AMDEA™
The Association of Manufacturers of Domestic Appliances

Mayor of London

Via email: environment@london.gov.uk

16 November 2017

Response to the Waste Section of the London Draft Environment Strategy Consultation

AMDEA is the UK trade association for large and small domestic appliances; heating; water heating; floor care; and ventilation. We represent manufacturers at UK, European and International level; with government and EU political institutions; in standards and approvals; with non-governmental organisations; with consumers; and in the media. AMDEA protects and promotes its members' interests in all these spheres.

All of our members are fully committed to waste prevention, opposed to landfilling of waste and support the recovery of value from waste. However, we have some member companies with a particular interest in sustainable and effective food waste management, as they manufacture domestic food waste disposers (FWDs).

Food waste disposers are the small devices that fit under a standard domestic kitchen sink and grind most food waste into minute particles that flush easily through the sewer system to waste water treatment plants, where increasingly biogas and soil improvers are extracted. They use minimal amounts of electricity and water, eliminate the need for road transport and can improve the recovery of other waste fractions, as the separation of food waste at the kitchen sink avoids the usual contamination.

Members of AMDEA's FWD Group include the world's leading producer, InSinkErator, that has manufactured food waste disposers for over 70 years and markets these appliances in over 80 countries. As food waste management and recovery of value from this waste stream are core issues for this group, we have accumulated and continue to build a substantial evidence base of peer-reviewed, scientific research conducted by recognised experts and academics worldwide.

To achieve the **Mayor's ambitious target for capture of food waste by 2026**, successful policy for London should include a variety of effective management options to suit householders living in diverse circumstances. We note that cities and towns in environmentally advanced nations such as Sweden and the Netherlands are constantly exploring new methods and technologies to improve capture and recovery. **This is because separate kerbside food waste collections are either highly subsidised, or are proven to peak at a maximum of around 40% success rate and then plateau or fall**.

Yet we note with concern the Mayor's intention to follow the UK tendency to pursue a single solution of kerbside collection for road transport to commercial or merchant anaerobic digestion

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(AD) facilities, in the hope of a better result than other highly disciplined population centres. This is in contrast to the most environmentally advanced nations who are constantly evolving food waste policy to incorporate new technologies as they emerge, alongside introducing systems for encouraging consumers to minimise their wastage of food.

In the drive to support evidence-based policy, InSinkErator, is committed to extend experimental work in the UK to ensure that robust scientific study scrutinises the positioning of FWDs among the basket of options to maximise recovery value from food waste. Working with the University of Sheffield (UoS) Department of Water and Civil Engineering, Albion Water Group and part-funded by the Engineering and Physical Sciences Research Council (EPSRC) a new project has commenced in Upper Rissington, Gloucestershire, **to quantify FWDs' potential contribution to the circular economy.** Here, using field trials, laboratory testing and scientific modelling techniques, the use of FWDs and the consequential effects on the sewer system, wastewater treatment and bio-resource recovery are being investigated at full-scale, in a three-year programme.

This work aims to provide a rigorously science-based tool to measure biogas recovery where FWDs are used to process unavoidable food waste, from a range of common UK food groups. The associated life cycle assessment will take account of measurement of the environmental impacts on the sewers and waste water treatment systems with AD capability, to ultimately permit a calculation of the carbon and monetary cost-comparison for production of the resulting biogas.

Key Points

- Households need a flexible range of environmentally sound options to allow them to choose the food waste management system that best fits their living conditions.
- **FWDs are being used to resolve food waste collection challenges in flatted properties in Sweden and the United States.**
- The current policy bias which encourages the **separation and storage of food waste** to take to the kerbside for separate collection **is challenging for the elderly, infirm, transient inner-city populations, as well as those in flatted properties. Policy enforcement is limited by these inescapable facts.**
- Pursuing **a single prescriptive solution will prove a barrier to innovation**. It will not keep pace with the environmental agenda and threatens to limit the ultimate achievement.
- AD technology requires a constant stream of high quality feedstock. This runs counter to the crucial aim of domestic food waste reduction and prevention.
- AD is also vulnerable to problems caused by common domestic food waste contaminants such as cling film, paper, fragments of china or glass. All of these are removed when using a food waste disposer.
- **When stored in restricted spaces food waste smells, contaminates and reduces the value of other dry recyclables.**
- Food waste disposers can improve the recovery of other waste fractions.
- Separate food waste collections are technically and economically untenable for some local authority waste collection routes**.**
- **Participation in separate food waste collections initially attracts the willing and able and subsequently falls or plateaus.**

- The most environmentally advanced nations, including **Sweden, Denmark and the Netherlands**, are increasingly examining and implementing alternative technologies, including FWDs, to meet Circular Economy criteria in the light of plateauing separate food waste collections.

Encouraging consumers not to over-purchase and then to maximise their use of edible food should be inter-linked with methods of recycling unavoidable food waste that are suited to Londoners' living conditions. Even in those countries with mature recycling cultures and highly disciplined populations, participation in programmes relying on household separation of food waste for kerbside collection achieve a certain level of participation (of the willing and able) and then plateau. While in urban environments, improving the capture of domestic food waste still challenges recycling targets in most cities worldwide.

There is no one-size-fits-all, single, solution that will suit city and suburban dwellers, those in flats, city terraces or spacious detached homes. Demographics also play a part. With an increasingly aging population successful policy must also take account of the disabilities of the elderly or infirm. Education cannot help a limited-mobility householder to carry their food waste out to the kerb or a communal bin. While some of the poorest recycling rates reported by local authorities are among student communities, it is reasonable to assume that student participation could be addressed with education and incentives, but legislation would be costly to administer, unpopular and ineffectual.

In 2014-15, 45% of local authorities in England did not offer separate food waste collections due to the complications and costs associated with this form of retrieval. Wales invested £70 per household/p.a. in local authority subsidies to support mandatory separate food waste collections. Nevertheless low success rates are reported for Cardiff, especially in the city centre and student areas. A comparable initiative rolled out across Greater London would require a commitment of over £231 million[1] per annum.

We have previously made submissions to the GLA Environment Committee on a number of the issues under consideration on 15 October 2010, 14 January 2011 and 27 July 2017.

The contamination issue is often overlooked and under-reported. The risk of industrial disputes over waste collections also have to be considered because of the danger to public health, especially where food waste is concerned, which can be particularly hazardous in densely populated urban environments. The cost to local authorities of re-sorting so-called contaminated recycle bins is said to be the primary reason the vast majority of the waste is being rejected. BBC Breakfast reported that 97% of the rejected rubbish was incinerated or sent to landfill in 2013-14 - the most recent year for which such figures were available. Just over 173,000 tonnes of rejected waste was incinerated or sent to landfill in 2011-12, with the figure rising to 270,000 tonnes two years later.

Across Europe there is an impetus to recover critical resources at waste water treatment. Increasing recovery of 'bio-resources' (biogas and soil improvers) at waste water treatment works (WwTW) has most recently been recognised by the water regulator OFWAT as a key strategic objective in its Water 2020[2] regulatory approach for water and wastewater services in

[1] GLA estimate of 3.3million households in 2011

[2] http://www.ofwat.gov.uk/water-2020-regulatory-approach-water-wastewater-services/

England and Wales. Politico Europe reported on the 12 August 2016 that the European Biogas Association was calling for the European Commission to encourage wider use of sewage for biogas production emphasising that Nordic countries were already operating a large number of initiatives in this area. The evidence from Sweden mentioned below highlights that food waste co-mingled with sewage at WwTW can enhance biogas and soil nutrient production, hence we would argue that policy in relevant areas of London should better reflect these trends.

In just one example, a 10 year study in Surahammar[3] Sweden, indicates that the addition of ground domestic food waste from FWDs to the waste water has increased the recovery of biogas at waste water treatment (with AD capacity) by 46%, with no impact on the sewers or sewer blockages. Overall Surahammar's waste strategy decreased the tonnage of waste to landfill from 3600 tonnes in 1996 to 1400 tonnes in 2007.

Recognition of the need to improve food waste capture and resource recovery at waste water treatment has prompted a recent increase in FWD studies. Reports by DANVA[4] in Denmark, Lulea[5] and Lund Universities in Sweden and STOWA[6] in the Netherlands have been driven by the pursuit of Circular Economy policies, including the need to increase the production of biogas and to identify secure supplies of phosphates and nitrates.

Less than 6% of homes in the UK currently have a FWD, while in the United States it is calculated that on average at least 50% of homes have a disposer. The City of Los Angeles estimates that 80% of local homes are fitted with a disposer and yet they are seeking to increase FWD usage, to reduce landfill and increase resource recovery. The Bureau of Sanitation, Wastewater Engineering Services Division has recently awarded a contract for a US$2million pilot project[7], similar in scope to the work proposed by UoS, to monitor FWD usage in 500 homes, in West Los Angeles, from kitchen sink through to recovery of biogas and soil improvers at waste water treatment. In Los Angeles they are seeking to upgrade installed equipment and encourage their households to put all unavoidable food waste into their disposers.

Similarly to London, the ambition of Los Angeles is Zero Waste and they view FWDs as a critical tool in this aspiration. London should consider this example, along with the policies adopted in Denmark, Netherlands and Sweden, where FWDs are incorporated into their methodology.

A refinement of the use of FWDs has seen a number of research-led schemes in the EU that seek to maximise biogas production, produce high quality soil improver, and boost the extraction of vital nutrients such as phosphates and nitrates.

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[3] Evans, T.D.: Andersson, P.: Wievegg, A.: Carlsson, I. (2010) Surahammar – a case study of the impacts of installing food waste disposers in fifty percent of households. Water Environ. J. 241 309 – 319

[4] Clauson-Kaas,J. et al (2011) Food waste disposers: energy, environmental and operational consequences of household residential use. ISBN: 978-87-92651-05-1

[5] Mattsson,J.; Hedström, A. and Viklander, M. (2014) Long-term impacts on sewers following food waste disposer installation in housing areas– Environmental Technology, DOI: 10.1080/09593330.2014.915346

[6] STOWA (2015). Principles for implementing LCA: food waste in the water chain. Stichting RIONED/STOWA 2015-W-02.

[7] City of Los Angeles, (2016) Department of Public Works, Bureau of Sanitation (LASAN), Residential Food Scrap In-sink Disposal Pilot Program, Task Order Solicitation (TOS) SN-64

In **Stockholm, the Royal Seaport Project[8] is building 12,000 flats,** from 2010 – 2030, using FWDs to capture food waste and recover biogas and soil nutrients.

Recent scientific studies at Lund University, Sweden, have shown that by separating black and grey water to isolate the nutrient-rich waste from toilets and food waste disposers for co-digestion at waste water treatment plants, with AD, biogas production can increase by over 70% (compared with a conventional system) and potentially yield a high recovery of phosphorus and nitrogen as biofertilizer[9].

As a result of such work, the most advanced schemes are in Sneek in the Netherlands, which already has 100 homes combining food and toilet waste in an innovative vacuum sewer system and a major development in **Helsingborg, Sweden (Helsingborg H+ project[10])** which aims ultimately to provide 10,000 homes, sending their food and toilet waste direct, via separate vacuum sewer pipes, to the local AD plant. **In Helsingborg the intention is to produce biodiesel as one of the products from the AD plant which will be used to power the towns buses and and utility vehicles.**

In parallel an **EU Horizon 20/20 research project, Run4Life[11],** has gathered together a wide range of research bodies and stakeholders to consider **improving nutrient recovery rates at waste water treatment** and it appears that both projects in Helsingborg and Sneek will serve as test sites along with other locations in Belgium, Spain and the Czech Republic.

Worldwide there is a growing trend to look at source separation infrastructure systems, as these are increasingly recognised as having promising potential for the more sustainable management of household food waste together with waste waters[12].

Of most relevance to London is the Helsingborg development which has been located where traditional separate kerb side food waste collection schemes are reportedly relatively successful; acknowledging that the best collection rates plateau at around 40%.

There is recognition that separate food waste collections have limitations and that there is a need for flexible, innovative solutions to meet the complex needs of residents who wish to manage their food waste responsibly. To maximise the recovery of food and other organic waste from households, it is important to make it as easy for London's population to view their unavoidable food waste as a resource and engage with systems that ensure recovery of its value.

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8 foodenergycircularecon.pdf

9 H. Kjerstadius, S. Haghighatafshar & Å. Davidsson(2015) Potential for nutrient recovery and biogas production from blackwater, food waste and greywater in urban source control systems- Environmental Technology, Vol36, 2015-Issue 13 pages 1707-1720

10 https://hplus.helsingborg.se/reportage-om-det-nya-avloppssystemet/

11 RUN4LIFE, Project ID: 730285, RECOVERY AND UTILIZATION OF NUTRIENTS 4 LOW IMPACT FERTILIZER

12 Skambraks A K., et al. (2017). Source separation sewage systems as a trend in urban wastewater management: Drivers for the implementation of pilot areas in Northern Europe. Sustainable Cities and Society 28 (2017) 287–296

Experience demonstrates that policy should not be a barrier to innovation. It is also critical to create the conditions necessary to take advantage of innovations in science and technology, as they rapidly develop, to meet the demands of the evolving environmental agenda and the Circular Economy.

The University of Sheffield has also produced a world-wide summary of current research on the use of FWDs in food waste management, which you may find useful. Should you require more details please contact our policy office copied below.

Yours sincerely,

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