Process, Energy & Environmental Technology Station

3 November 2017

UNIVERSITY OF JOHANNESBURG

Vision

The University of the Johannesburg is an international university of choice, anchored in Africa, dynamically shaping the future. Inspiring its community to transform and serve humanity through

innovation and the collaborative pursuit of knowledge

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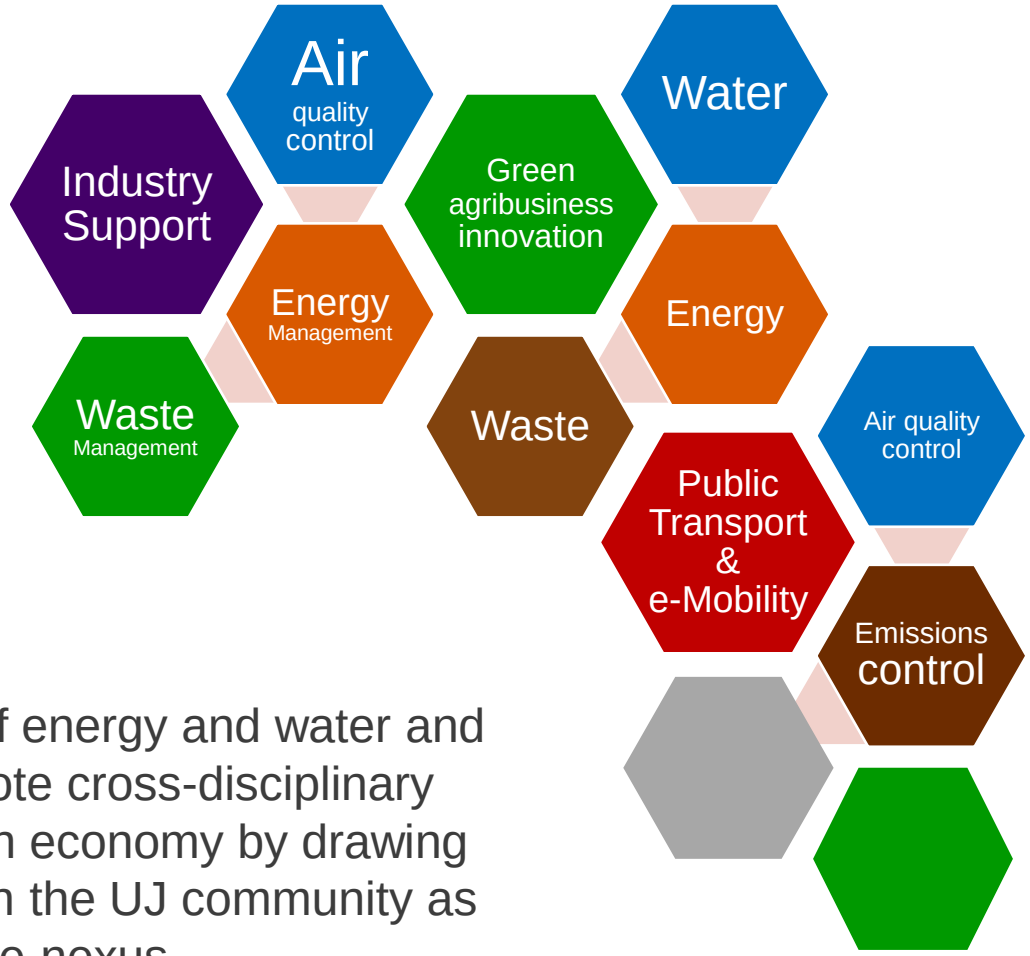
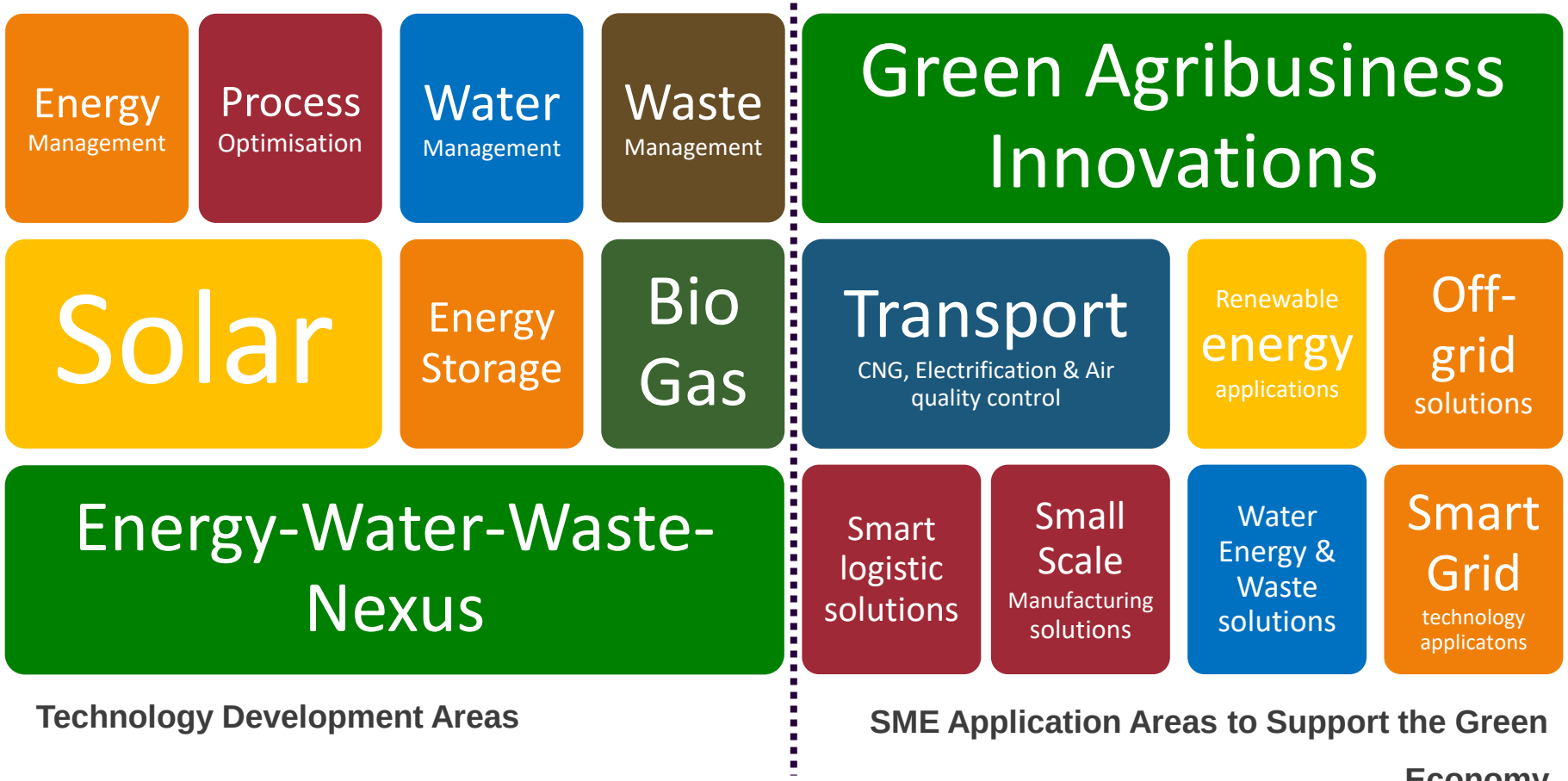
Focus areas



There are close linkages between the production and usage of energy and water and consequently generation and disposal of waste. PEETS promote cross-disciplinary knowledge transfer that supports the development of the green economy by drawing on relationship with research and development networks within the UJ community as it relates to sustainable development in the energy-water-waste nexus.

Connected research themes



Data-Driven Social Innovation and the Agriculture-Energy Nexus

1. Smart Urban Agriculture
2. Waste and Energy
3. Township Economist

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9 billion

795 000 000

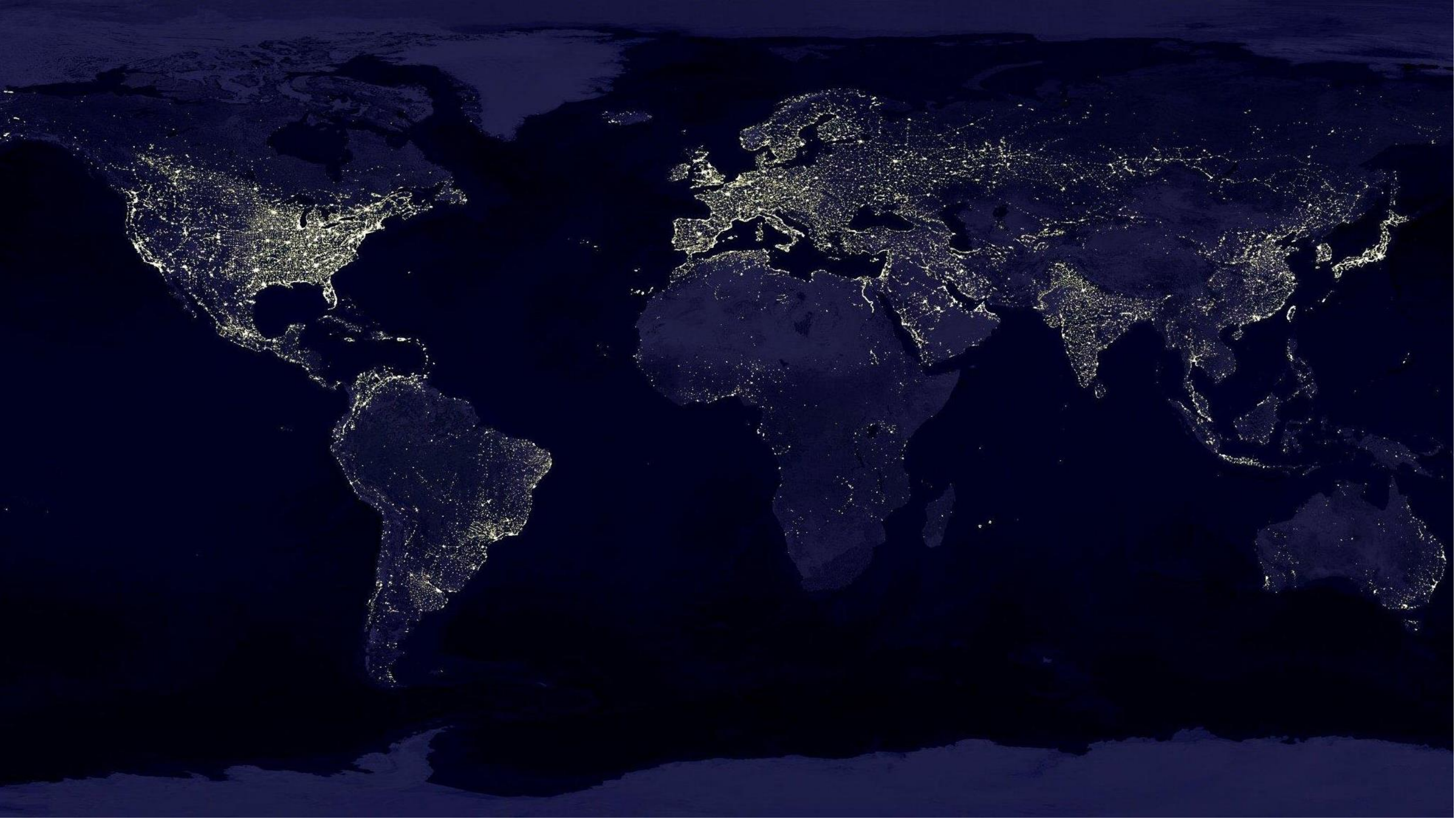
233 000 000

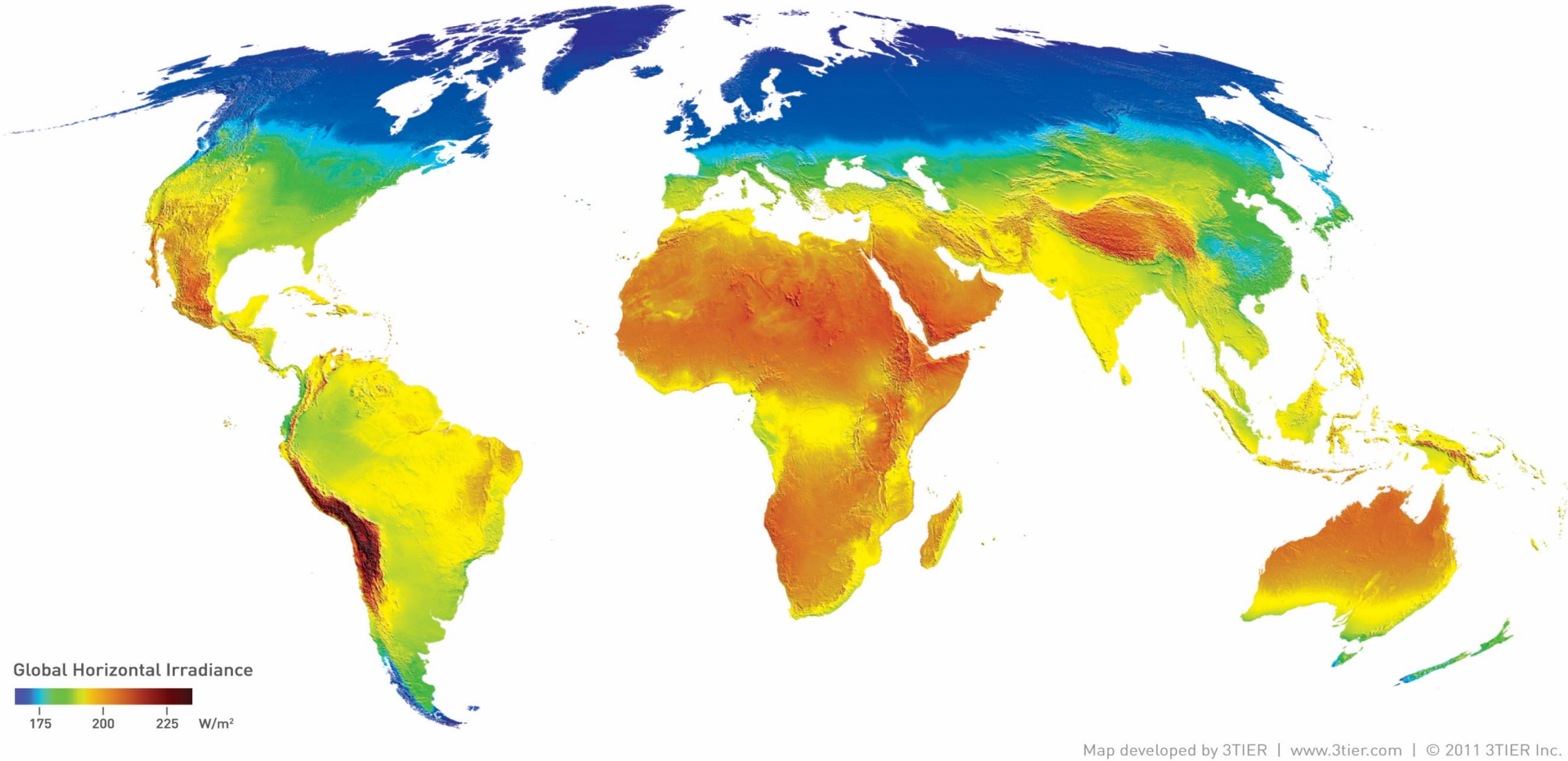
47% of the population of sub-Saharan Africa lived on $1.90 a day or less

2 800 000 000

1 100 000 000

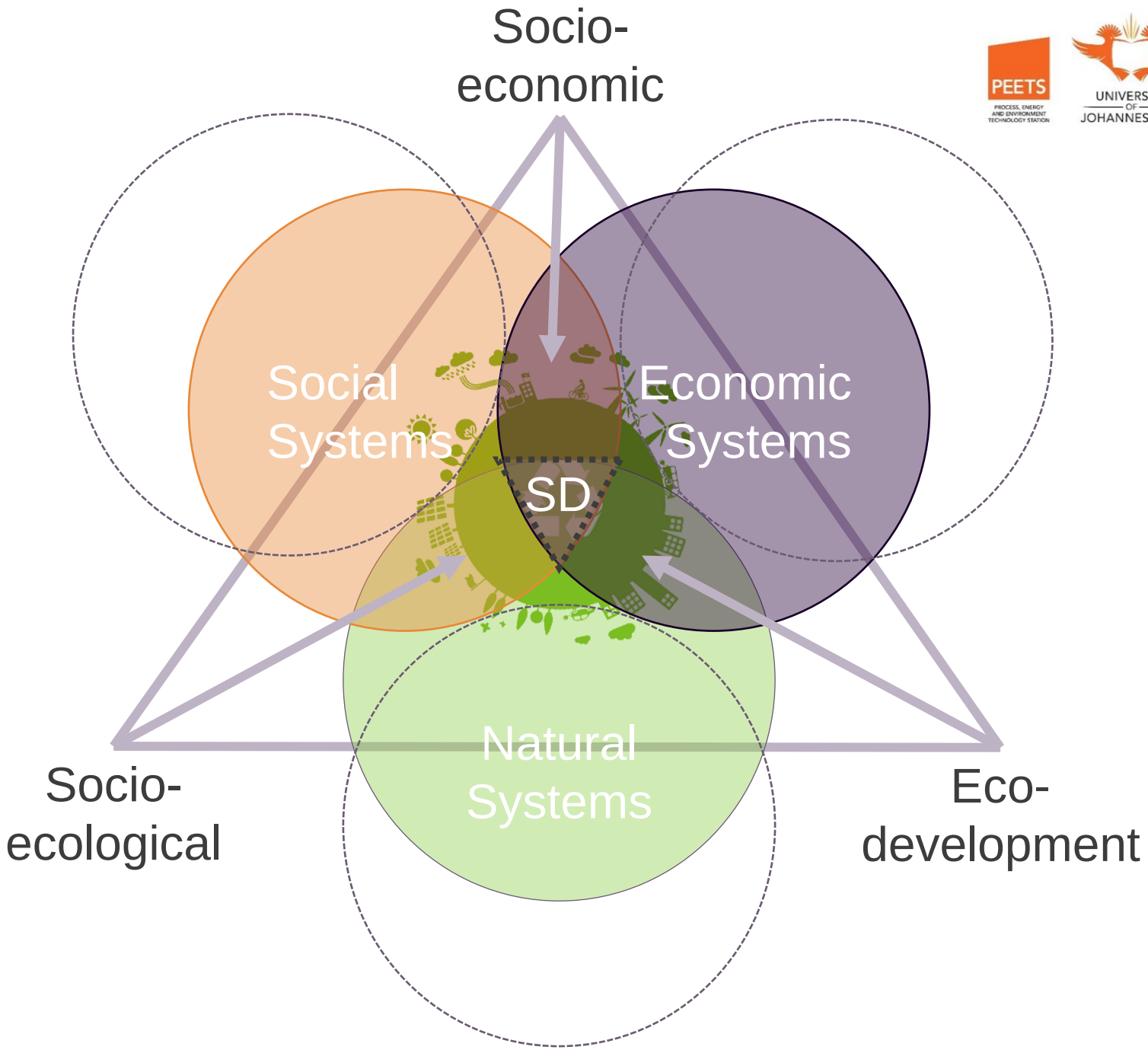
620 000 000




Global Horizontal Irradiance
175
200
225
W/m²
Map developed by 3TIER | www.3tier.com | © 2011 3TIER Inc.

Wicked problems

Change in Perspective



Track TBL targets
Social dimensions
Environmental dimensions
Economic dimensions

Sustainable Development Goals

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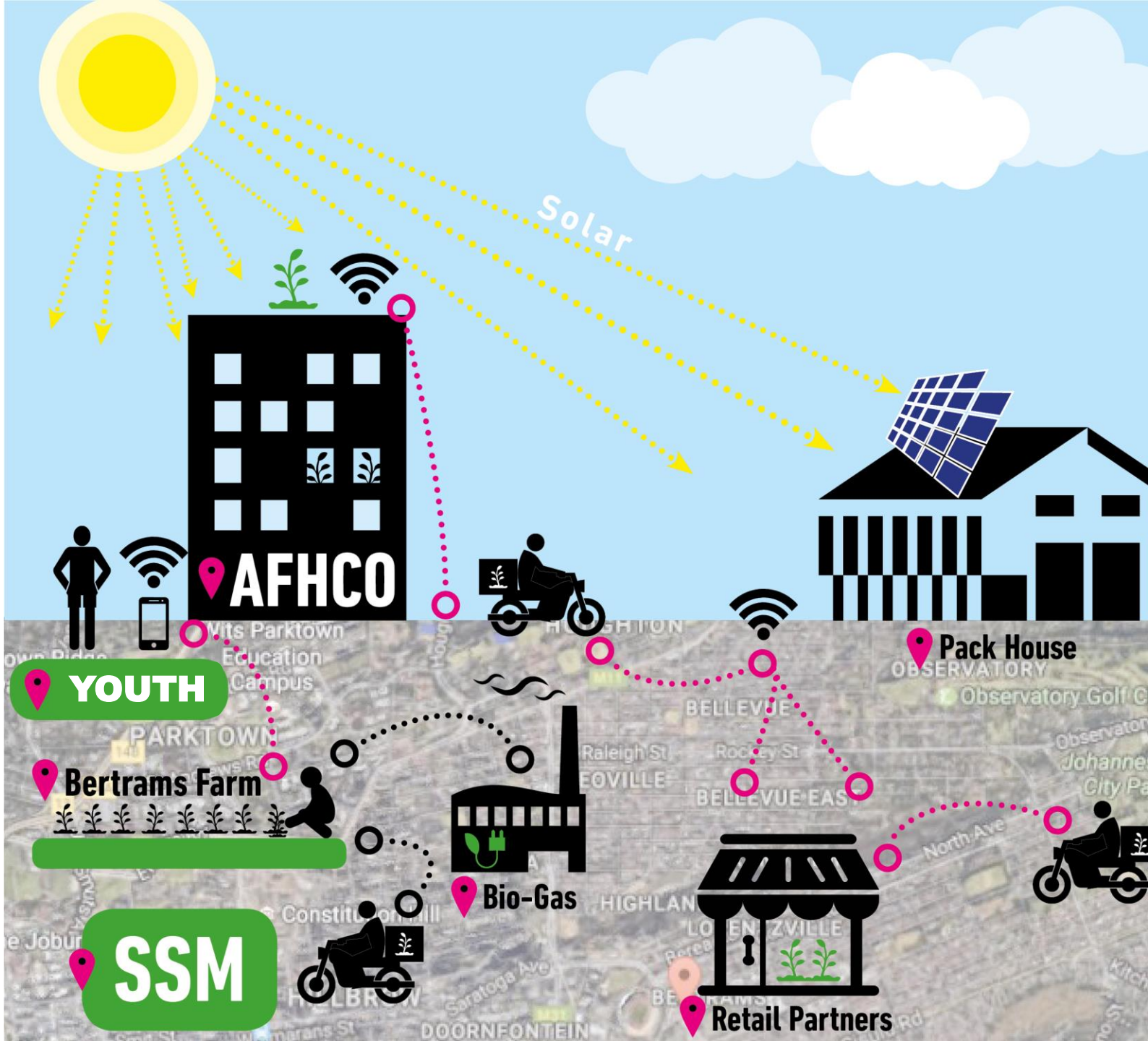
Smart Urban Agriculture

Smart Urban Agribusiness Solutions



Youth development strategy

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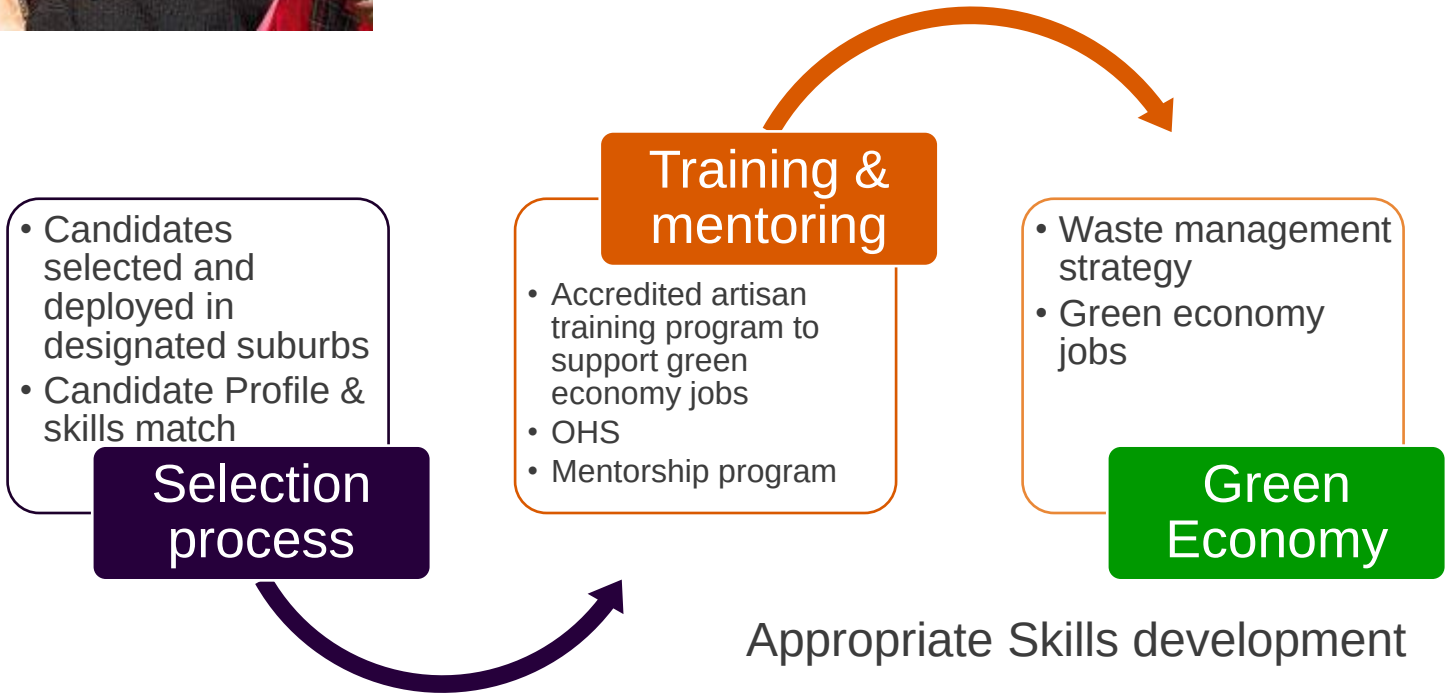
Candidate Profile

- Age 18-35
- Technically inclined
- Enthusiastic, Passionate & Hard working
- NQF Level 3 Literacy & Maths Literacy
- Candidates must be physically fit



Source – Match – Prepare

Youth Employment Accelerator

- Local youth participation
- Prior screening of candidates to ensure appropriate candidates and gender selection
- Candidate are appropriately prepared for the interaction
- Better retention rate and commitment
- Shadow match profile of successful candidate for future projects
- Tracking and reporting on future job opportunities

Youth AgrInitiative

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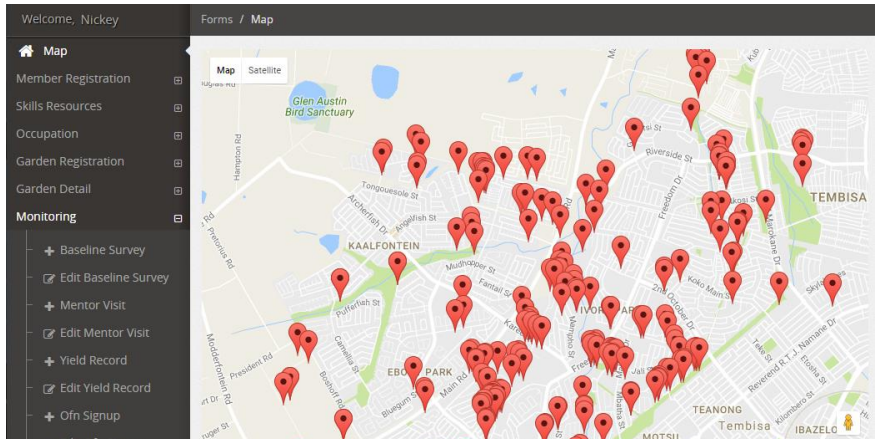
28 Data collectors

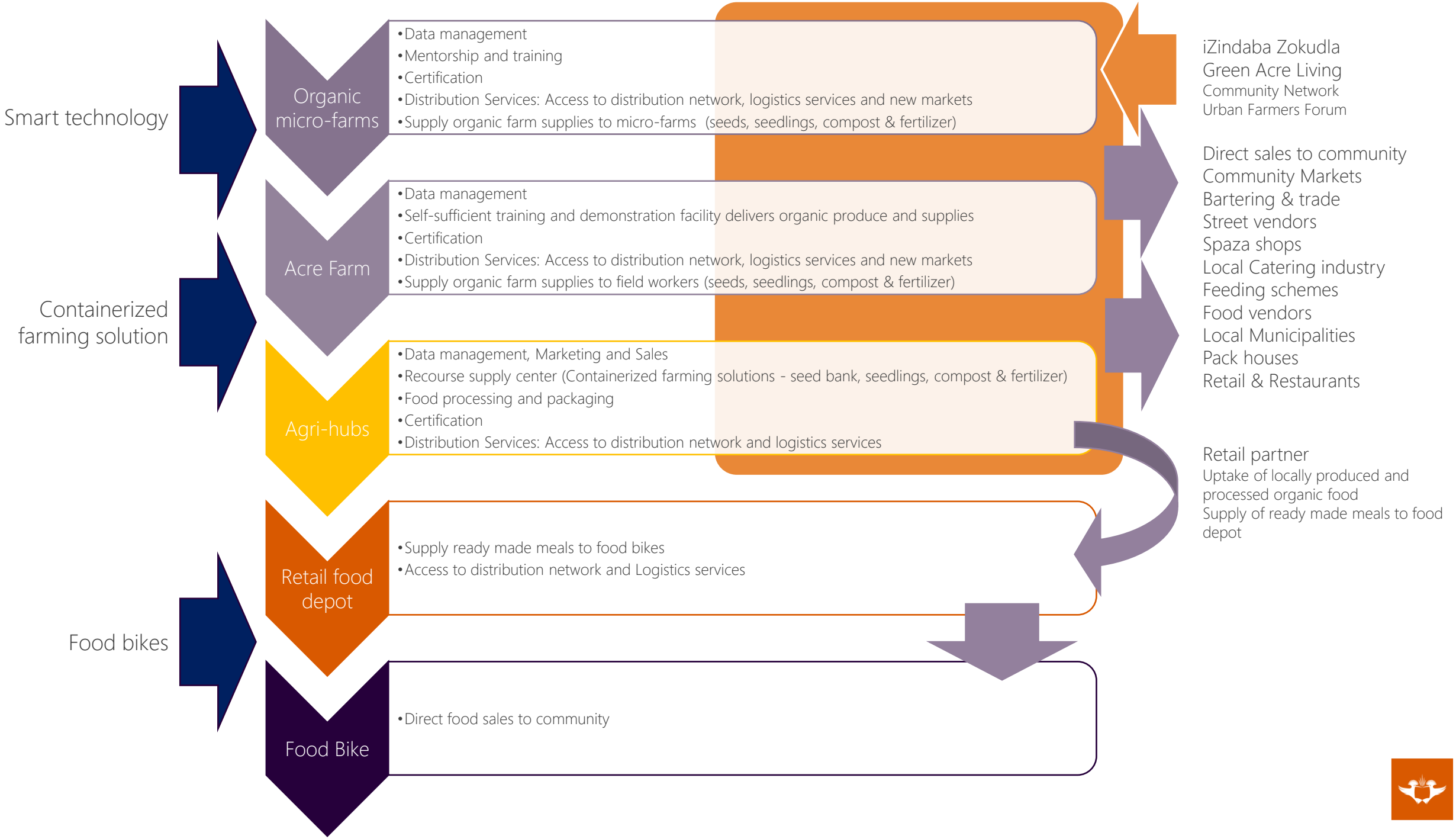
765 Member registration



697 Garden Registrations

509 Baseline Studies

Connect and expand an urban food ecosystem to unlock opportunities and advance local economies

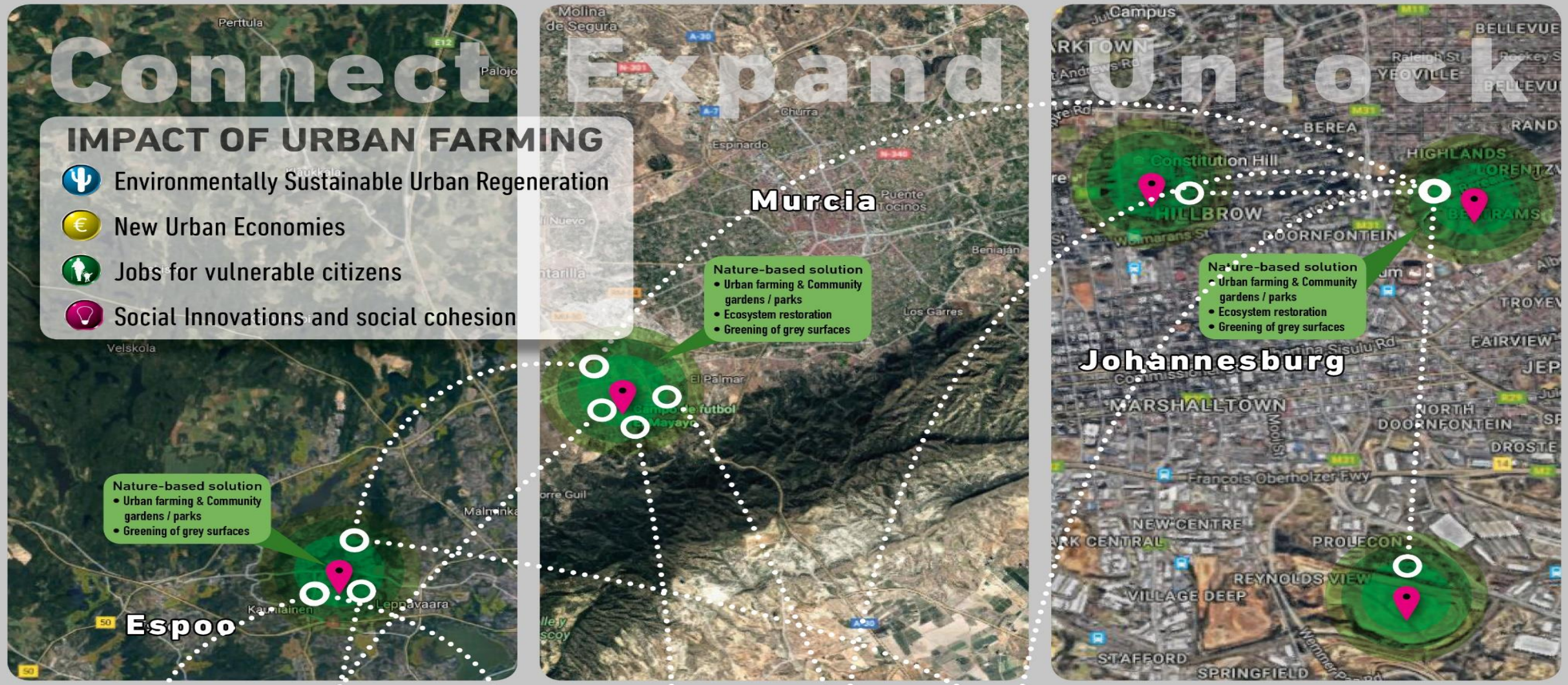

Smart technology
Containerized farming solution
Food bikes
Organic micro-farms
•Data management
•Mentorship and training
•Certification
•Distribution Services: Access to distribution network, logistics services and new markets
•Supply organic farm supplies to micro-farms (seeds, seedlings, compost & fertilizer)
Acre Farm
•Data management
•Self-sufficient training and demonstration facility delivers organic produce and supplies
•Certification
•Distribution Services: Access to distribution network, logistics services and new markets
•Supply organic farm supplies to field workers (seeds, seedlings, compost & fertilizer)
Agri-hubs
•Data management, Marketing and Sales
•Recourse supply center (Containerized farming solutions - seed bank, seedlings, compost & fertilizer)
•Food processing and packaging
•Certification
•Distribution Services: Access to distribution network and logistics services
Retail food depot
•Supply ready made meals to food bikes
•Access to distribution network and Logistics services
Food Bike
•Direct food sales to community
iZindaba Zokudla
Green Acre Living
Community Network
Urban Farmers Forum
Direct sales to community
Community Markets
Bartering & trade
Street vendors
Spaza shops
Local Catering industry
Feeding schemes
Food vendors
Local Municipalities
Pack houses
Retail & Restaurants
Retail partner
Uptake of locally produced and processed organic food
Supply of ready made meals to food depot

Waste management solutions

Holystic Approach

Human Capital

Community based, smart waste management



Follower City	Follower City	Follower City	Follower City	Follower City	Follower City
Belgrade, RS	Bugras, BG	Bydgoszcz, PL	Carouge, CH	Kohtla-Järve, EE	Wuppertal, DE

Scaling-up Nature-Based Solutions for Urban Regeneration

Innovative, replicable and locally attuned solutions; co-designed, co-developed and systematically co-implemented in cities via Urban Living Lab approach

- Commitment to seek expertise and capacity building from front-runners
- Participation in defining user requirements and designing methodology for replicating and transferring solutions
- Replication and scaling for local contexts
- Integration to urban planning

Innovation Platform for Open Data:
Networking • Knowledge-sharing • Access

Waste and energy

Homestead Bio-digester

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The Willows Village | UJ-PEETS

Service Offered: Technology demonstration-Installation of a home-stead bio-digester for The Willows Village as an alternative clean energy source and waste reduction for green economy**.**

Deliverables: Homestead Bio digester, Biogas technology, waste utilization Training and Technology demonstration in Villages, 3D Technical designs drawings.

Envisaged impact (benefit of the end product): To produce renewable or clean energy (biogas) from animal and agricultural wastes by construction and installation of two underground bio-digester within the community of The Willows Village in Limpopo.

Further to that a training/workshop on biogas technology, Renewable energy and Solid Municipal Wastes has been provided for community awareness on Bio digester utilization, operation and maintenance. This approach will contribute in reducing household expenses, animal waste utilization, and liquid fertilizer generation for plants.

Homestead Bio-digester Feasibility studies

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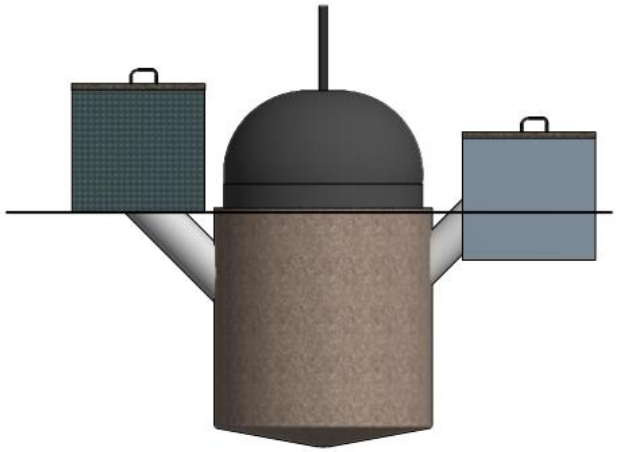
Feasibility studies



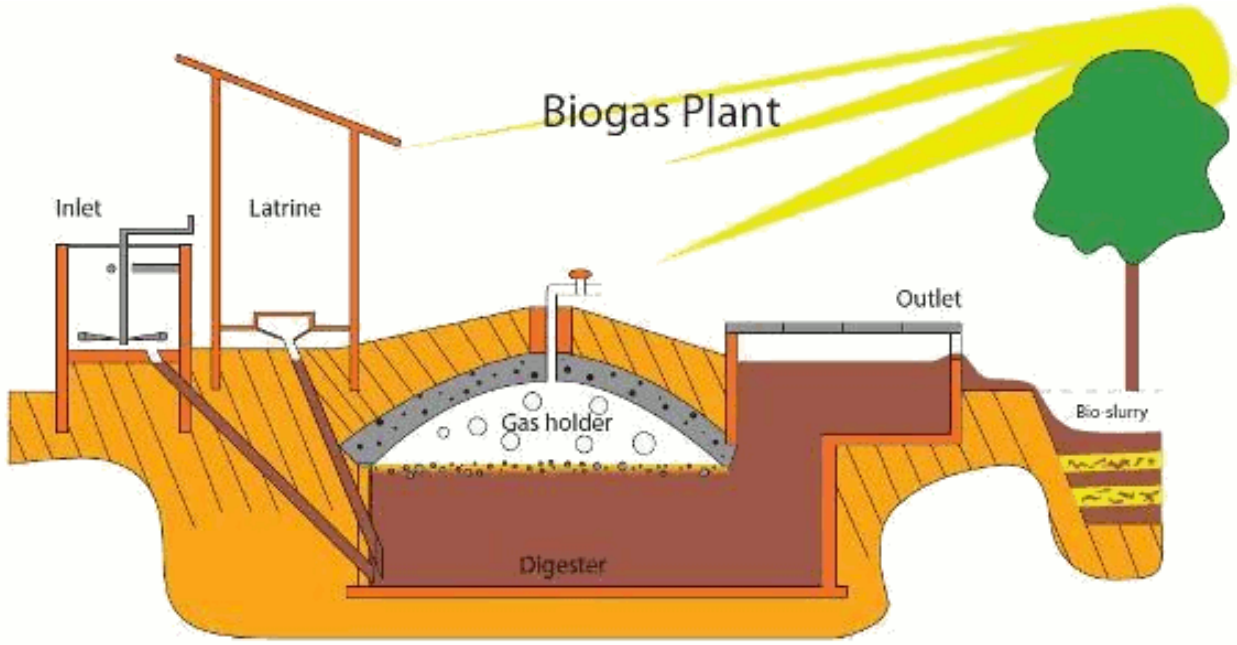
Design & process optimization

Bio-digesters

Solar PV village electrification

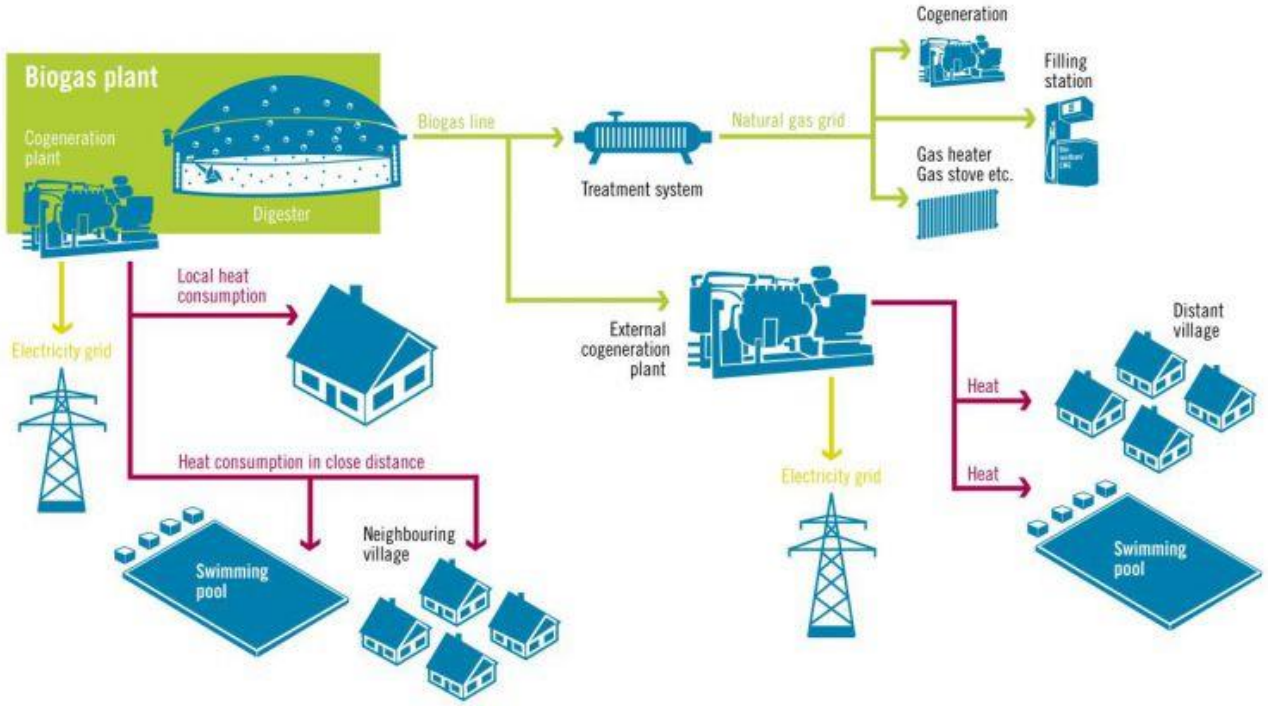
Public Lectures

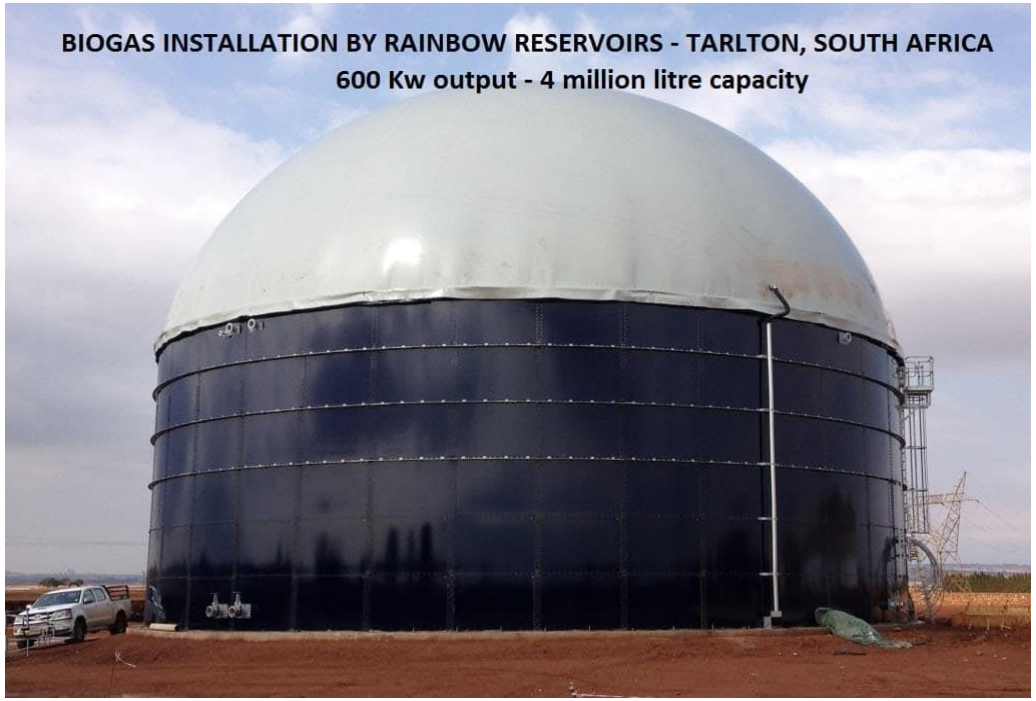
Human Waste Management



Improve sanitation and better manage human waste in low-income urban communities

Biogas plant





Biogas, or Anaerobic Digestion, is the production of methane gas, an incredibly rich source of energy, through the breakdown of organic waste in an oxygen-free (anaerobic) environment

CNG fuelling station

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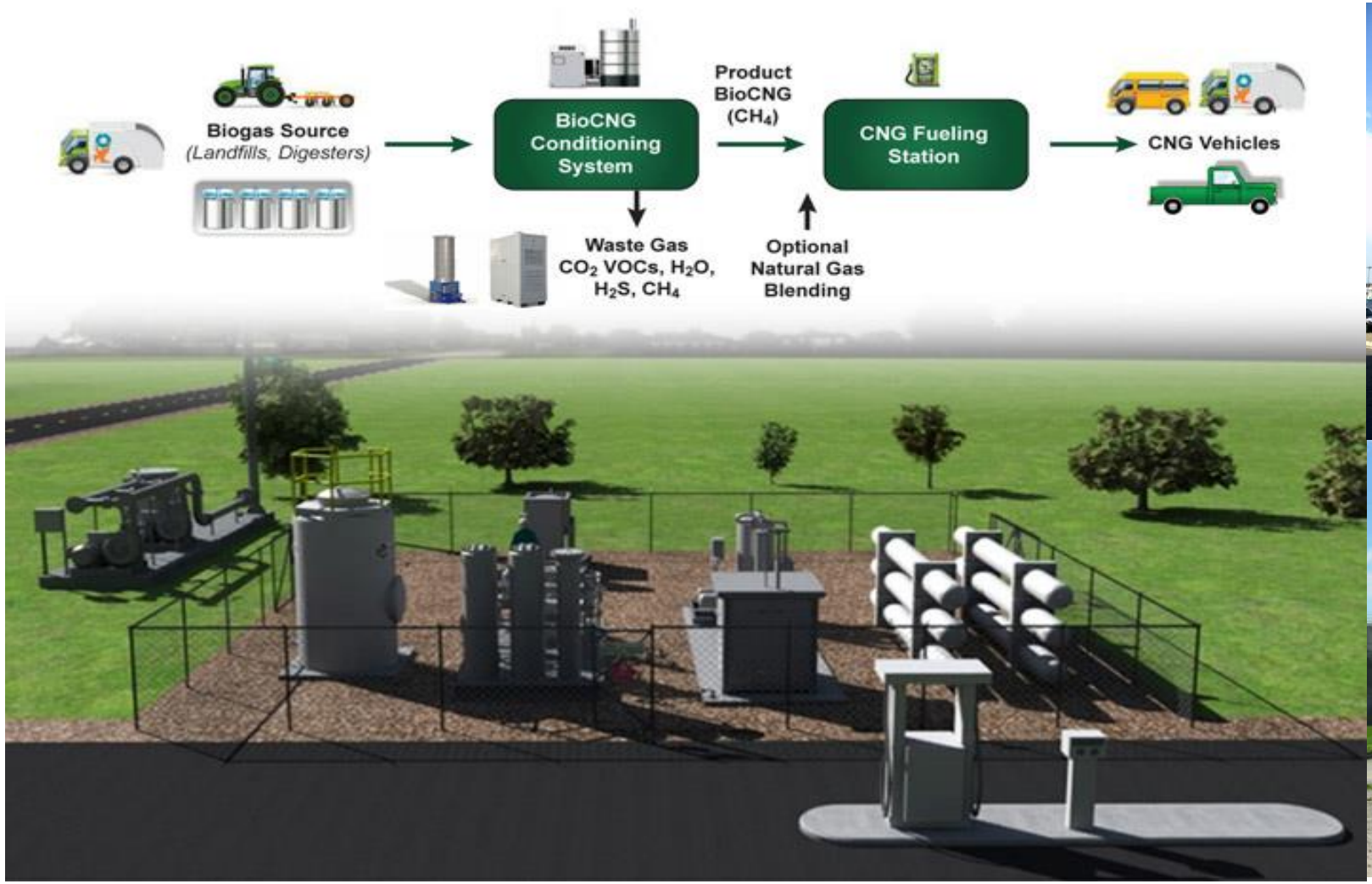

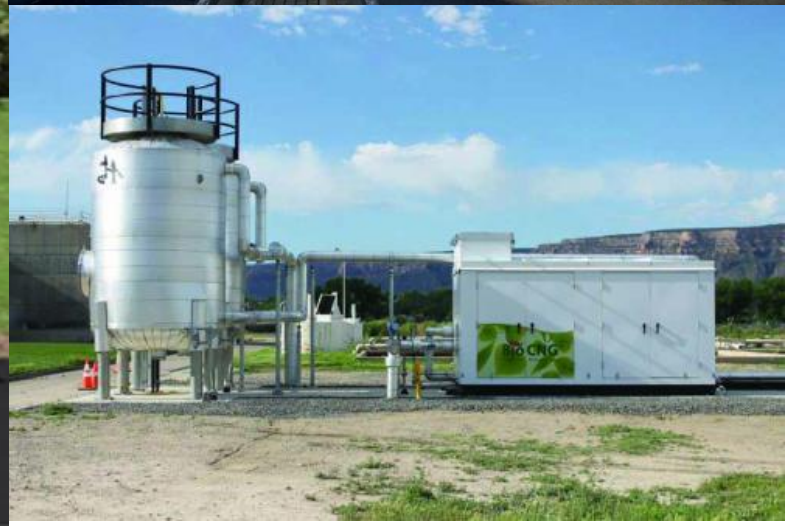

Biogas Network

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energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

agriculture, forestry & fisheries
Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Joburg
a world class African city

JDA
Johannesburg Development Agency

PIKI TUP

Joburg Market

METROBUS

sanedi
South African National Energy Development Institute.

SABIA
SOUTHERN AFRICAN BIOGAS INDUSTRY ASSOCIATION

SAGA
Southern African Gas Association

ibert
Converting bio-waste into Green energy

NCPC
NATIONAL CLEANER PRODUCTION CENTRE
SOUTH AFRICA

Nickey Janse van Rensburg
Manager | Process, Energy & Environmental Technology Stations
nickeyjvr@uj.ac.za
+27 72 322 5316

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