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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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Cairo University
Faculty of Regional and Urban Planning

**INTEGRATION OF GEOINFORMATICS TECHNOLOGIES
AND ECONOMETRICS APPROACHES FOR ENVIRONMENTAL
IMPACT ASSESSMENT: TRAFFIC NOISE**

by

TAREK ZAKI AHMED ABOU EL SEOUD

A dissertation submitted in partial fulfillment of the
Requirements for the degree of

DOCTOR OF PHILOSOPHY
IN
REGIONAL AND URBAN PLANNING

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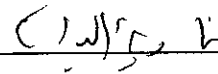
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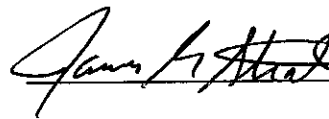
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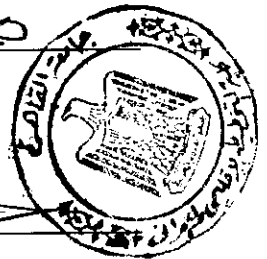


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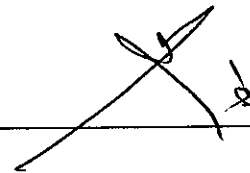


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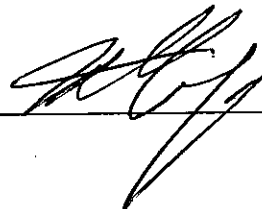




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ABSTRACT

An abstract of the dissertation of Tarek Abou El Seoud for the Doctor of Philosophy in Regional and Urban Planning presented March 2005.

Title: Integration of Geoinformatics Technologies and Econometrics Approaches for Environmental Impact Assessment: Traffic Noise

This dissertation deals with the prediction/valuation phase of environmental impact assessment (EIA). The research develops a predictive approach to examine traffic noise in the Portland metropolitan area by the integration of geoinformatics technologies: geographic information systems (GIS), global positioning systems (GPS), and intelligent transportation systems (ITS). These technologies serve as a tool to process the input data and to analyze the spatial characteristics of the results. The main prediction calculations are carried out in the traffic noise model developed by the U.S. Federal Highway Administration (FHWA TNM). The solution described here integrates the whole process into one compatible efficient framework. At the same time, using the advantages of geostatistical tools of GIS and GPS technology, the research develops a calibration model for the application of the FHWA TNM to the Greater Cairo area using traffic noise field measurements.

The research also introduces and illustrates econometrics approaches for traffic noise economic valuation, among which are hedonic pricing and contingent

valuation which the study applied to the monetary valuation of traffic noise in Portland and Greater Cairo. The research develops a hedonic model for the property values of the free market in the Portland metropolitan area. The research also develops a contingent survey and a logit model for the prediction of willingness to pay to reduce traffic noise in the Greater Cairo area.

These econometrics approaches combined with geoinformatics technologies allow us to better understand and forecast how changes in traffic noise levels influence human behavior in both Portland and Greater Cairo. The research addresses some of the more serious shortcomings in past research on the prediction/valuation phase of traffic noise EIA and in general in the economic analysis of natural resource management, environmental management, and environmental policy analysis.

*Dedicated to the souls of
my father and my mother*

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Portland, March 2005

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