

## Dynamic Modelling and Assessment for Urban Growth and Transport in Riyadh City, Saudi Arabia

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**Abstract :** In 2009, over 3.4 billion people in the world resided in urban areas as a result of rapid urban growth. This figure is estimated to increase to 6.5 billion by 2050. This urban growth phenomenon has raised challenges for many countries in both the developing and developed worlds. Urban growth is a complicated process involving the spatiotemporal changes of all socio-economic and physical components at different scales. The socio-economic components of urban growth are related to urban population growth and economic growth, while physical components of urban growth and economic growth are related to spatial expansion, land cover change and land use change which are the focus of this research. The interactions between these components are complex and non-linear. Several factors and forces cause these complex interactions including transportation and communication, internal and international migrations, public policies, high natural growth rates of urban populations and public policies. Urban growth has positive and negative consequences. The positive effects relate to planned and orderly urban growth, while negative effects relate to unplanned and scattered growth, which is called sprawl. Although urban growth is considered as necessary for sustainable urbanization, uncontrolled and rapid growth cause various problems including consumption of precious rural land resources at urban fringe, landscape alteration, traffic congestion, infrastructure pressure, and neighborhood conflicts. Traditional urban planning approaches in fast growing cities cannot accommodate the negative consequences of rapid urban growth. Microsimulation programme, and modelling techniques are effective means to provide new urban development, management and planning methods and approaches. This paper aims to use these techniques to understand and analyse the complex interactions for the case study of Riyadh city, a fast growing city in Saudi Arabia.

**Keywords :** policy implications, urban planning, traffic congestion, urban growth, Saudi Arabia, Riyadh

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