



MITIE'S GREEN KITCHEN

All you need to know about good resource management practice in the kitchen environment



In partnership with:



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Impacts on climate from farming and agriculture, land use and land use change, storage and transportation

Food Production & Distribution

* Energy use for lighting, ventilation and other kitchen environment requirements

* Electricity and gas consumption for cooking and refrigeration equipment

* Water consumption for prep and cooking

Food Preparation

Most commonly used packaging material is plastic – high environmental impacts and embedded carbon content.

Contamination of recyclable packaging with food traces leads to the incorrect disposal of this material.

Food packaging

Food waste typically disposed of alongside general waste, and sent to landfill.

Alternatively, food waste is sent down the drain via macerators.

Food waste disposal

Impacts of food

The simple act of preparing and consuming food on the company's premises has numerous and significant environmental and climate change impacts, and it most likely costs your company quite a bit of money.

The diagram on the left uses a life-cycle approach to show how at every stage of its life, food leaves a significant environmental footprint.

By changing a few things about the way you manage the procurement, preparation and disposal of food and of associated resources will help you save money and minimise the impacts of your operations on the environment.

Where is the damage?

Whether fresh or processed, organic or conventionally grown, locally or globally sourced, the food we consume every day is an environmentally-demanding necessity in our lives.

Even before it has reached our kitchens, a food item has already left behind a considerable environmental footprint by undergoing a number of stages with significant direct and indirect impacts. These start with agriculture and farming and include processing, storage and distribution.

This is why the type of attitude we embrace when it comes to procuring, preparing, and consuming food has the potential to offset or at least minimise these negative effects.

Whose responsibility is it?

If your company prepares and serves food through specially designated catering facilities, then these impacts will be even more important. Low levels of awareness amongst staff and visitors means that the way food is dealt with – from procurement through to disposal – is often inappropriate.

Good news is MITIE is here to help!

We are committed to assist your organisation in taking responsibility for the way you manage resources in the kitchen environment. The even better news is there are numerous financial opportunities to pursue along the way!

WE HAVE PARTNERED WITH A NUMBER OF ORGANISATIONS AROUND SCOTLAND TO HELP US DELIVER TAILORED RESOURCE MANAGEMENT SOLUTIONS. THERE IS NO ONE-STOP ANSWER TO EVERYBODY'S NEEDS, SO WE WILL LOOK TO WORK IN CLOSE COLLABORATION WITH EACH INDIVIDUAL CLIENT AND UNDERSTAND THE MOST EFFECTIVE WAY TO REDUCE THE ENVIRONMENTAL IMPACT OF THEIR OWN OPERATIONS!





A few tips for when it comes to food procurement

If you are worried about the environmental and financial implications of the food served on your premises, the first step is to ensure procurement is based on a few simple but sustainable criteria.

Local or global?

While buying locally-produced food is important to support local suppliers, it is not always the most environmentally-friendly option for particular types of food. There is, however, an increasing amount of information available on the most sustainable sourcing options for different foods.

For more details go here on the balance between local and global food procurement, we recommend DEFRA's report on the topic, which can be accessed from:

www.ifr.ac.uk/waste/Reports/DEFRA-Environmental%20Impacts%20of%20Food%20Production%20%20Consumption.pdf

Organic or conventionally-grown?

Organic options for many types of food are often associated with environmental impacts significantly lower than those of conventionally-grown foods.

Organic food is food which is produced using environmentally and animal friendly farming methods on organic farms. These methods are legally defined and any food sold as 'organic' must be strictly regulated

For more details on organic food options visit www.soilassociation.org

Know your food!

Any provider of catering facilities who prides itself with supplying sustainable food services must know what healthy, environmentally-friendly and cost-efficient food is. Design an informed food procurement strategy based on the principles of sustainability and responsibility, and you will note the financial, reputational and environmental benefits straight away!



Healthy and nutritious food

If your organisation aims to embrace a responsible behaviour towards food procurement, then it will most likely be concerned about how healthy the food you serve on your premises is. Yes, it's not just about the cheaper option. Sustainability in food procurement must start with a desire of delivering healthy, nutritional meals to your customers, visitors and staff.

In-season food

Produce that is grown in-season requires little energy and water inputs compared to food grown in greenhouses, and therefore has a lower environmental impact. By designing your menu around these products, or basing at least some of the dishes on such criteria can compensate for other sources of negative impacts, such as food transportation and on-site storage.

For more details on in-season food go to eatseasonably.co.uk

Animal welfare

Ecological awareness must be at the core of a sustainable food procurement strategy. It is important that products such as fish, eggs, and chicken are procured from sustainable sources whereby animal welfare is an integral part of the farming process.

For more information we recommend visiting the Farm Animal Welfare Committee's website, available here: <http://www.defra.gov.uk/fawc/>



Resource awareness in food preparation

MITIE's waste and environmental team is not just about material wastes. We are increasingly focusing on resources management, thriving to help our clients avoid wastage of any type.

The kitchen environment is a prime example of how simple but efficient changes can improve environmental performance and help your organisation save money in the process.

Moreover, with water consumption figures of thousands of litres every day, you may be wondering where that money is going... Well, we can tell you: it's going down the drain!

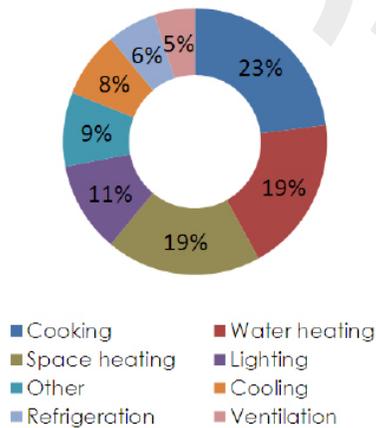
A lot of resources are wasted during the food preparation process. Cookers and other kitchen equipment are constantly left on. Not to mention lighting, cooling and extraction systems, which are crucial to the smooth running of kitchen operations.

The ways in which water is often used in a kitchen mean that a lot of oils, grease and food stuffs are also sent down the drain alongside that water bill! This means that you need to also consider the environmental impact of your operations as well as the costs involved in paying pollution taxes, keeping an eye on the legislative framework, and managing the risks of incurring fines and of damaging your reputation!

All of these lead to an energy-intensive process that costs money and accounts for a significant proportion of your organisation's carbon footprint.

Between 1.2 and 6.1 kWh are consumed for every meal prepared in an industrial kitchen. In a staff restaurant, for example, 2.7 kWh per meal means that hundreds of pounds are spent daily on food storage and preparation alone, without taking into account procurement and staffing costs.

ENERGY CONSUMPTION IN THE KITCHEN ENVIRONMENT



Did you know?

4-6% of total kitchen operating costs is attributable to energy consumption

Only 40% of the energy consumed is used for the preparation and storage of food

21,600 million kWh per year are consumed across the catering sector

More than 50% of this is consumed in non-commercial facilities and staff cafeterias

More than 15% savings can be achieved just by training staff to use the kitchen equipment in a more efficient manner

Up to 60% savings can be achieved if equipment such as fridges and fans is kept clean and checked regularly for damages

MITIE ENCOURAGES YOU TO CONSIDER ALL OF THESE IMPACTS, COSTS AND RISKS. OUR TEAM WILL HELP YOU UNDERSTAND WHERE ENERGY AND WATER WASTAGE OCCURS IN THE FOOD PREPARATION PROCESS AND WHAT YOU CAN DO TO MINIMISE THIS. WE BELIEVE THAT AN EFFICIENTLY RUN KITCHEN CAN IMPROVE WORKING CONDITIONS FOR STAFF AND CAN EVEN LEAD TO AN INCREASE IN THE QUALITY OF FOOD SERVED.



Impacts of food packaging

When it comes to reducing the environmental impact of food, perhaps one of the most commonly spoken of aspects is packaging.

Wrappings, coffee cups, hot food containers – how much of these does your canteen throw out every day? And have you ever considered what it takes to produce the materials that make up this packaging?

Most food packaging is made out of plastics, which has an energy- and water-intensive production process. Depending on the type and characteristics of the material, the production of one tonne of plastic results in between 2.6 and 4.6 tonnes of CO₂e being emitted through the burning of fossil fuels.

There is also a lot of confusion regarding the best disposal routes for food packaging waste. For example, during the manufacturing process, paper coffee cups are laminated with polyethylene, a plastic resin which prevents the liquid from being absorbed by the paper.

This makes the coffee cup non-recyclable, which means that it is usually sent to landfill, where the decomposition of paper leads to large amounts of methane being emitted into the atmosphere.

The contamination of packaging with food often means that, even where recycling is an option for the disposal of the respective materials, it becomes unfeasible.

Did you know?

Almost 6 million tonnes of packaging waste arise every year from commercial and industrial facilities every year.

The environmental impact of this accounts for around **10 million tonnes of CO₂e**, mainly from landfill disposal.

Policymakers focus on **optimising packaging** design and acknowledging its role in prolonging the life of food and preventing waste.



Disposal of fat, oil and grease from commercial kitchens

Fat, oil and grease represent a great challenge to drains and sewers. In addition to the environmental impact they have on water streams across the country, dealing with the blockages that they cause is a tricky and far from enviable task!

While fat, oil and grease (FOG) are commonly disposed of in liquid form, the cooling of these streams causes them to congeal and harden. This solid residue then sticks to the drainage pipes and restricts the water flow. This, in turn, causes blockages, which are expensive to deal with and can have numerous adverse effects, including sewer flooding, odour problems and pest infestation.

There is a legal framework which aims to ban the disposal of FOGs via the public sewer system. This includes the Water Industry Act 1991, which makes it a criminal offence to discharge into the public sewers any matter which may interfere with the free flow of wastewater. Prosecution can add significant financial penalties to the cost burden of dealing with the on-site effects of blockages.

The disposal of any wastes does also come against the principles and requirements of the Environmental Protection Act 1990 Duty of Care. This imposes an obligation on waste producers to ensure that the waste arising on their sites is tracked from the point of production through to its final disposal site. This is obviously not satisfied when waste is simply thrown down the drain.

There are a number of measures which kitchen managers can undertake in order to ensure that FOGs do not end up being disposed of in this way. These include educating and raising awareness amongst staff to "prepare" the equipment prior to washing (i.e. to dry clean the oily pots and pans before placing them into the dishwasher). However, in a fast paced environment these types of measures may be seen as challenging and time-consuming.

“APPROXIMATELY 200,000 SEWER BLOCKAGES OCCUR EVERY YEAR IN THE UK, 75% OF WHICH ARE CAUSED BY THE BAD MANAGEMENT OF FAT, OIL AND GREASE WASTE DISPOSAL.”





CORE IS A SOCIAL ENTERPRISE OWNED BY MITIE, IN COLLABORATION WITH THE EDINBURGH-BASED CYRENIANS CHARITY. CORE EFFECTIVELY RECYCLES YOUR FOOD AND KITCHEN WASTE BY PROVIDING AN EFFICIENT AND BESPOKE SERVICE, WHILST FOCUSING ON THE MOST SUSTAINABLE OPTIONS FOR KITCHEN RESOURCE MANAGEMENT.

The big topic: Food waste

In the UK, the amount of food waste arising on an yearly basis from households, commercial and non-commercial kitchens, as well as its ecological impacts and financial implications, make it one of the biggest environmental challenges facing the national economy at the moment.

Approximately 0.6 million tonnes of food waste arise from the hospitality and food service sectors every year, of which two thirds is avoidable waste. Most of this is directed to landfill sites, despite policy makers acknowledging this as the least environmentally friendly solution for organic wastes.

Alternatively, in facilities where high levels of food waste arise, maceration outlets are used for the disposal of this waste stream. This means that large quantities of food, oil, and grease are sent down the drain and on to the sewage system.

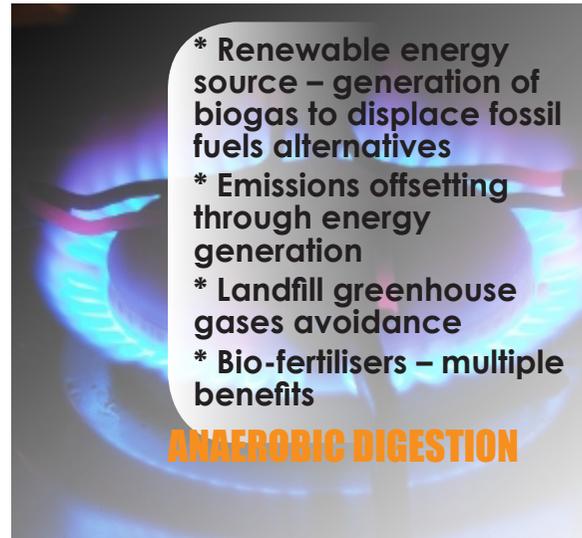
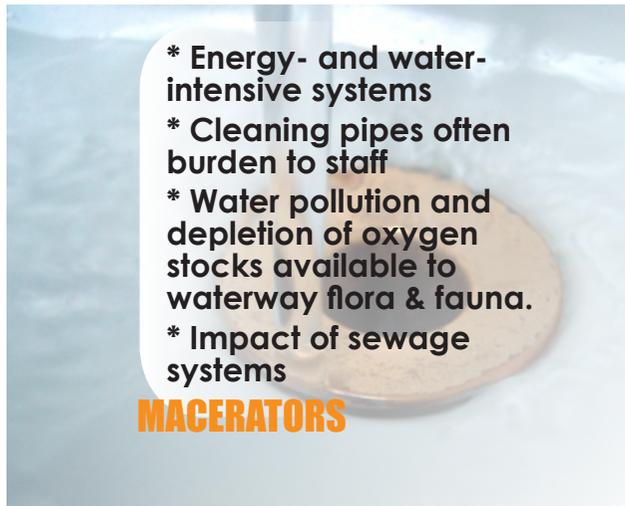
Anaerobic digestion currently provides the most compelling case for treating food waste. The energy value embedded in food products makes them important elements within the national environmental and energy policy frameworks.



Disposal options for food waste, their impacts and benefits



Out of sight, out of mind?



Or a responsible attitude towards resources?



Food waste to landfill - resources “thrown away”

DEADLINES FOR ESTABLISHING SYSTEMS TO ALLOW THE SOURCE SEGREGATION OF FOOD WASTE:

- * 2015 FOR SMALL BUSINESSES
- * 2013 FOR MEDIUM TO LARGE
BUSINESSES
- * LOCAL AUTHORITIES BEGIN ROLL-OUT
2013 AND COMPLETE IN 2015

Landfill disposal of food waste is one of the most environmentally damaging option for this waste stream. A typical non-domestic kitchen producing approximately 600 meals daily can produce more than 7 tonnes of CO₂ equivalent every year. This is equivalent to over 25 return trips from Bristol to Glasgow!

The diversion of biodegradable wastes to and anaerobic digestion facility can significantly reduce greenhouse gas emissions from landfill. Defra suggests that capturing the biogas from one tonne of food waste can result in a saving of approximately 0.5 to 1 tonnes of CO₂ equivalent.

With these challenges as well as opportunities in mind, the UK Government is currently looking at options for banning food waste from landfill sites, with a view to eradicate this by 2020. With this in mind, the Scottish Government expects medium and large size organisations to have in place, by 2013, a system which allows for the separate collection of food waste from their premises.

This will be the first ban of this type in the UK, driven by the recognition of the fact that links must be drawn between national waste and emissions targets. It also aims to drive investment in new waste infrastructure across Scotland and to shift the focus from, and find alternatives to landfill disposal of all wastes.

Macerators - resources “down the drain”

Most food waste generated in the UK catering outlets, including from hotels, restaurants, hospitals and educational establishments, is macerated and evacuated into the sewers. However, the costs associated with running these types of food disposal units and the environmental implications of these is often overlooked.

A typical commercial kitchen producing approximately 600 meals every day can waste as much as 400 kg of CO₂e every year. This is equivalent to leaving the lights on in the canteen for approximately 50 extra hours!

A macerator is a highly demanding piece of equipment, consuming up to 11.4 litres of water to shred and dispose of one kilogram of food waste, and can cost more than £5000 per year in electricity costs only.

The Scottish Government is now moving towards a ban of macerators from all commercial kitchens. This will target the use of food waste disposal units (macerators) and food waste digesters where 'treated' food is discharged into public sewers directly or indirectly.

According to a 2011 Policy Statement issued by the Scottish Government, this measure aims primarily to ensure that the resource value of food waste can be realized and that food waste is managed in compliance with Article 4 of the revised Waste Framework Directive (on the waste hierarchy).



TIMEFRAME FOR THE INTRODUCTION OF A LEGAL BAN ON FOOD DISPOSAL UNITS:

* BAN TO BE INTRODUCED ONCE THE ROLL OUT OF SEPARATE FOOD WASTE COLLECTION SERVICES TO SMALL BUSINESSES IS COMPLETE (2015)

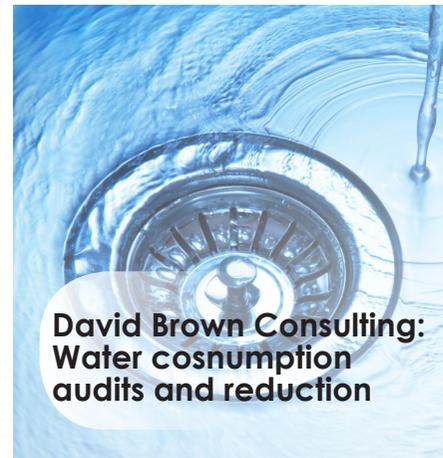
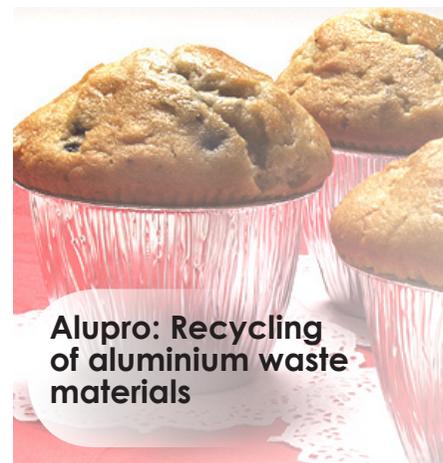
MITIE'S GREEN KITCHEN Model



“MITIE HAS PARTNERED WITH A NUMBER OF ORGANISATIONS WHO CAN DELIVER ALTERNATIVE SOLUTIONS FOR THE ALL-ROUND MANAGEMENT OF RESOURCES IN THE KITCHEN ENVIRONMENT. TOGETHER, WE HAVE BEEN LOOKING AT CLOSING SOME OF THE LOOPS AND CREATING AN ENVIRONMENT WHERE WASTE IS NO LONGER WASTE, BUT RATHER A VALUABLE RESOURCE WHICH CAN BE PUT BACK INTO THE PROCESS TO CREATE A CIRCULAR MICRO-ECONOMY.”

Our partners

The companies who form part of MITIE'S GREEN KITCHEN partnership



THE MODEL WE PROPOSE IS ONE WHEREBY:

* A TIDY PLANET DEHYDRATOR IS USED TO SEPARATE LIQUID WASTE AND OBTAIN A DRY, LIGHTER FOOD WASTE RESIDUE.

* VEGWARE COMPOSTABLE PACKAGING AND CATERING DISPOSABLES ARE USED TO REPLACE THE TYPICAL CONTAINERS AND UTENSILS IN THE CANTEEN AREAS.

* A SINGLE WASTE STREAM IS CREATED: THE DRY FOOD WASTE IS DISPOSED OF ALONGSIDE THE PACKAGING WASTE.

* CORE COLLECTS THIS AND TRANSPORTS IT FOR DISPOSAL VIA ANAEROBIC DIGESTION. THE PROCESS RESULTS IN A SMALL AMOUNT OF ENERGY BEING GENERATED ALONGSIDE AN ORGANIC FERTILISER WHICH CAN BE USED IN AGRICULTURE.

* THE AD FACILITIES PROVIDED BY SCOTTISH WATER HORIZONS IS UTILISED FOR PROCESSING FOOD WASTE.

* A FOG REMOVAL SYSTEM IS PROVIDED AND INSTALLED BY HUTCHINSON, ELIMINATING THE GREASE TRAP ISSUE AND THE ENVIRONMENTAL IMPACTS ASSOCIATED WITH THEM.

* DAVID BROWN CONSULTING DELIVERS WATER AUDIT SERVICES TO IDENTIFY THE BEST METHODS FOR MINIMISING WATER USE AND WASTAGE.

* ALL ALUMINIUM WASTE MATERIALS ARE RECYCLED USING THE SUPPORT AND SERVICES PROVIDED BY ALUPRO.

Segregation and collection of food waste: what are the benefits?

CORE is Scotland's leading food waste recycling business, with over 900 clients across Scotland, recycling 5,000 tonnes of food waste per year.

“OUR AWARD-WINNING APPROACH IS BESPOKE TO EACH CLIENT AND IS DESIGNED TO ESTABLISH A SIMPLE, YET EFFICIENT FOOD WASTE SEGREGATION SYSTEM WHICH ADDRESSES THE TOUGH CHALLENGES OF KITCHENS AND CORPORATE FOOD HALLS, WHILE ALSO FOCUSING ON INCREASING EFFICIENCIES.”

Since their inception in 2009, CORE have pioneered a system for **separating and collecting food waste**, providing an **efficient alternative to landfill for food waste**.

CORE (Cyrenians Organics Recycling Enterprise) are one of the Edinburgh Cyrenians' **social enterprises**. They are a registered charity and committed to the task of **tackling poverty and homelessness**.

Having acquired CORE in 2011, MITIE have committed to **maintaining the links with the charity**, reinvesting £11 per tonne into Cyrenians' social business; helping to **create jobs and training opportunities** for disadvantaged people.

CORE will seek to **engage with, and raise awareness** with chefs, kitchen managers and staff to facilitate **food segregation at source**.



By choosing CORE as your food waste contractor, the client will achieve **great CSR value** through the association with the Cyrenians charity.

CORE will select **the most environmentally and economically viable routes** for each location. This means that AD sensitivities in terms of content, packaging and water are no longer a concern.



Food waste dewatering: reducing weights and volumes of food waste for a cheaper, more sustainable management of food waste

Tidy Planet offer a sustainable alternative to the disposal of food waste to landfill by focusing on sustainable on-site solutions.



By installing a Tidy Planet food dryer, clients can **reduce the weight and volume of waste**, which can lead to a reduction in waste disposal costs of up to **80%**.

De-waterers can help organisations improve their recycling efforts by **encouraging source separation of food**.

By treating food waste through a Tidy Planet de-waterer, you will also **eliminate the problem of heavy, leaky and smelly bins**.

The dry food waste residue obtained through the process **can be collected by MITIE CORE** for processing via anaerobic digestion or **can be used for on-site composting**.



“ MITIE IS WORKING IN COLLABORATION WITH VEGWARE, THE PLANT-BASED PACKAGING MANUFACTURERS, TO DELIVER SUSTAINABLE SOLUTIONS TO YOUR ORGANISATION'S FOOD PACKAGING ISSUE. VEGWARE DELIVERS COMPOSTABLE PACKAGING PRODUCTS, FROM NAPKINS THROUGH TO HOT FOOD CONTAINERS, HAVING ALREADY BEEN AWARDED BEST NEW PRODUCT AT THE 2011 CLIMATE WEEK AWARDS. ”

Compostable packaging: How does it work?

By procuring compostable eco-packaging to replace the existing containers in which food is served on your premises, your organisation will dramatically reduce the environmental impact of your food operations.



Vegware packaging materials are produced using exclusively **renewable and recycled materials**, and are **compostable**.

The problem associated with the **contamination of packaging materials with food traces is eliminated**.

Compostable packaging and utensils no longer end up with general waste – but are **collected from your premises alongside food waste**.

This waste stream is sent to **Composting and Anaerobic Digestion** facilities.

By processing organic materials through anaerobic digestion, your organisation contributes to the **production of green energy for the national grid**.

Another by-product of anaerobic digestion is a **bio-fertiliser**, which can be widely used to displace the use of non-organic fertilisers in agriculture.

Composting of organic waste produces a **nutrient-rich compost** with a high value for agriculture and food production.

This life-cycle approach means that packaging is no longer a waste; it is a **valuable resource for the wider economy**.



Clean and safe disposal of oil and grease

The equipment proposed by Hutchinson Environmental Solutions utilises a patented bacteria based technology to eliminate all of the issues associated with grease traps.



HUTCHINSON

The grease trap alternative proposed by Hutchinson eliminates drain blockages, foul odours and pest contamination issues.

By utilising a patented bacteria based technology, the equipment will ensure optimal drain cleaning.

The media dosed in line will digest the fats, oils and greases into, ultimately, water and carbon dioxide emissions.

The unit is designed to be low maintenance, with little or no daily intervention. The only maintenance needed is to refill the biological-fluid when needed, and this will fall under the standard service contract.

“SAVING WATER AND REDUCING COMMERCIAL WATER CONSUMPTION IS VERY IMPORTANT FOR THE ENVIRONMENT AND THE FUTURE NEEDS OF OUR PLANET, BUT WE'RE ALSO VERY MUCH AWARE THAT THE MAJOR FACTOR FOR BUSINESSES TO HAVE A WATER AUDIT DONE IS TO REDUCE COST. THEREFORE THE WATER AUDIT WE UNDERTAKE FOR OUR CLIENTS AND ANY RECOMMENDATIONS WE MAKE ARE FULLY BACKED UP BY A BUSINESS CASE FOR ACTION AND RETURN ON INVESTMENT. WE MAKE SURE THAT OUR CLIENTS ONLY BENEFIT AS A RESULT OF OUR WATER AUDIT PROCESS

Improved efficiency in water consumption

Knowing your water costs is a crucial first step to reducing them. Our partner can help you understand your water consumption and where the most significant opportunities for savings exist.

D DAVID BROWN
~ consulting ~

David Brown Consulting offers a **specialised analysis service** of current water costs leading to rebates, industry benchmarking, **identification of water wastage** and the ability to measure the success of any water reduction project.

Knowing the costs associated with water use and wastewater disposal in the kitchen is key to any project of reducing waste and cost.

Using billing data we can analyse how efficient your kitchen is when it comes to water consumption. **Building an accurate consumption model** which can be used to identify different areas of avoidable wastage.

Trade effluent can be analysed to ensure **correct billing and lowest costs** and to calculate the cost savings that can be achieved through a **water improvement project**.

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Sustainable processing of aluminium waste materials

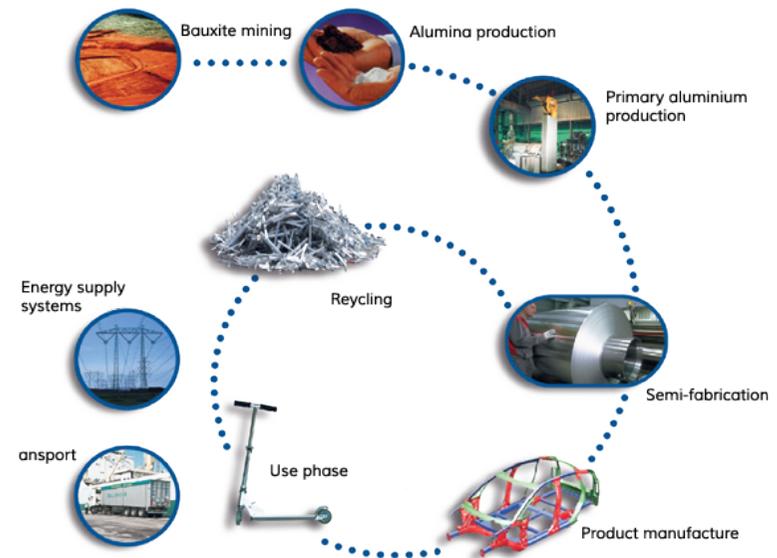
All aluminium packaging can be recycled, endlessly, saving natural resources and energy.



Alupro has a proven track record for developing and running **programmes that make a difference**, focussing on programmes aimed at **raising awareness of recycling** and increasing the recycling rate of aluminium packaging.

Alupro offers advice and information to anyone wanting to collect aluminium packaging, or expand their activity. Our partner's membership comprises **many of the UK's leading reproprocessors**, so they can help and advise on any aspect of setting up or running a collection scheme.

Alupro has developed a **comprehensive suite of materials** to assist organisations wanting to improve participation and capture rates for **valuable aluminium packaging**. Metalmatters and Every Can Counts were both cited as examples of good practice in the 2011 government Waste Policy Review.



For more details about MITIE's Green Kitchen please contact:

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Glasgow
G73 1AU

Also, please visit our website for more details on our business and experience:

<http://www.mitie.com/greenkitchen>

For more information on our partners' products and services go to:

CORE:

<http://www.mitie.com/core>

Tidy Planet:

<http://www.tidyplanet.co.uk>

Vegware:

<http://www.vegware.com>

Hutchinson:

<http://www.hutchinson.co.uk>

Alupro:

<http://www.alupro.org.uk>

David Brown Consulting:

<http://www.davidbrownconsulting.co.uk>

Scottish Water Horizons:

<http://www.scottishwater.co.uk/business/horizons>





