conduct a project. The project has three components including: pilot project, capacity building activities, and advisory services. Battambang town was selected on the basis of emergence of low-income informal settlements and a scale that facilitates the replication of the model in other urban areas of the country.

The aim of the pilot project is to enhance the understanding of the policy makers and other urban actors on potential approaches for low-income housing and to use the lessons learnt from the implementation of the pilot project in refining the draft Housing Policy for Cambodia. The Battambang experience will also serve as a model for building capacity in other key secondary towns of Cambodia.

As part of the pilot project, a site has been identified to apply effective approaches in improving the living conditions of the informal settlements. As a first step for the implementation of the pilot project, physical documentation is needed on the selected site. Physical documentation requires detailed mapping of the pilot project site, existing houses and the distribution of service utilities. To achieve this first step, GIS was used for data creation, analysis, and presentation.

## **II. Methods**

### **II.1. Data Creation**

#### **II.1.1 Geodatabase Development**

Data to be collected involves information related to houses and households, land uses, local road network, and so forth. This data can be categorized as spatial and non-spatial, and it can be modeled with Geodatabase introduced by ESRI Company. During the modeling process, three formal steps including Conceptual model, Logical model, and Physical model have been followed.

Paul A. explained in his book that “the first step of modeling starts with definition of the main type of object to be represented in the GIS and conclude with a conceptual description of the main types of objects and relationships between them.”

The next step is to create diagrams and lists that describe the names of objects, their behavior, and the type of interaction between those objects. This kind of model will determine the ability of a GIS and the type of domain over which it will extend.

Finally, the physical model is focused on how the objects can be digitally implemented in a GIS. It describes the exact files or database tables used for data storage, the relationships between different objects, and the feasible operations that can be done.

(Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind, 2005. “Geographic Information System and Science.” John Wiley & Sons Ltd, England)

### **II.1.2 Data Collection**

As mentioned above, data to be collected fall into two categories: spatial and non-spatial data. Spatial data was collected based on balloon photos taken in 2006, and non-spatial was based on the questionnaire interview conducted by group of students from the Faculty of Land Management and Land Administration.

First, balloon photos were enhanced by removing the transparent background of the images before printing. Then, the printing images were taken to the field by the students in order to sketch the location of the parcels, land uses, houses, road networks, and other resources. At the same time, households were interviewed based on the questionnaires prepared by UNESCAP and the students to get the information about their livings.

Finally, sketch maps produced in the field were digitized with ArcGIS Desktop 9.0, and the information from the interview was digitally put into Microsoft Access 2003. This data will then be used in the analyzing and presenting process.

### **II.1.3 Data Analysis**

With tools available in ArcGIS Desktop, statistical summary, such as total number of households in each village, number of existing houses, types of utilities they are using, and so on, could be derived from the data. This kind of information which then be presented with maps is used to evaluate the general standard of living of the people in the study area.

### **II.1.4 Data Presentation**

During the preparation of the presentation, various maps were produced along with different kinds of tables and charts. These visual aids were presented in the first workshop to the local government officers, various non-profit organizations, and local people. Later stage in the pilot project, the second version of the same data will be collected and compare to see any changes occur in the village. Again, the data will then be presented in the workshop to all stakeholders.

## **III. Result**

This section shows the results from the methods described above. There are three parts in this section. Part 1, Part 2, and Part 3 are about the results from the Geodatabase Development, Data Analysis, and Data Presentation processes respectively.

### **Part 1**

There are five different feature classes, such as Houses, Parcels, Roads, Sanitation, and Water with their own attributes in the Geodatabase. The following figures represent those feature classes and their attributes.

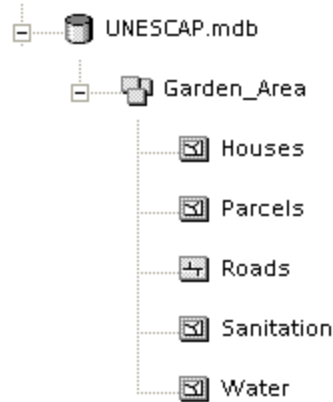





Figure 1 General Structure of the Geodatabase



**Housing the Urban Poor in Cambodia**



Cambodia



UNESCAP

---

**Information about House owner**

ID of the house:

Village Name:

Communcne Name:

Ownre Name:

Sex:

Number of households:

i. Household I:

ii. Household II:

iii. Household III:

iv. Household IV:

v. Household V:

Respondent:

a. HouseholdHeadI:

b. HouseholdHead II:

c. HouseholdHead III:

d. Household Head IV:

e. Household Head V:

**Utility**

Water supply facilty:

Other water supply facilty:

Type of use Tap and Well:

Type of use Tanker and Pond:

Water provider:

Sanitation:

Electricity:

**Information about House**

Type of building:

Time of residing:

Number of story:

House hight:

Type of use:

House tenure:

Wall Type:

Roof Type:




Figure 2 Form used to manage the attribute data

## Part 2

There are twelve tables of statistical summary from the analysis process. However, because of the limited space of the report, only three of them are presented in this section. The following tables depict those three tables:

<b>Nº</b>	<b>Years</b>	<b>Number residing</b>	<b>Nº</b>	<b>Years</b>	<b>Number residing</b>
<b>1</b>	1966	1	<b>13</b>	1995	16
<b>2</b>	1982	1	<b>14</b>	1996	12
<b>3</b>	1983	5	<b>15</b>	1997	5
<b>4</b>	1984	4	<b>16</b>	1998	6
<b>5</b>	1985	1	<b>17</b>	1999	8
<b>6</b>	1986	1	<b>18</b>	2000	1
<b>7</b>	1988	3	<b>19</b>	2001	11
<b>8</b>	1990	9	<b>20</b>	2002	7
<b>9</b>	1991	4	<b>21</b>	2003	6
<b>10</b>	1992	11	<b>22</b>	2004	6
<b>11</b>	1993	66	<b>23</b>	2005	18
<b>12</b>	1994	16	<b>24</b>	2006	16

Table1: Time of residing

<b>Nº</b>	<b>Type of house tenure</b>	<b>Number of house tenure</b>
<b>1</b>	Owner	214
<b>2</b>	Tenant	8
<b>3</b>	Guard	3
<b>Total</b>		<b>225</b>

Table2: House tenure

<b>Nº</b>	<b>Primary occupation</b>	<b>Number of households</b>
<b>1</b>	Government official	9
<b>2</b>	Private official	8
<b>3</b>	Petty trade	80
<b>4</b>	Motorcycle taxi driver	46
<b>5</b>	Farmer	15
<b>6</b>	Taxi driver	7
<b>7</b>	Worker	31
<b>8</b>	Big business	1
<b>9</b>	Others	0
<b>Total</b>		<b>221</b>

Table3: Resident's primary occupation

### Part 3

Besides the statistical summary tables described above, various maps were also produced so that the stakeholders could see the general picture of the study area. Figure 2 shows a map of land use in the area while Figure 3 represents the same map with a larger scale of 1:500.

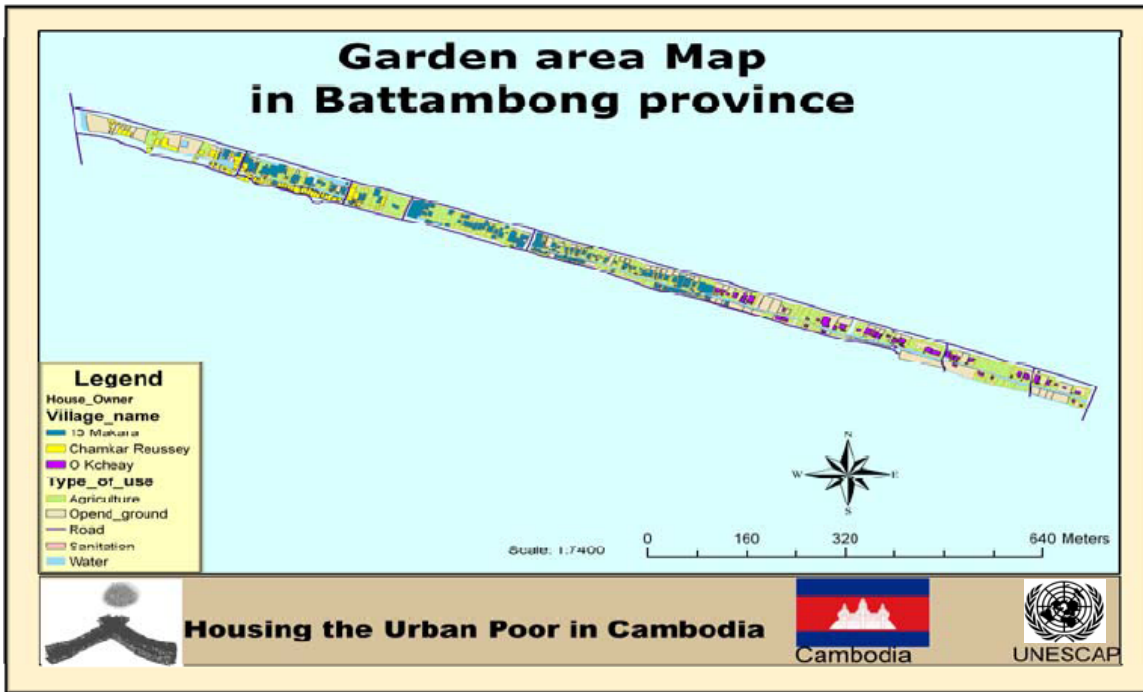


Figure 3 Land Use Map of the study area

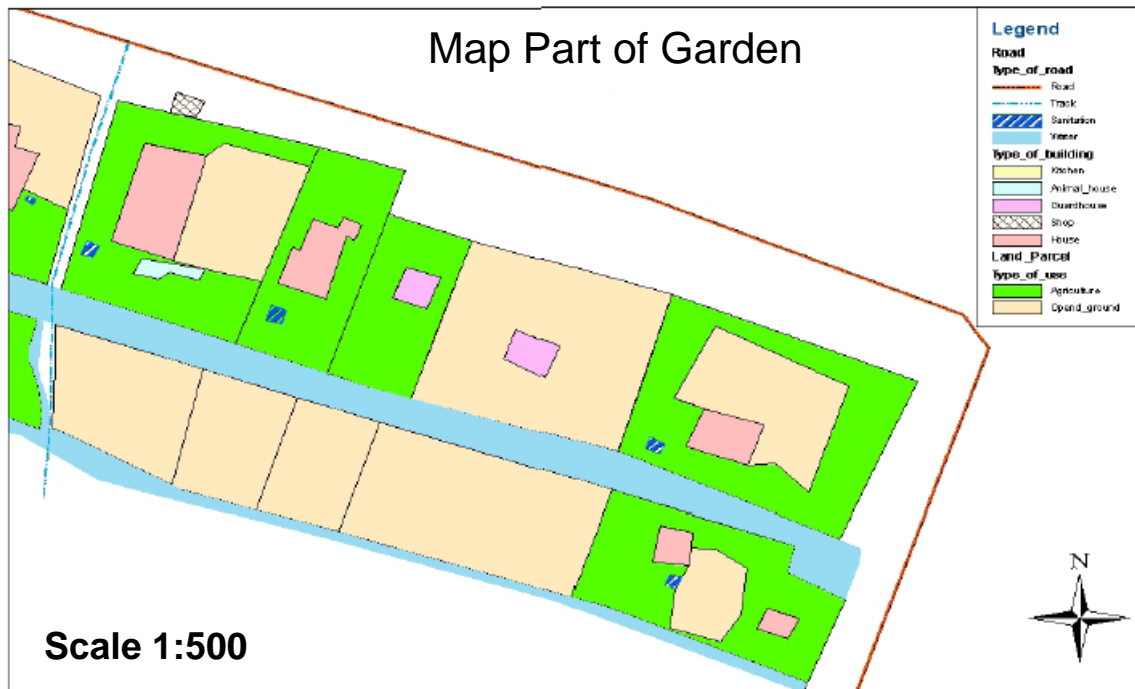


Figure 4 Zoomed in Land Use Map of the study are

#### **IV. Conclusion**

People came to reside in 1993 because of repatriation and peace in Cambodia. They chose to live around the garden area because it is near Battambang town. Some people who resided in 1993 sold their land and went to live outside. Moreover, some of other people divided their land into plot and sold partly.

We also know that nearly all of the land is used for residence and plantation, and only a small piece of land is unused. Most of people are petty trade and motor taxi drivers, and some of them are workers, government and private officials, farmers, and taxi drivers.

Regarding water supply, people use individual tap which is supplied by private company, and they also use rain water and pond water. On the other hand, state electricity is the main service for people while others use lamps and battery.

Most of people have toilets with soak pit, septic tank while some of them dig the ground for their toilets, and discharge to channel. However, some people don't have toilets, so they ask their neighbors to use their toilets and others excrete in the field.

We also found that some people are not willing to leave their land. Furthermore, they have tried to request for the land title. However, some people know that their land is public state land that can not be issued the titles to them. Therefore, they are willing to give back the land to the government when needed.

Finally, some of the land in the study area is currently occupied by the rich and powerful people, who live outside the villages. They have hired some guards to protect and take care of their land or rented the land to local people who need temporary houses and farming.

Paper reference number: MA07 PN 96

Title of the paper: "Housing the Poor in Urban Economies in Battambang, Cambodia"

Name of the Presenter: Sokhorn Pin

Author affiliation: Dr. Jan-Peter Mund

Mailing address: Royal University of Agriculture

Chamkar Dong, Dangkor Commune/District, Phnom Penh, Cambodia.

Email address: pin\_sokhorn@yahoo.com

Telephone number: +855 11370807

Fax number: 023 219690/023 219753

Author Photograph and a brief bio data:

# CURRICULUM VITAE



## Personal History

Name : Pin Sokhorn  
Sex : Male  
Nationality : Cambodian  
Date of Birth : 01 August 08, 1984  
Place of Birth : Kakor Village Svayluong Commune, Kandieng District, Pursat Province.

## Permanent Address

Address : Toul Samrong Pagoda, Sambour Village, Dangkor Commune,  
Dangkor District, Phnom Penh, Cambodia.  
Tel : (855)11 37 08 07  
E-mail : pin\_sokhorn@yahoo.com

## Academic Qualification

2002-2003 : Pursat High School  
Present : Pursuing Bachelor degree in the field of Land Management and Land Administration.

## Languages

Khmer : Native Language  
English : Good in writing, listening, speaking and reading

## Other Skills

Ms Word, Ms Excel, Ms Power Point, Ms Access, Adobe Photoshop, CorelDraw, Internet and E-mail, Arc GIS 9.0, GPS Etrex, Map source, Facilitator and Advocator.

## Hobbies and Interest

Reading books, Listening music, Internet researching, Football playing, Volleyball, House works.

## Reference

1. Mr. Vung Setha

(Dean Faculty of Land Management and Land Administration in the Royal University of Agriculture, Phnom Penh, Cambodia)

- Tel : (+855) 11 751 703
- E-mail : vung\_setha2001@yahoo.com

2. Dr. Jan Peter Mund

(German Technical Advisor, Faculty of Land Management and Land Administration in the Royal University of Agriculture, Phnom Penh, Cambodia)

- Tel : (+855) 12 333 537
- E-mail : jpmun03@yahoo.com

3. Ms. Luy Rasmey

(Deputy Executive Director of Culture and Environment Preservation Association, Phnom Penh, Cambodia)

- Tel : (+855) 12 843 987
- Table Phone : (+855) 23 369 179