琉球大学学術リポジトリ

都市および農村地域の土地利用計画適正化に関する
研究：カブール首都圏域を対象として

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Form 3

Abstract

Title: A Study on the Land Use Suitability Assessment for Urban and Rural Development: A Case Study of Kabul Metropolitan Area

(都市および農村地域の土地利用計画適正化に関する研究：カブール首都圏域を対象として)

The capital of Afghanistan, Kabul has gone through the most powerful wave of urbanization since 2003. The population increased by almost 10% per year, which eventually contributed to a large urban sprawl and illegal settlements on the hill sides and the city. Most of the settlements are prone to natural disasters and may cause casualties and extensive damages if not paid attention.

Kabul Metropolitan Area (KMA), with a total area of 1763 km2, has been chosen as the study area. It encompasses both the existing Kabul and Kabul New City (KNC). The master plan for the KNC which is also known as Dehsabz area was prepared with the cooperation of JICA. Planners faced several challenges while designing the new city as the land already contained 54 villages and, more importantly, 140,000 people were residing there. Given their socioeconomic significance and critical role in urban-rural integration, it was necessary to preserve and upgrade them. To define a sustainable model for the development of the villages, essentially, there is a need for characterization and categorization of the villages. Following a literature review on multi-criteria decision analysis and AHP approaches, efforts have been placed to classify the villages from several planning aspects; seven potential factors with 36 sub-parameters were identified and rated in collaboration with experts, and super decision software was used as an analytic hierarchy process (AHP) tool to weight the factors. The result revealed that almost two of the entire villages have the highest development capacity while another two villages have the lowest. Furthermore, 8, 9, and 15 villages have been classified respectively into high, moderate, and low categories. The third part of the dissertation primarily evaluates land suitability from an environmental and physical perspectives as a tool for determining appropriateness for urban development in the existing Kabul city. The focus was centred on the application of the AHP and MCDA through GIS. Twelve principal factors with 43 sub-parameters including landslides, avalanches, earthquakes, floods, groundwater, and climate, along with other physical and geological factors like soil, slope, natural features, historical and cultural sites, landcover, and barren land, were identified to be weighted in collaboration with experts. The result showed that 22.9% of Kabul is highly suitable, while 28.1%, 17.5%, and 18.4% are classified respectively as suitable, moderate, and less suitable areas. However, 13.2% is ranked unsuitable, whereby factors such as slope, natural features, and landslides contribute most to the unsuitability. The resulting information from this research will assist urban planners and policymakers in determining the most effective use of land, as well as the protection of human lives and the environment.

For the research validation, a part of the existing Kabul has chosen as target area. The research primarily focused on three different development approaches and reveals that urban development methods are too dependent on a variety of factors, including the environmental, socio-economic, cultural, and physical conditions of each location. So that each area and region must be characterized and addressed by a specific development model that is consistent with the characteristics of the area.

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