

Presentation to the UN ECA 28th Intergovernmental
Committee of Senior Officials and Experts (ICSOE) for
Southern Africa, 26 to 27 October 2002, Maputo,
Mozambique
By Mashudu Ramano

The Quest and Journey to Find a Solution to Energy Poverty in Africa

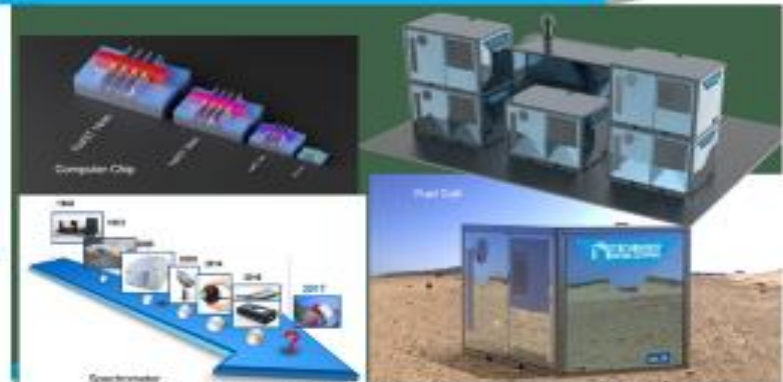


Mitochondria, AVL & Ceres Power Conducts tests on Project Phoenix Engages Architects, Consultants & key stakeholders in the area.

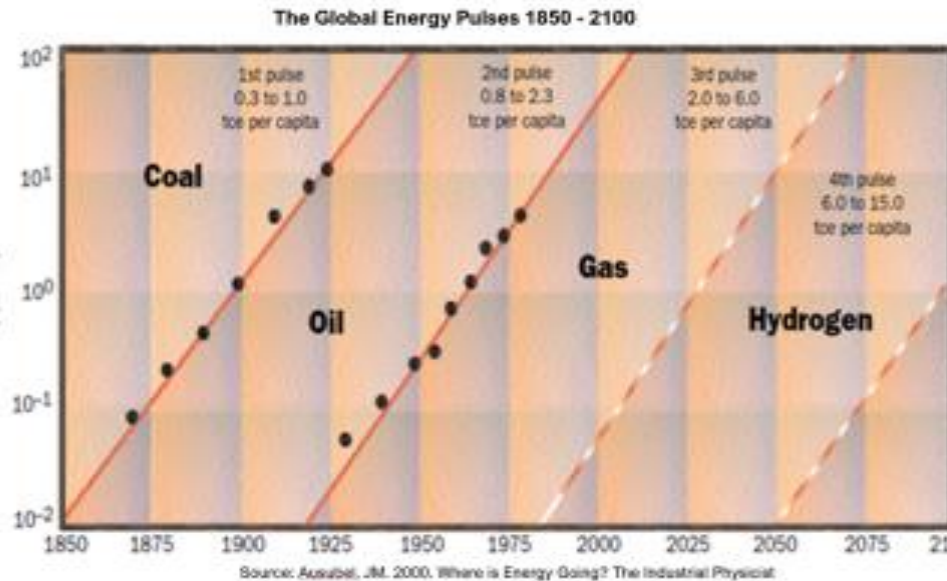


01 2007: Mashudu Ramano decides to participate in the Hydrogen and Fuel Cell Sector

2008 -2010: . Mashudu embarks on an extensive study of energy transitions of the last 200 years. The name Mitochondria is chosen as it represents decentralized & distributed energy solution in nature. In this study Mashudu got to understand the underlying trends in the global energy system. These trends convince Mashudu of the future trajectory of the global energy system seesome of the images across..



The Miniturization of Technology



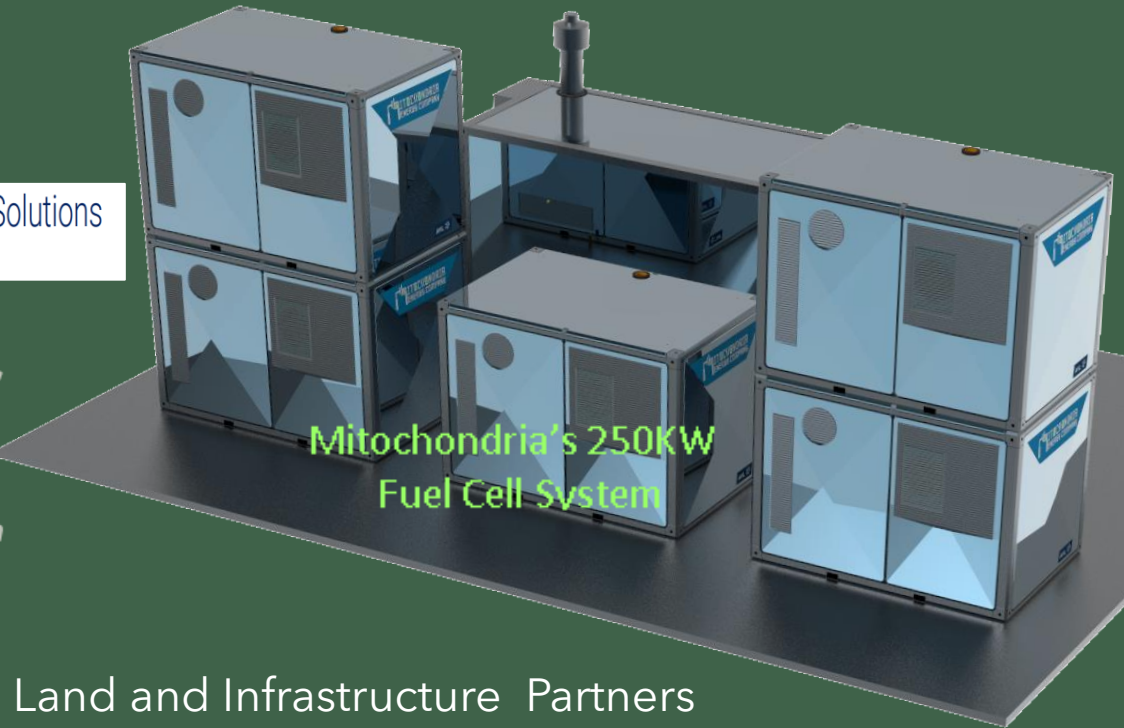
Mitochondria Energy & its Partners



Funding Partners



Sustainable Ethical Solutions Holdings



Mitochondria's 250KW Fuel Cell System

Land and Infrastructure Partners



Technical Partners

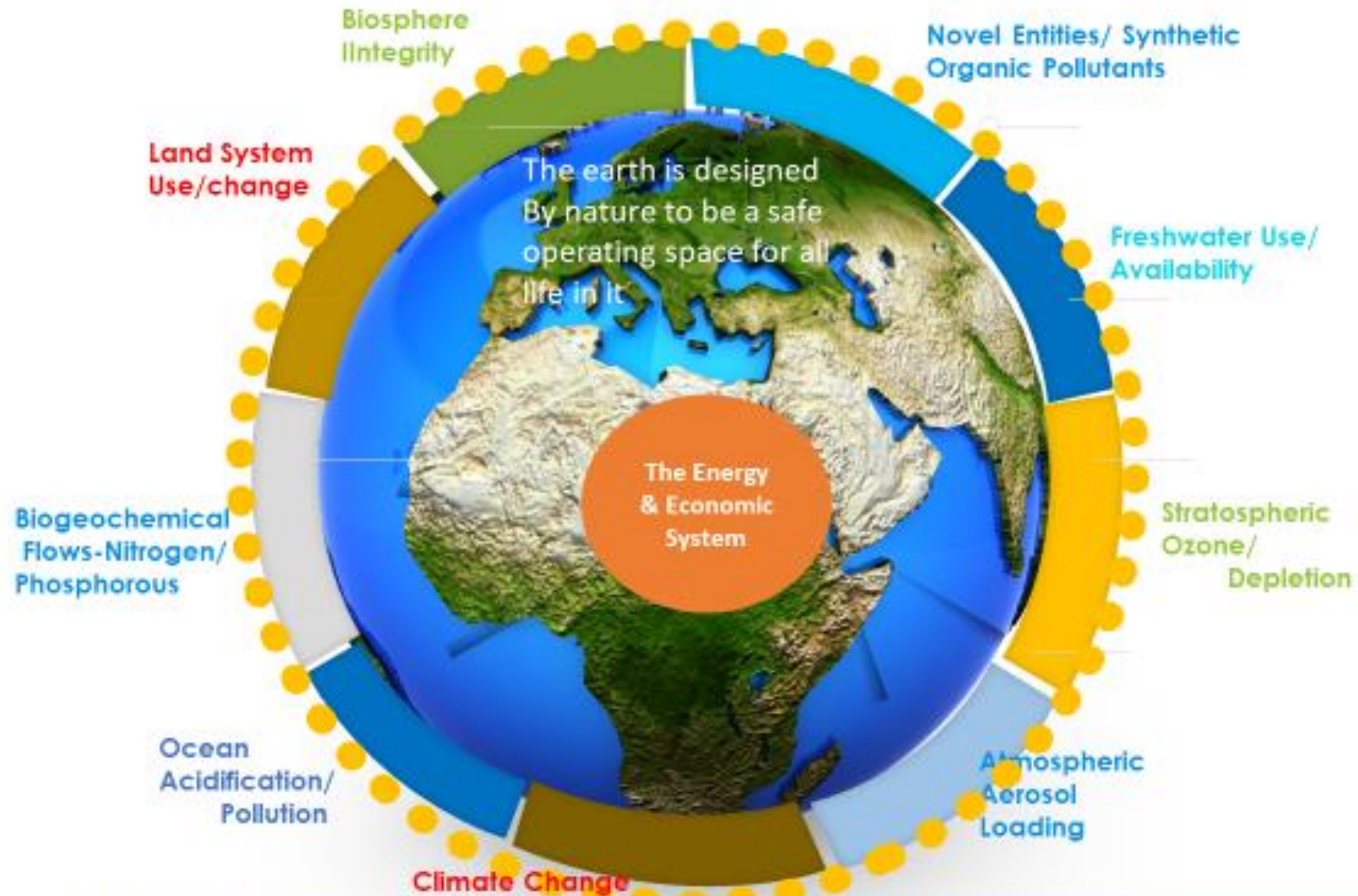


Our companies are rooted in the ethic and paradigm of sustainability and subsidiaries of Sustainable Ethical Solutions Holdings which comprises of five entities:

- Mitochondria Energy company founded in 2012 to be an independent power producer focussing on distributed, decentralized and onsite energy solutions
- Mitochondria Energy Systems founded in 2018 to develop and market hydrogen based energy technologies
- Mitochondria Networks established in 2015 to provide smart energy network solutions.
- Singamati (we are water) Holdings established in 2018 to provide water services from source to utilization and to support the hydrogen economy.
- Hydrogen Economy Fund- In the process of being established to fund hydrogen related infrastructure and activities

Where Our Values Originate

The Energy/ Economy/ Society Earth Systems Holarchy



Our Values

- We honour & respect all life on our planet
- We recognize that energy & the economy are holons
- We are biomimicry learners, followers & enthusiasts
- We love integrity, gratefulness & transparent relationships
- We respect that all humans are all citizens of one planet
- We strive to conduct our business within planetary boundaries



Our First Product Project Phoenix Video

Here's the video Link: <https://youtu.be/egJb9HJIWaU>



Hydrogen Valley Innovation Hub

Hydrogen Valley Innovation Hub Goals

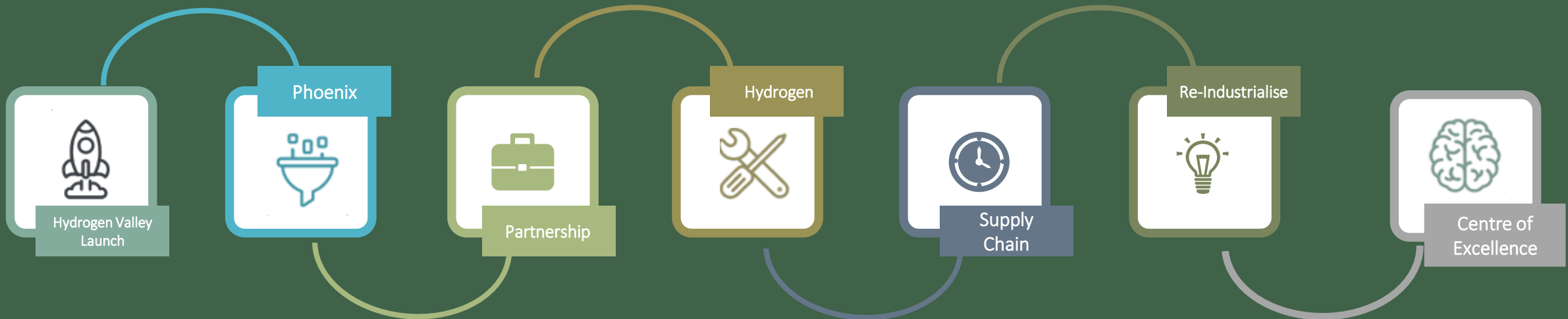
- NEW Industry formation
- Re-Industrialization towards a zero-carbon future
- Just Energy Transition

Hydrogen Industry Establishment

- Green Hydrogen Industries (components) Value Chain \$40bn by 2050
- Global Competitive Fuel Cell Manufacturing Hub for local and exports
- Electrolyser Manufacturing Hub for Green Hydrogen
- Manufacturing Fuel Cell for Mobility Applications
- Establish a critical Hydrogen Economy Working Group to Champion the development

Project Phoenix

- First Fuel Cell Manufacturing Facility located within the VAAL SEZ to be named Hydrogen Valley Innovation Hub.
- Manufacturing Capacity 250 MW/a up to R2bn Capex
- Job creation between 400 and 800 permanent jobs
- Microgrid to power the VAAL SEZ, Gauteng Provincial buildings and integrate with municipalities for own power generation



Fuel Cell Supply Chain

- R1.2bn per annum Local Supply Chain Development
- 250MW Inverter Manufacturing Facility R50m Investment
- 250MW Fuel Cell Stack Manufacturing R3bn Investment
- Reformer Manufacturing Facility
- Job Creation up to 1000 permanent jobs

Centre of Excellence

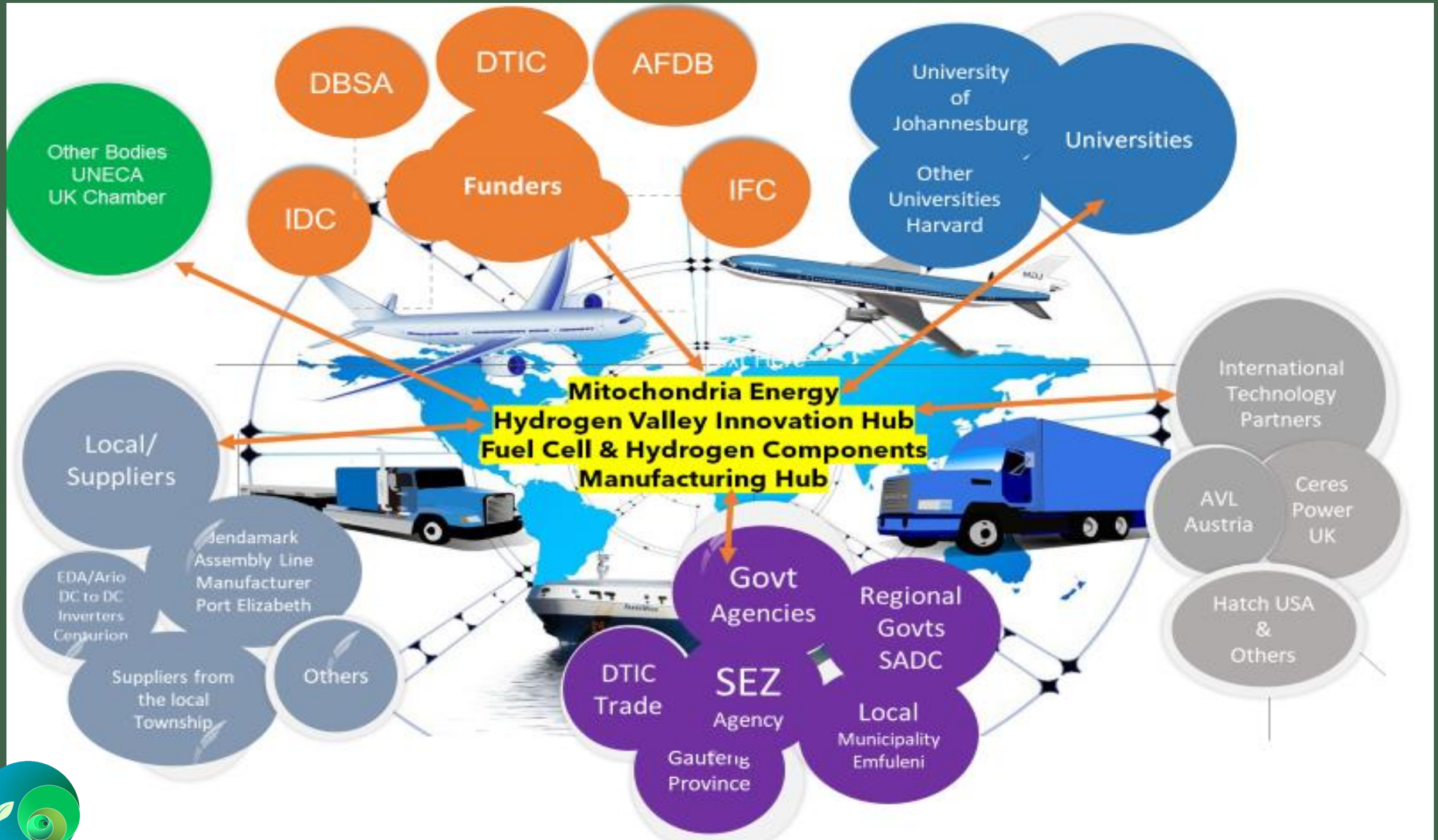
- VAAL Centre of Excellence focusing on the hydrogen economy knowledge and skills in partnership with VUT, FETs (Labs & Testing Facilities)
- Provide skills upgrade to about 1000 job seekers to be employed in the Valley together with the Department of Labour / SETA's

Re-Industrialisation Existing Industry

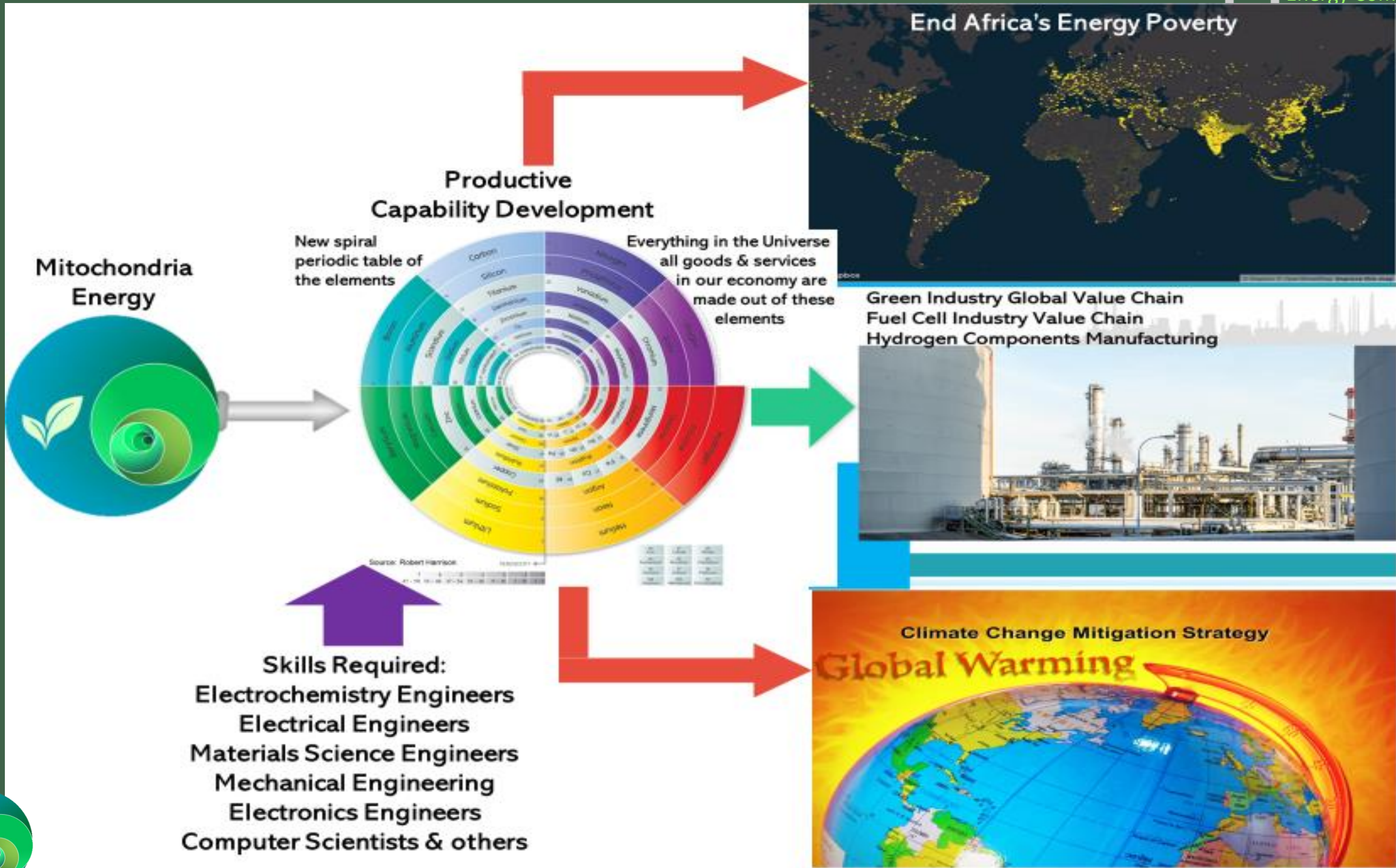
Towards a zero carbon future for:

- Power Generation and Storage
- Green Steel Production
- Green Power Fuels
 - Diesel
 - Aviation fuel
 - Ammonia
 - SNG





The Mitochondria Expected Outcomes



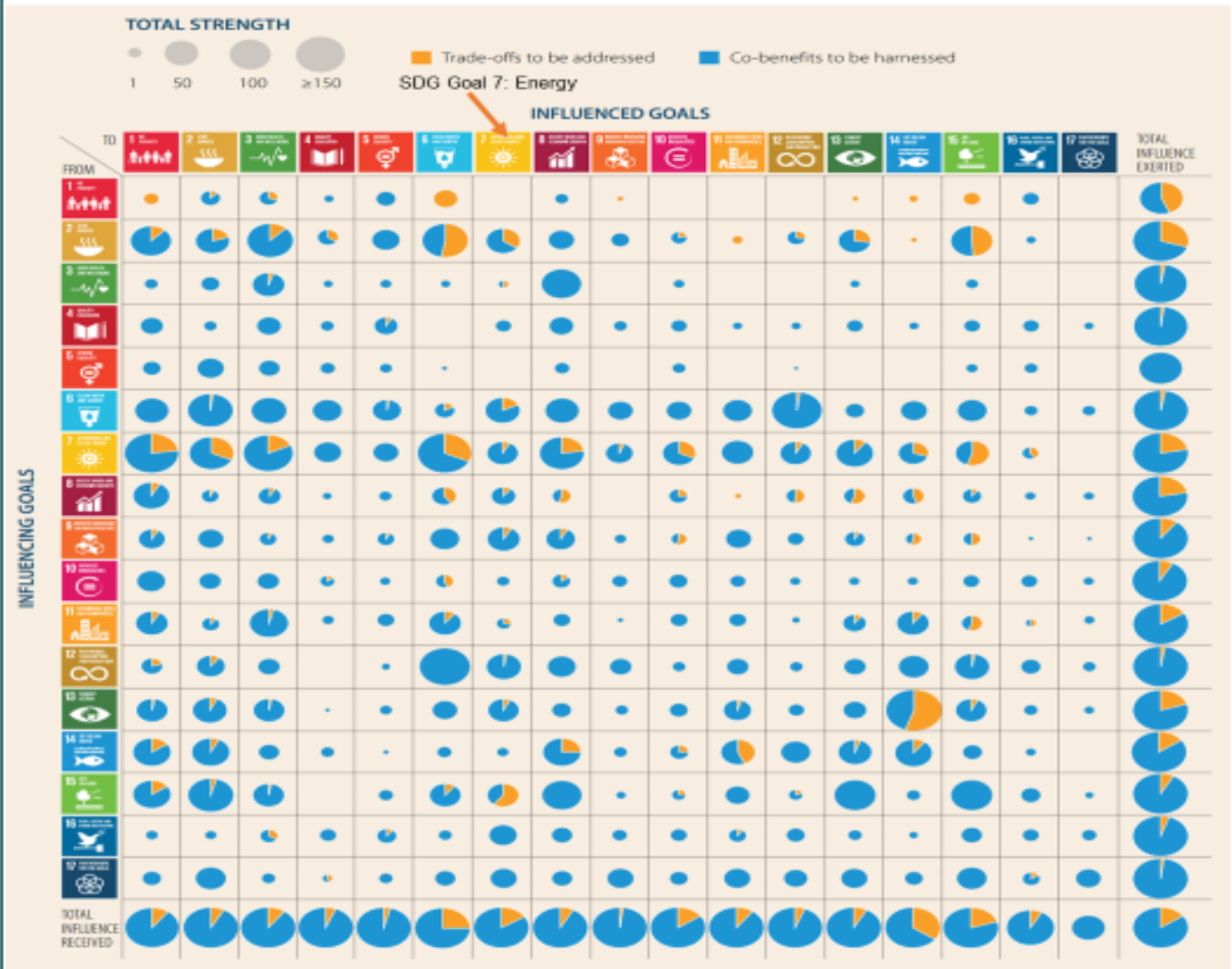
SDG 7 Energy

Sustainable development goal 7 (SDG 7) is expected to ensure all households and other institutions of society get access to affordable, reliable, sustainable, and modern energy by 2030. Achieving this goal directly contributes to the achievements of the following goals:

- SDG 1: End poverty in all its forms everywhere
- SDG 3: Ensure healthy lives and promote well-being for all at all ages.
- SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning
- SDG 5: Achieving gender equality and empowering all women and girls
- SDG 6: Ensure availability and sustainable management of water and sanitation for all
- SDG 8: Promote sustained, inclusive, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- SDG 12: Ensure sustainable consumption and production patterns.
- SDG 13: Take urgent action to combat climate change and its impact
- SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems

Source: Global Goal. www.globalgoals.org
 Medina Terefe Tucho, G. T & Kumsa, D.M
www.frontiersin.org

Our Fuel cell Solution Fulfills at Least Ten SDG Goals



Source: UN's Global Sustainable Development Report. 2019



Contact Details

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to a Regenerative & Sustainable Future



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