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.
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

Technology Development Areas

Green Agribusiness Innovations

Solar

Energy-Water-Waste-Nexus

Energy Management
Process Optimisation
Water Management
Waste Management

Energy Storage
Bio Gas

Transport
CNG, Electrification & Air quality control

Renewable energy applications
Off-grid solutions

Smart logistic solutions
Small Scale Manufacturing solutions

Water Energy & Waste solutions
Smart Grid technology applications

Technology Development Areas

SME Application Areas to Support the Green Economy

Energy Management
Process Optimisation
Water Management
Waste Management

Energy Storage
Bio Gas

Transport
CNG, Electrification & Air quality control

Renewable energy applications
Off-grid solutions

Smart logistic solutions
Small Scale Manufacturing solutions

Water Energy & Waste solutions
Smart Grid technology applications

Technology Development Areas

SME Application Areas to Support the Green Economy
Data-Driven Social Innovation and the Agriculture-Energy Nexus

1. Smart Urban Agriculture
2. Waste and Energy
3. Township Economist
9 billion
795,000,000
233,000,000

47% of the population of sub-Saharan Africa lived on $1.90 a day or less.
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Wicked problems
Change in Perspective

Impact of engineering
Engineering for impact
Track TBL targets
Social dimensions
Environmental dimensions
Economic dimensions
Sustainable Development Goals

1. NO POVERTY
2. ZERO HUNGER
3. GOOD HEALTH AND WELL-BEING
4. QUALITY EDUCATION
5. GENDER EQUALITY
6. CLEAN WATER AND SANITATION
7. AFFORDABLE AND CLEAN ENERGY
8. DECENT WORK AND ECONOMIC GROWTH
9. INDUSTRY, INNOVATION AND INFRASTRUCTURE
10. REDUCED INEQUALITIES
11. SUSTAINABLE CITIES AND COMMUNITIES
12. RESPONSIBLE CONSUMPTION AND PRODUCTION
13. CLIMATE ACTION
14. LIFE BELOW WATER
15. LIFE ON LAND
16. PEACE, JUSTICE AND STRONG INSTITUTIONS
17. PARTNERSHIPS FOR THE GOALS
Smart Urban Agriculture
Smart Urban Agribusiness Solutions
Youth development strategy

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

Selection process
• Candidates selected and deployed in designated suburbs
• Candidate Profile & skills match

Training & mentoring
• Accredited artisan training program to support green economy jobs
• OHS
• Mentorship program

Green Economy
• Waste management strategy
• Green economy jobs

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

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.
Waste management solutions

Holistic Approach
Human Capital
Community based, smart waste management
IMPACT OF URBAN FARMING

- Environmentally Sustainable Urban Regeneration
- New Urban Economies
- Jobs for vulnerable citizens
- Social Innovations and social cohesion

Nature-based solution
- Urban farming & Community gardens / parks
- Ecosystem restoration
- Greening of grey surfaces

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

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

Bio-digesters

Feasibility studies

Design & process optimization

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

Biogas Source (Landfills, Digesters) → BioCNG Conditioning System → Product BioCNG (CH₄) → CNG Fueling Station → CNG Vehicles

Waste Gas CO₂, VOCs, H₂O, H₂S, CH₄ → Optional Natural Gas Blending

Process, Energy and Environmental Technology Station