

COMMUNICATING THE BIOECONOMY



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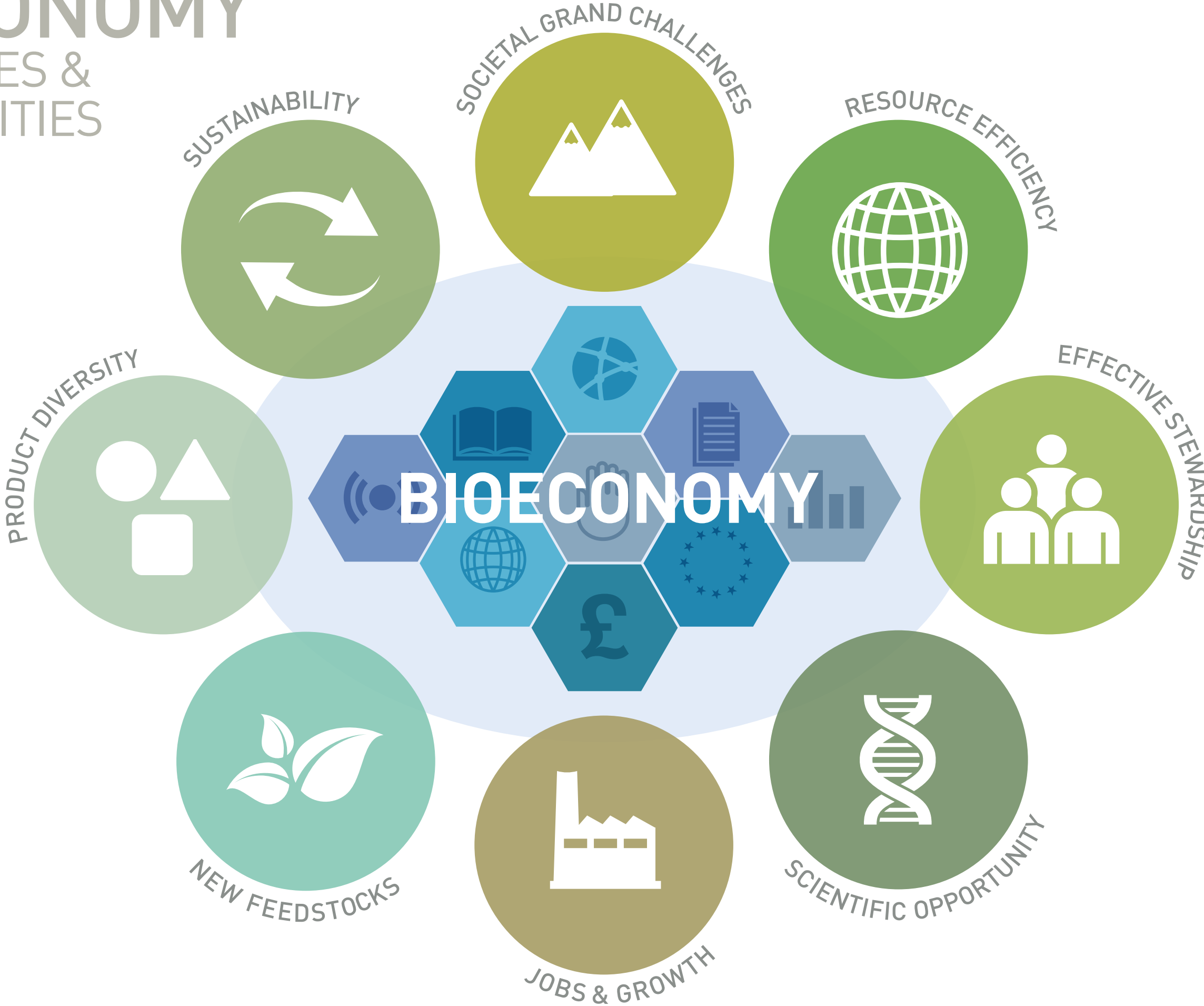
The UK Bioeconomy - A working definition

All economic activity derived from bio-based products and processes which contributes to sustainable and resource-efficient solutions to the challenges we face in food, chemicals, materials, energy production, health and environmental protection.

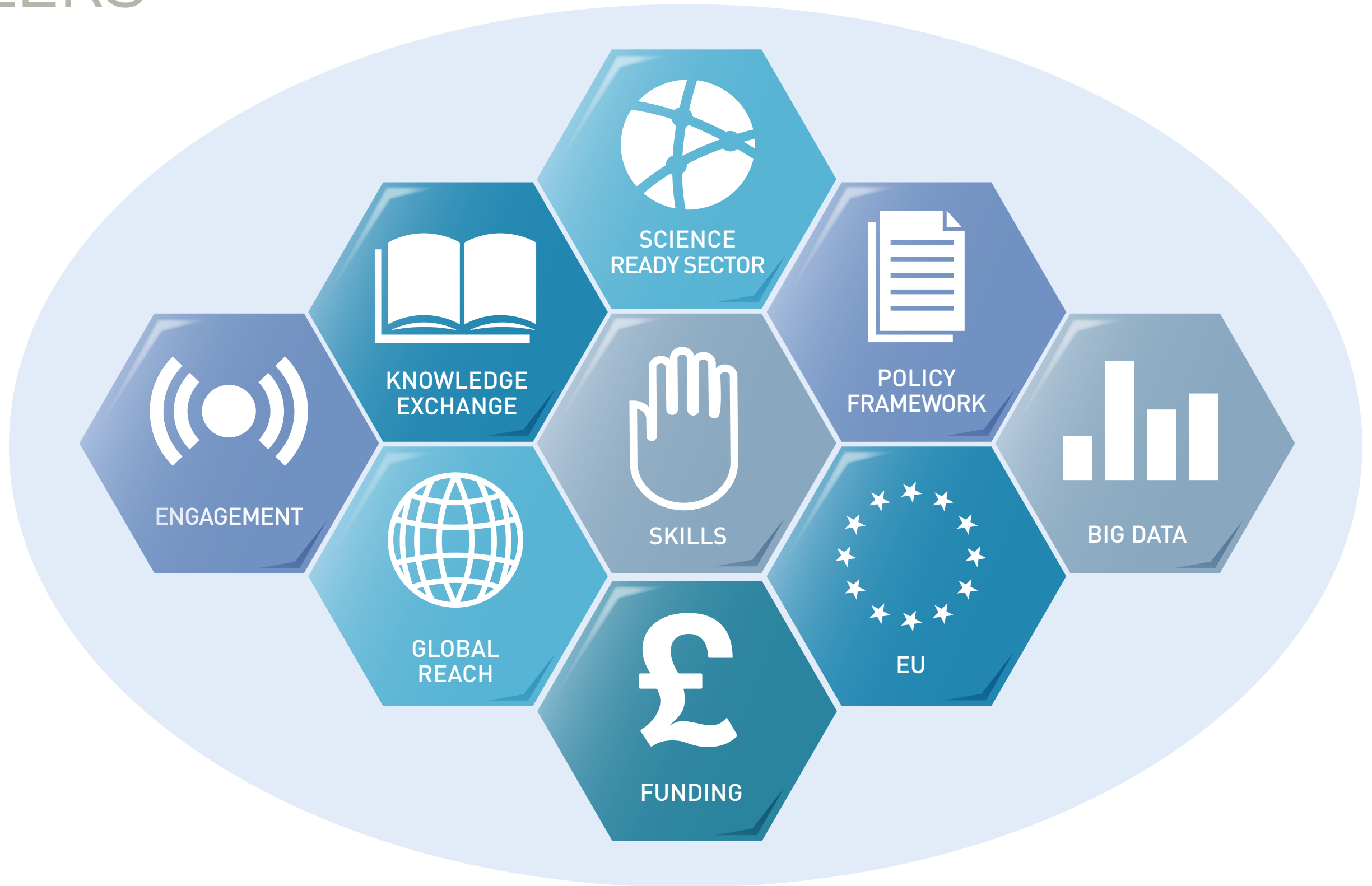
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BIOECONOMY

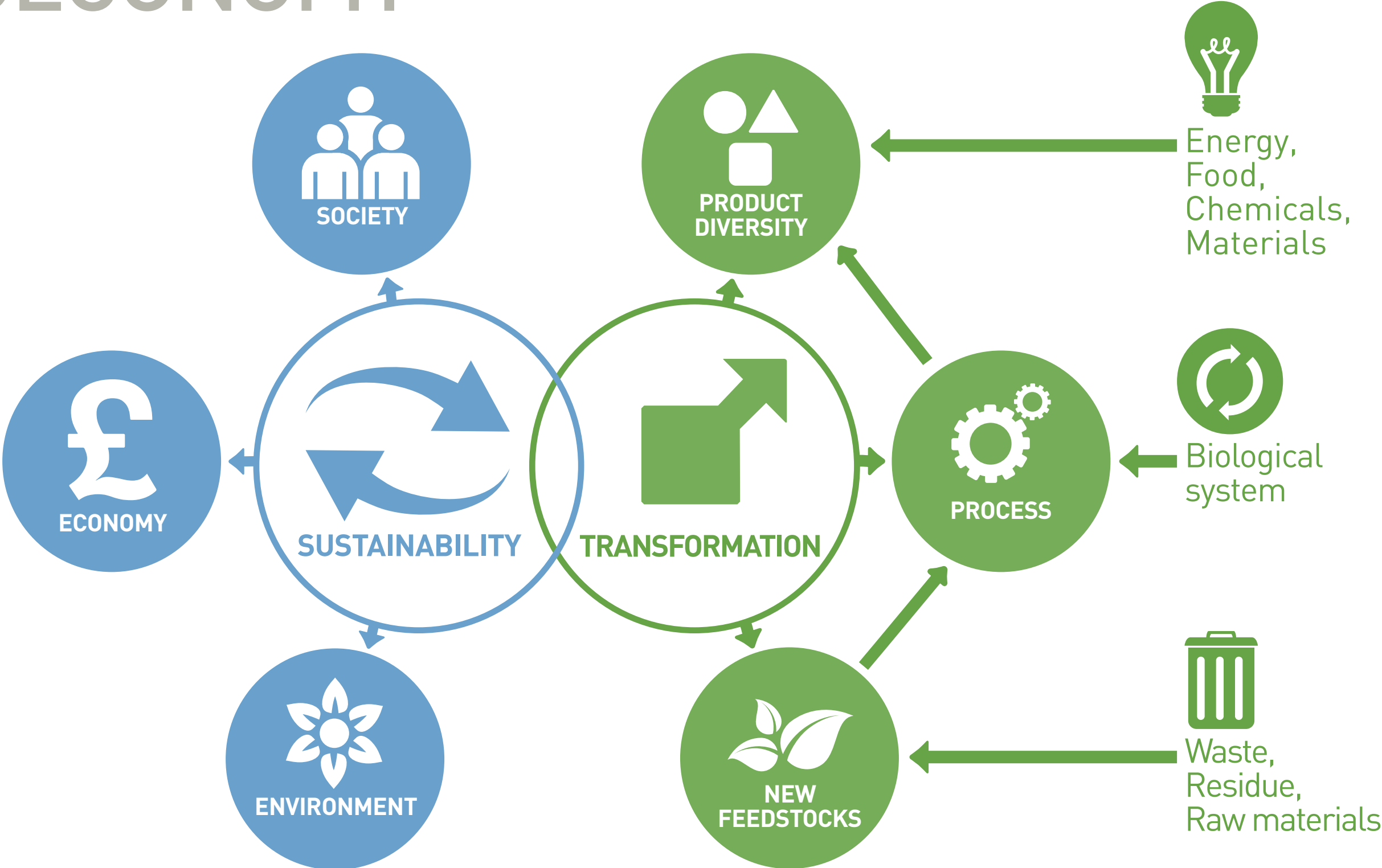
CHALLENGES & OPPORTUNITIES



BIOECONOMY ENABLERS

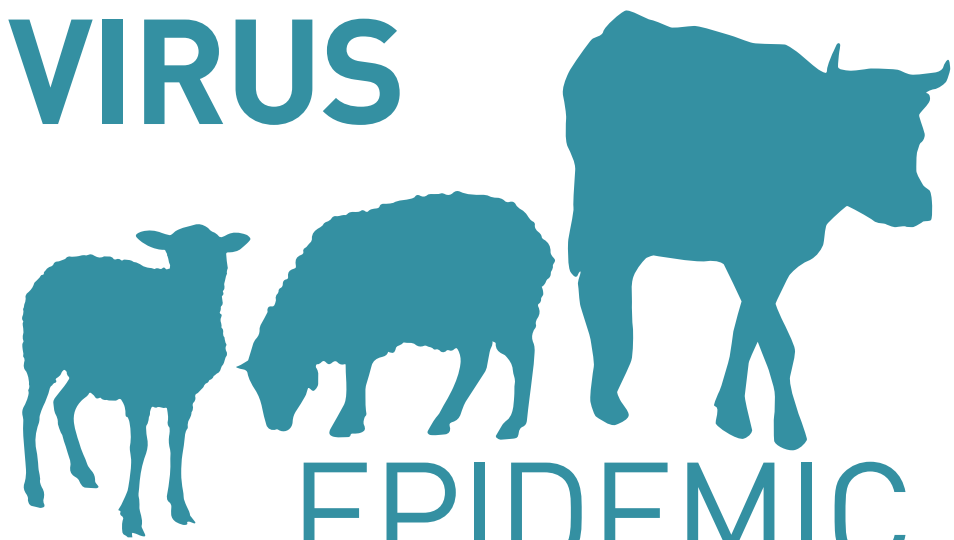


UNPACKING THE BIOECONOMY



EFFECTIVE STEWARDSHIP

BLUETONGUE VIRUS



EPIDEMIC

OUTBREAK ESTIMATED

30% LIVESTOCK MORTALITY



EFFECTIVE STEWARDSHIP



SCIENTIFIC OPPORTUNITY



JOB & GROWTH

£480M

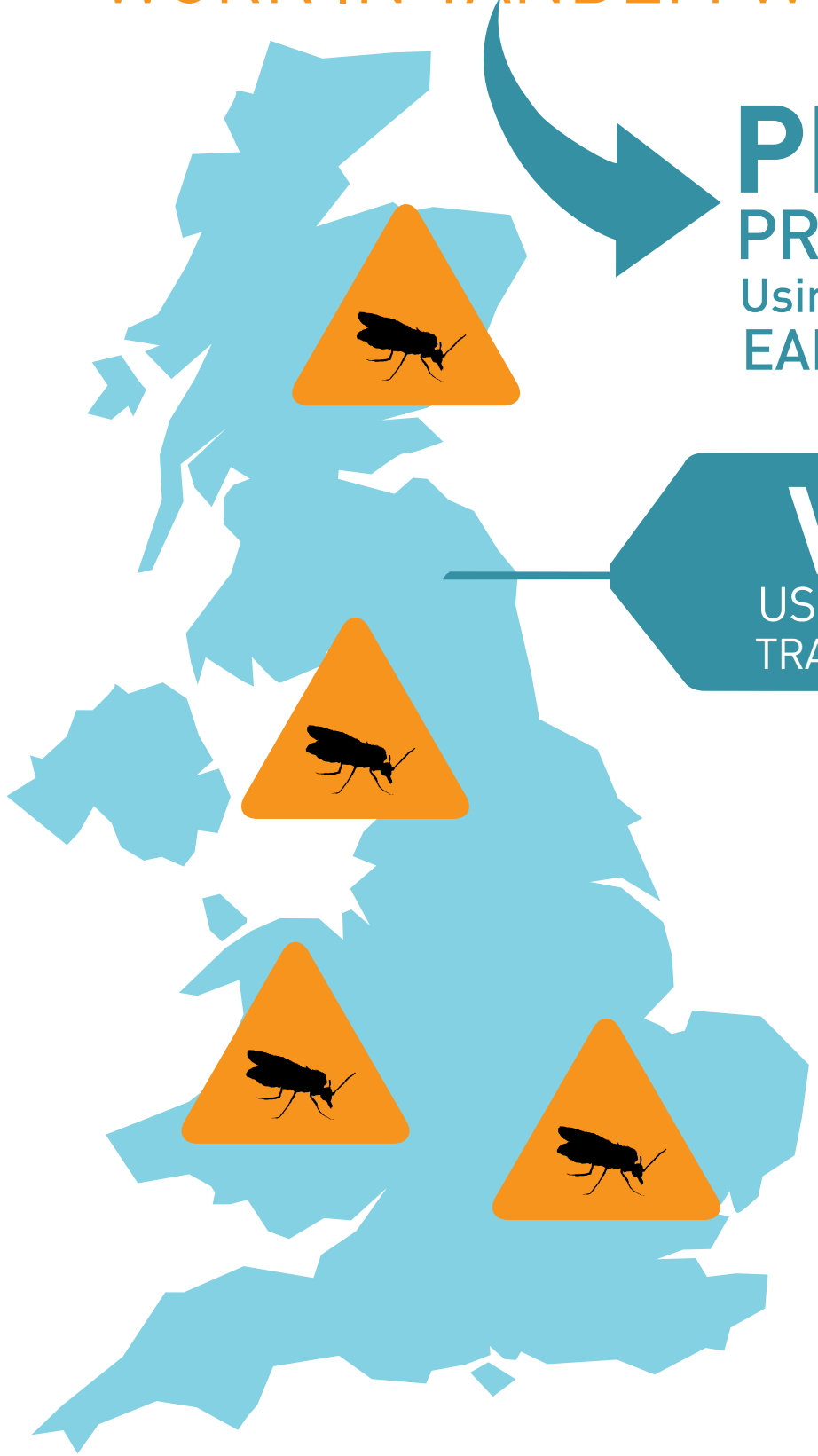
SAVED BY THE UK ECONOMY

10,000

POTENTIAL JOBS SAVED IN THE UK

PIRBRIGHT INSTITUTE

WORK IN TANDEM WITH RESEARCHERS



PREDICTION

PREPARE & PREVENT

Using DATA ANALYSIS to create EARLY WARNING SYSTEM

VACCINE+

USE OF AGRITECHNOLOGY TO TRAP AND MONITOR THE MIDGES

HIGH RISK LIVESTOCK VACCINATED TO CONTROL VIRUS

805

MILLION PEOPLE MALNOURISHED

SOURCE: THE STATE OF FOOD INSECURITY
IN THE WORLD (SOFI 2014)



EFFECTIVE
STEWARDSHIP



RESOURCE
EFFICIENCY



SUSTAINABILITY



SCIENTIFIC
OPPORTUNITY

A NEW GREEN REVOLUTION

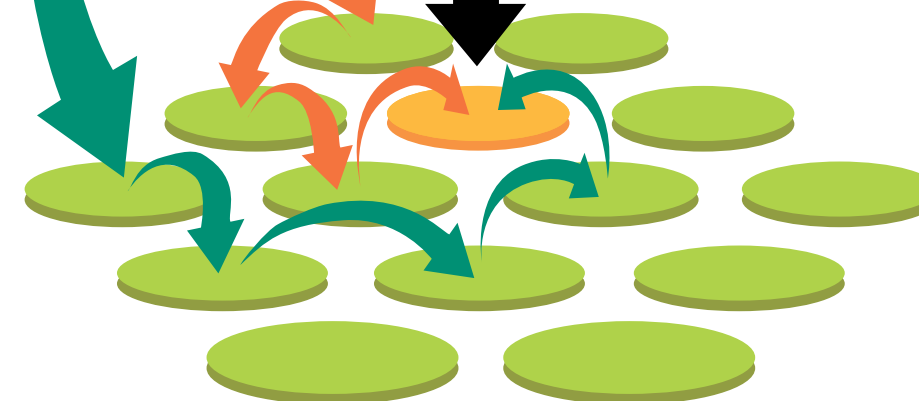
- INCREASED CROP YIELD
- GREATER FOOD SECURITY
- A SECURE ENERGY SOURCE

AGRI- TECHNOLOGY

used to STEP-CHANGE
PHOTOSYNTHESIS

CO₂ UPTAKE SLOWS GLOBAL WARMING

REACTION
CENTRE



Plant Cell Photosystem 1

5%

EFFICIENCY
CURRENTLY

POTENTIAL FOR GREATER EFFICIENCY

FUTURE POTENTIAL

30 FOLD INCREASE IN DENGUE FEVER IN FIFTY YEARS



50-100 MILLION CASES GLOBALLY / YEAR

SOURCE: WHO

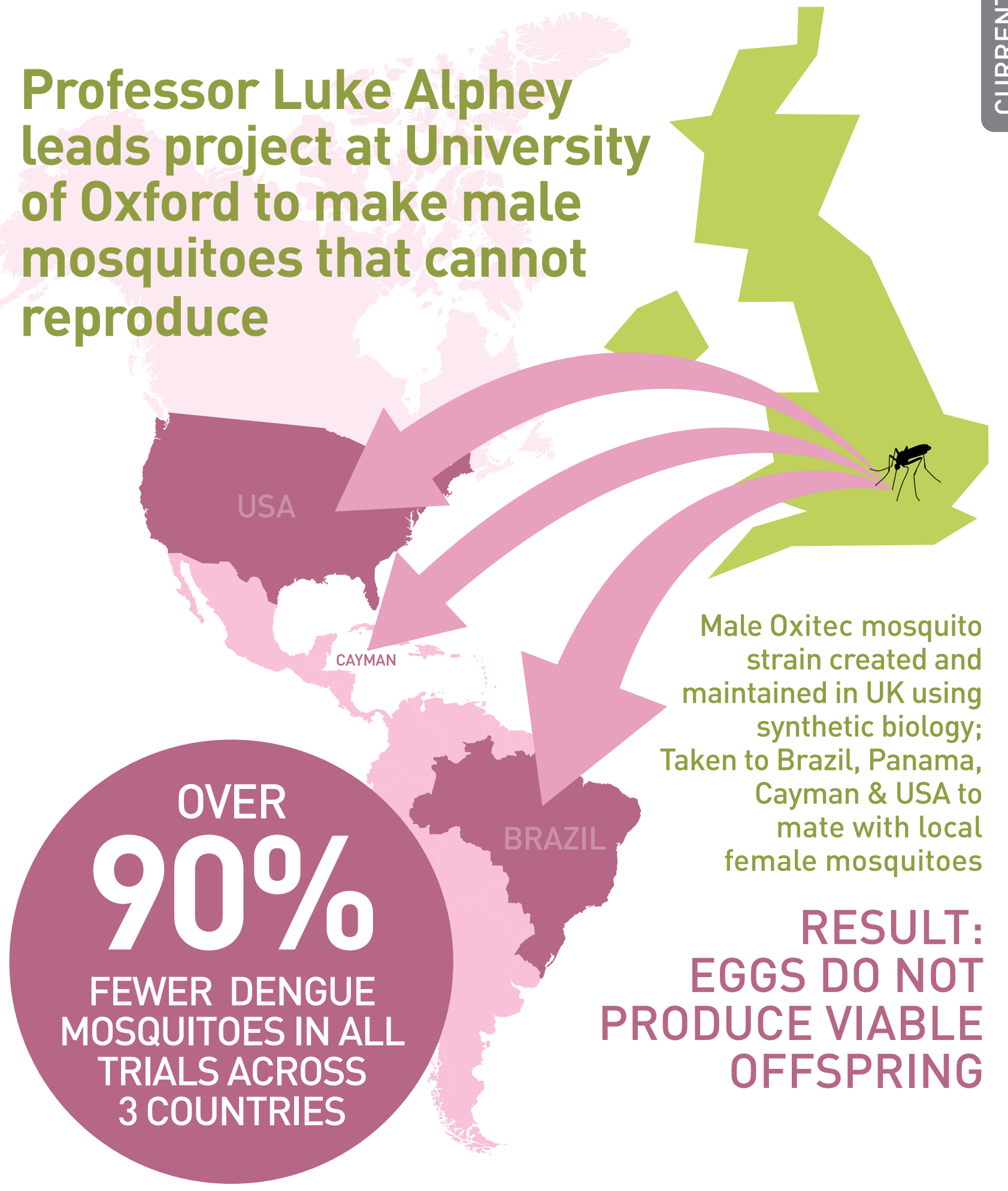


EFFECTIVE STEWARDSHIP SCIENTIFIC OPPORTUNITY SOCIETAL GRAND CHALLENGES JOBS & GROWTH

OXITEC

50 EMPLOYEES £24 MILLION INVESTED IN COMPANY SO FAR

Professor Luke Alphey leads project at University of Oxford to make male mosquitoes that cannot reproduce



Male Oxitec mosquito strain created and maintained in UK using synthetic biology; Taken to Brazil, Panama, Cayman & USA to mate with local female mosquitoes

RESULT: EGGS DO NOT PRODUCE VIABLE OFFSPRING

PANDEMIC FLU ANNUAL GLOBAL EPIDEMICS RUN TO **3-5 MILLION** CASES OF SEVERE ILLNESS AND UP TO **500,000** DEATHS
 SOURCE: WHO

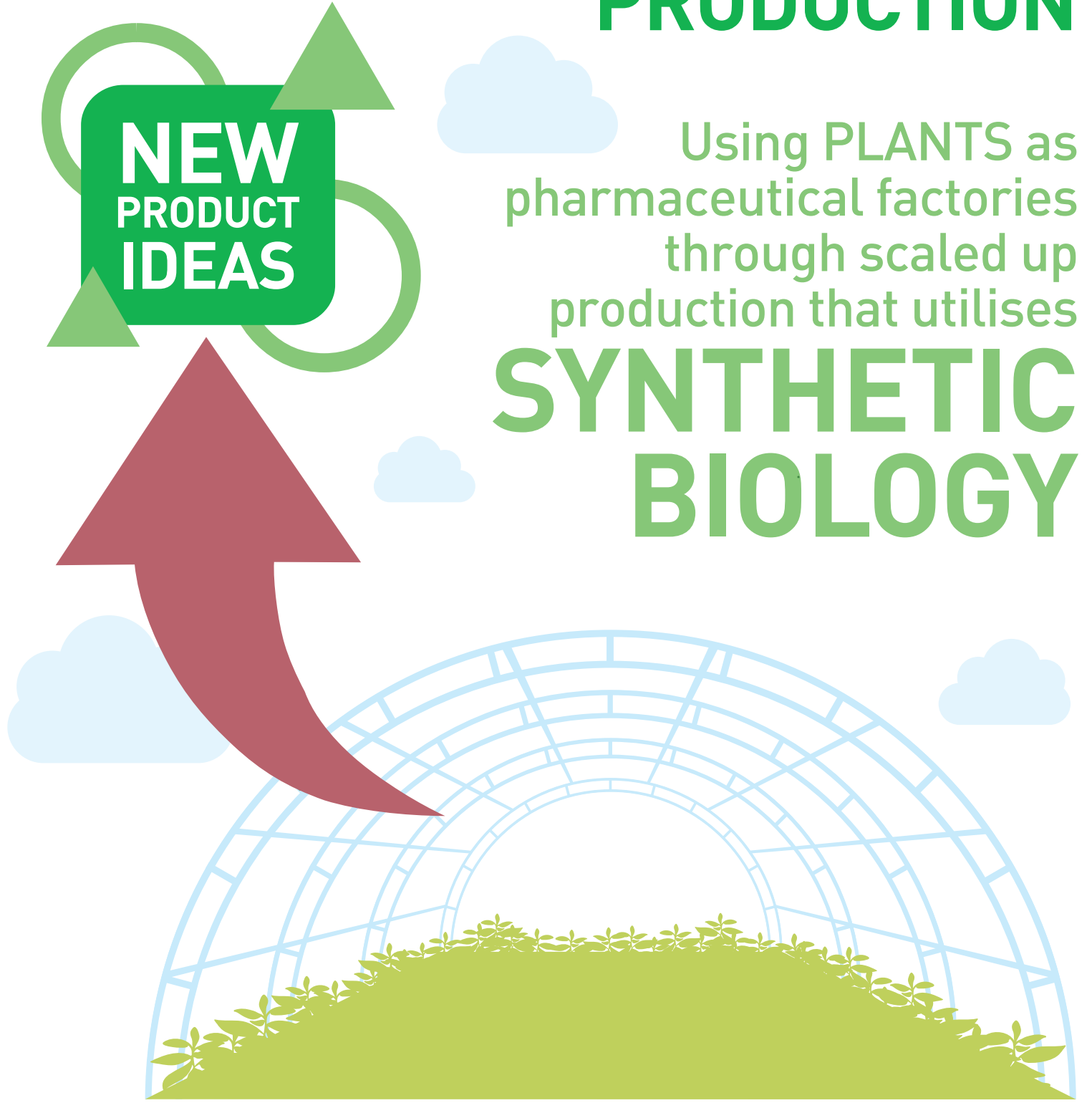


EFFECTIVE STEWARDSHIP SCIENTIFIC OPPORTUNITY JOBS & GROWTH SUSTAINABILITY

NEW FUTURE APPLICATIONS

- NEW BIOTECHNOLOGY BASED INDUSTRIES
- SUSTAINABLE MORE EFFICIENT COST EFFECTIVE DRUG PRODUCTION
- IMPROVED HEALTH OUTCOME & THOUSANDS OF LIVES POTENTIALLY SAVED

PLANTS AS BASIS FOR FUTURE VACCINE PRODUCTION



ANTI-AGEING SKIN CARE MARKET IS WORTH



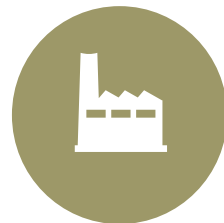
EFFECTIVE STEWARDSHIP



SUSTAINABILITY



RESOURCE EFFICIENCY



JOBS & GROWTH

CRODA_{LTD}

EXAMPLE PRODUCT RESISTEM™

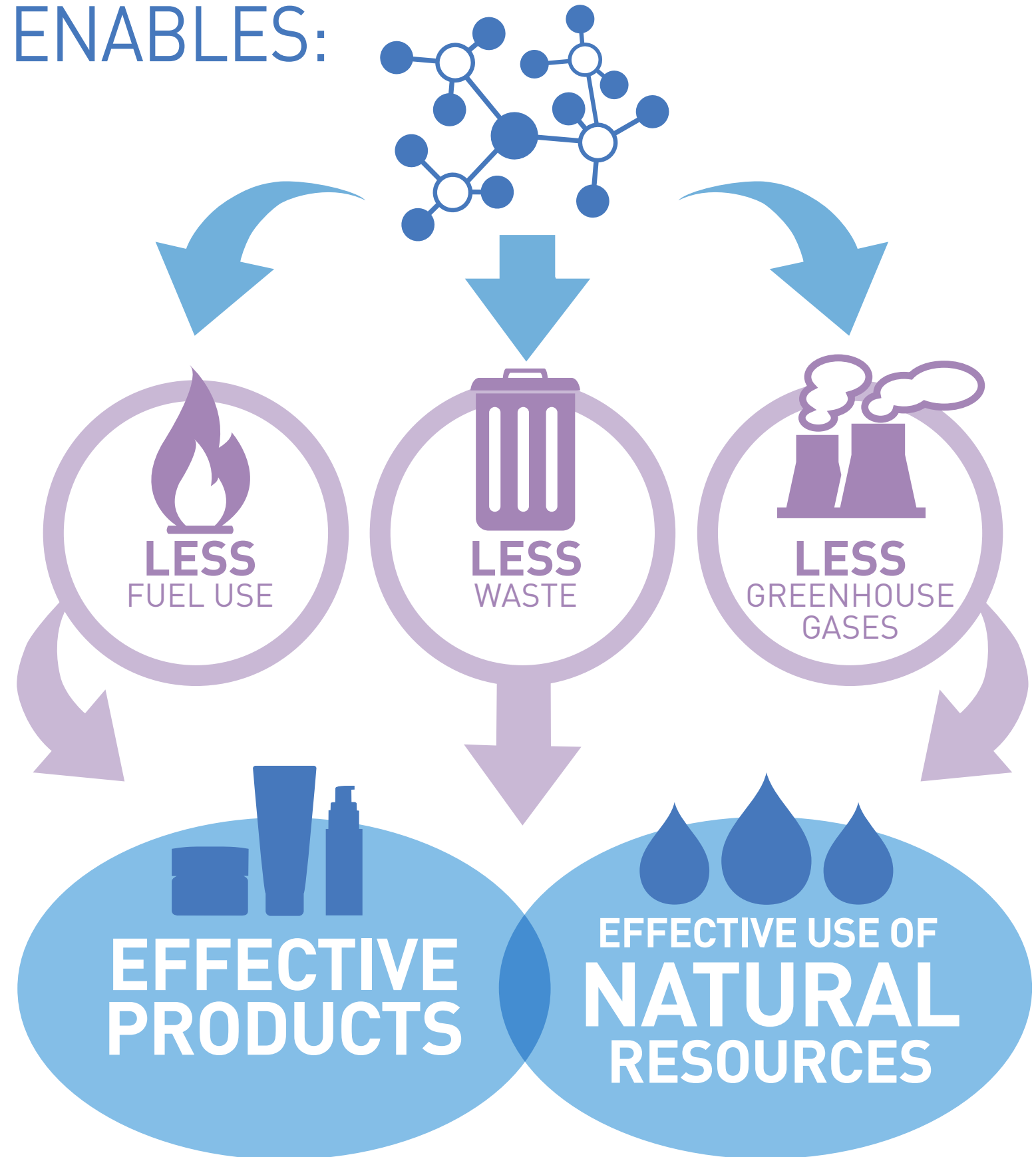
3,300

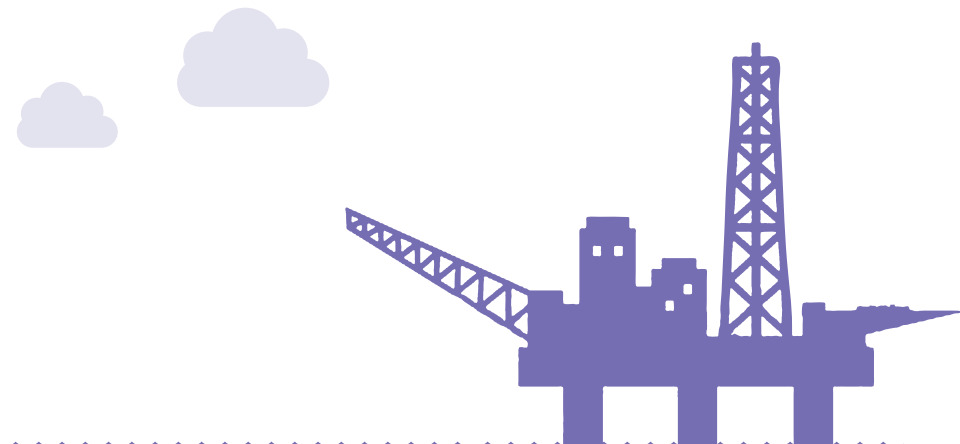
GLOBAL EMPLOYEES

£1.1bn

APPROX TURNOVER 2013

BIOTECHNOLOGY ENABLES:





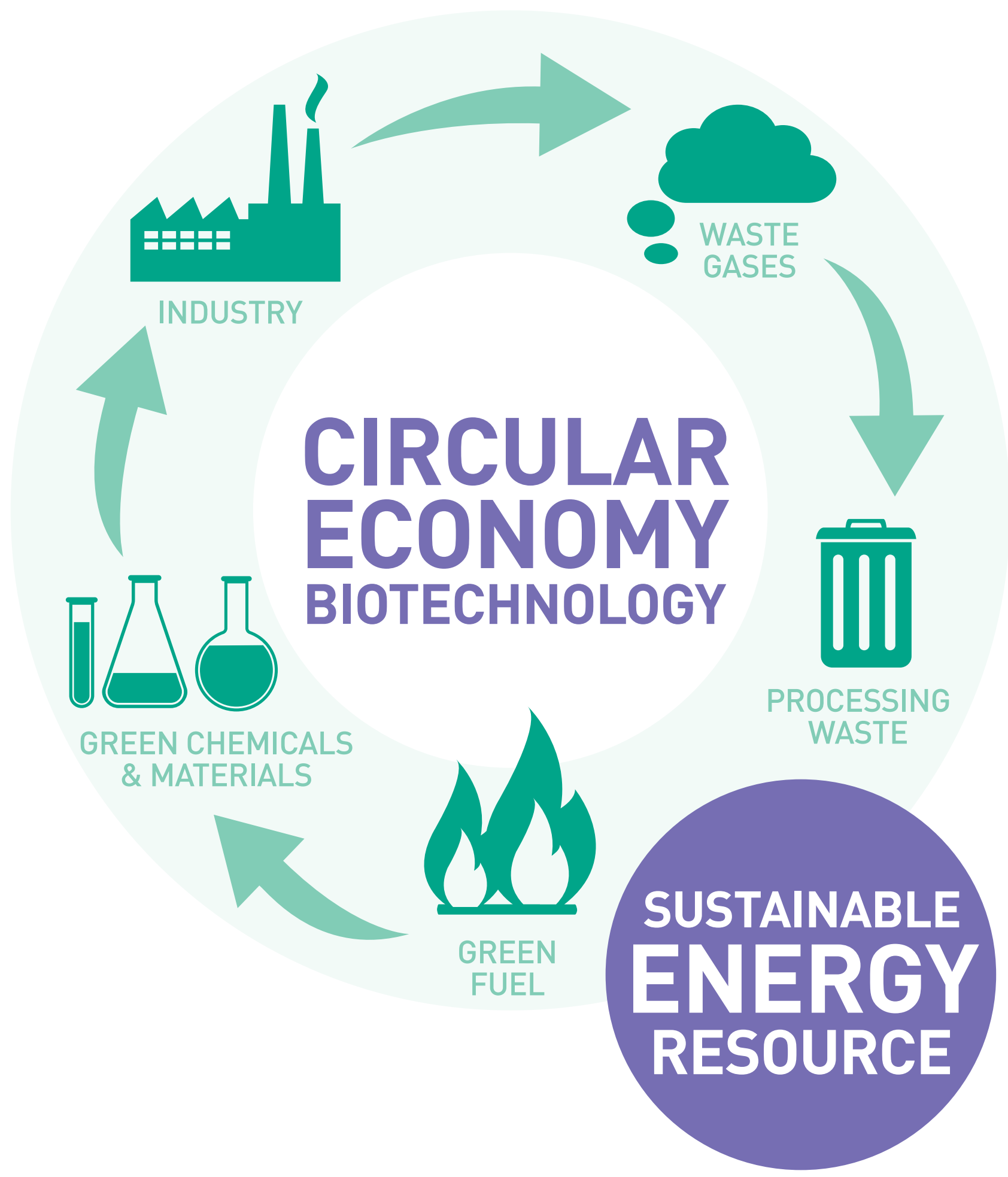
**PRICE VOLATILITY
& LIMITED LIFE SPAN OF
FOSSIL FUELS**



EFFECTIVE STEWARDSHIP SUSTAINABILITY RESOURCE EFFICIENCY SCIENTIFIC OPPORTUNITY

INDUSTRIAL BIOTECHNOLOGY FUTURE

- ADDRESSING CLIMATE CHANGE
- REDUCING DEMAND FOR PETROCHEMICAL INPUTS
- IMPROVED FUEL SECURITY & STABLE PRICING
- USE OF RENEWABLE FEEDSTOCKS
- KEEPING LAND FOR GROWING FOOD



Bioscience Leadership Councils:
Industrial Biotechnology Leadership Forum (IBLF),
Agri-tech Leadership Council (ATLC),
Synthetic Biology Leadership Council (SBLC)

Further information available via:
bioeconomy@bbsrc.ac.uk