

Food Waste to Animal Feed in the EU

The continued use of food wastes is permitted only where it can be demonstrated that there is no risk of contamination with meat, fish, or other animal products. This requires either that a facility handle no animal products, or they establish separate handling streams for animal and non-animal products, along with Hazard Analysis and Critical Control Point (HACCP) procedures.

Nevertheless, a large proportion of food waste that could be legally recycled under the current legislation already exists, as provisioned by the Commission Regulation No. 1017/2017 in the catalogue of feed materials. More specifically, the Regulation includes former foodstuffs (Figure 1, source 1), defined as food products manufactured for human consumption in full compliance with the EU food law but which are no longer intended for human consumption for practical or logistical reasons. The second type of source is fruit and vegetable surplus, which is composed of surplus derived from the industrial processing of raw fruit and vegetables, such as fruit pulp.

Figure 1 outlines the main results regarding the applicability of the F4F process. Concerning the legal framework on food waste and feed production currently in force, the analysis has proven not to be fully suitable for implementation in the EU due to two main drawbacks: The nature of the raw material used as input for the food waste transformation process (catering waste) and, secondly, the destination of the final product.

Markedly, sources 1 and 2 (former food and fruit and vegetable surplus) can be used for farmed animals since the absence of animal proteins makes them suitable for transformation into livestock feed within the EU safety requirements. Furthermore, all the sources listed in Figure 1 can be used for the production of pet food including catering residues, under specific conditions. Protein is the most expensive macronutrient in ecological and economic terms, and therefore the one requiring the most attention for sustainability¹. The animal protein content significantly determines the environmental impact of dog and cat food recipes, and there is an increasing demand for culturally acceptable products for pet owners, while still being nutritious and palatable to the pets². Eco-alert owners of pets- wish to balance their pets' dietary needs with the protection of the planet. Thus, the development of controlled measures for collecting, transporting, and storing raw materials is the principal condition for the safe use of the raw materials identified as livestock feed or pet food.

The third type of food surplus identified is catering residues, defined by Regulation (EU) 2017/1017 as all waste food containing material of animal origin originating in restaurants, catering facilities and kitchens, including central kitchens and household kitchens. The food material comprised in this category can be considered as one of the most interesting sources for animal feed production and derives from three main origins: Sludge due to kitchen procedures, the food surplus generated by unconsumed food portions (which can also be redistributed for human consumption) and plate leftovers, under specific safety conditions determined by HACCP procedures.

Source 4, namely the fish and meat surplus, is composed of animal products or by-products with or without treatment, such as fresh, frozen, and dried food products.

¹ McCusker, S.; Buff, P.R.; Yu, Z.; Fascetti, A.J. Amino acid content of selected plant, algae and insect species: A search for alternative protein sources for use in pet foods. *J. Nutr. Sci.* 2014, 3, p39.

² Carter, R.A.; Bauer, J.E.; Kersey, J.H.; Buff, P.R. Awareness and evaluation of natural pet food products in the United States. *J. Am. Vet. Med. Assoc.* 2014, 245, 1241–1248.

Swanson, K.S.; Carter, R.A.; Yount, T.P.; Aretz, J.; Buff, P.R. Nutritional sustainability of pet foods. *Adv. Nutr.* 2013, 4, 141–150.

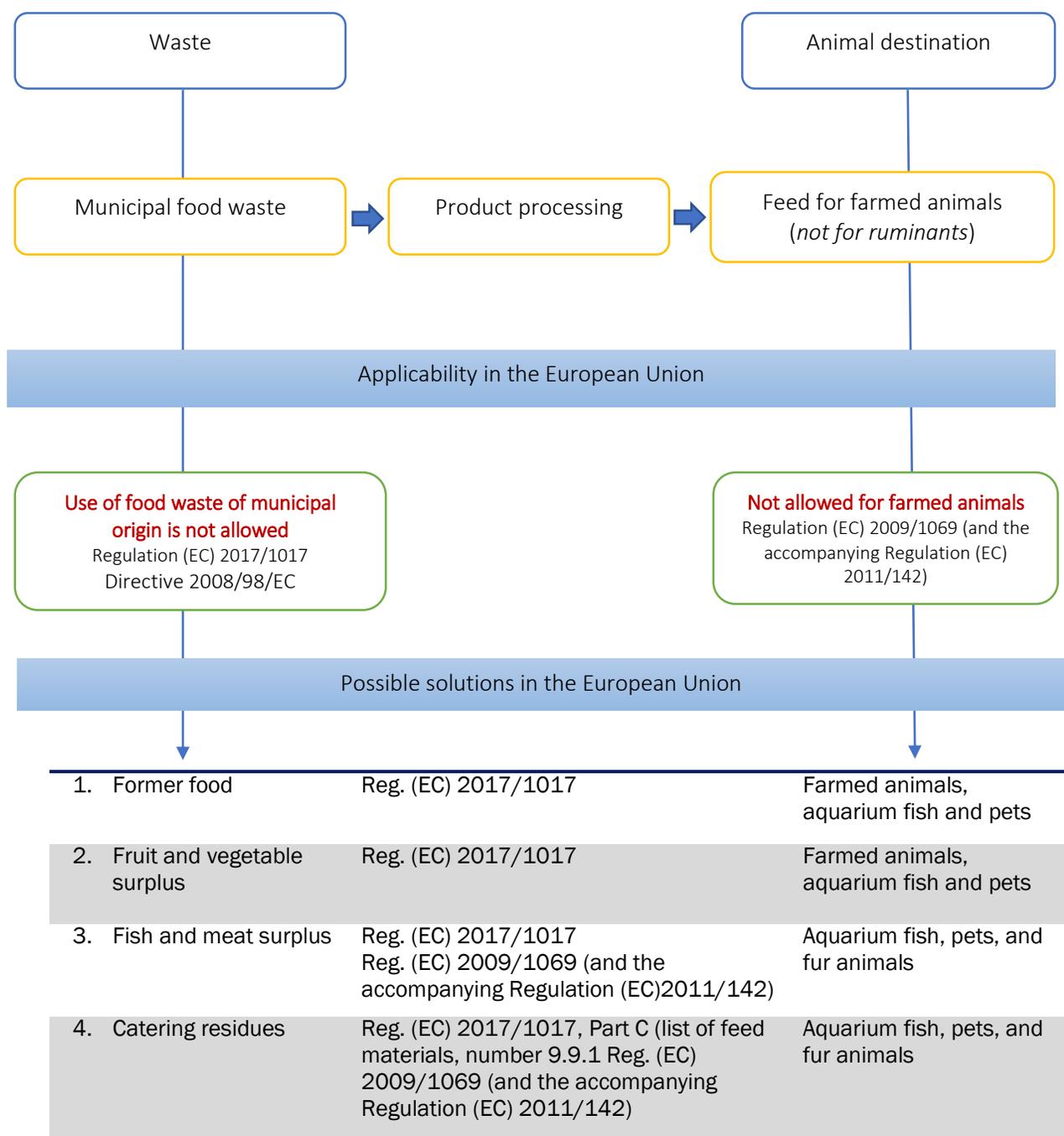


Figure 1. Applicability analysis of food residues transformation to animal feed for the EU.

The second critical point relates to the destination of the product, namely the type of animals that can be fed with the product originating from the food waste treatment. EU legislation Reg. No. 1069/2009 specifies the health rules regarding animal by-products and derived products not intended for human consumption. However, it does not permit the feeding of farmed animals with processed animal proteins. This measure derives from past crises related to outbreaks of foot-and-mouth disease, the spread of transmissible spongiform encephalopathies such as bovine spongiform encephalopathy (BSE), and the occurrence of dioxins in feedstuff.

The processed municipal food waste is not allowed in the EU following Directive 2008/98/EC which considers food and kitchen waste from households, restaurants, caterers, and retail premises as biological waste for incineration, landfilling, or use in a composting, anaerobic digestion plant.

Even when the final product analysed can show its compliance with safety requirements and a good nutritional profile, the European approach, which does not permit municipal waste to be used as raw material for the food chain, can be considered as the best solution for public health protection.

Relevant EU Legislation

1. **Regulation (EC) No 1069/2009** of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation). OJ L 300, 14.11.2009, p. 1–33
2. **Commission Regulation (EU) No 142/2011** of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council **Directive 97/78/EC** as regards certain samples and items exempt from veterinary checks at the border under that Directive (Text with EEA relevance). OJ L 54, 26.2.2011, p. 1–254.
3. **Commission Regulation (EU) 2017/1017** of 15 June 2017 amending Regulation (EU) No 68/2013 on the Catalogue of feed materials (Text with EEA relevance). OJ L 159, 21.6.2017, p. 48–119.
4. **Regulation (EC) 2017/625** of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC (Official Controls Regulation) (Text with EEA relevance). OJ L 095 7.4.2017, p.1.
5. Commission Delegated Regulation (EU) 2019/625 of 4 March 2019 supplementing Regulation (EU) 2017/625 of the European Parliament and of the Council with regard to requirements for the entry into the Union of consignments of certain animals and goods intended for human consumption (Text with EEA relevance.). OJ L 131, 17.5.2019, p. 18-30.
6. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance). OJ L 312, 22.11.2008, p. 3–30
7. Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (Text with EEA relevance). OJ L 150, 14.6.2018, p. 109–140.