## **IERM CONVENTION**

Gauteng City Region: Green Infrastructure

Johannesburg



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## Presentation outline

## Gratitude

- □ Context & Background
- Green Infrastructure in brief
- Discussion: The case of Gauteng City Region
- □ Final thoughts
- Acknowledgements



### Gratitude

- ✓ IERM leadership and support staff
- ✓ UNISA: Prof Willie Nel & support staff
- ✓ Johannesburg City Parks and Zoo as well as City of Johannesburg
- ✓ Dr. Christy Boylan
- $\checkmark$  Host location and institutions



## Introduction

#### Green Infrastructure: Gauteng City Region



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### Context

Striking **a balance** between social equity and environmental sustainability when planning for a city is a **complex process**.

At the IERM Convention of **2015**, **Dr. Christy Boylan**. Chair World Parks Academy Secretary, Europe Region gave a presentation on Green infrastructure, with a **historical perspective** of the global North. I then decided to add to the body of knowledge a **Southern perspective** from the global South.

GI principles considerations; planning for mega-cities like Gauteng city region which is a cluster of economic nodes made out of towns, cities and metropolitan areas.

## **Regions of Gauteng**



## Map of Gauteng City Region-Cast Study





## The study in brief

- The presentation will provide theoretical models and guidelines for comparison as a way of understanding various approaches applied in the global south and internationally as well as concepts and principles for green infrastructural development.
- The paper concludes by proving a framework for green infrastructural considerations for city regions.



## Background

- Green infrastructure which is a strategically planned network of natural and semi-natural areas with environmental features is emerging as a necessary link between the build environment and ecological functions.
- The paper focuses on the theoretical models and applications for spatial configuration of the green infrastructure in support of the build environment of Gauteng city region.

# Down memory lane: Definitions as cited Dr. Christy Boylan

#### What is Green Infrastructure?

GI: a strategically planned network of natural and semi-natural areas, with other environmental features designed and managed to deliver a wide range of ecosystem services.

It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas.

On land, GI is present in rural and urban settings.

Source: Green Infrastructure (GI) (COM(2013) 249 final





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## Methodology

The study methods were based on the review of the literature, content analysis theory as a way of analysing Gauteng City Region as case study.

## Is Gauteng City Region adhering to 'modern' Green Infrastructure Strategies?

#### A Smart Conservation Solution

#### **Green Infrastructure Versus Traditional Conservation**

#### **Traditional Conservation Strategies**

✓Usually focus on environmental restoration and preservation

✓Often neglect, shape and location of development in relationship to important natural resources

Green Infrastructure Strategies

✓ Seek to understand, leverage, and value the ecological, social, and economic function provided by natural systems

✓Strive to guide more efficient and sustainable land use and development patterns as well as protect ecosystems

Assuring Great Places





#### **Green Infrastructure**

The virtualisation/imagination of green infrastructure in Gauteng

#### Definitions and Concepts

GI refers to the **connected sets of green assets.** The interconnected set of natural and constructed ecological systems, green spaces and other landscape features.

It includes planted and indigenous trees, wetlands, parks, green open spaces and original grassland and woodlands, as well as possible building and street level design interventions that incorporate vegetation.

Together these assets form an infrastructure network providing services and strategic functions in the same way as traditional grey infrastructure.

#### **Literature Scan**

Early landscape planning theorist in the 19th and 20th centuries, such as **Olmstead's parkways concept** and **Howard's garden city movement**, laid down the necessary conceptual foundations of a GI planning approach by promoting the idea of environmental connectivity between urban green assets – such as parks and green spaces (Mell, 2008).

GI has also become an attractive concept for creating **sustainable urban design** through supporting high-density urban development, climate change adaptation, sustainable communities, micro-climate control and biodiversity (Mell, 2008).

The use of the GI concept in urban planning allows for the implementation of flexible or fit-forpurpose infrastructure planning solutions that take into account the local context (Ahern, 2007).



## Design Consideration

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## **Global to Local**



#### **Gauteng Land Cover**



URBAN: buildings, industrial, residential, townships, roads, rail and open space

MAN-MADE GREENSPACE: school grounds, sports and recreation, golf courses, small holdings and cultivated land

#### NATURAL GREENSPACE:



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Map produced by Kerry Bobbins

Pretoria

Midrand

. Johannesburg



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## **Challenges-Gauteng City Region**

With limited budgets and capacity, South African cities arguably have the most to gain from a GI planning approach. This is because the multi-functional nature of GI has the ability to meet a number of local infrastructural and developmental challenges associated with inequality and poor living and working environments.

## **Case of Gauteng City Region-Findings**

- Understanding the ecological value, social and economical value provided by the natural systems
- 2. Efficient and systematic land use and develop patterns and protection of ecosystem

1. Gauteng City Region Observatory: GI mainstreamed into planning, Gauteng Integrated Infrastructure Master Plan (GIIMP), working closely with cities network.

 Methodological investigation of a green municipal asset registry to inform GI planning;
 Exploring green infrastructure storm-water solutions for
 Diepsloot, Johannesburg; and the cost-benefits of the Atlaspruit green infrastructure flood relief scheme, Ekurhuleni.

## Policy Recommendations-Ecosystem Services: Framework: Application for City-Regions



## Policy Recommendations-Ecosystem Services: Framework

- Provisioning Services—providing goods that people can use.
- Cultural Services—contributing to health, wellbeing and happiness.
- Regulating Services—maintaining a healthy, diverse and functioning environment.



### In conclusion

An integrated approach considerations for green infrastructural development within an ecosystem services framework.



## Final thoughts



"Until you dig a hole, you plant a tree, you water it and make it survive, you haven't done a thing. You are just talking."

Wangari Maathai

### **Thank You for listening!**





## Acknowledgements

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