



# 27th AMEU Technical Convention 2019

The 4th Industrial Revolution (“4IR”) | *Building the Power Utility of the Future, Today*

## Public Lighting Lighting the Way to Smart City Development

**Presented by Bjorn Smidt-Hart**

**Senior Electrical Engineer**

**SMEC South Africa (Pty) Ltd**

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**CITY OF CAPE TOWN  
ISIXEKO SASEKAPA  
STAD KAAPSTAD**

# Think Cars

Prior 4<sup>th</sup> IR



1998 Ford Fiesta 1,3cc 44kW

Moving towards 4<sup>th</sup> IR

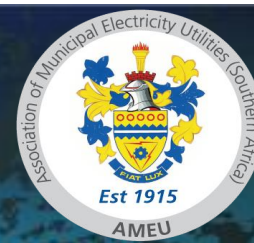


2019 Ford Kuga 1,5cc 132kW

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# Think Cars

## Living the 4<sup>th</sup> IR

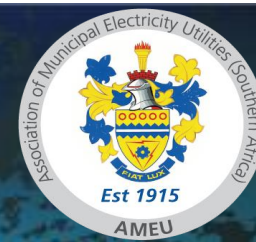


Reference 1: Futuristic Vehicle

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# Topics for Discussion



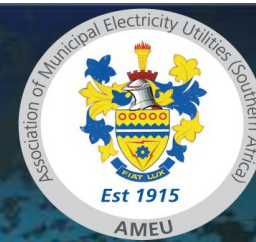
Reference 2: Evolution of Lamps

1. Illuminate or not to Illuminate
2. Watts Trending
3. The Bridge to Enlightenment
4. Smart City Interconnectivity

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# Illuminate or not to Illuminate



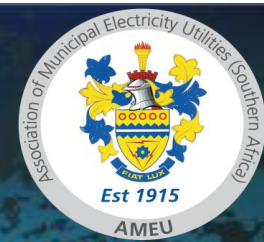
Understanding the importance of Public Lighting within a Municipality

Understanding the Undermining Challenges confronted by a Municipality

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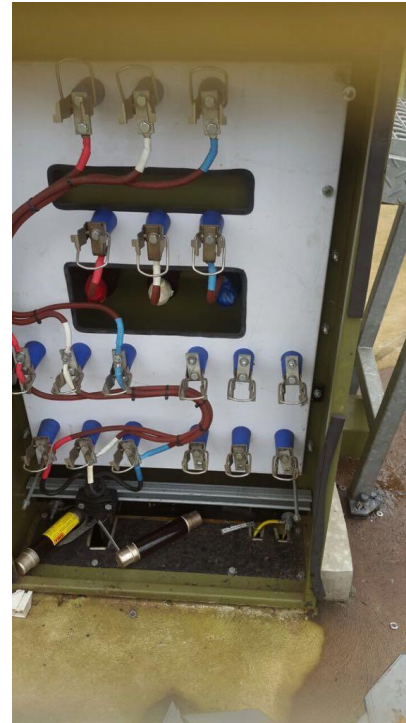
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# Illuminate or not to Illuminate

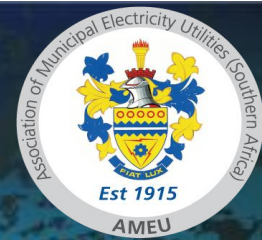
## Is Public Lighting a Liability?



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# Illuminate or not to Illuminate



## Public Lighting:

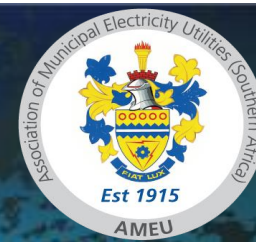
1. Consumes Power
2. Has no present form of direct revenue
3. Susceptible to theft and vandalism
4. Requires Maintenance & Repair
5. Community influences



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# Illuminate or not to Illuminate

## Is Public Lighting an Asset?

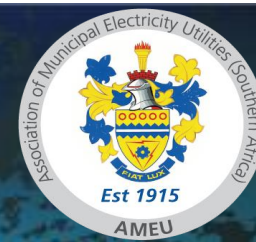


Reference 3: Cape Town Waterfront

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# Illuminate or not to Illuminate

Improves Public Safety & Security

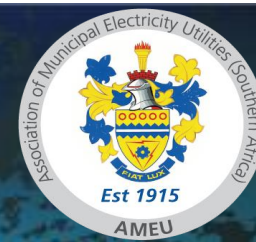


Mt Edgecombe Interchange, Kwa-Zulu Natal

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# Illuminate or not to Illuminate

Promotes Commerce & Community Wellbeing

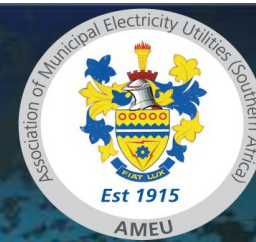


Reference 4: Night Market in Newmarket Alberton

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# Illuminate or not to Illuminate

Supports Positive Evening Use of Public Places

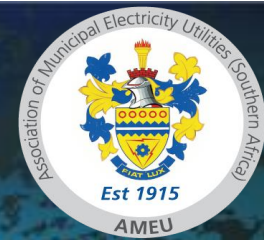


Reference 5: Mbombela Stadium

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# Illuminate or not to Illuminate

## Aesthetic Beautification

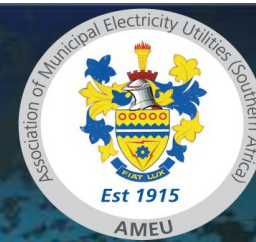


Reference 6: Bloemfontein National Museum

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# Watts Trending

## Energy Orientated Trends

1. Conversion to LED Luminaires
2. DMRE EEDSM Programmes
3. Green House Emission Reduction
4. Telemanagement Systems

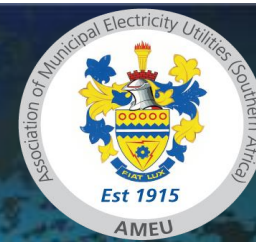
## Community Orientated Trends

1. Urban Regeneration
2. Public Transport Systems
3. Non Motorised Transport
4. Universal Access

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# The Bridge to Enlightenment

It is essential to promote economically sustainable lighting assets that are:

- Easy to install,
- Have low maintenance requirements,
- Are secure, and
- Are cost effective over the life of the asset.

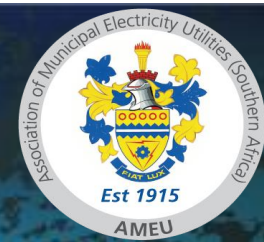


Develop a set of guidelines for public lighting sustainability.

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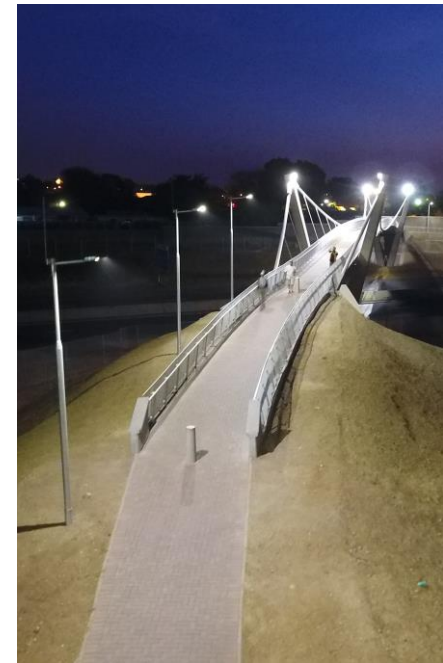


# The Bridge to Enlightenment

ARP035:2007

Guidelines for the installation and maintenance of street lighting

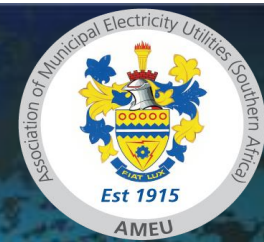
- Incentive for public lighting
- Design criteria
- Luminaires & poles/masts
- Maintenance,
- Maintenance procedures
- Training
- Safety



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# The Bridge to Enlightenment

The public lighting infrastructure is only as good as a municipality's ability to manage, operate and maintain it.

Evolve and support a sustainable, intensifying and progressive public lighting infrastructure.

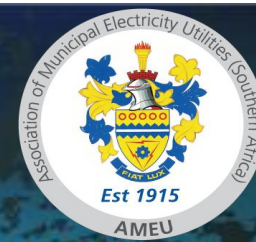


Commitment to sustainability.

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# The Bridge to Enlightenment

## Develop Minimum Performance and Quality Standards for

- Assets

- SANS 475: Luminaires for interior lighting, street lighting and floodlighting — Performance requirements
- SANS 10225: The design and construction of lighting masts
- SANS 1088: Luminaire entries and spigots

- Lighting

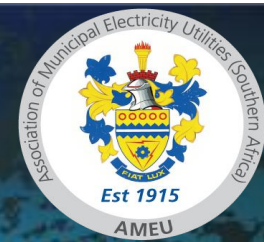
- SANS 10098: Public Lighting
- SANS 10389: Exterior Lighting
- SANS 10114: Interior Lighting
- Occupational Health and Safety Act, 1993
- Environmental Regulations for Workplaces, 1987



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# The Bridge to Enlightenment

Continuous Training should be a MUST

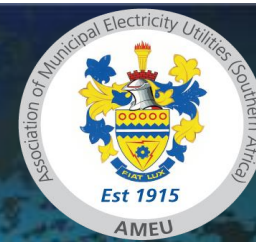
- Skilled personnel
- Quality workmanship
- Safety & Accountability
- Maintainability
- Efficiency



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# The Bridge to Enlightenment

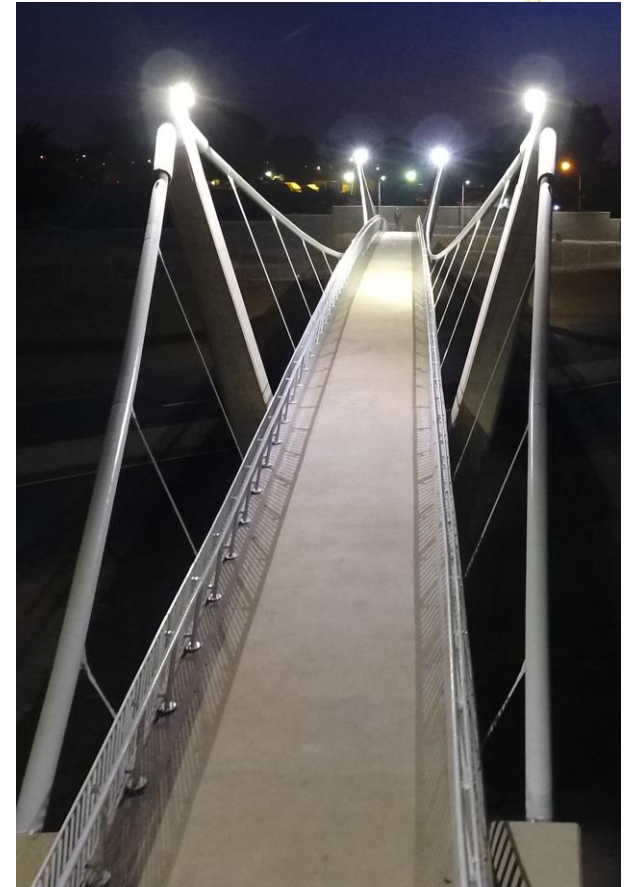
By implementing even small initiatives, a more sustainable public lighting infrastructure may be obtained.

Sustainability promotes IoT systems integration.

Promoting the ability of delivering additional services to communities & possible revenue generation.

Promote active engagements with communities.

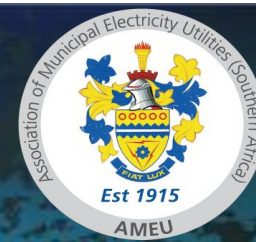
Promote the sharing of knowledge.



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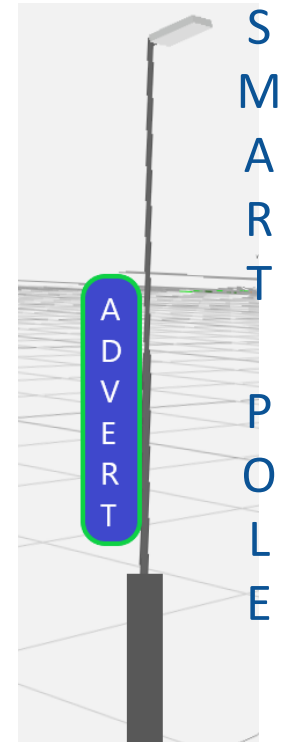
# Smart City Interconnectivity

The efficiency and quality of a municipality's sustainable public lighting service could be seen as the municipality's advancement further into the 4th industrial revolution era.

WHY?

Ability to support Smart City Systems

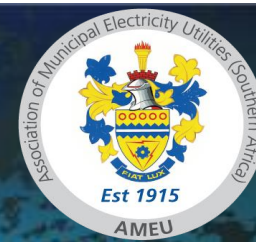
Reducing underground service congestion



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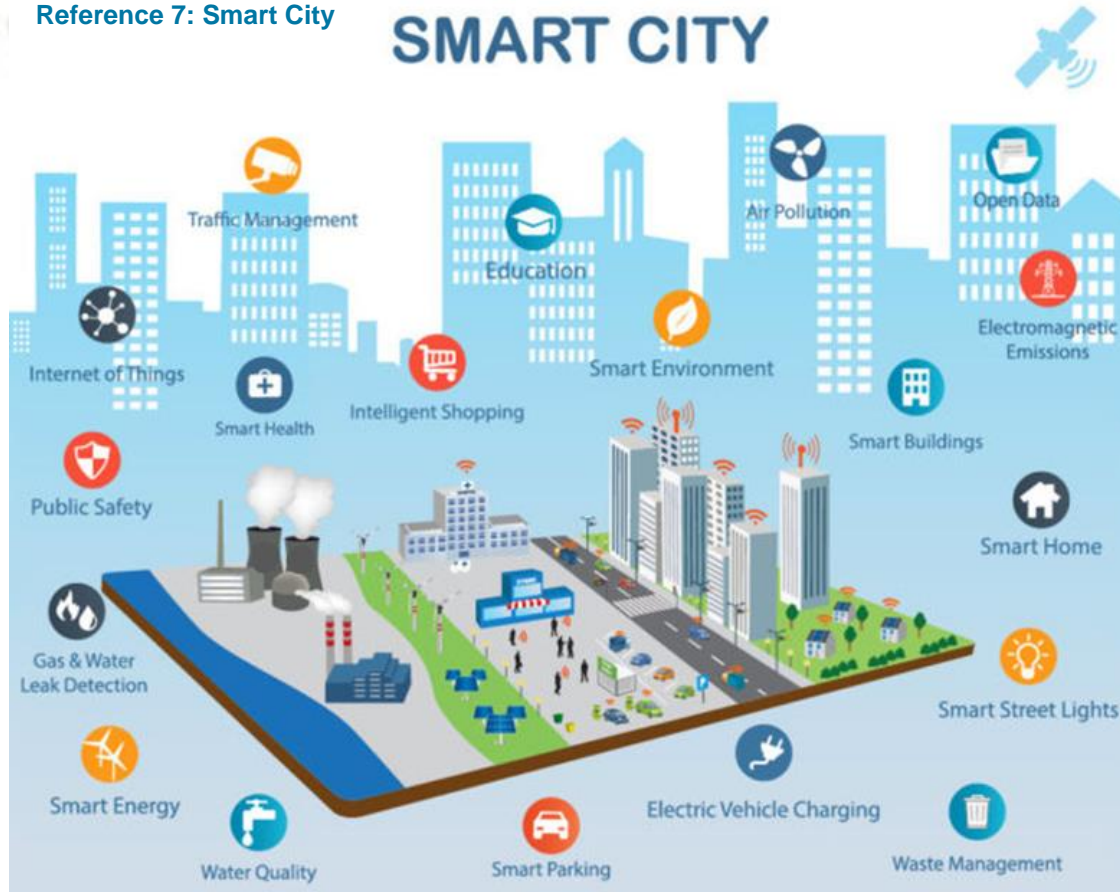


# Smart City Interconnectivity

## The potential of Smart City Systems

Reference 7: Smart City

### SMART CITY

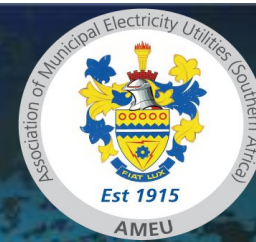


Public Safety  
Smart Health  
Education  
Environment  
Surveillance  
Resource & Service  
Management  
Traffic Management  
Advertising  
Open Communication

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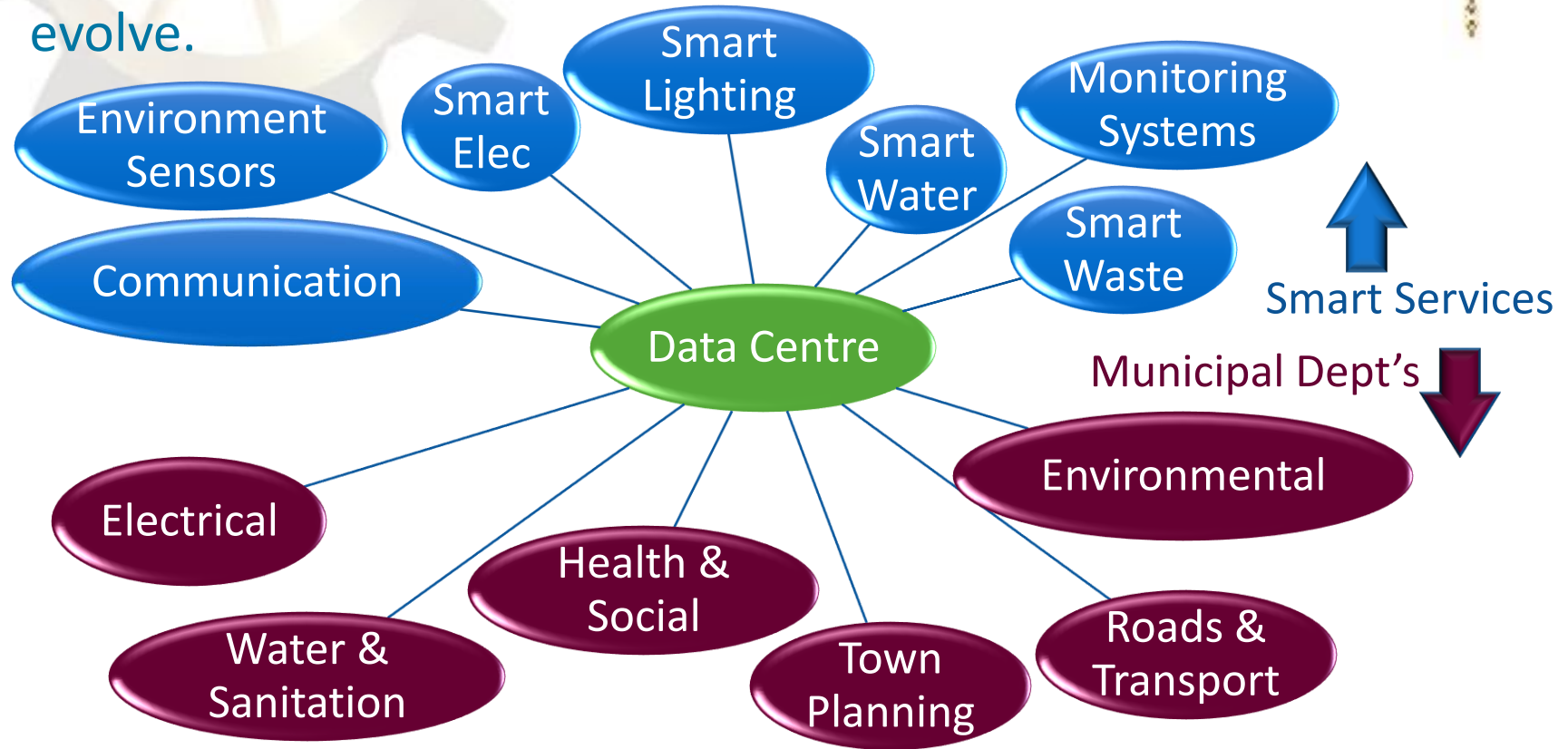
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# Smart City Interconnectivity

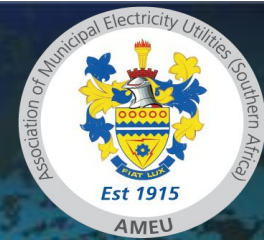
The interconnectivity of Smart City services may create a data centre from which these and new services may further evolve.



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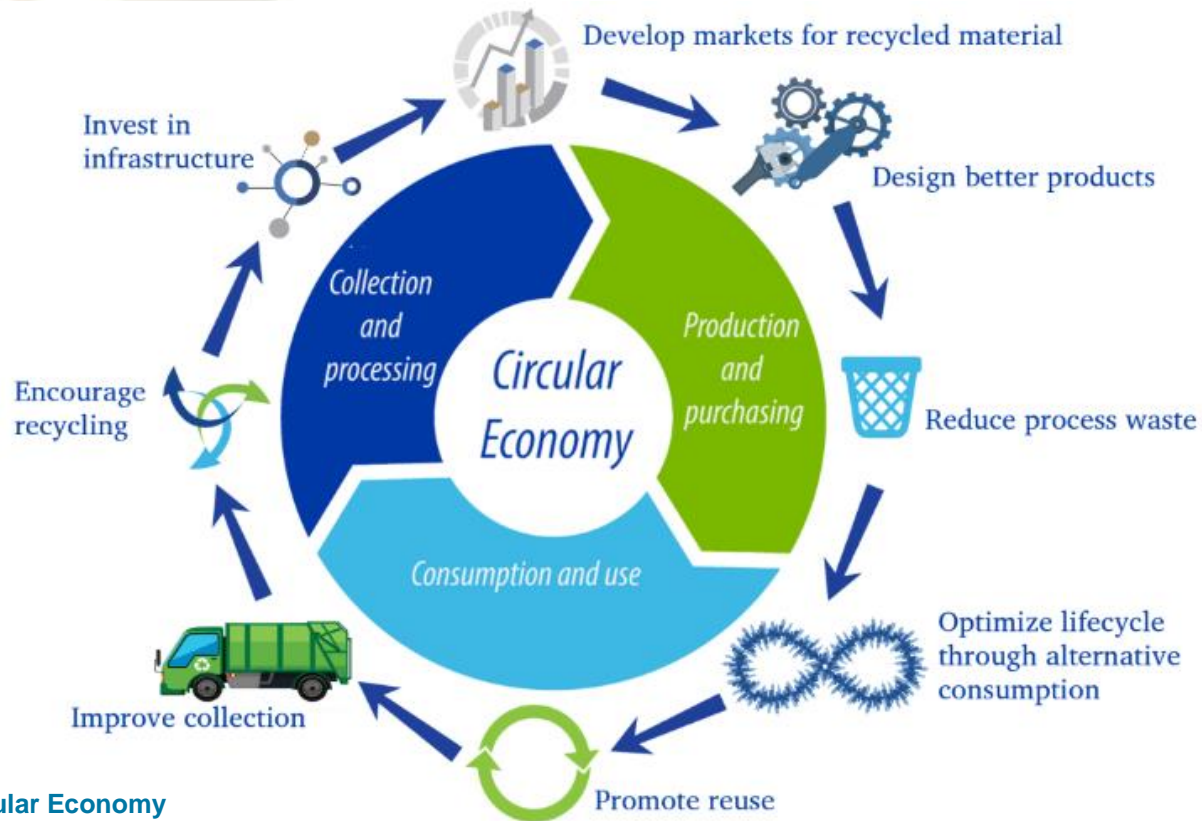
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# Smart City Interconnectivity

The interconnectivity within Smart Cities may assist in establishing sustainable 4<sup>th</sup> IR Circular Economies.

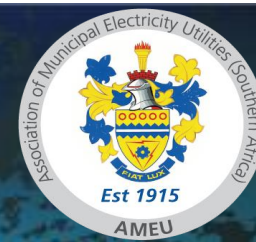


Reference 8: Circular Economy

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## Thank you

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# References

## Images Referenced

1. Futuristic Vehicle: Economy <https://za.pinterest.com/pin/830421618761849003>
2. Evolution of lamps: <http://www.selectionled.com/blog/advantages-of-vintage-led-bulbs-over-traditional-bulbs/>
3. Cape Town Waterfront: <https://blog.junkmail.co.za/wp-content/uploads/2014/10/cape-town-night.jpg>
4. Night Market in Newmarket Alberton: <https://albertonrecord.co.za/102141/night-market-in-newmarket/>
5. Mbombela Stadium: <https://bestofmbombela.co.za/living-in-mbombela/best-place-to-take-out-of-towners/522/where-to-take-visiting-out-of-towners/>
6. Bloemfontein National Museum: <https://www.nightjartravel.com/cultural/national-museum>
7. Smart City: <https://www.axis.com/blog/secure-insights/what-smart-city/>
8. Circular Economy: <https://rco.on.ca/circular-economy/>

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