Urbanization and Urban Sprawl: An Environmental Justice Examination of Carbon Footprints on Houston, TX and Miami, FL By Olaniyi D. Olaleye Advisor: Dr. Glenn S. Johnson

Introduction

• Urbanization is a term associated with physical development of metropolitan cities

• Urban sprawl refers to expansive development and growth of metropolitan cities away from the center



Houston Sprawl Source: Marketurbanism.com (2018)

Urbanization and Urban Sprawls

 Urbanization and urban sprawls are contributory factors to the impacts of carbon footprints and associated natural disasters.



Houston City (1978)



Houston City (2011) Source: Klineberg (2013)

Carbon Footprints_

• Carbon footprint is the sum of all carbon dioxide (CO₂) emissions generated directly or indirectly by human activities.



Source: Brisbanebaylands.com (2018)

Research Questions_

To what extent has smart city ideology incorporated environmental justice principles?

• Are the benefits accruing from smart growth practice equitably distributed?

• What are the Environmental Justice (EJ) and Planning modalities for ensuring transferability and generalizability of smart growth approaches in other cities?

Framework-Schools of Thoughts

• The German School of thought focuses on principles applicable for exploring growth of urban cities.

 The Chicago School of thought employs ecological metaphors to illustrate metropolitan settings from perspective of self-governance.

• Los Angeles School of thought emerges as new urban model based on postmodern perspective of urban cities.

Methodology_

• Qualitative scope of the study entails interview of about 50 research subjects each from the two units of measurement.

 Survey questionnaires on urban sprawl and carbon footprints will be sent to selected participants.

• Supporting statistical data will be collected and analyzed as part of the quantitative scope.

Environmental Justice Analysis • President Clinton Environmental signed the executive Justice entails order 12898 into law in equitable engagement of citizens in 1994, to address environmental justice in implementation of environmental policies low-income and minority CLIMATE CHANGE attion SOCIAL JUSTICE PRAR Source: http://defendourfuture.org (2018)

 Urbanization and associated sprawls have consequential carbon footprints on metropolitan cities.

• Carbon footprint also has linkage with climate change.



This map denotes the approximate location for each of the 15 billion-dollar weather and elimate disasters that have impacted the United States January through Suptember of 2017, a record pace

Source: Bullard (2018)

In October
 2012, Hurricane
 Sandy
 devastated
 Atlantic coast of
 United States.



Hurricane Sandy Source: Discover Magazine (2014)

Statistics on Hurricane Sandy

Labor force participants per square mile, counties declared major disaster areas after Hurricane Sandy, 2011 annual average



Source: US Bureau of Labor Statistics (2018)

• Hurricane Harvey caused catastrophic damages in Houston metropolitan area in 2017



Source: Bullard (2018)

Statistics on Hurricane Harvey



Source: Schwartz et al., 2018

• Miami in Florida is another city that has experienced colossal disaster from impact of carbon footprint.



Hurricane Irma Source: The Daily Beast (2017) Statistics on Hurricane Irma
Florida Power & Light (FPL) lost a total of 2500 network power poles.

• Destruction of 14.4 square miles of farmworkers community housing in Homestead.

 Damage to 83 Acre plot occupied by Fairchild Gardens and Parks.

Source: Miami New Times (2017)

• Hurricane Florence devastated North and South Carolina on September 2018. • 42 deaths recorded. • 500,000 homes and businesses affected.



Hurricane Florence Source: The Atlantic (2018)

Smart City and Smart Growth

• Smart city is an innovative as well as intellectual ability linked with application of information and communication technologies to enhance urban infrastructure



Source: Kotak Securities (2013)

 Smart City and Smart Growth
 Houston and Miami metropolitan areas are examples of smart city.

• The cities apply supervisory control and data acquisition (SCADA) to enhance distribution of water and electricity.



SCADA improves efficiency of Water and Electricity distribution systems; Retrofit for energy efficiency of 40 municipal buildings delivers \$3 million yearly warranted energy and water savings.

Source: Anderson (2013)

Results

• The case studies of Houston and Miami indicates that urbanization and urban sprawl contributes to climate change with consequential environmental disaster and property damage.

• The case studies also indicate that physical planning and development of the cities are contributory factors to the colossal loss and damage often recorded because of severe weather impacts.

Implications

• There is need for more inquiries to ensure incorporation of smart growth as well as smart city initiatives in metropolitan cities.

• Urban planners and decision-makers should include factors such as visionary leadership, collaboration, and integration in smart city approach with a view to improving urban infrastructures and technical innovation.

Future Research

• Future research towards identification of equitably applicable and appropriate smart city programs will enable metropolitan cities to be sustainable and adaptable.

• Development of methodologies of incorporating smart growth factors into City's development programs should be part of future research endeavor in urban planning.

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