

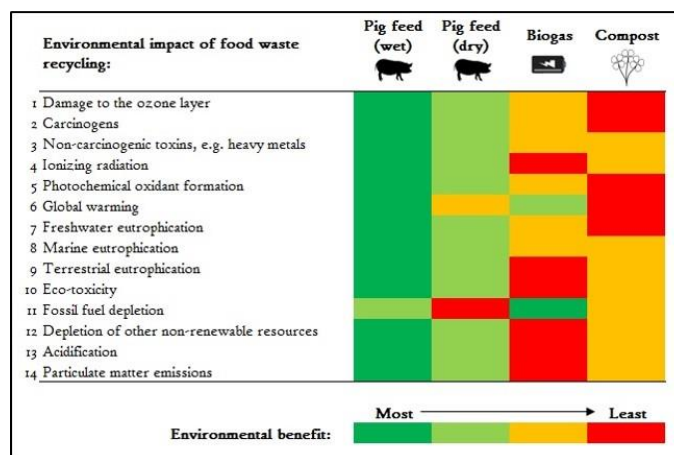
Environmental and economic data supporting the review of the ban on feeding meat-containing surplus food to omnivores

Summary of existing evidence for the Committee on Climate Change. January 2017.

The Pig Idea campaign encourages the feeding of surplus food no longer fit for human consumption to pigs to liberate food supplies to help feed people; protect landscapes rich in biodiversity, such as the Amazon rainforest; reduce the costs of pig feed for British and EU farmers; and create jobs and revenue in the new eco-feed industry.

1. Land use reductions from replacing conventional feed with heat-treated waste-based feed
 - Currently 3 million tonnes of former foodstuffs from manufacturing (mostly bakery / cereal goods that cannot go to retail for a variety of reasons) are already recycled into animal feedⁱ. It is estimated a further 2 million tonnes of former foodstuffs could be fed to livestock, reducing land use for feed crops by 1.2%ⁱⁱ.
 - If the EU were to authorise the feeding of heat-treated meat-containing surplus food to omnivorous non-ruminants, such as pigs and chickens, and EU food waste was recycled into animal feed at rates similar to current practice in Japan and South Korea, “the land requirement of EU pork could shrink by 1.8 million hectares. This represents a 21.5% reduction in the current land use of industrial EU pork production”.ⁱⁱⁱ
 - Feeding meat-containing surplus to pigs also could “reduce demand for up to 268,000 hectares of soybean production, which could “mitigate ca. 2.6% of the forecast expansion of soybean, reducing pressure on high-biodiversity tropical biomes accordingly”.^{iv}
2. Advantages of animal feed over anaerobic digestion

Sending food waste to animal feed scores better on 12 out of 14 environmental (e.g. eutrophication and eco-toxicity) and health indicators (e.g. carcinogens) - than anaerobic digestion (biogas) or composting^v. The calculations in the study were based on the current UK energy mix – for the energy needed to render the food waste safe – so if renewable energy was used feed could potentially beat biogas and compost on all indicators.



Source: Saleemdeep et al. (2016)

3. Current legislation and safety risk management

While there has been no outbreak of Foot and Mouth Disease in the US since 1929 and no outbreak linked to the use of catering and retail waste in Japan^{vi}, the disastrous 2001 FMD epidemic in the UK shows the critical importance of robust legislation and its effective enforcement. By robust, we do not mean an all-out ban on the feeding of any meat-containing by-products, surplus and waste food streams to all livestock, as implemented by the UK and followed soon after by European Commission. This may have been appropriate in the short term to address a disaster, but ten years

after the ban, The Pig Idea campaign and others now view this as an unnecessarily heavy-handed approach^{vii} (zu Ermgassen et al, 2016, [Danby, 2015](#), [Stuart, 2009](#)).

The ban is not enforced effectively at small-holder level. A survey of 313 smallholder farms in the UK found that 24% of smallholders fed uncooked household food waste to their pigs^{viii} Furthermore, Spanish authorities have confirmed with Feedback that the ban on feeding kitchen-leftovers is not enforced with smallholders who breed pigs for domestic consumption only.

According to the EC Scientific Steering Committee, "no scientific evidence exists to demonstrate the natural occurrence of TSE in farmed pigs, poultry and fish, which may create a basis for an intra-species progression of a TSE infection due to intra-species recycling" ([EC Scientific Steering Committee Opinion](#)). Chickens and pigs have never had prion disease, the only way researchers have made it happen in experiments is through injection in the brain which is biologically impossible ([Wells, G. et al. \(2003\)](#))

Evidence-based heat treatment specifications are central to new legislation. The UK's Department for the Environment, Food and Rural Affairs (DEFRA) newly released [study on the risks of feeding food waste to non-ruminants\(link is external\)](#) confirms the effectiveness of heating meat-containing surplus food to 100°C for one hour, but also highlights the risks related to potential errors in transport, storage or manufacturing that could allow for the re-introduction of pathogens through cross-contamination between treated and untreated product.

Building on the DEFRA study, Feedback is bringing together key academic risk experts to review the Ban on Feeding Meat to Omnivores (BFMO) by placing the approach to risk underlying the BFMO in a wider risk analysis in two ways. First, we are comparing the level of precaution taken in the BFMO to the risk management of other public health issues, such as campylobacter and the use of recycled manure solids and digestate from anaerobic digestion. Secondly, we broaden out the risk analysis by considering the specific animal health risks alongside the wider economic, social and environmental risks of not using all possible food waste for animal feed.

Lifting ban on porcine PAP in poultry feed

With porcine DNA detection method now commercially available, it is expected that the ban on porcine PAP feeding to chickens will be lifted soon^x. We see this as a first step to lift the swill ban, as it would help to reverse the mistaken public opinion on pigs and chickens being herbivores.

Economic case

- In Dec 2015, [feed costs](#) in key 7 EU pig producing countries made up between 56% and 69% of total production costs. [EU pig farming is in crisis](#), while the Japanese and S Koreans deliver safe waste-based feed at 40-60% of conventional feed.
- The use of food waste as animal feed has consistently grown in both countries (by 125% in Japan from 2003–2013, and by 35% in South Korea from 2001–06) ([zu Ermgassen, 2016](#) p.39.).

US and Japanese examples

Japan

- No disease outbreaks [linked to the use of swill](#) in Japan and South Korea (Muroga et al., 2012; Park et al., 2013, from zu Ermgassen, 2016).

- Our Japanese contact has confirmed that the detailed Japanese treatment and handling guidelines are being translated to English for our information.
- The most efficient Japanese model in our view is practiced at the Japan Food Ecology Centre^x. For a detailed description of the feed treatment plant, see Stuart (2009), pp. 277-279^{xi}
- Where Japan and South Korea formerly sent substantial quantities of food waste to landfill, in 2006–07 they respectively recycled 35.9% and 42.5% of food waste as animal feed (zu Ermgassen, Fig. 1, p.36)

United States

- The United States has been free of foot-and-mouth disease (FMD) since 1929. (according to [industry](#)). Classical swine fever (hog cholera) eradicated from US in 1978.
- USDA advice is simply: heat treat food waste properly. “Fully cooking food waste that is used as feed” is the last in a list of recommended steps for farmers to protect their farms from FMD. <http://www.fmdinfo.org/protectingyourfarm.aspx>.
- US government focus is on border control to avoid infected meat coming into the US in the first place (UK outbreak is thought to have come from illegally imported meat that then ended up in catering waste that was fed uncooked).
- In most states people can feed leftovers from their own kitchens to their own pigs, so if people have been eating undercooked meat that was brought in from Mexico for example, this is where an outbreak could start.
- There are some examples of established catering waste to feed practices in states where this is permitted (eg. Rutgers University catering services and Pinter Hog Farm)

See [Harvard guide](#) on feeding food scraps to livestock for more information.

US heat treatment specifications

The regulations in § 166.7 require that garbage be heated throughout at boiling (212 °F or 100 °C at sea level) for 30 minutes before being fed to swine. Requirements regarding the licensing of facilities that treat garbage for feeding to swine are contained in § 166.10. The requirement that the material be heated throughout at boiling takes into account a margin of safety to ensure that disease organisms of concern are inactivated. Although the scientific literature recognizes that heating meat throughout at 167 °F (75 °C) for 30 minutes is sufficient to inactivate the disease organisms, in many cases it is difficult on a practical level to determine precisely when every piece of meat in the garbage being treated has been heated to 167 °F throughout. Larger pieces of meat may take longer than smaller pieces to reach that temperature throughout. By requiring that garbage be heated at boiling throughout for 30 minutes, the regulations have provided a documentable and easily visible way to ensure that meat has been heated to a temperature sufficient to inactivate disease organisms of concern.

Evidence cited:

McKercher P.D., J.H.Graves, J.J. Callis, and F. Carmichael. (1974). Swine vesicular disease: virus survival in pork products. Proceedings of the Annual Meeting of the U.S. Animal Health Association; (78):213a–213g.

Edwards, S. (2000). Survival and inactivation of classical swine fever virus. Vet Microbiol. Apr 13; 73(2–3):175–81.

Scott Williams Consulting Pty Ltd. (2003), Persistence of Disease Agents in Carcasses and Animal Products. Report for Animal Health Australia, December.

World Organization for Animal Health (OIE).(2008).

https://www.aphis.usda.gov/animal_health/animal_dis_spec/swine/downloads/interim_rule_products.pdf

ⁱ EFFPA, 2017. European Former Foodstuff Processors Association. <http://www.effpa.eu/> Accessed 17.01.2017

ⁱⁱ zu Ermgassen, E.K., Phalan, B., Green, R.E. and Balmford, A., 2016. Reducing the land use of EU pork production: where there's swill, there's a way. *Food Policy*, 58, pp.35-48.

ⁱⁱⁱ Ibid.

^{iv} Ibid.

^v Salemdeeb, Ramy, et al. (2016) "Environmental and health impacts of using food waste as animal feed: a comparative analysis of food waste management options." *Journal of Cleaner Production*.

^{vi} Zu Ermgassen (2016)

^{vii} Danby, G. (2015) *The Pig Swill Ban – A Sledgehammer to Crack a Nut?* Thesis published online https://www.academia.edu/10739293/The_Pig_Swill_Ban_A_Sledgehammer_to_Crack_a_Nut

Zu Ermgassen (2016)

^{viii} Gillespie, A., Grove-White, D., Williams, H., 2015. Should cattle veterinarians be concerned about disease risk from smallholder and pet pigs? In: Presented at the Middle European Buiatric Congress 10th ECBHM Symposium, Maribor, Slovenia.

^{ix} Additional info on Porcine DNA detection – Porcine PAPs to chickens: file:///C:/Users/User/Downloads/ERM-AD483_report.pdf

<https://crm.irmm.jrc.ec.europa.eu/p/q/erm-AD483/ERM-AD483-PORCINE-pDNA-CALIBRANT/ERM-AD483>

Extracts from report: Regulation (EC) No 152/2009 has laid down the methods of sampling and analysis for the official control of feed [10]. The new Regulation (EU) No 51/2013 includes new PCR-based methods for the detection of animal constituents [4]. Using qPCR methods it is possible to identify PAP samples because of the presence of remaining species specific intact DNA fragments in the samples.

A qPCR method for the detection of animal DNA in feed stuff has been validated by the EU Reference Laboratory (EURL-AP).... This certified reference materials CRM for porcine detection is required not only because of the reauthorized use of porcine PAPs in aquacultures since 2013 [9], but also because of the expectation that in 2015, the ban on PAPs in feed will be further lifted and porcine PAPs will be allowed in poultry feed.

^x <http://www.japan-fec.co.jp/english/index.html>

^{xi} Stuart, T. (2009). *Waste: Uncovering the global food scandal*. Penguin.