



**ENVIRONMENTAL ENERGY IN PLANNING
SMART SUSTAINABLE CITIES USING
SYSTEM DYNAMIC APPROACH
GEOGRAPHIC INFORMATION SYSTEM AND
ANALYTICAL HIERARCHY PROCESS
INTEGRATED APPROACH**

By

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PROCESS INTEGRATED APPROACH**

Key Words:

Smart sustainable city ; GIS ; AHP; System dynamic modeling ; Renewable energy

Summary:

The research concentrates on conceptual modeling for simulation of smart sustainable cities in Egypt based on systems concept. The conceptual models are built by using of system dynamics (SD) methodology and based on causal feedback relationships among the various parameters under main eight smart sustainable characteristics of a city. This thesis analyzes the previous cases study through using GIS in renewable energy-related projects, extracts optimum driven criteria's and, finally, defines spatial model for GIS-based for smart sustainable city allocation in EGYPT with a focus on renewable energy by AHP .



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عنوان الرسالة : نموذج لتخطيط المدن الذكية المستدامة معتمدا على الطاقة الطبيعية باستخدام نظم معلومات جغرافية – منهج قائم على دمج تقنيات التحليل الهرمى وأسلوب النظام الديناميكي.

الكلمات الدالة : المدن الذكية المستدامة , نظم معلومات جغرافية , الطاقة المتجددة , التحليل الهرمى , النظام الديناميكي

• المخلص :

المدن الذكية المستدامة هي مزيج من تقنية تكنولوجيا المعلومات ومفاهيم التنمية المستدامة من خلال نهج استراتيجى علمى . يركز البحث على كيفية تمثيل ومحاكات خصائص المدينة الذكية المستدامة من خلال تحديد عناصر محددة (ثمانية عناصر) وإنشاء نموذج ممنهج باستخدام أساسيات النظام الديناميكي (**System Dynamic**). وعلى الرغم من هذا التطور فمعظم هذه التعديلات تطرح تحديات، فإن إدماج نماذج نظم الطاقة وتخطيط المدن الذكية ونظم المعلومات الجغرافية لا يزال محدود. تقوم هذه الدراسة البحثية بتحليل دراسة الحالات والامثلة للمدن المستقبلية و تخطيط المدن الذكية ونظم المعلومات الجغرافية لا يزال محدود. مستدامة أهمها الطاقة الخضراء ، واستخلاص المعايير التخطيطية المثلى للمدن الذكية المستدامة ، وأخيرا، قد تم تحديد النموذج الرياضي المكاني المعتمد على تلك المعايير التخطيطية للمدن الذكية المستدامة في مصر إستناداً على معايير الطاقة المتجددة وذلك من خلال نظم المعلومات الجغرافية (GIS) وأسلوب التحليل الهرمى (AHP)

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