



121 Tech Conference June 2019

ASX : 14D

1414 DEGREES LIMITED

ACN 138 803 620

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Corporate snapshot: 14D

Overview

Market capitalisation (fully diluted) (4 June 2019)	AUD\$57m
Shares on issue	172,389,923
Listed options on issue	11,557,293
Current share price (4 June 2019)	0.300
52 week high	0.540
52 week low	0.205
Capital raised	\$30 million
Cash position (at 31 March 2019)	\$12 million
Products and IP (first quarter 2019)	\$9.5 million

Board

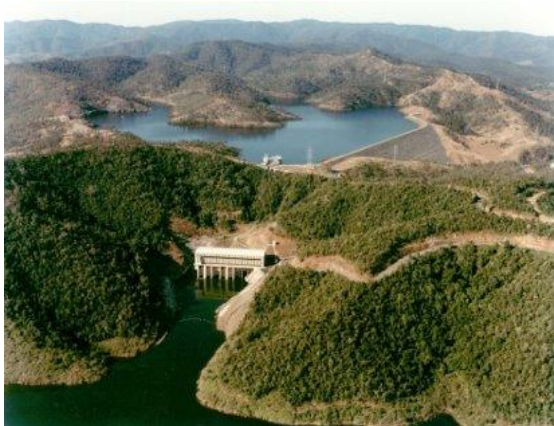
Name	Position	Shareholding
Dr. Kevin Moriarty 	Executive Chairman	7%
Robert Shepherd 	Non-Executive Director	4%
Dana Larson 	Non-Executive Director	Nominal

Energy for all, at all times

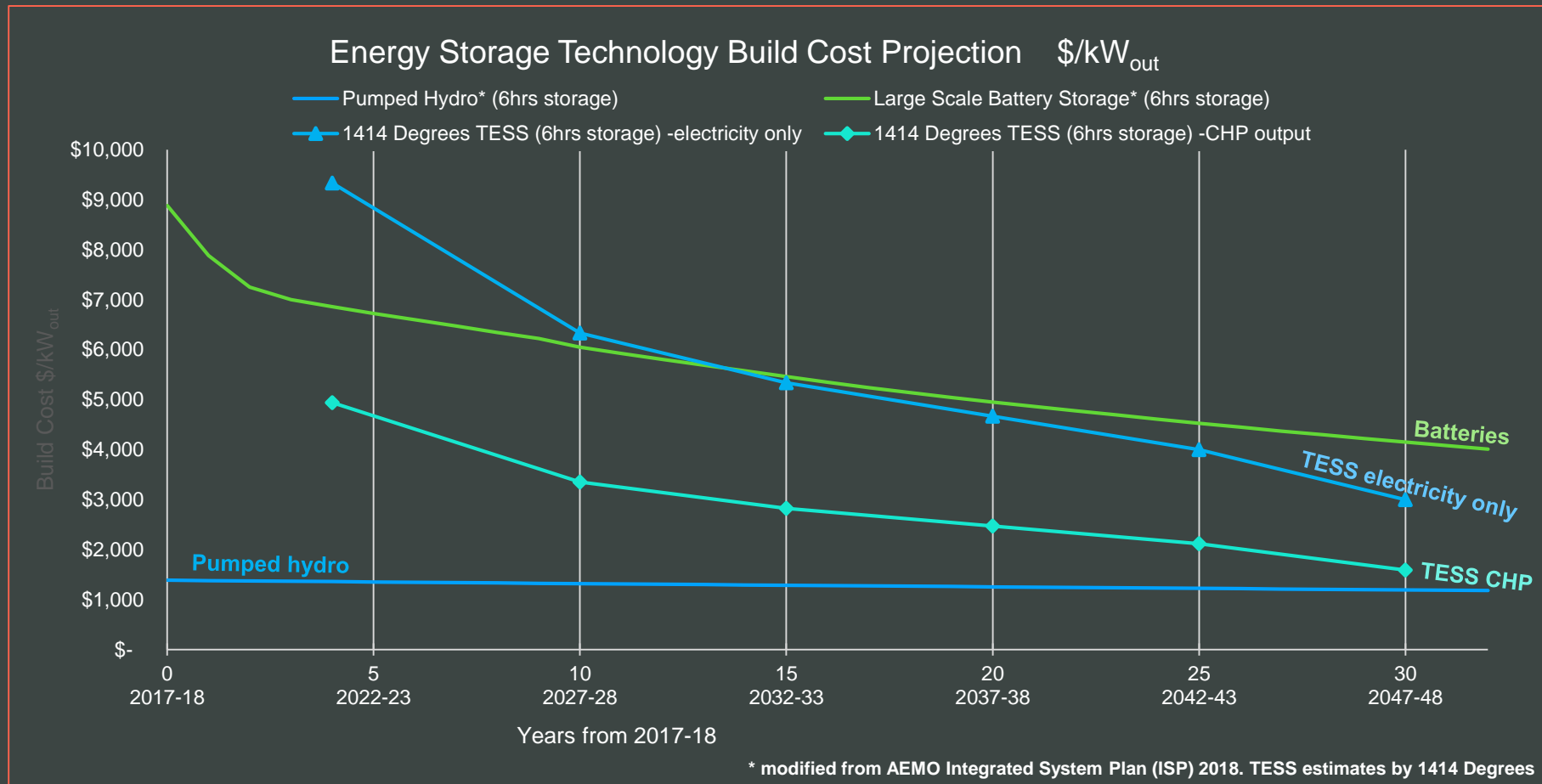


Big solutions are needed

- Renewable solar and wind generation is now competitive but energy supply is unreliable
- Low cost bulk energy storage solutions are needed
- Pumped hydro – inflexible location, electricity only
- Concentrated Solar Thermal – inflexible location, low temperature
- **What else?**

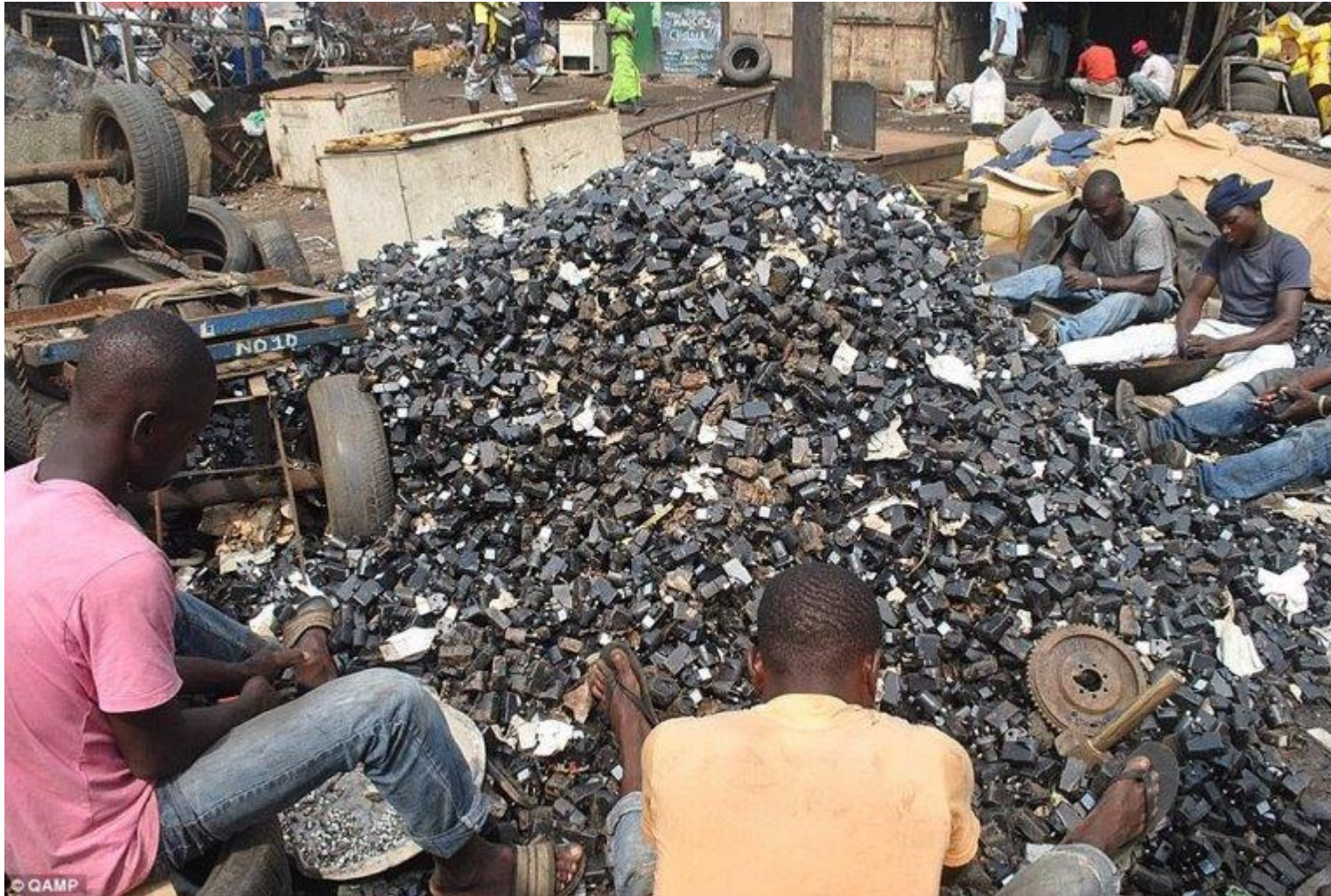


Projected storage build cost comparisons



NB: Initial build cost only, does not factor in system lifetimes or operating costs
 Storage cases do not capture versatility of system operation, basis is only single cycle operation
 1414 Degrees TESS is new technology, not yet undergone learnings, economies of scale cost reduction trends, vs mature technologies

Sustainability: Be careful of unintended outcomes



1414 Degrees overview

Why do we exist?

The energy industry is in transition to a renewable future but uncertainty of supply and high prices need to be solved

We will enable a world of clean energy, with flexible and large scale energy storage solutions addressing both heat and electrical energy needs, delivering energy for all, at all times

How is it different?

We store energy utilising the ultra-high energy density of silicon

What we do?

Our technology generates heat and electricity using clean hot air to power gas turbines at consumer sites, replicating the reliability of conventional power stations

Is it competitive?

No other technology is delivering heat and electrical energy at the scale and low cost of 1414 Degrees

Where is the value?

Energy storage is essential infrastructure to provide energy security for industry, heat and electricity networks

1414 Degrees overview

- The Company has been in research and development for 10 years and is now commercialising
- Demonstrated our prototype in 2016
- Listed on Australian Securities Exchange in 2018 (ASX: 14D)
- Commissioned our electrically charged 10MWh TESS-IND in late 2018
- Currently commissioning the 10MWh GAS-TESS at SA Water's Glenelg Wastewater Treatment Plant
- Currently seeking sites for a 40MWh pilot
- R&D focus on scaling up to and beyond 1GWh TESS-GRID

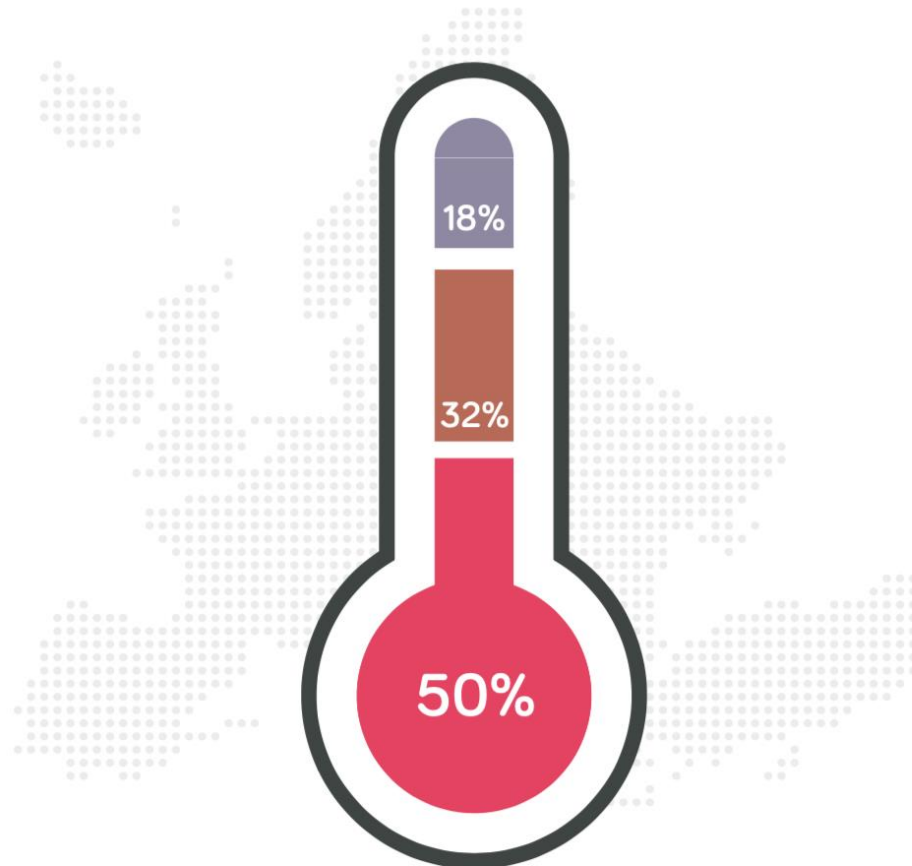
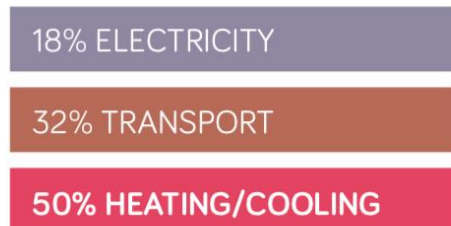
Thermal energy storage system (TESS)

- › Energy is stored by melting silicon phase change material (PCM) in the Heat Store
- › The Energy Recovery System (ERS) uses a turbine or heat engine similar to conventional power stations
- › ERS can be a Combined Heat and Power (CHP) output or heat only
- › Heat output may be hot air, hot water, or steam to meet site requirements
- › The TESS can charge and discharge simultaneously

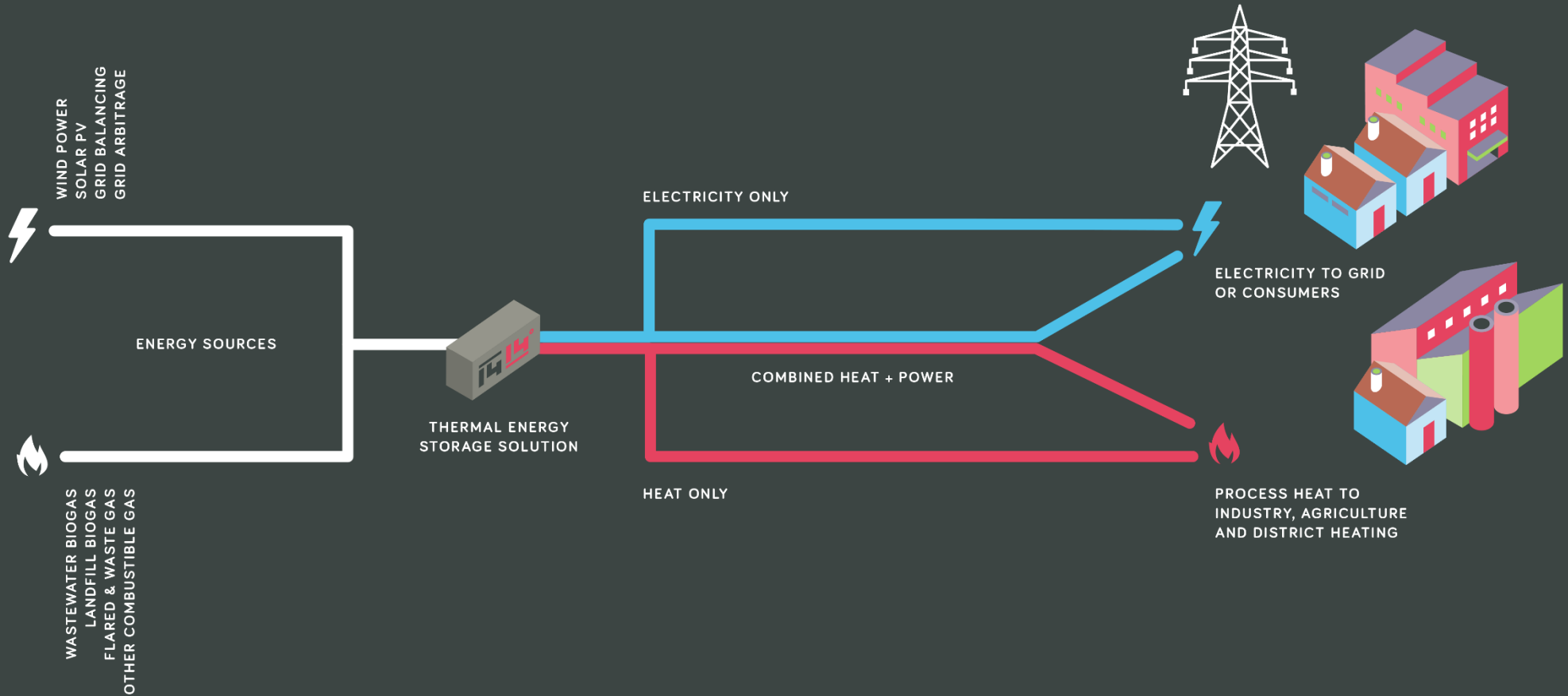


Heat vs. Electricity

50% of the EU's annual energy consumption is for Heating/Cooling



The 1414 Degrees solution





Business path

2009-2014



Early Work



- Engineering verification and concept design refinement
- University of Adelaide student projects 2012-2014 (ongoing through to 2019)
- Focus on containment of Silicon PCM
- Student projects ongoing through to 2019 on different focus areas

2016



TESS-Demonstrator



- Energy storage and recovery proof of concept
- Completed 2016
- Accelerating Commercialisation grant (\$440K) from Australian Govt to build the prototype (funds matched by 1414 Degrees)

2018



TESS-IND 10MWh



- Commercial scale pilot of full system operation
- Commissioned late 2018
- Accelerating Commercialisation grant (\$560K) from Australian Govt to build TESS commercial demonstrator

2019



GAS-TESS 10MWh



- Commercial pilot project, SA Water Glenelg WWTP
- Commissioned May 2019
- SA Govt \$1.6m grant

Potential

- Wastewater Treatment Plants
- Landfill gas
- Flared and waste gas

Business path

2019



TESS-IND 10MWh
mkII



- Commercial pilot project
- Late 2019 commissioning
- 100% funded by 1414 Degrees

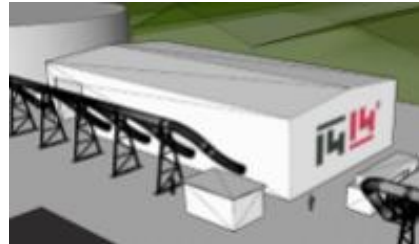
Potential

- *ABBE Corrugated*
- *Pepes Ducks*
- *ENOVA Energy*
- Medium commercial and industrial users

2021



TESS-GRID 40MWh



- Commercial pilot project
- Analysis and modeling by ARUP

Potential

- Medium commercial and industrial users
- Agribusiness
- Greenhouses

TESS-GRID 200MWh



- Commercial pilot

Potential

- Large commercial and industrial users
- Network utilities

TESS-GRID 1GWh



- Commercial pilot project

Potential

- Large commercial and industrial users
- Network utilities
- Power station conversion
- Key grid infrastructure

Business model

Products

GAS-TESS
10 - 100MWh

TESS-IND
10 - 100MWh

TESS-GRID
200 - 1GWh+

Industries

Waste gas plants

- Water utilities
- Wastewater management
- Landfill gas

Greenhouses

- Passive and Active lighting

Small Industry

Process industry

Other large industry

Electricity grids

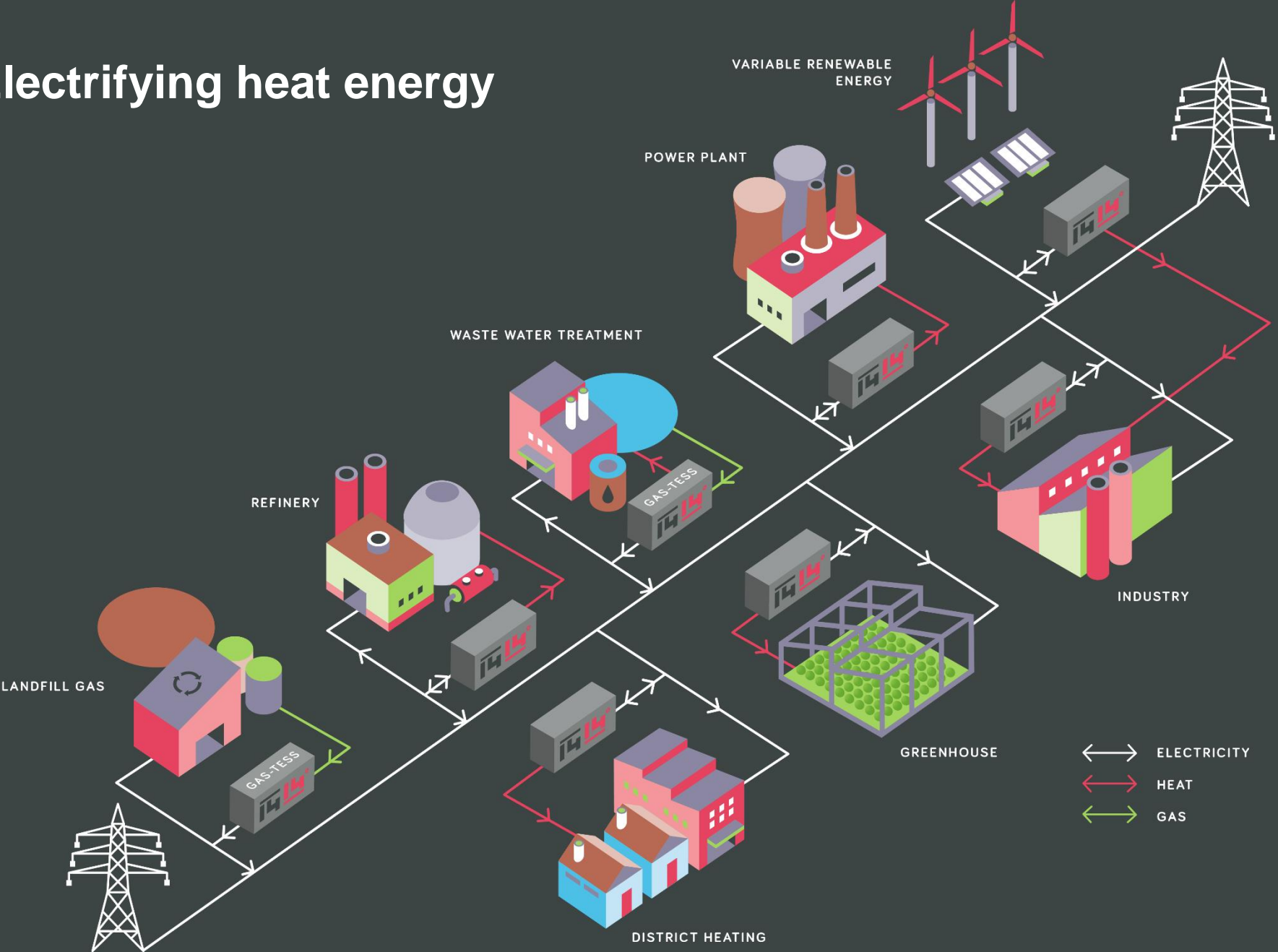
Revenues

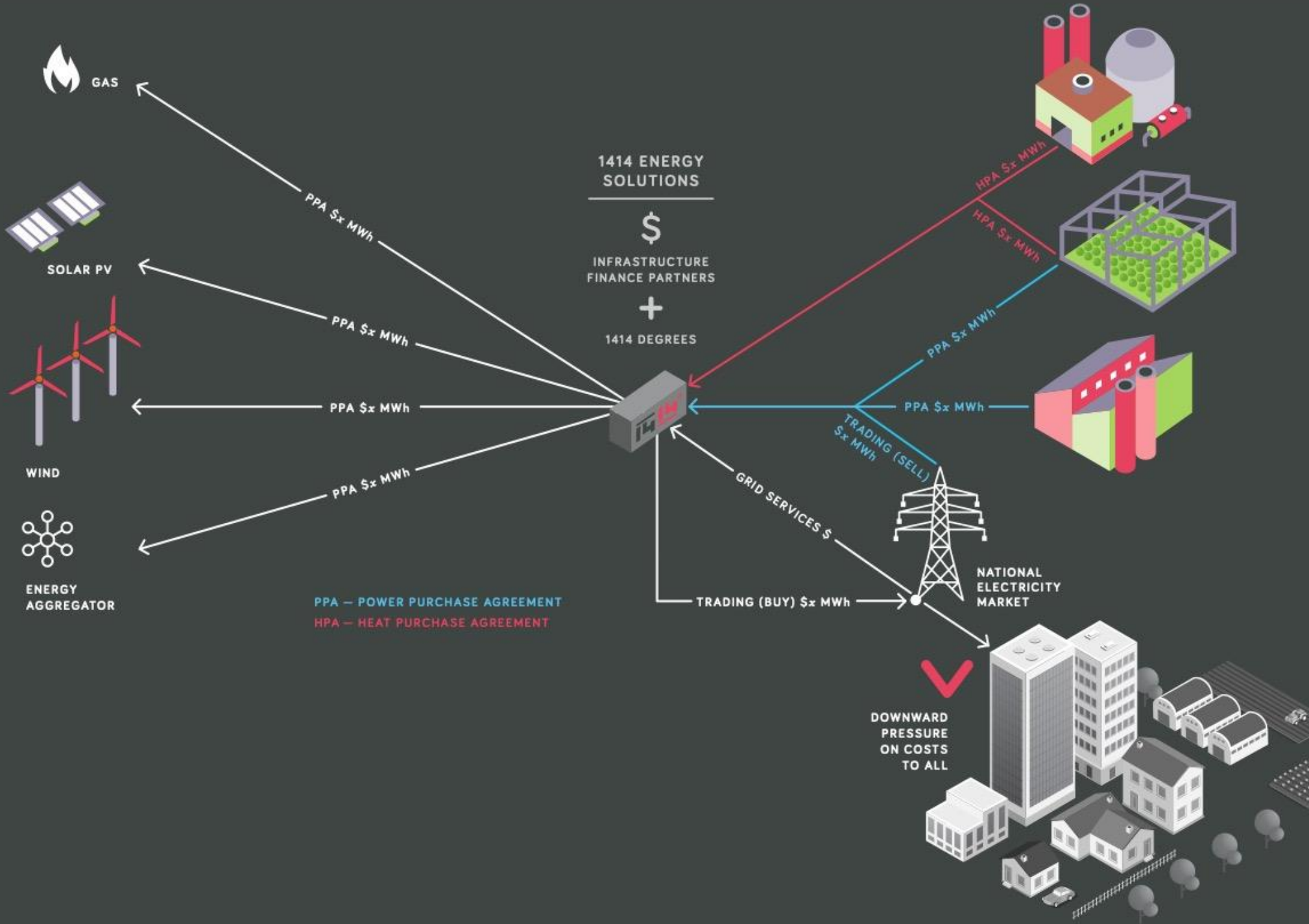
- Electricity sales
- Heat sales

- Electricity
 - Sales
 - Trading
- Carbon offset payment
- Heat sales

- Electricity
 - Sales
 - Trading
- Grid stability fees
 - FFR
 - FCAS
 - Peaking plant
- Heat displacing gas/coal
- Carbon offset payments

Electrifying heat energy

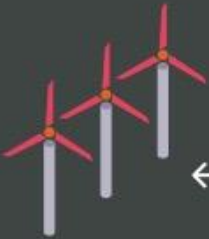




GAS



SOLAR PV



WIND



ENERGY AGGREGATOR

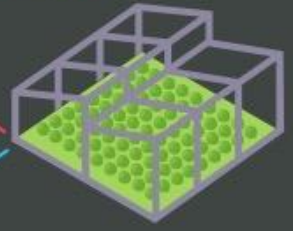
1414 ENERGY SOLUTIONS



INFRASTRUCTURE FINANCE PARTNERS



1414 DEGREES



PPA \$x MWh

PPA \$x MWh

PPA \$x MWh

PPA \$x MWh

PPA — POWER PURCHASE AGREEMENT
 HPA — HEAT PURCHASE AGREEMENT

HPA \$x MWh

HPA \$x MWh

PPA \$x MWh

TRADING (SELL)
 \$x MWh

GRID SERVICES \$

TRADING (BUY) \$x MWh

NATIONAL ELECTRICITY MARKET

DOWNWARD PRESSURE ON COSTS TO ALL

TESS-GRID 1GWh+

Low-cost grid scale energy storage

Distributed generation, can be located anywhere on the grid



TESS-IND 10MWh+



GAS-TESS 10MWh+

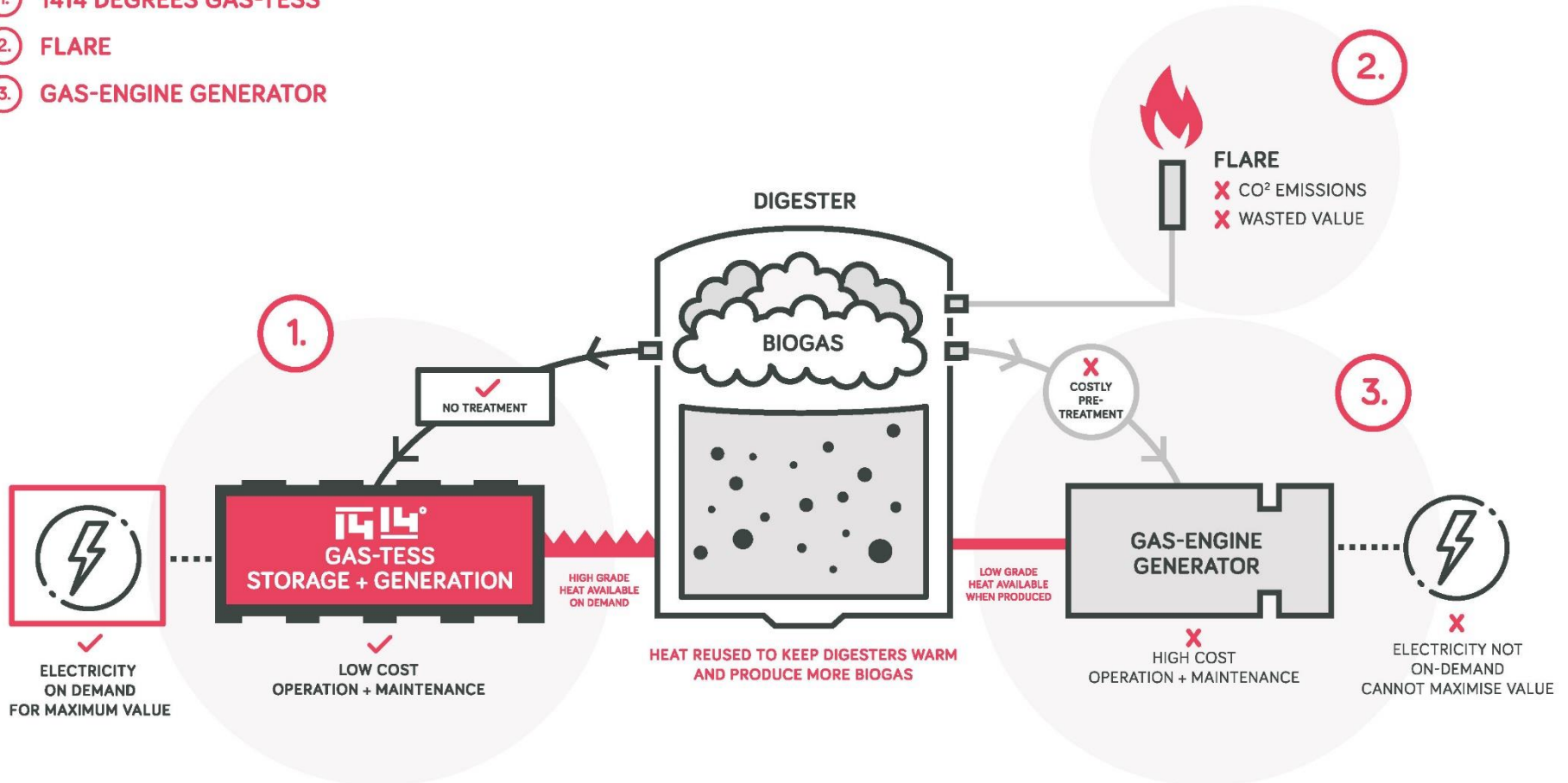
Low-cost energy storage with a biogas input
Installation at a Wastewater Treatment Plant, commissioned in May 2019



GAS-TESS 10MWh+

WASTEWATER BIOGAS OPTIONS

1. 1414 DEGREES GAS-TESS
2. FLARE
3. GAS-ENGINE GENERATOR



GAS-TESS global market potential

- Australia: > 100 x 10MWh GAS-TESS in WWTP's
- Worldwide biogas energy 1.27EJ annually (2014)
 - Equivalent to 352.8TWh (thermal) annually
 - Potential electrical generation 123.5TWh (electrical) annually (at 35% efficiency)
- Daily thermal energy available 966.5GWh (thermal)
 - Equivalent to 96,651 x 10MWh GAS-TESS installations, cycled daily
- Growth in capacity averaged 11.2% annually 2000 - 2014
- Large proportion of the world's sewage is not currently undergoing treatment to produce biogas

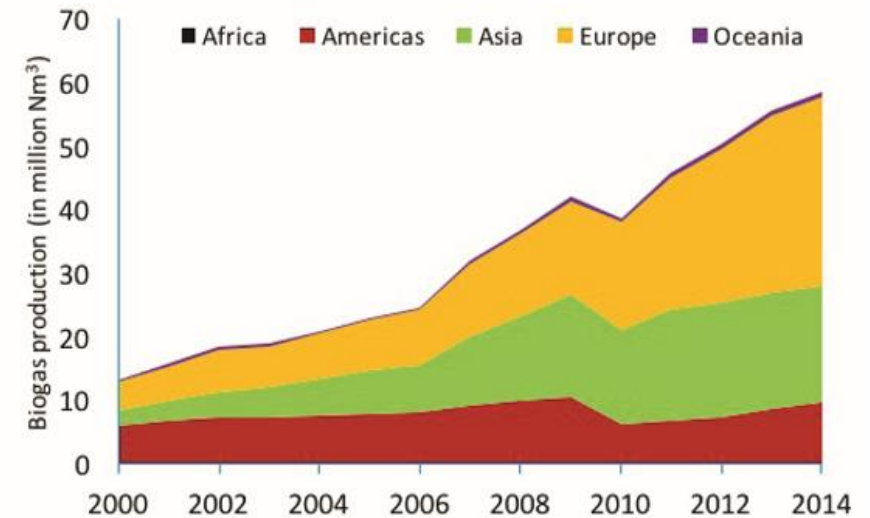


Figure 51 Biogas production during 2000 - 2014

- › Average biogas energy density factor of 21.6 MJ/Nm³
- › Source: WBA Global Bioenergy Statistics 2017, www.worldbioenergy.org



1414degrees.com.au

Dr Kevin Moriarty, Executive Chairman

Penelope Bettison, Head of Corporate Services

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