# 1 Cat

We will assume that a cat requires around 2 to 6 percent of their body weight as food each day. The average weight for a cat of medium weight class with a perfect Body Conditioning Score (BCS) of 5 is 3.5 and 4.3 kilograms for females and males respectively[1]. Therefore, using an ideal weight of roughly 4 kilograms, a cat should consume 0.16 kilograms of wet food per day. Since cats are carnivores, it is assumed that their diet is entirely meat- or fish-based. The energy needed per cat and day, using the same CEEs as with the human diet, is:

$$E_{Cat} = CEE_{MeatAndSeafood} * 0.16kg = 13.068\frac{kWh}{kg} * 0.16\frac{kg}{day} = 2.091\frac{kWh}{day}$$

# 2 Dog

According to Tasso, the two most popular dog breeds in Germany in 2024 were the Labrador Retriever (25-36 kg) and the Golden Retriever (25-35 kg). In France in the same year the two most popular dog breeds were the Australian Shepherd (16-32 kg) and again the Golden Retriever according to centrale canine. We will take 30 kilograms to be the weight of the ordinary dog. We will make further assumptions that dogs need around 2 percent of their body weight in raw food, as well as that this raw food will be following a 60/40 rule diet of 60 percent meat and 40 percent vegetables and fruits. As with cats we will use the same CEEs as we did with the human diets. Therefore:

$$E_{Dog} = 0.02 * 30\frac{kg}{day} * (0.6 * 13.068\frac{kWh}{kg} + 0.4 * 2.232\frac{kWh}{kg}) = 5.240\frac{kWh}{day}$$

# 3 Horse

Horses eat around 1.5 to 2 percent of their body weight per day in dry feed. Assuming a weight of 500 kilograms for an average horse the daily dry feed consumption is 8.75 kilograms. Using an embodied energy of barley of $0.78\frac{kWh}{kg}$ [2] we have:

$$E_{Horse} = 0.78\frac{kWh}{kg} * 8.75\frac{kg}{day} = 6.825\frac{kWh}{day}$$

# References


[1] Ellen Kienzle and Katja Moik. A pilot study of the body weight of purebred client-owned adult cats. *The British journal of nutrition*, 106 Suppl 1:S113–5, 10 2011.

[2] Muhammad Khan and N. Latif. Energy requirements and economic analysis of wheat, rice and barley production in australia. *Soil Environment*, 21:61–68, 01 2010.