



# 1 Introduction

## 1.1. Background

Regional development is essentially a matter of resource allocation. Subsequently, it aims to create human well being which has proper access to utilize various resources including natural resource, land, human resources as well as many other potential and actual resources optimally and proportionally under the principle of sustainable development. In this ideal situation, economic growth and equality perform in harmony as balanced development has been achieved. However, in the current situation, there are still many people living in poverty while some view others living in a great prosperity. In a spatial context, it reflects on the existence of particular fast growing developed areas while many others are still categorized as stagnant and underdeveloped regions. These phenomena provide evidence that regional development has not produced a rewarding result. As have been revealed in World Development Report (World Bank, 2009) and World Urbanization Prospects (United Nations - UN, 2004), disparity and inequality have emerged as central issues in regional development realm which need to be worked out.

Disparity between the western part and the eastern part of Indonesia is one of the national issues to be critically addressed (Government of Indonesia, 2007). From the provincial spatial and development plan policy documents, it is identified that urban development in Central Java is still concentrated only in the northern part of the province. Even though infrastructures mainly in transportation and communication in Java have already built-up relatively evenly compared to other islands in the country, it is in fact not sufficient to reduce disparity and inequality among provinces or in each province within the island. There is something principle which should be overhauled in the policy level. Current development policies are likely to treat rural and urban areas in an entirely different manner. The policies disregard the fact that outcomes of a policy whether it is pro rural or pro urban would become a single set of dynamic processed affecting rural and urban areas as an interdependent system. Furthermore, urbanization mostly in developing countries leads to the blurring of the distinction between rural and urban areas. McGee (1991) identifies such regions as *desakota* regions (Indonesian words: *desa* is rural and *kota* is urban). *Desakota* or rural-urban regions are places that have a mixture of rural and urban characteristics. These emerging regions may also strength



the argument that urban and rural areas are interconnected and cannot simply be treated based on separate policies.

Concerning inequality and propensity of unbalanced development patterns that currently take place in Indonesia including in Central Java, the emerging of rural-urban regions are considered to be further examined. Expectedly, further comprehension regarding the dynamics of these regions would be advantageous to promote balanced development as well as to enforce the creation of integrated regional development policies which are not simply dichotomized rural and urban regions.

## **1.2. Problem Statement**

Urbanization and rural-urban transition should be taken into account as two important terminologies in relation to the discussion of rural-urban regions. These emerging regions are a critical part of the development process in which the process is an integral component of urbanization and rural-urban transition.

Urbanization in Asia, including in Indonesia, has resulted on a distinctive pattern in which it has a different character from that which has been happening in the Western Europe and the Northern America as developed countries. There are at least two obvious distinctive characteristics of urbanization. The first characteristic is related to the existence of mega-urban regions in most Asian countries (Douglass, 2000). As a matter of fact, these regions are created due to the globalization phenomenon in which foreign investments that played a dominant role in the development are concentrated in only particular urban regions. The development of these mega-urban regions has led to an emergence of particular rural-urban areas in the surrounding regions and has created severe disparity between core regions and their peripheries.

The second characteristic is related to what Lo et al (1981) call 'dualistic structures'. Formal industrial sectors in most urban areas fail to absorb the increasing labour force that is mostly made up of migrants. Subsequently, informal sectors appear in such urban areas. As a result, rural economic activity as well as rural life style emerges in many places categorized as urban. Thus, many urban areas that have experienced high economic growth based on modern and formal industrial sectors are also occupied by informal rural sector activities such as small-scale traditional industries and informal urban farming.

The urbanization that has been occurring is highly related to the fact that rural-urban transitions in most developing countries do not take place smoothly



(Champion and Hugo, 2004; Douglass, 2000; Gugler, 1996; Gilbert and Gugler, 1991). Rural areas become stagnant due to exploitation of potential resources for urban area development. There is not a mutual relationship between rural and urban areas. Small-intermediate urban areas also have significant difficulties in performing optimally. They fail to be functioned as a barrier of resource movement from the rural area to the largest urban centre. These all result in a significant disparity in which unbalanced development remains.

Thus, what has been happening regarding urbanization and rural-urban transition in most developing countries including Indonesia has led to discourse on bringing together rural and urban, agriculture and industry, and ultimately economic growth and equity in harmony as an integrated package of development (Tacoli, 2006; Lynch, 2005; UN-HABITAT, 2005; ESCAP, 2001; UNDP, 2000; Douglass, 1998). Accordingly, discussion to promote balanced development has been becoming a global concern at least since the last decade to reduce disparity and inequality mainly in Asia-Pacific region (UN, 2001; UNDP 2000). However, it is clearly not an easy task in the implementation level.

Several approaches have been implemented in many developing countries to reduce disparity as well as to integrate rural and urban development. In Indonesia, development policies under the principle of decentralization, which are likely to be rural oriented such as agropolitan, is considerably important to strengthening interaction between urban and rural areas (Douglass, 1998). However, all approaches which have been applied are likely not very effective yet aimed to synergized rural and urban characteristics in the region to create a more balanced development. In any case, it can be shown from the fact that until 2006 the western part of Indonesia still comprises five times higher GRDP (Gross Regional Domestic Product) than the eastern part of the country in addition to the fact that Java Island still produces almost 60 per cent of the Indonesian GDRP (CBS, 2006b).

Two major factors can explain the failure of the applied development policies. The first is that current policies are considerably neglected endogenous forces while many scholars have argued should be considered as a potential source to enforce optimal development (Barquero, 2002; UNDP, 2000). The second is the fact that most governments in developing countries are forced to create and then implement a more sector based planning policy instead of integrated multi-sector planning policies. As a result, mis- coordination among institutions becomes an important issue in enforcing harmony of rural-urban development.



In the context of Central Java, in addition to the traditional approach that considers urbanization as mostly urban industrialization, rural industrialization based on small-medium enterprises has become a concern at least since the economic crisis in 1997. These types of industries noticeably survived compared to the large manufacturing industries during the crisis period (Hill, 2001). Rural industrialization has formed various typical urbanized activities in the area officially defined as rural regions. This type of industrialization is expected to generate a strong economic linkage between the rural and the urban areas as well as the rural and the world market. Though, it also raises questions since these kinds of industries are mostly based on limited natural resources such as rattan and timber.

Ultimately, urbanization has continued to increase in various ways notably in all big, medium, and small cities in Java. The globalization phenomena that have been connecting such regions to the world arena in combination with endogenous forces make rapid urbanization inevitable. According to CBS data (2001), the number of people who are defined as living in urbanized area in Java Island has risen from 25.1 per cent in 1980 to 48.7 per cent in 2000 (see appendix B for formal classification to define urban place in Indonesia). It results on more regions categorized as *desakota* or occupying double characters, both as rural as well as urban. Moreover, this phenomenon also has led to environmental degradation issues and food security problems. The rapid growth of land conversion from agriculture land and forest to built-up areas causes less land to be cultivated, fewer people to work in agriculture, and fewer areas to be allocated as green zones. Eventually, migration from rural to urban areas will be uncontrolled and more regions will be considered as disaster prone areas.

Meanwhile, most research in the area of the rural-urban region is focused only on particular aspects such as people movement and natural resource flow. As urbanization and rural-urban transition are central concerns in this subject, migration and agricultural issues become the focus of matters in current rural-urban discourse (Lynch, 2005; Tacoli, 2006; UNDP, 2000). There is still little discussion on spatial features of these rural-urban interfaces whilst the emergence of regions with mixed character of rural and urban is significant to be figured out not only based on a particular aspect. Therefore, further investigation is essential to examine current typology of rural-urban regions in more comprehensive terms. In this research, Geographic Information Systems (GIS) and statistical analysis are considered to be used as advanced tools to define typology of combination of rural-urban characteristic. Following that, scenario planning is applied to comprehend possible futures. Mixture of



qualitative and quantitative data are also employed to produce a more comprehensive portrayal of these regions. Comprehensive analyses results expectedly would be effective to be utilized as the ammunition to formulate robust policy framework for promoting balanced regional development.

### **1.3. Research objectives**

There are three main objectives of the research as follows:

- 1. To elaborate typology of rural-urban regions in Central-Java Province**
- 2. To comprehend any possible future of spatial formations through scenario building**
- 3. Formulating policy recommendations to promote balanced development in the study area**

To be more specified, following are several research questions as guidance for the analysis stage:

- How is the rural-urban regions growth in the study area? Is it mostly as a part of extended metropolitan region? Or these regions also significantly develop from the lower hierarchy of the urban structures or from rural regions?
- Based on the pattern, in what ways that current understanding of rural-urban dichotomy is still relevant or not relevant in the study area?
- How is the performance of these rural-urban regions? Is the current performance lead to a more balanced development or quite the reverse, these regions demonstrate that disparity between developed and under developed regions become more apparent?
- What are the explanatory factors to comprehend these rural-urban regions in which they have both rural and urban characteristics?
- Based on results from the previous questions, afterwards, in what ways balancing policies that have been implemented in the study area are effective or ineffective?
- Based on result from the previous questions, afterwards, what could possibly happen for future spatial formation in the study area?
- Has the traditional political concept that has been put into practice lead to worse spatial disparities? Or is it effective enough and still valid in the Indonesian region in general?

### **1.4. Structure of the Study**

In total, the study is organized in eight chapters. The first part is the introduction which contains background, problems statements and research



objectives. In order to achieve the study objectives, the research design is addressed in Chapter 2. The research design is proposed to provide a brief view regarding research approach, steps, data collection, and methods of how this study is being conducted.

Chapter 3 is devoted to some empirical evidence, theoretical perspectives as well as lessons learned from policy implementation both in developed and developing countries. Therefore, this chapter is divided into three main parts. The first part is aimed to answer ‘what has been happening?’ It is then furthered discussed in the second part in theoretical perspectives. The theory explanation expectedly answers the question ‘how and why they happen?’. The last or the third part is aimed to show some lessons learned from international experiences in promoting balanced development. Four successful as well as unsuccessful stories are discussed in this part. They are policentricity in most European countries, the rural based development approach in most Asia’s developing countries, the success story of East Asia in their transformation process, and the last is endogenous growth and decentralization policy in Asian developing countries.

Chapter 4 discusses development planning policies in Indonesia. In the first part, this chapter covers government hierarchy followed by a brief description of development planning policies framework. Discussion of development planning policy implementation is then explained in the third part. It is divided into two sub-parts; in the new order era and in the decentralization era. This chapter is closed with concluding remarks regarding policy outcomes and trends for the future.

Chapter 5 is a brief view of urbanization in Central Java Province. The discussion is explored based on several parameters namely urban population and density, share of built-up areas and land conversion, GDP, employment, and unemployment. A brief comparison between urbanization in district and non-urban districts in the province is the final part of the chapter.

Chapter 6 focuses on cluster analysis application to create rural-urban typology. It includes technical explanations, steps of clustering analysis, assessment of the variables, cluster solution and dendogram interpretation, cluster validation based on discriminant analysis, robustness analysis and ends with a discussion on rural-urban transition in the study area based on the clustering result.

Chapter 7 elaborates scenarios for future spatial formations in Central Java Province. There are four main parts including steps of scenario building, macro



framework, and flesh out scenarios for national setting and for Central Java province.

This study is finalized with conclusions and policy recommendations in Chapter 8. The chapter comprises a summary of research findings, policy challenges, policy recommendations, and future research agenda.







# 2 General Research Design

## 2.1. Conceptual Framework

This research is categorized as empirical research in which empirical phenomena are examined to accomplish the research objectives. According to Simon (2003:5), empirical refers to “getting the facts” in which the research should “explaining nature and making predictions about it”. In the view of Simon explanation, Figure 2.1 illustrates briefly empirical phenomena and literature-theoretical framing which are used as the main platform in the research.

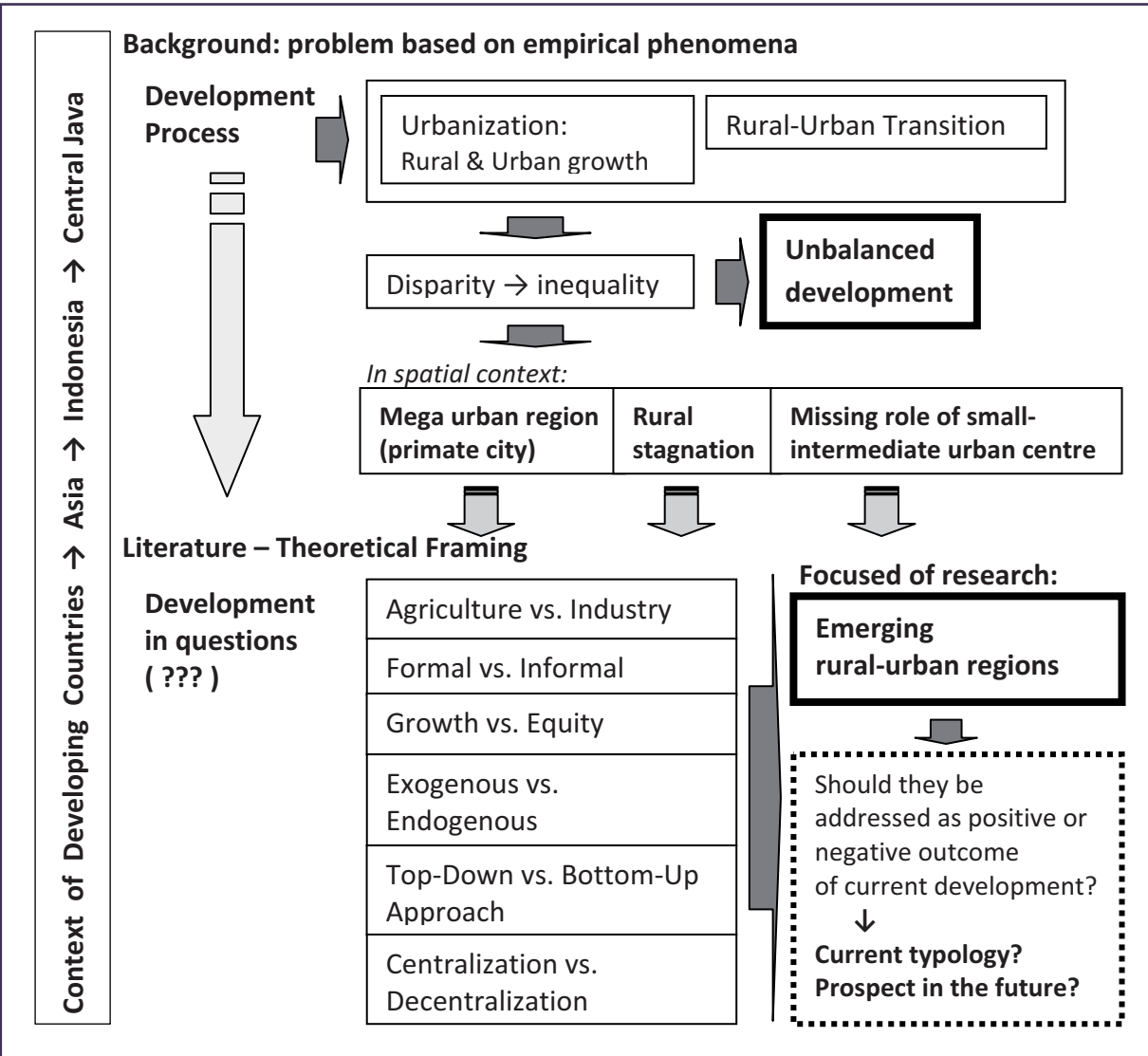


Figure 2.1 Conceptual Framework



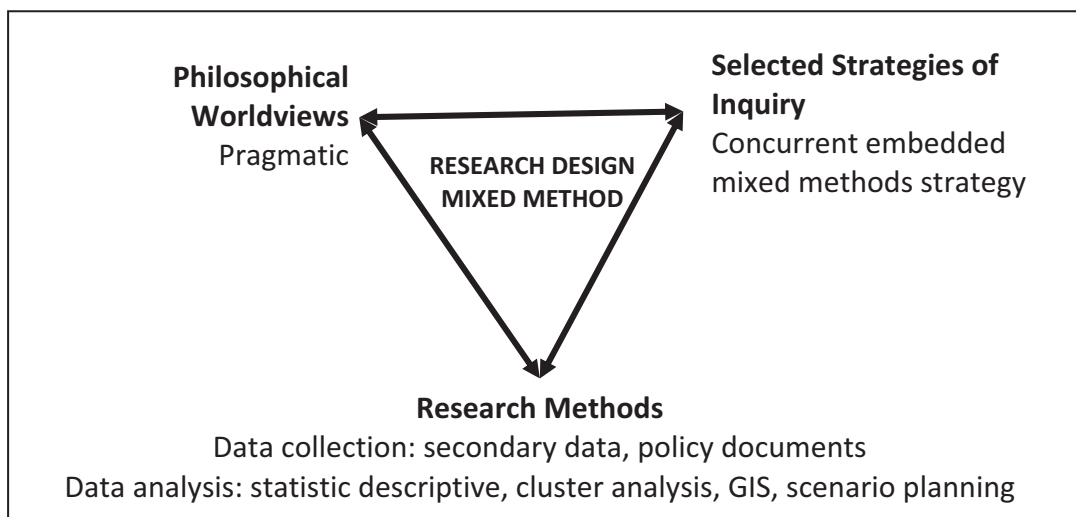
## **2.2. Research Approach**

The mixed method approach was chosen to be applied in this research. According to Creswell (2009: 4), mixed method research is an approach to combine qualitative and quantitative forms of philosophical assumptions as well as collecting and analyzing data. Philosophically, this research categorized as pragmatic. It implies that the research emphasized on research problems and use combination of methods to address the problems. The problems themselves are comprehended from empirical evidence supported by relevance theory and concepts as has been illustrated in Figure 2.1. Accordingly, to some extent, this research also applies a postpositivist worldview. Postpositivism mostly used for quantitative research emphasizes empirical observation, measurement, and theory verification (Creswell, 2009:6-7). However, since many parts of the analyses are likely to combine quantitative and qualitative approaches to have more comprehensive results, then, pragmatic worldview is considered as more suitable to be used as the philosophical point of view.

The concurrent embedded mixed method strategy is applied to combine the quantitative and the qualitative data analysis. It means quantitative and qualitative data are used and then processed in the analysis stage simultaneously (Creswell, 2009: 210-215). Statistic descriptive, cluster analysis and GIS are highly quantitative, in these parts of analysis there will be a combination of quantitative and qualitative data to be used as the variables. Quite similarly, scenario planning is qualitative in nature but in this approach, combination of quantitative and qualitative data also be employed to develop the scenario. Figure 2.2 explains briefly three main components in the research design.

## **2.3. The Research Steps**

Figure 2.3 illustrates the research process. There are three main steps. The first step is preliminary considerations that include explanation on conceptual framework and research design. The second step is a literature review followed by data analysis. Empirical phenomena and theoretical perspectives are explained in the literature review part. Following that, there are some brief contextual explanation regarding development policies in Indonesia and urbanization in the study area. There are two main parts of the analyses. The first part is a cluster multivariate analyses which is mainly quantitative but embedded with some qualitative data analysis. In this part, some statistical descriptive analyses and GIS tools are also applied to create robust and



**Figure 2.2 Three Main Components in the Research Design**

Source: Adopted from Creswell, 2009: 5

accurate variable. The second part is scenario planning which is mainly qualitative but embedded with some quantitative data analyses. GIS is also used to illustrate particular part of the scenario. In the end, as the third part, there are three main output of this research. First is typology of rural-urban regions based on cluster analysis followed by scenario for future spatial formation in the research area. Combinations of these two findings are further proceeded to produce policy recommendations for future regional development in Central Java Province.

## 2.4. Study Area

The study area is within the administrative boundary of Central Java Province - Indonesia. It is located on Java Island and consists of 35 districts/municipalities and 565 sub-districts. Total area of the province is 3.25 million hectares with the total population are 32.18 million persons or around 14 per cent of the Indonesian population (CBS, 2006). Figure 2.4 illustrates orientation of the study area.

## 2.5. Data Needs and Collection

All data employed in this research is categorized as secondary data. These secondary data are collected from following different sources:

1. Annual statistic reports and relevant publications based on census and survey data from Central Bureau of Statistics (CBS).

Population Censuses were carried out five times in Indonesia; they were in 1961, 1971, 1980, 1990, and 2000. The sixth population census is expectedly done by the end of 2010. There are three types of survey data namely *Supas* (Inter-Censal Population Survey), *Susen* (National Socio-Economic Survey),

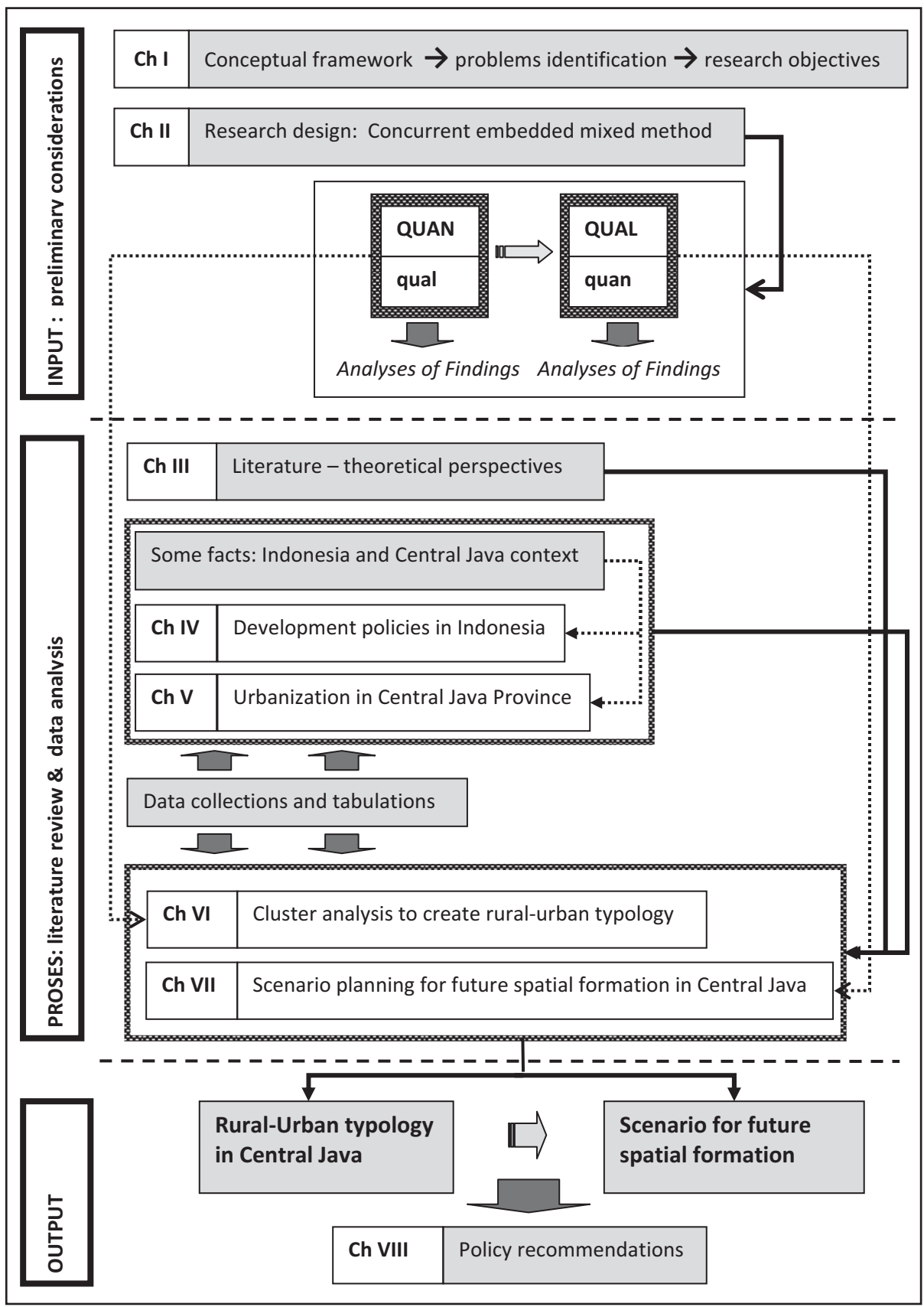
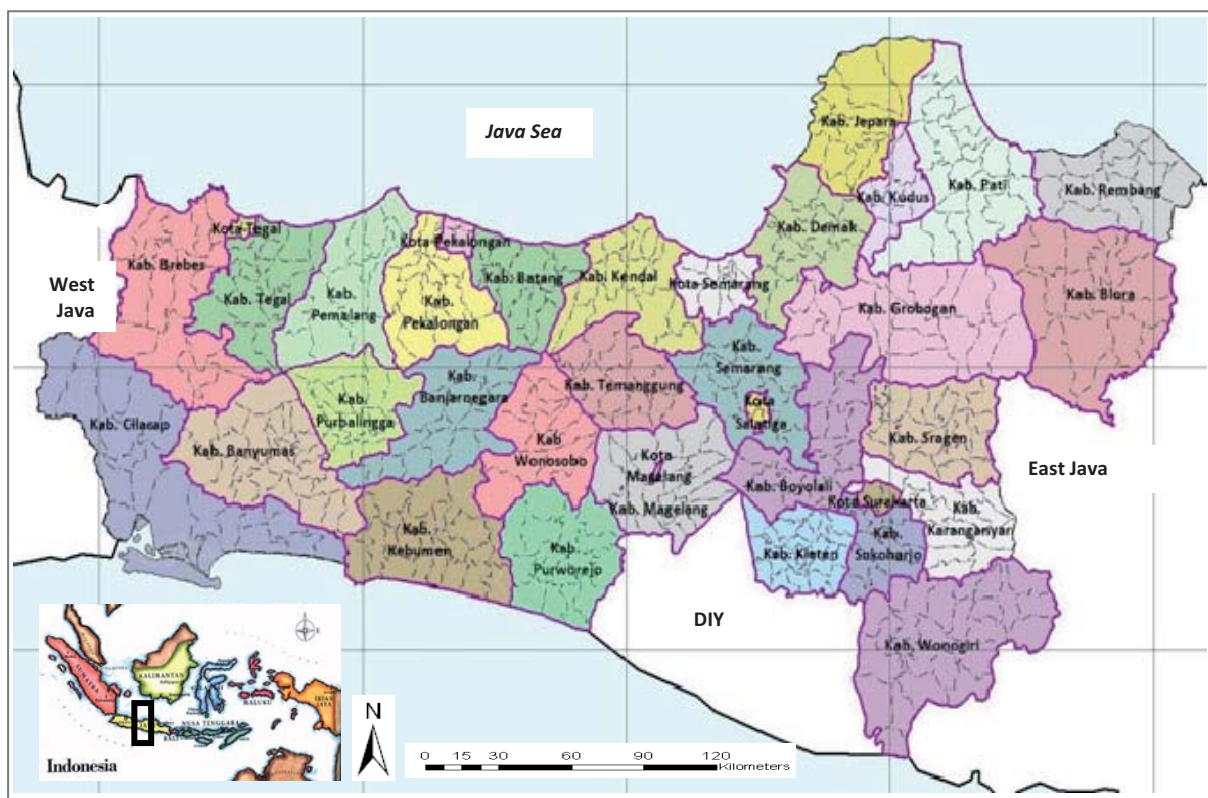


Figure 2.3 The Research Steps



**Figure 2.4 Orientation of the Study Area**  
 Source: Bappeda (Planning Board and Development Agency of Central Java Province), 2006

and *Sakernas* (National Labour Force Survey). *Supas* is population survey conducted between two periods of population censuses, *Susenas* is a survey based on household unit to create social-economic profile, and *Sakernas* is particular survey to provide data regarding employment. All these sources of data are used in the study area mainly in regard to population, and social-economic performances for national, provincial, and district level.

2. Government documents and archival records.

These include policy documents, some social-economic information which is not published in the statistical reports, and land use data which have been processed into digital (GIS) format.

Table 2.1 explains briefly required data for conducting the research. In general, the data is divided into four categories. The first is related to physical environment. It includes slope, land use, road network, population data, and any other data that are basically spatially oriented. The second category is economic. There are two main data sets in the economic category namely GDRP and employment. Social as the third category includes population based on education attainment and poverty. The last category concerns policy documents as an important source to comprehend development policy applied in the research area.

**Table 2.1 Data Needs, Types and Sources**

Categories	Data	Types	Sources
<b>Physical Environment</b>	Slope - Contour Land use Carrying capacity of land Accessibility (road network and distance)	Spatial, digital (GIS) format	– National Coordination Agency for Survey and Mapping – National Land Agency – Provincial Planning Board and Devt Agency
	Population density, population growth, number of rural/urban population	Numeric	CBS
<b>Economic</b>	GDRP	Numeric	CBS
	Employment	Numeric	CBS
	Flow of good	Numeric	CBS
	Small-Medium-Large industries	Numeric	– CBS – Provincial Planning Board and Devt Agency
<b>Social</b>	Population by education attainment Poverty – Unemployment	Numeric	CBS
	<b>Politic (Policy documents)</b>	<ul style="list-style-type: none"> <li>- Law No. 17, 2007 concerning National Long-Term Development Plan 2005-2025</li> <li>- Law No. 26, 2007 concerning Spatial Planning System</li> <li>- Law No. 25, 2004 concerning (Non-Spatial) National Planning system</li> <li>- Governmental Regulation (PP) 26, 2008 concerning National Spatial Development Plan</li> <li>- 1<sup>st</sup>-5<sup>th</sup> Five-Year National Development Plan (<i>Repelita</i>)</li> <li>- Local Government Regulation (<i>Perda</i>) No. 3, 2008 concerning Provincial Long-Term Development Plan 2005-2025</li> <li>- Provincial Medium-Term Development Plan 2003-2008</li> <li>- Local Government Regulation (<i>Perda</i>) No. 6, 2010 concerning Central Java Province Spatial Plan 2009-2029</li> <li>- Local Government Regulation (<i>Perda</i>) No. 21, 2003 concerning Central Java Province Spatial Plan 2003-2018</li> </ul>	

Notes: detailed data compilation can be seen in appendix

## 2.6. Data Processing and Analysis

### 2.6.1. Cluster Analysis

Cluster analysis is a multivariate statistical approach for grouping a data set. Each group (cluster) contains set of cases that have similarity in character. Concerning this, cluster analysis is relevant to be applied in creating rural-urban typology in the study area. To build the typology, there are considerably large data sets (indicators) that need to be classified into groups based on their similarity. Applying clustering algorithms will help to organize the data into groups efficiently based on statistic formulation. Then, it will assist to discover the characteristics of each group.

Following are several key issues that need to be considered when applying cluster analysis:



### 1. Selection of variables

As Ketchen and Shook (1996) points out, carefully select appropriate variables are very important to create meaningful and useful clusters. There are three approaches to select the variables namely inductive, deductive, and cognitive (Ketchen et al, 1993). This research uses a deductive approach as all variables that are applied highly based on theory or literature perspective.

### 2. Methods of clustering algorithms

In general, the methods of clustering can be divided into two types, namely hierarchical and non-hierarchical methods. There are no single agreements which are the best methods to be used. Therefore, some experts suggest using both of them and making comparison (Everitt, 1993:72; Kaufman and Rousseeuw, 1990:37; Ketchen and Shook, 1996). As non-hierarchical methods ask for number of clusters to be built, hierarchical methods can be used first to indicate the most suitable number of clusters.

### 3. Standardization

Since variables may contain scale differences and also a great combination range between minimum and maximum value, standardization can be applied so all variables contribute equally in the process. However, some experts believe that standardization is not really influence the result (Kaufman and Rousseeuw, 1990:9). Thus, it is also useful to do the analysis in both ways, with and without standardization.

Kaufman and Rousseeuw (1990: 8-11) points out that generally people calculate mean values of variables then use standard deviation to standardize data. However, this measure is likely to be affected very much by outliers. To overcome this problem, then commonly z-scores are applied to standardize data.

### 4. Multicollinearity

High correlation among variable will lessen the accuracy of the result (Ketchen and Shook, 1996). It may overweight certain variable over another. Regarding this, it is also important to re-evaluate variables which have high correlation.

### 5. Measuring distance

It is mainly to measure degree of dissimilarity or similarity. There are several measurements namely Euclidean distance, Block (Manhattan) distance, and Minkowski distance. Everitt (1993: 46-47) believed that even Ecludian distance is the most familiar measurement to be used but in most cases it has shown unsatisfactory results mostly since it is largely depends on scales applied for the variables (in inches, pounds, feet, meters etc). Some experts suggest using Block (Manhattan) to have a more 'natural' distance. Apart



from that problem, Kaufman and Rousseeuw (1990: 13) mention that Minkowski distance is a 'generalization' of Euclidean and Block (Manhattan) distance. Which measurement then suits the best? According to Everitt (1993:52) and Ketchen and Shook (1996), it largely depends on the types of data and the intuition of the investigators. Sneath and Sokal (1973 in Everitt, 1993:52) suggest using any measurement which may help to generate a convincing interpretation in the final result.

#### 6. Applying agglomerative hierarchical clustering methods

As mentioned in point number two, there are two clustering algorithms. They are hierarchical and non-hierarchical methods. When using hierarchical methods, it is very important to carefully select the most suitable method to classify the data. There are several methods namely single linkage clustering, complete linkage clustering, group-average clustering, centroid clustering, median clustering, and Wards' hierarchical clustering methods. Even Ward's method and group average have been found to perform relatively well (Everitt, 1993: 142), Milligan (1980 in Everitt, 1993: 72) believes that no single method can be claimed as the best. Thus, applying a number clustering methods would be very helpful. If there is a consistent result, it may give more confidence to the researcher to make further interpretation.

### 2.6.2. GIS Application

Geographic Information System (GIS) is commonly used to analyse rural-urban areas in spatial context. In principle, GIS is a computer-based system to combine spatial and non-spatial data, analyse them for various purposes, and display the results as thematic maps or in other graphic formats (Weeks, 2004: 332-333). In this study, GIS is used for different purposes; to process land use data by analyzing feature relationship, to measure accessibility using network analyst tools, to measure density, to create land use change scenario, as well as to present informative thematic maps to describe particular rural-urban features in the study area. Following is a brief technical explanation on GIS operation in this study:

1. Land use data in 1994 and 2006 is processed by GIS to calculate land conversion rate as well to signify where the conversion takes place. Some commands in analyzing spatial data are used namely:
  - Buffering features to calculate built-up and non built-up area around the city centre
  - Overlaying data to calculate land conversion rate between 1994 and 2006
  - Calculating attribute values to combine some non-spatial data (such as density, GDP, and many others) and spatial (land use) data.