



compactAD Presentation



compact**AD**[®]
Our compact Anaerobic Digestion Solution



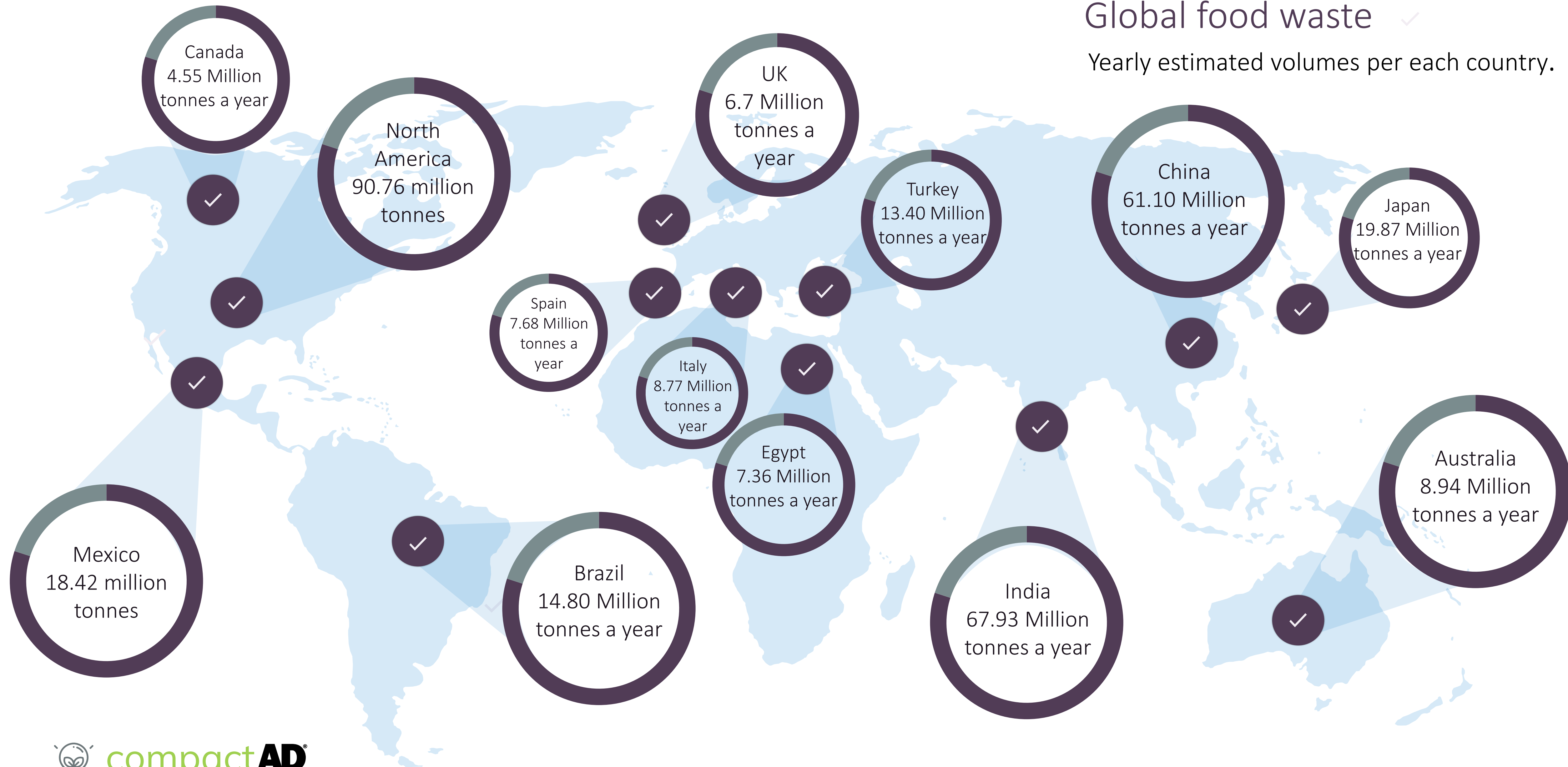
WINNER
AD AND BIOGAS INDUSTRY AWARDS 2020
8th October 2020 | **ONLINE**
Hosted by **ADBA**  **WORLD BIOGAS ASSOCIATION**



FOOD WASTE

Global food waste ✓

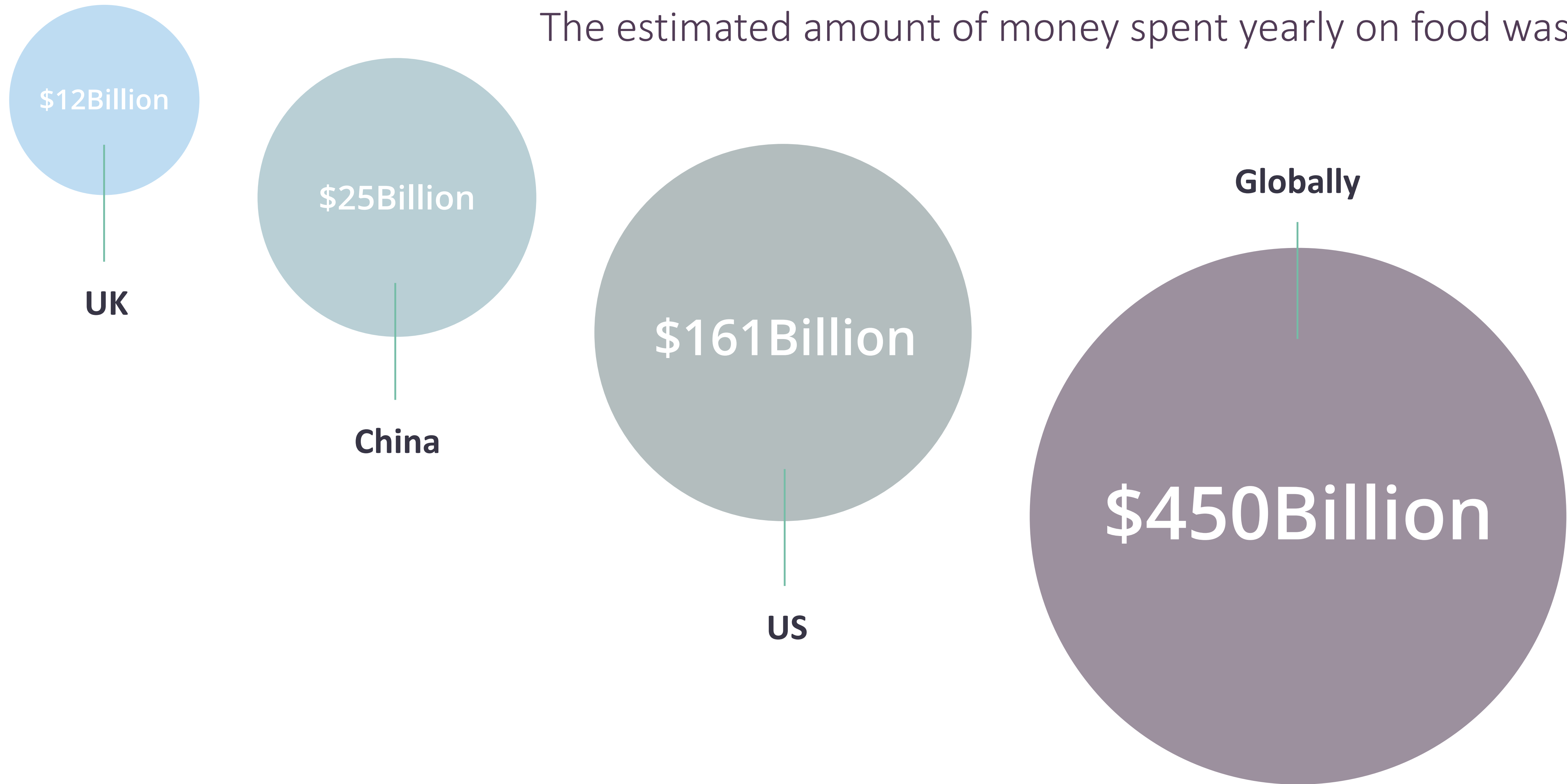
Yearly estimated volumes per each country.

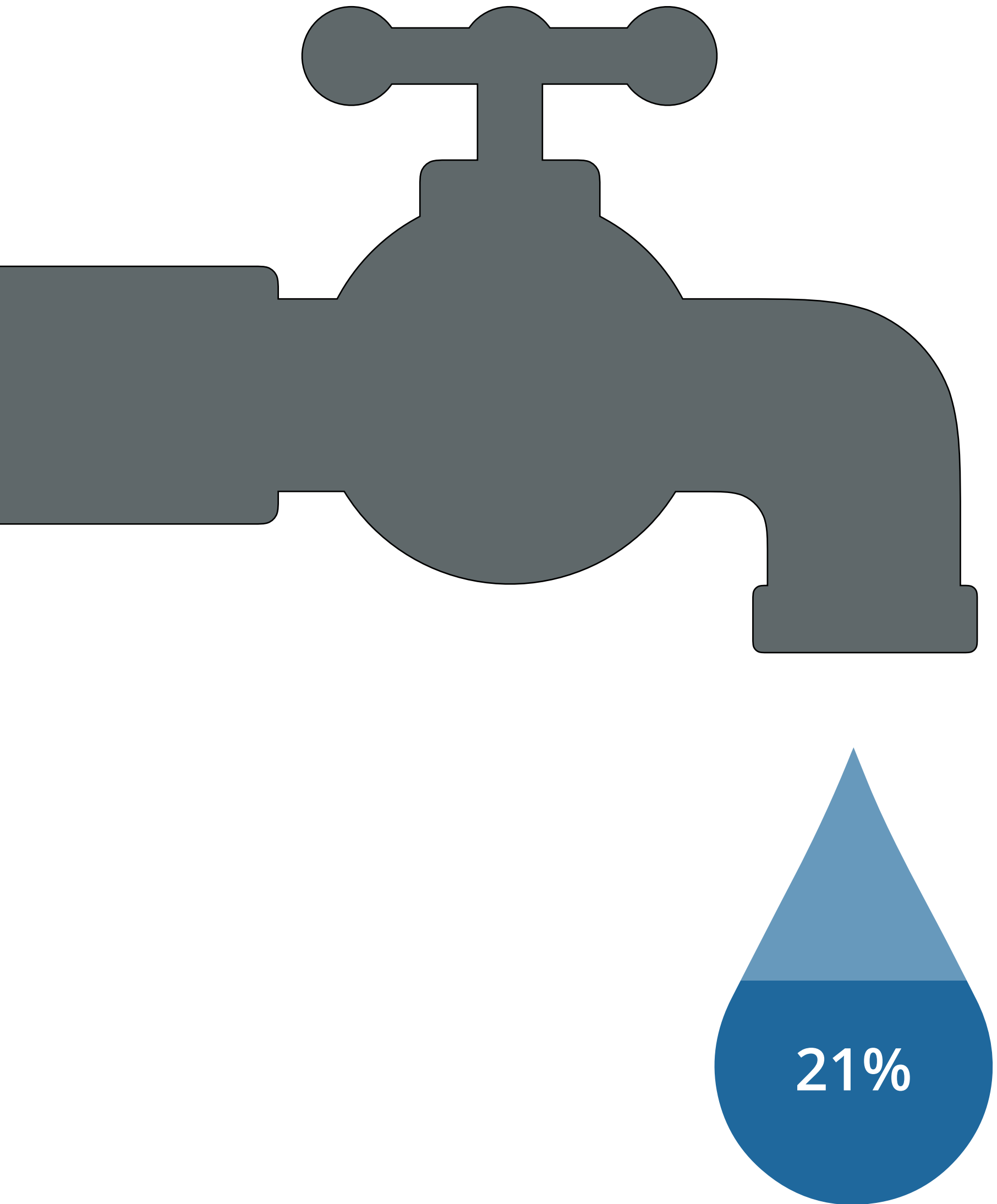


A large, detailed image of food waste. In the foreground, there's a large slice of pepperoni pizza on the left, a pile of spaghetti in a white container on the right, and various vegetables like broccoli and leafy greens scattered throughout. A pink-frosted donut with colorful sprinkles is also visible. The background is filled with more food scraps, including what looks like a salad and some bread. The overall scene is a chaotic pile of discarded food items.

On average we globally
waste approximately
1.6 BILLION tonnes of food
each year

The estimated amount of money spent yearly on food waste?



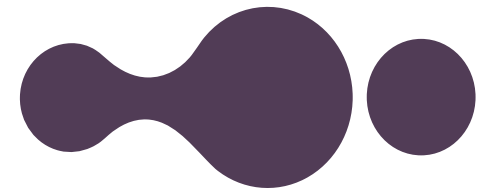


Every year approximately 21% of the world's fresh water supply is used to produce food which is thrown away!



GEGAN SOLUTIONS

Our Journey



Gegan Solutions Ltd was born from an idea back in 2016.

We identified a problem in the global Anaerobic Digestion sector, with high volumes of food waste being generated and limited options for the correct disposal, that we believed we could fix!

Using our combined knowledge of engineering and waste management, we developed our compact AD.

This solution means that food waste no longer needs to be transported across the country for disposal, thus reducing a company's carbon footprint while allowing them to benefit from their own clean, sustainable energy source.



compactAD[®]

Our compact Anaerobic Digestion Solution

Our Homogenised Organic Gastrobot[®] technology allows the waste producer to treat their organic waste on their own site giving the waste producer the ability to generate there own useable biogas.



Key Benefits of our Modular Compact Anaerobic Digestion System

- ✓ Fast digestion
- ✓ Each modular can process between 500kg and 5000kg of organic waste a day
- ✓ Multiple feedstock capabilities
- ✓ Usable electrical output
- ✓ Up to 100kW base load
- ✓ Heat output for own use
- ✓ Usable biogas output
- ✓ Organic fertilizer
- ✓ Modular and expandable
- ✓ Online monitoring
- ✓ Turns expenditure into an income source



Email: info@geganolutions.com
Tele: 0203 633 8225





compactAD[®]

Our compact Anaerobic Digestion Solution

Key points

- Dry Anaerobic Digestion
- Thermophilic solution
- Flexible feedstock capability
- Built to customer specification and requirements
- Modular and expandable
- Straight Forward Site permitting
- Useable on-site biogas



Biogas applications

- It can be used to power a CHP (combined heat power) engine and turned into clean useable electricity and heat. If required the heat can be turned into cooling for use in chillers and air conditioning.
- Biogas is a great replacement for natural gas which can be used to heat buildings and water, to operate refrigeration and cooling equipment, to cook, to dry clothes, and to provide outdoor lighting
- The Biogas can be cleaned and used as a fuel for biomethane vehicles,

As a by-product of the Anaerobic Digestion process, digestate is produced. This is rich in nitrogen and can be spread to land as a great alternative to chemical fertilisers.

The compactAD allows you to create your own circular economy



From Wikipedia,

Gastrobot, meaning literally 'stomach robot', was a term coined in 1998 by the University of South Florida Institute's director, Dr. Stuart Wilkinson. A gastrobot is "...an intelligent machine (robot) that derives all its energy requirements from the digestion of real food."

Types of waste that the compactAD can turn into clean energy





multifuel**CHP**

Our multifuel CHP engine is ground breaking technology in the combined heat & power sector.

Biogas is a great renewable source but sometimes the gas quality can vary to the required specification which can reduce energy production.

Not with the multi-fuel CHP!

The customer can set their required energy production 24/7 ensuring they are in complete control.

The multifuel CHP can be run on many fuels for example;

- Green Diesel
- Biogas
- HVO (Hydrotreated Vegetable Oil)

CHP and Turbine engines

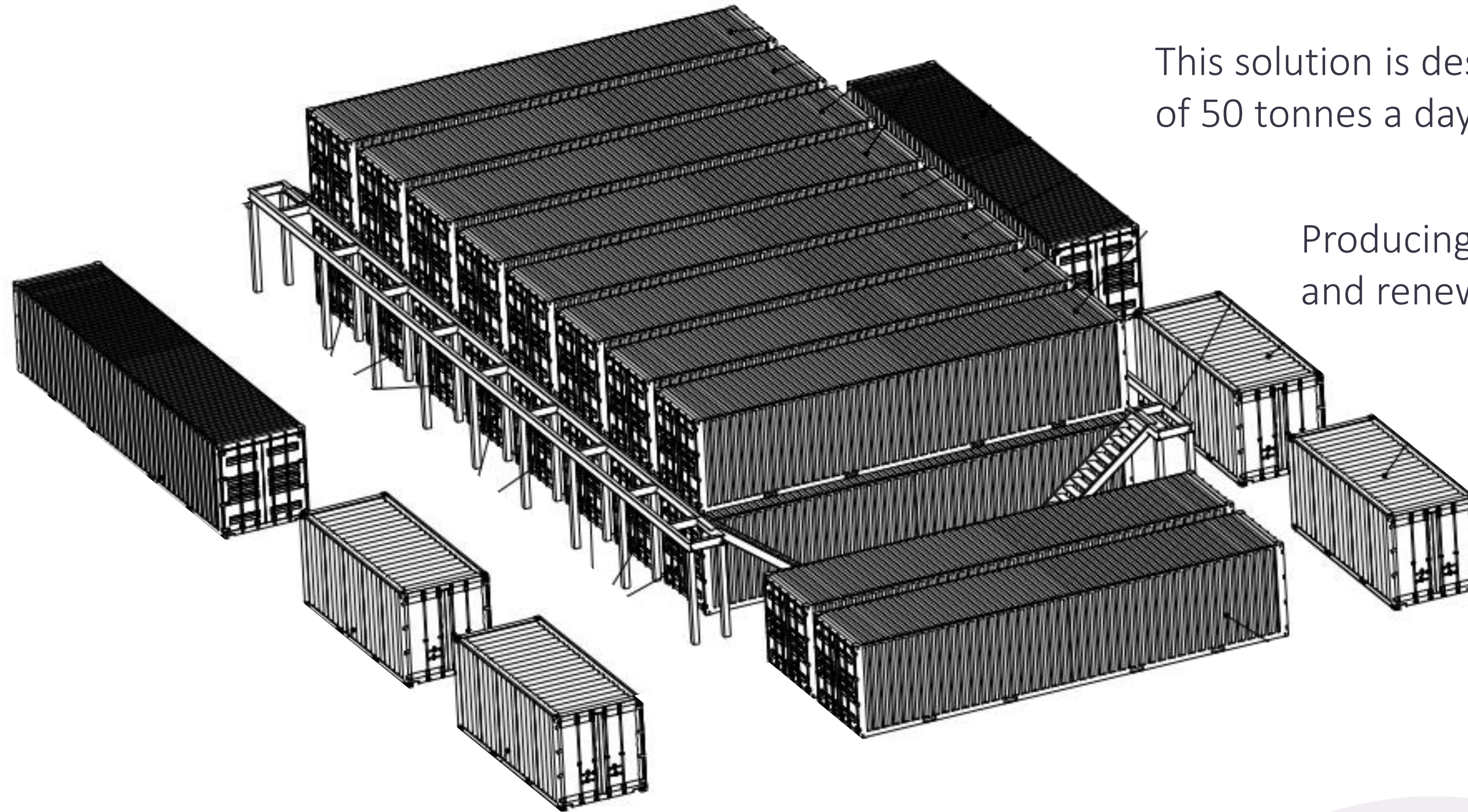
We also offer a wide range of alternative CHP (combined heat and power) and Turbine engines, for example here are a few we offer.



Professionals in TOP performance



An example of our modular system



This solution is designed to process upwards of 50 tonnes a day of organic waste.

Producing up to 1,000 kilowatts of clean and renewable electricity per hour.

And 40 tonnes of organic fertiliser per day.

CREATING YOUR OWN CIRCULAR ECONOMY



Clean electricity



- Anaerobic Digestion provides many businesses with a way to turn their organic waste products into clean renewable energy.
- The methane-rich biogas which is generated can be used as a source of renewable energy to power an electricity generator.
- The electricity produced has many different applications, for example, it can be used on-site, within a community or sold back to the national grid.

Clean heat source



- Wasted heat is becoming increasingly important, not only from an economic point of view, but also politically.
- Surplus heat produced by biogas combustion in a combined heat and power (CHP) unit is the most common heat source within an AD process
- The individual heat loads of each process within an AD operation can be greatly reduced by using recaptured heat, resulting in improvements in both efficiency and product quality.

Biomethane



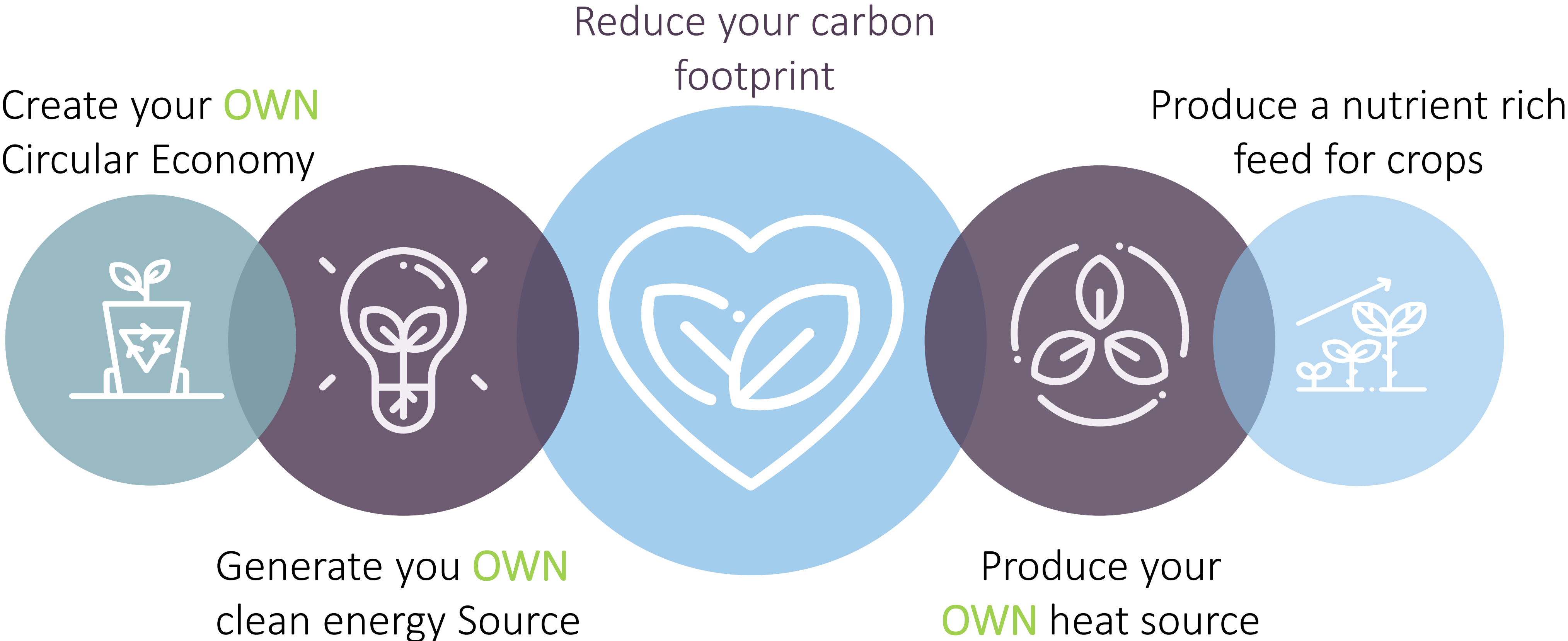
- One of the greatest environmental benefits of biomethane is without a doubt, its effect on the Earth's atmosphere.
- Biomethane does not increase the concentration of greenhouses.
- The biomethane that is produced by our compactAD could be put to many uses, for example, it could be used to power vehicles like cars, lorries or even on-site forklift trucks.

Digestate



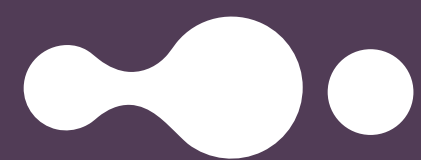
- Digestate is a nutrient-rich substance produced by anaerobic digestion that can be used as a fertiliser.
- Digestate is an excellent soil conditioner and a good source of major plant nutrients, including readily available potash.
- It is reported and documented that the use of digestate give a greater crop yield year on year in comparison to chemical substitute.

Key benefits of our on-site food waste solution



Turn your current cost into a revenue

KEY POINTS



Advantages and Benefits

● Fast Digestion

Our team has developed a technology that digests solid food quicker, giving the waste producer the ability to maximise gas yield and waste processing.

● Multiple Feedstock Capability

The compactAD has the ability to process a wide range of organic waste; from packaged food waste through to agricultural and green waste.

● Eats 500kg to 5m³ of Organic

We have a wide range of compactAD solutions to fit most requirements. Whether you need a solution for 500kg a day or 5 tonnes a day we can accommodate.

● Usable Clean Electrical Output

The technology turns your organic waste into a clean electricity, reducing your current usage from the grid.

● 100kW_e Base Load

Energy in is, and always will be, energy out, but our modular process has the ability to give an electrical output.

● Heat Output

Energy in is, and always will be energy out but our modular process has the ability to give a heat and cooling output.

Advantages and Benefits

● Usable Biogas Output

The biogas created through our Anaerobic Digestion process is fully useable and has range of applications, for example it can be used to generate a clean electricity and heat, or power vehicles.

● Organic Fertiliser

The rich digestate produced from the solution is a perfect replacement for chemical fertiliser.

● Modular and Expandable

The solution is very versatile, giving the user the ability to upscale and downscale the solution to a size that works for them.

● Straight Forward Site Locating

As the solution is not a fixed structure permitting is very straight forward. However, every site will need to be assessed to determine what permitting solution is required.

● Online Monitoring

Every compactAD has online monitoring allowing the team at HQ to ensure good health and maximum energy production.

● Turn Waste Into Circular Benefits

Turn your food waste into your own energy...is there a better circular benefit?

There are two main benefits of Anaerobic Digestion

Environmental

Methane is 23 times more potent as a greenhouse gas than carbon dioxide (CO₂).

Anaerobic digestion (AD) collects methane and provides a source of renewable energy that is carbon neutral i.e. provides energy with no net increase in atmospheric CO₂.

Financial

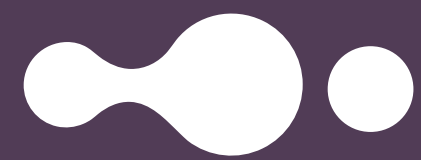
Biogas gives direct financial returns when used to generate electricity.

Use of a combined heat and power (CHP) unit to produce electricity and hot water is of further benefit, provided the heat produced can be utilised fully to heat the digester and for export.

Biogas can also be used in modified gas boilers to produce hot water for use on site or for export.

In addition, biogas can be scrubbed of impurities and fed into a natural gas grid, or used as a fuel for cars, buses and trains.

SUPPORT SERVICES



Support Services

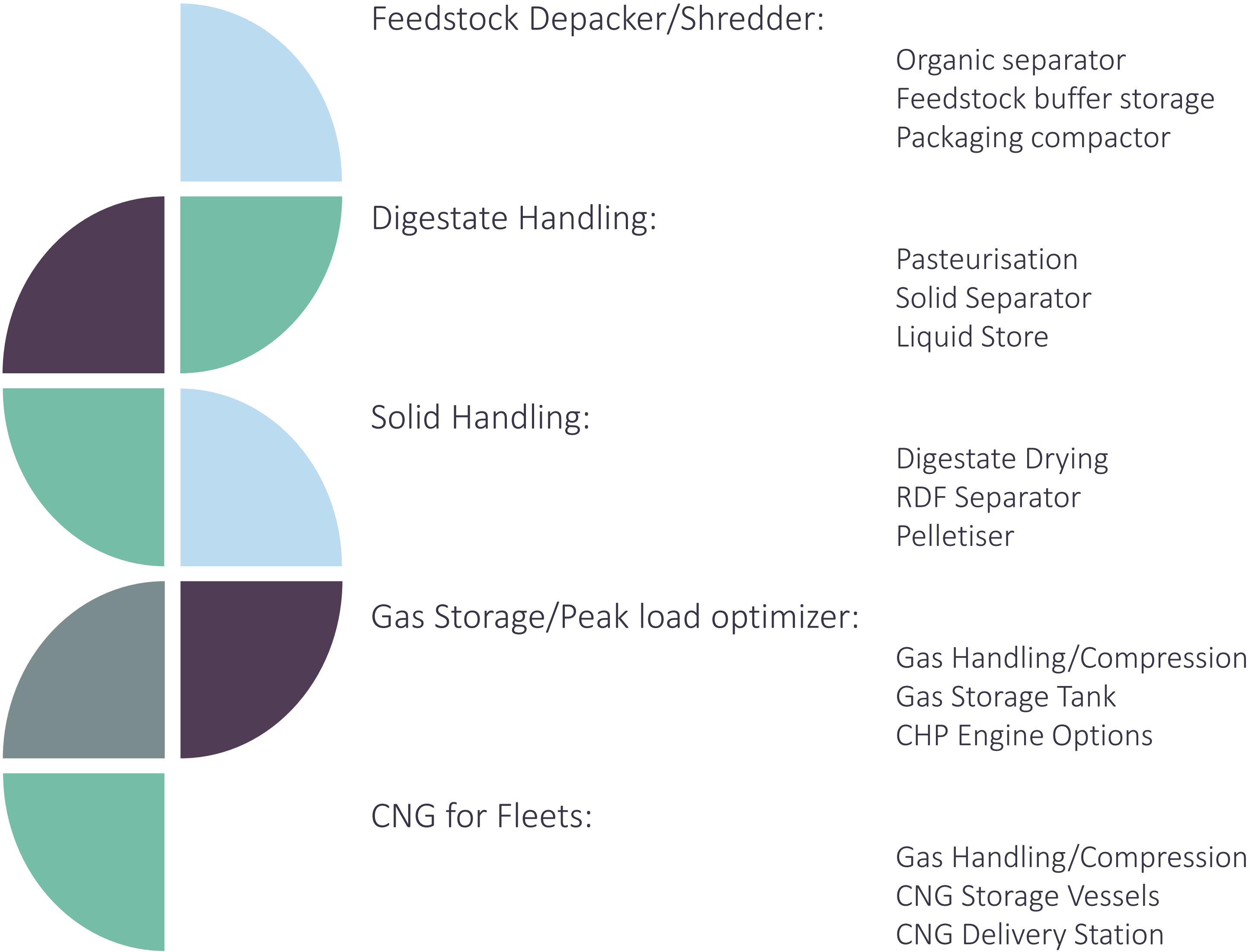
- ✓ On-line monitoring and management of AD performance
- ✓ Full system overview to maximise uptime
- ✓ Maintenance services and service plans
- ✓ On-call support and site backup



On-line monitoring



Bolt on solutions



Our Achievements



 Rushlight *Awards*
Winner 2019/20

The text "Rushlight Awards" is displayed in a large, elegant font, with "Rushlight" in dark grey and "Awards" in orange script. Below it, "Winner 2019/20" is written in orange. To the left of the text is a stylized orange flame icon.



HUB SPOKE SOLUTION

Hub Spoke Solution

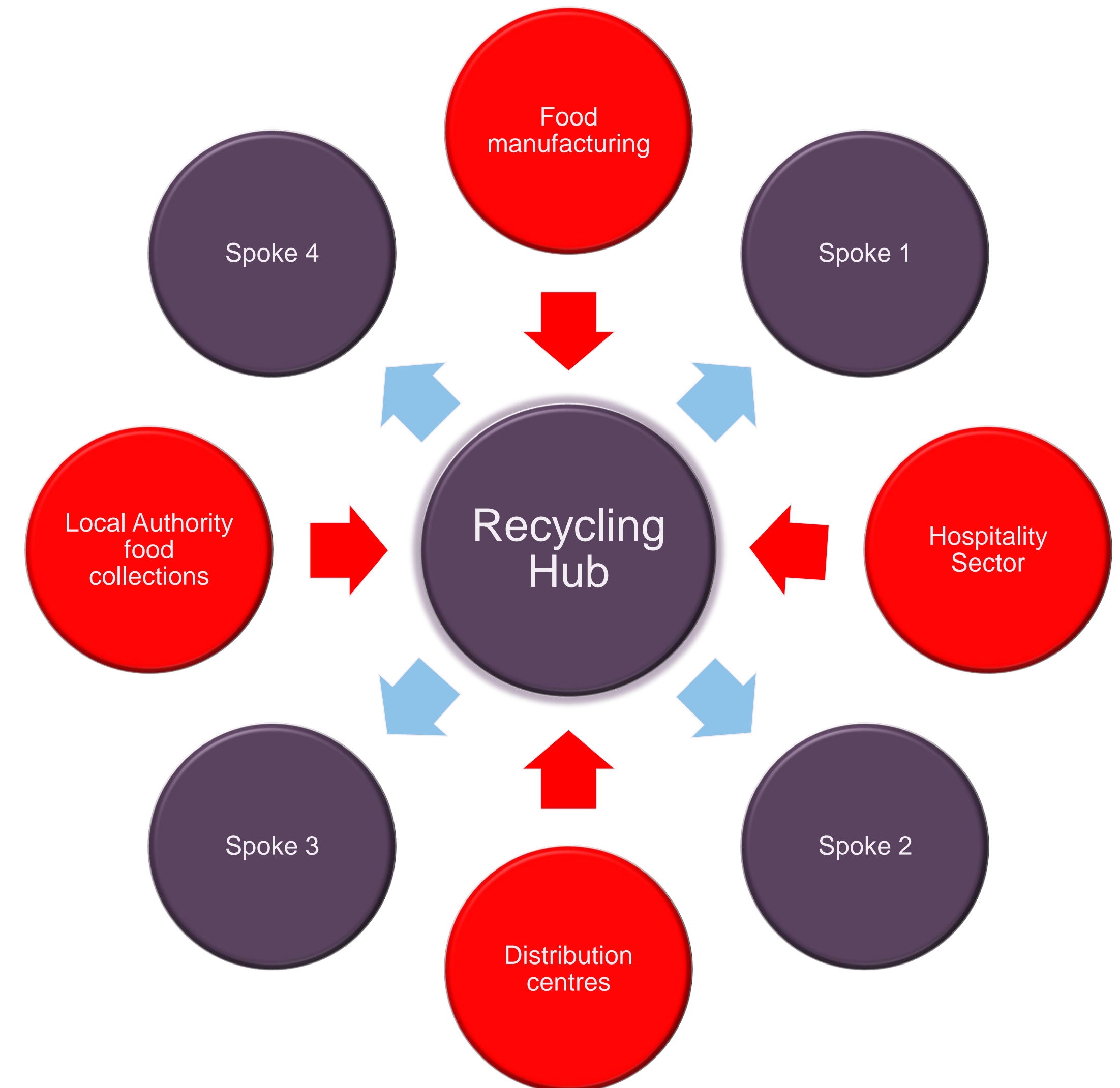
Organic waste is collected or delivered into the Recycling Hub.

- ✓ Manufacturing sites
- ✓ Logistics (Distribution centres, cold stores)
- ✓ Local authorities
- ✓ Hospitality sector (Hotels, restaurants)
- ✓ Animal feed production
- ✓ Waste management companies

The organic waste is processed and turned into a liquid energy feedstock, then delivered to the compactAD (spoke)

The process of turning food waste into an energy feedstock will produce plastic, cardboard and pallet waste.

These commodities will be baled and traded



If you would like to discuss how Gegan Solutions can help you, please feel free to contact a member team.

Sales: Lee Bush
lee.bush@gegansolutions.com

Technical: Gary Burgess
gary.burgess@gegansolutions.com

Landline: +44 (0) 203 633 8225

