

Energy Catalyst UK-Africa Brokerage Web Link-Up



- Latest in a series of partnership building activities under the LCEDN's support for DFID's Transforming Energy Access Initiative.
- Bringing together
 - a) UK companies funded under DFID and Innovate UK's Energy Catalyst competition attending the Rushlight UK clean energy conference and showcase in London and
 - b) African researchers and companies attending the second Africa-EU International Renewable Energy Research & Innovation Symposium.



Innovate UK
Knowledge Transfer Network



Department
for International
Development



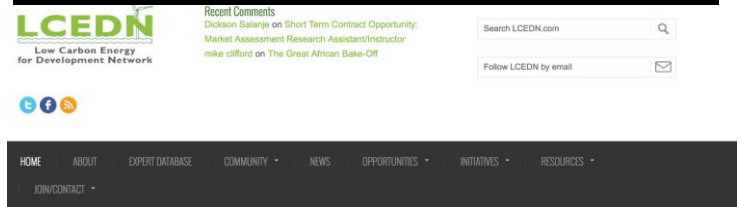
Time (London/Lesotho)	Item	Lead
12.00/14.00	Introduction and scene setter - Background to Lesotho conference - Background to Energy Catalyst and TEA	Ed Brown
12.20/14.20	KTN Overview	Chris Bagley
12.25/14.25	UK 2 Minute pitches - Swanbarton - Oaktec - Solar Polar - Creative Energy - Phycofeeds - Africa Power	Chris Bagley
12.45/14.45	Q&A for UK Pitches	
12.55/14.55	Lesotho Pitches - Green Spaces - One Power - MOSCET - National University of Lesotho	Moeketsi Mpholo
13.15/15.15	Q&A for Lesotho pitches	
13.25/15.25	Follow up actions	Chris Bagley
13.30/15.30	Close	

UK Collaboration

- **Low Carbon Energy for Development Network (LCEDN)**
- Community building (UK Energy and development research).
- Multi-disciplinary.
- Multi-sectoral.
- Information portal.
- Catalysing International Collaborations.



<http://www.lcedn.com>



- Aiming to facilitate Africa-EU research collaboration, private and public sector participation in research, business innovation and university spin-offs, the symposium addresses the following thematic areas:



- Power generation
- Decentralised and household energy solutions
- Energy socioeconomics
- Promotion of energy research, innovation, education and entrepreneurship

Second Africa-EU Renewable Energy Research & Innovation Symposium (RERIS) 2018



About

Programme

Abstracts

Imprint

- Three days of Collaboration organized by EUEI-PDF and National University of Lesotho
- 200 Participants.
- Chief Theme: Research into Practice. Seeking to Encourage Collaboration between European and African businesses, researchers, NGOs etc.



- For further info see: [https://energypedia.info/wiki/Second Africa-EU Renewable Energy Research %26 Innovation Symposium \(RERIS\) 2018](https://energypedia.info/wiki/Second_Africa-EU_Renewable_Energy_Research_%26_Innovation_Symposium_(RERIS)_2018)
- Proceedings to be published by Springer

Second Africa-EU Renewable Energy Research & Innovation Symposium (RERIS) 2018



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Transforming Energy Access (TEA)- research and innovation

Project Purpose: To address critical evidence gaps and test innovative technology applications and business models that will accelerate the provision of affordable, clean energy based services to poor households and enterprises

- Early stage support for innovation development and related resource requirements
- Build on and scale up previous proven innovation ventures
- Holistic approach with focus on :
 - research, development, demonstration and incubation of new technologies and business models (Innovate UK Energy Catalyst)
 - incentivising innovation and entrepreneurship; (Shell Foundation)
 - supporting collaborative partnerships; (scoping)
 - supporting development of local skills and expertise (scoping)

Energy Catalyst R5 – up to £13m grants

Scope: The Energy Trilemma: *all 3 aspects*

security of supply

+

affordability

+

emissions



=

...global opportunities

Any Technology Area, e.g. including:

- Carbon Abatement
- Renewable Energy
- Nuclear Fission
- Hydrogen & Fuel Cells
- Energy networks & System Integration
- Demand Side technologies
- Enabling Technologies & Processes
- Other (any)
- +20 sub-categories to select from

the Energy Trilemma issue is rapidly disrupting global energy systems & markets
– creates business opportunities in UK & around world for UK organisations

SCOPE: “Does the project address energy *emissions and cost and resilience?*”

DFID Scope: Energy Catalyst Round 6

- Scope: Innovation must be [sufficiently] ***“relevant to the needs of developing countries”*** and address all three aspects of the energy trilemma
- Targeting innovative energy technologies & business models from UK enterprises and academia that can **“Transform Energy Access”** for poor DC communities, particularly in Sub-Saharan Africa & South Asia regions
- TRL3-7 & any ***relevant*** technology area; no countries are being specified
- Addressing the challenges of significantly scaling up access to reliable, clean, affordable energy to households & enterprises, particularly where electricity via the grid is unavailable or unreliable
- Addressing critical evidence gaps & opportunities with outcomes coherent with DFID’s 5-yr, £65m “TEA” program
- **International partners** are not required but encouraged, where relevant to the project. International Partners will be funded, via UK lead partner, on same grant% terms as UK organisations, if the project is selected by DFID
- International organisations participate without grant if not DFID-funded

DFID has final say on whether a project is in scope for DFID funding

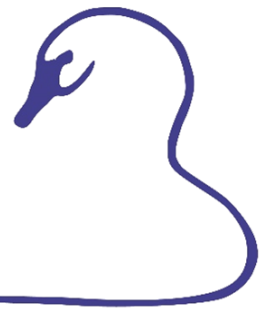
Other Potential Funding Sources for Collaboration



- UK Innovate Energy Catalyst
- Other parts of DFID Transforming Energy Access
- DFID Regional Office Funding Sources
- DFID Energy and Economic Growth Phase Two
- UK Research Councils GCRF
- European Union: Horizon 2020
- UK University Impact Enhancement Budgets (UK)

UK Presentations

Swanbarton



We offer

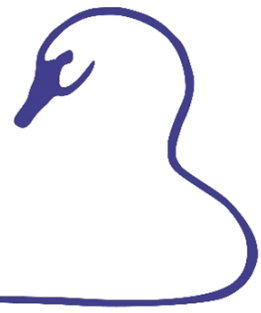
Smart electricity storage

- storage technologies
- information technology to use storage better
 - high integrity software development
 - systems design
 - hardware prototyping
- grid balancing vs markets
- high quality bid partner

Example R&D projects

- Botswana: network-integrated energy security
- Iona, India, Cameroon: electricity storage & local trading
- UK: electricity grid power services from heat storage in domestic hot water
- *(India: network-integrated charge planning for small electric vehicles)*

Swanbarton



We are looking for

- real problems beyond UK
- partners from sub-Saharan Africa
 - academic or business

Contact us

- Clive Tomlinson
 - engineering
 - funding bid management
- +44 (0) 1666 840948
- www.swanbarton.com
- clive@swanbarton.com

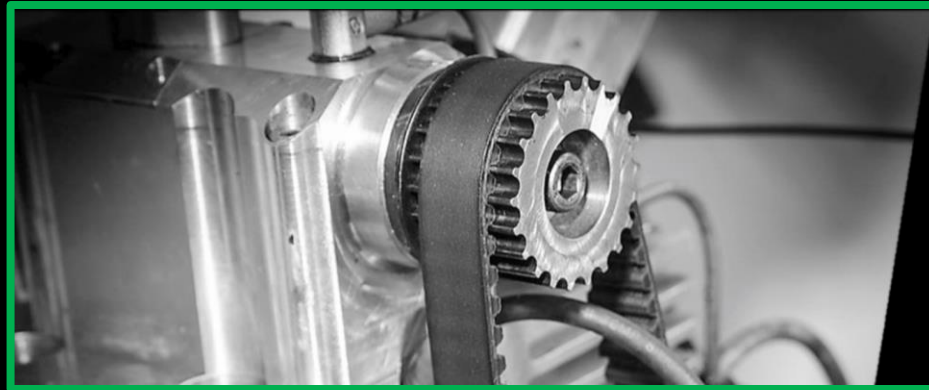
25/01/2018





Multi-Gas Engine

Clean. Efficient. Powerful.



- Direct replacement for existing 2-25kW gasoline and diesel engines
- Can use LPG, CNG, Bio-gas or hydrogen
- Over 90% lower health harming emissions than diesel
- 20% more fuel efficient than existing diesels
- Robust, long life and lower cost



Applications:

for first 10 kW Pulse-R engine product

Any machine that uses an equivalent diesel or petrol engines

Construction equipment

Water pumps

Industrial machinery

Small vehicles

Agricultural machinery

Generators



A Pulse-R powering
a small leisure vehicle



Pulse-R gas generator

Pulse-R engines available for evaluation in 2018



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Innovate UK

OakTec
efficient power

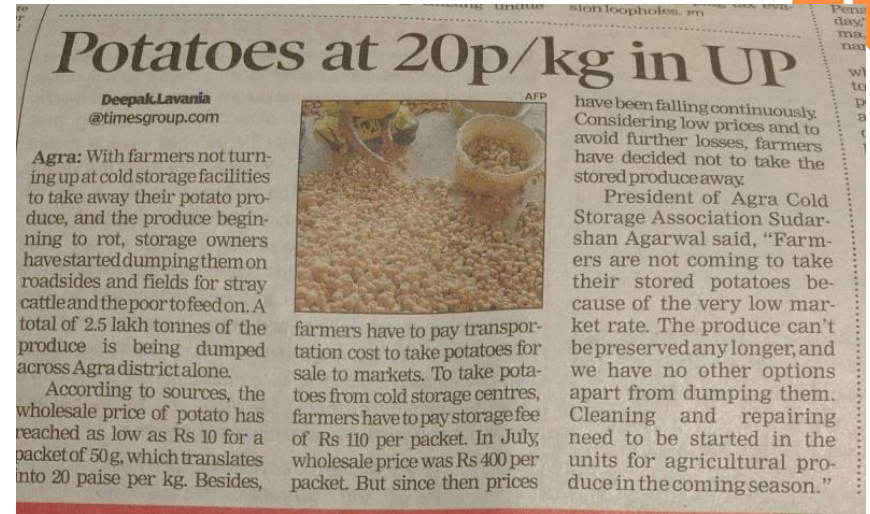


Solar Polar Limited

Michael Reid
CEng FIMechE MBA
Technical Director

The question we asked

Could we help to produce economic and social benefits by keeping all food fresh from farm to fork?



USPs / benefits – Economic benefits



- Lowest solar cooling cost per watt worldwide.
- The five-fold profit multiplier
 - Better quality
 - Greater range
 - Longer season
 - Value added
 - Less loss





Solar Polar Limited

Michael Reid
MBA FIMechE MGATE
Technical Director
m.reid@solar-polar.co.uk

Expertise



CREATIVenergie

Unlocking sustainable energy for life

Innovation – Collaboration – Training
Co-Design – Accessible – Affordable
Appropriate - Sustainable - Energy



Reducing barriers to biogas entry



Working with communities to develop solutions.



Training course for biogas construction

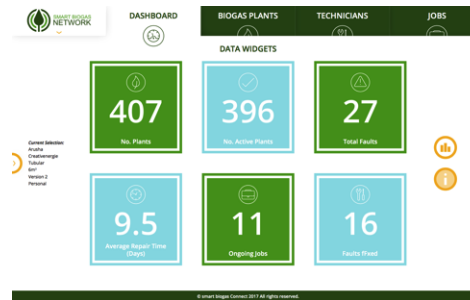


Running participatory user centered design workshops around energy access

Expertise



Product Development – rethinking solar power



ICT – technology development for the energy sector (mobile and web apps + physical tech).



Remote sensing specialists – smart technology for the energy sector with applicability for smart agricultural

Looking for ...

Partners (e.g. agricultural training organisations, locally based NGOs, churches):

- desiring training in constructing expanding bag biogas digesters
- wanting to collaborate to innovatively make use of ICT to increase energy access
- as demonstration sites for the Smart Biogas Network across East Africa
- organisation with experience of scaling energy access solutions
- people with experience in starting/mentoring micro-enterprises for energy access



Dr Matt Pearce, Founder

matt@phycofeeds.com

www.phycofeeds.com

Phycofeeds provides sustainable, carbon neutral biofuels and nutrients from sunshine, waste and algae.

- **Renders waste to valuable products**
- **Transforms utilisation of solar thermal energy**
- **Provides genuine sustainable biofuels and nutrients for higher value products**
- **Technology field tested to TRL 4 in Rajasthan, INDIA**
- **2 patents filed**
- **Sustainable Development goals addressed – 7, 8, 9, 11, 12**

Looking for:

- Land to develop a 1 hectare pilot site with high direct solar radiation
- Biomass waste remediation providers from plastics, sugar cane bagasse or agriculture
- Biofuel processing facilities for fuel processing
- Funding partners to scale production and build new markets

Dr Matt Pearce, Founder

matt@phycofeeds.com

www.phycofeeds.com

- **Africa Power Ltd**
- Dr. Livesey, Managing Director
- Alastair alivesey@africapowerltd.com
- +44 1403 864702 www.africapowerltd.com



About us

- Rural, off-grid power services company working in Africa
- We specify, **purchase**, install, operate and lease independent low-carbon power systems **and** end-use equipment.
- All systems are independent, PAYG; remotely monitored systems
- Active in Uganda, Tanzania and Zambia
- Early stage IUK grant to design Modular SHS & study productive power

Mid-stage Grant 2018

- Source, develop, improve power system and end-use equipment combinations to support micro enterprises in Africa
- Businesses in a box.

What we can offer

- Detailed customer specifications
- Beta test sites and feedback
- Purchase contracts for the best power/equipment combinations
- We buy quality based on life-cycle cost, not lowest capital price.

What or who we are seeking

- Better, longer life, lower cost, low-carbon power systems
- Higher efficiency (typically DC) end-use equipment and appliances
- Remote monitoring;
- Equipment testing

What's your innovation/idea

- Lease integrated power packages
- Provide power services to ALL members of rural communities
- Lease power equipment with zero deposits
- Cut the power lines, just as cell phones cut the land-lines

What's the market opportunity you are addressing

- Off-grid rural power services (Africa)
- Anchor clients
- Businesses
- Community Facilities
- Domestic Solar Home Systems
- As easy as ABCD.

Lesotho Presentations



Lisa Nyamadzawo

Co-Founder > Green Spaces

nyamadzawo.lisa@gmail.com

**SOLAR TREES for energy
access and Wi-Fi hotspots**



Revamping Public Places

Off-grid Energy Solutions for outdoor living



Services



Charging



Wifi



Information centres



Lighting

Market

Beer Gardens

Exhibition Grounds

Vending sites

Local authorities

Public institutions

Private homeowners

\$\$\$ **MARKET** \$\$\$

Hotels

Malls

DIVERSIFIED

MULTI-SIDED

Business parks

Function Venues

Schools

Property owners

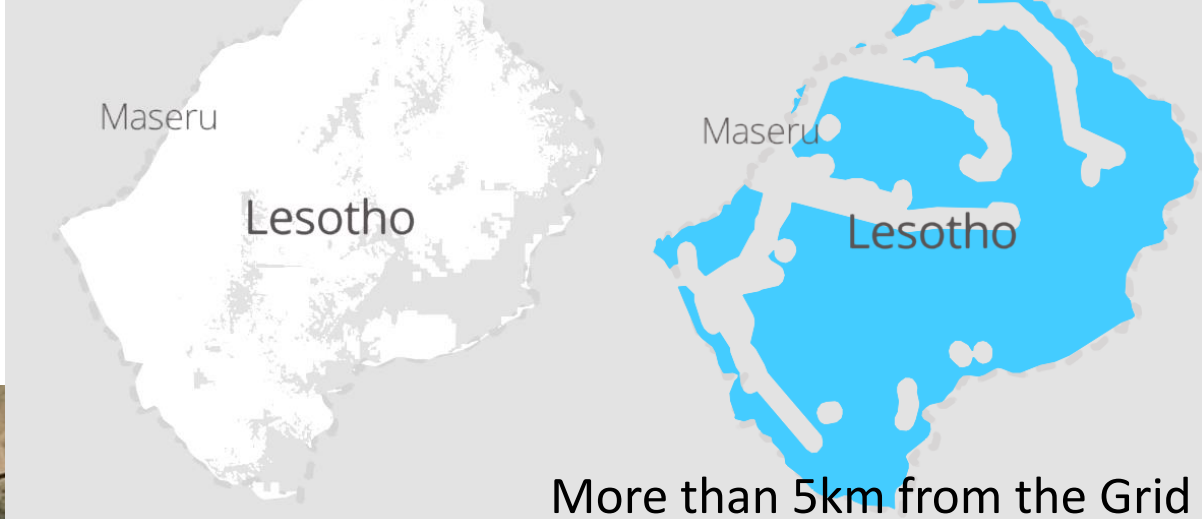
Government complexes

POWER

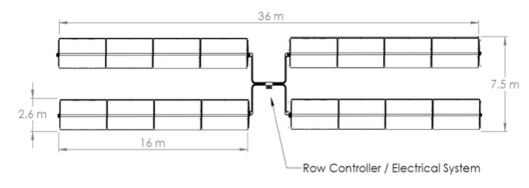
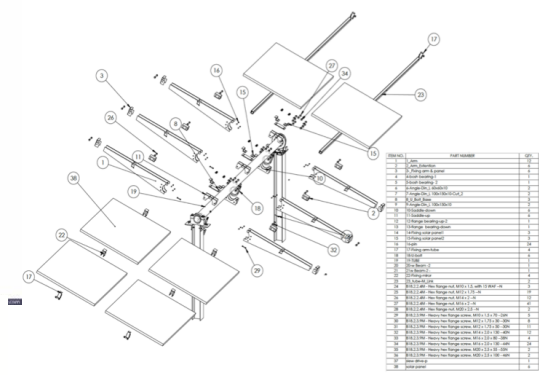
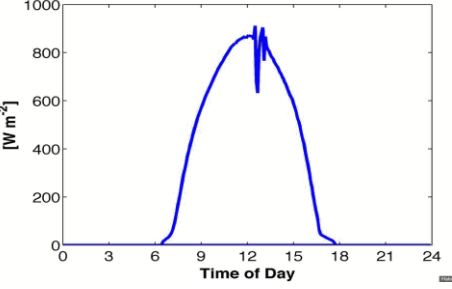
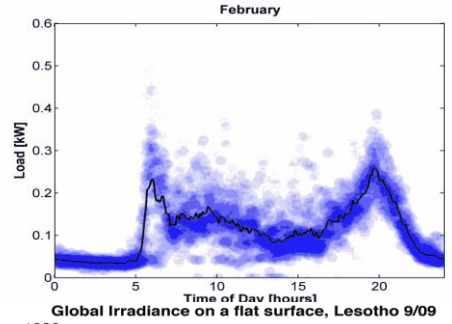
www.1powerafrica.com

Solar Mini-grids for Lesotho

Cellular Network Coverage

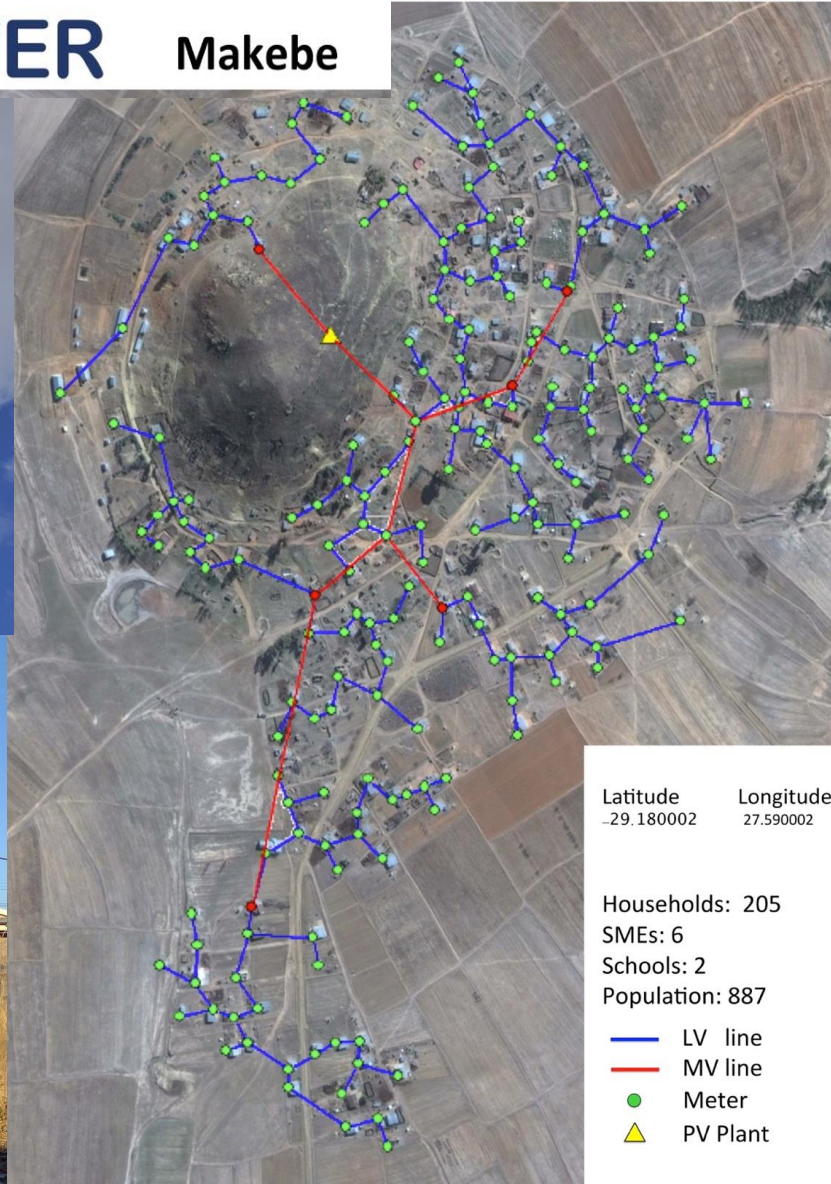


More than 5km from the Grid



POWER

Makebe



Latitude -29.180002 Longitude 27.590002

Households: 205
SMEs: 6
Schools: 2
Population: 887

- LV line
- MV line
- Meter
- ▲ PV Plant





MOSCET

MOS-SUN CLEAN ENERGY TECHNOLOGIES (PTY) LTD

VAT Reg.5000 1114 /Reg. I2010/1023

P.O. Box 2515
Thulo Building,
Cnr Moshoeshoe & Qoqolosing Rd.
Industrial Area
Maseru 102
Tel: (+266)28 328 627 / 22 321197 / 22 320 552
Email: info@moscet.co.ls /info.moscet@gmail.com
Website: www.moscet.co.ls

- **Mission** – To provide clean energy services for electricity and water heating
- **Vision** – To see a countrywide access to clean energy through renewable energy

Our Business

- **Solar Energy** - >1,000 systems installed countrywide (5Wp to 5kWp). 2 Grid tie systems installed
- **Wind** – Feasibility study for 15MW wind farm at Semonkong in progress
- **SWH** - >200 solar geysers installed in ~4 years



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Website: www.moscet.co.ls

Our Business – Yet to be explored

- Utility scale PV and Wind Energy systems
- Mini-grids for rural electrification

Challenges

- National Policy Framework for utility scale and grid tie systems
- Affordability issues for rural electrification
- Financing for feasibility and large scale projects



National University of Lesotho

Energy Research Centre



Current Teaching and Research Fields

Solar Energy

(Prof. B. M. Taele)

Wind Energy

(Dr M. Mpholo)

Hydro Power

(Dr M. Makhele)

Bio-Energy

(Dr S. B. Mekbib)

Energy Policy & Regulation

(Prof. S. B. Tlali)

Energy Economics & Finance

(Mr. R. I. Thamae)

Energy & Gender

(Dr M. Ntho)

- *Academic Research*
- *Practical Postgraduates Research Projects*
- *Feasibility Studies*
- *Demonstration Plants*
- *Commercial Projects in Collaboration with Private Sector*