### GIS AND GEOSPATIAL INFORMATION MANAGEMENT FOR URBAN PLANNING AND LAND MANAGEMENT IN SAUDI ARABIA

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# I.THE FUTURE SAUDI CITIES PROGRAM

مستقبل المدن السعودية FUTURE SAUDI CITIES



# THE FUTURE SAUDI CITIES PROGRAM GOALS:

- Provide Sustainable Urban Environment
- Control of the Urban Sprawl
- Enhance the institutional capacities in municipal sectors
- Building partnerships for better Urban Development

The Future Saudi Cities Program Objectives:

- Study and Analyze the current state in Saudi Cities to provide a sustainable urban environment
- Asses the urban legislation and institutional infrastructures in Saudi Cities
- Prepare a Detailed strategic plan to serve sustainable development



# 2. GIS In Urban Planning and Land Management

#### **GIS ROLES IN URBAN PLANNING**

planners use geographic information system (GIS) technology to research, develop, implement, and monitor the progress of their plans. GIS provides planners, surveyors, and engineers with the tools they need to design and map their neighborhoods and cities. Planners use GIS to facilitate the decision-making process.

### Benefits of using GIS in local government:

Increase access to government Increase efficiency Generate revenue Provide decision support Improve accuracy Manage resources Automate tasks Save money and time Enhance public participation Promote greater collaboration among public agencies

### GIS allows urban planners to visualize alternative scenarios to compare outcomes

**Proposed Land Use** 

#### **Existing Land Use**





#### Scenario I Land Use





Figure 1.22: Main Objectives of the Local plan of Buraydah Source: Buraydah Local Plan Report - Municipality of Qassim Region

Figure 1.14: Existing Land Use (at the year of the plan - 1425H) in Buraydah Source: Buraydah Local Plan Report - Municipality of Qassim Region



----- Proposed railway Line

----- Proposed metro Line

1435H/2014 Urban Boundry limit

2028/1450H Urban Boundry limit

Qassie Airport

**Regional Services** 

Entertainment

Public Services

Industrial

### **Multilayers Mapping:**

Urban planning requires overlaying many layers of details on a single map; Parcels; roads network; utilities; and building.

Multilayers mapping can support decisions on location of new development areas; identification of vacant land for development; A municipal planning committee can use a GIS to see a variety of different data.

It can help in places that are already developed or had been previously developed and are being revamped by providing information about permits issued in the past including permits type, dates and what type of development they were for.

#### ZONING (BUILDING) REGULATIONS VITAL ACTIVITY CENTERS AND MAJOR COMMERCIAL CORRIDORS

Vital activity centers is represented by a series of centers which are: City center, Sub-municipality centers, Urban sectors centers, District centers, Neihborhood centers.





GIS can support municipalities in zoning and building permits

## GIS help the planner to evaluate the impact of Policy Decision

Using the spatial zoning map will help the city staff members to evaluate the impact of policy decisions at local, neighborhood and city level.

Also the developers use the zoning map to evaluate the development potential of Parcels.

GIS can provide opportunities for Urban regeneration







### The Spatial Data and the Sustainable Development in urban planning,



growth from the west side of the city

### Examples of GIS Applications in urban planning and land management



# **GIS Spatial Analysis**



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spatial analysis



#### **4-THE MAP BOOKS**

**The Purpose:** To compile the maps and spatial information about Saudi cities in one full document. The maps were created by integrating and overlaying various layers from different sources.

The objective: to share the valuable GIS Spatial data to help build an efficient and organized city. By presenting the spatial data in this comprehensive format, the map book will support the standardization, integration and visualization of the spatial data and provide better opportunities for dynamic queries.

To provide a faster and more extensive access to spatial data which enables planners to explore a wider range of 'what if scenarios'. As such, it can be a useful tool that is necessary for effective decision-making in urban and regional planning. The maps cover several layers like municipal boundaries, buildings, utilities, road networks, etc. In addition, the map book includes text on each city describing the spatial information







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