Achieving net zero status in South Africa

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Introduction and Background

Built Environment

- 40% Global Energy
- 36% Greenhouse gas emissions
Introduction and Background

- Decrease in biodiversity
- Heat Island effect

Built Environment
Introduction and Background

South Africa’s most polluted cities

1. Johannesburg: One of the most polluted cities in the world
2. Pretoria
3. Cape Town
4. Durban
Introduction and Background

Internationally: Urbanisation = high rises, inward compacting and or outward expansion

Africa: Urbanisation = uncontrolled spatial expansion, known as urban sprawl.
Introduction and Background

Urban Sprawl:

- Unsustainable land use
- Converts agricultural land into urban development
- Sustainability is thus very important: Net Zero Bldgs
Aim and Objectives

• The objectives:
  • Define net zero developments
  • Determine the status quo of net zero developments in South Africa
  • Determine the involvement of building regulations
  • Determine the difficulties that South Africans face with the implementation thereof

• The aim is to understand how developments in South Africa can reach net zero status.
Regulations in SA

• Net Zero Developments: How does it feature in SA

• National Building Regulations does not support it.
• Local authorities in South Africa can introduce their own by-laws
Regulations in SA

Local Authorities

Johannesburg - Built Environment Guidelines
Pretoria - City-owned blds 5 star green star rating & zero carbon target
Cape Town - Local carbon conditions
Durban - Incentivise green developments
Green Building Council SA

• The aim of the GBCSA is to develop green building solutions and to drive the revolution of the South African developing industry towards sustainability.

• Certified the first four buildings in South Africa under its Net Zero Pilot Certification scheme in October 2017
Green Building Council SA

Net Zero Status

- Estuaries Plaza in Cape Town
  - Net Zero Water
- Vodafone Site Solution Innovation Centre in Johannesburg
  - Net Zero Carbon & Ecology
- Greenfields Industrial Park in Cape Town
  - Net Zero Carbon
- Two Dam Sustainable in Montagu
  - Net Zero Carbon
Definitions

Net Zero Carbon

• A building that is highly energy-efficient, and the remaining energy use is from renewable energy, preferably on-site but also off-site where absolutely necessary, so that there are zero net carbon emissions on an annual basis.

Net Zero Water

• A building that is designed, constructed and operated to greatly reduce total water consumption, and then use harvested, recycled and reused water such that the amounts of water consumed is the same as the amounts of water that is produced.
Definitions

Net Zero Waste

• A building that reduces, reuses, and recovers its waste streams to convert them to valuable resources with zero solid waste sent to landfills over the course of the year.

Net Zero Ecology

• A building that does not reduce the ecological value of the site during development for Greenfield sites.
Global Net Zero Definitions

• The definitions as given by Europe, United States, Brazil and the Green Building Council SA all comes down to buildings that are energy efficient and that uses renewable energy resources, where the energy used by the building does not exceed the energy generated by the renewable resources.

• The GBCSA however have four categories: Carbon, water, waste and ecology.

• Where carbon has been addressed in other countries
Barriers to the development of net zero buildings in South Africa.

- Actual Cost
- Lack of incentives
- Lack of knowledge: developer
- Perception of cost
- National Building Regulations
- Lack of knowledge: professionals
- Maintenance cost
- Water shortage
Barriers VS Solutions

- Cost - Incentives
- National Building regulations - updated
- Knowledge gap – Education
- Maintenance – Keep in mind with initial installation
Limitations

- **Pilot study** – 5 Semi structured interviews. It is recommended that more interviews or semi-structured questionnaires are gathered for an in depth and comprehensive conclusion.

- The **lack of previous research** done on net zero buildings in South Africa
Further research

- Further research on the **premium costs** of net zero carbon, water, waste and ecology in South Africa should be done.
- Future research could also focus on South African **credit institutions**, fund companies and insurance companies which can possibly acknowledge net zero building developments for sustainable financing instruments, sustainable fund management or insurance offers and support their development with incentives.
Thank You