

# The Circular Food Economy Model

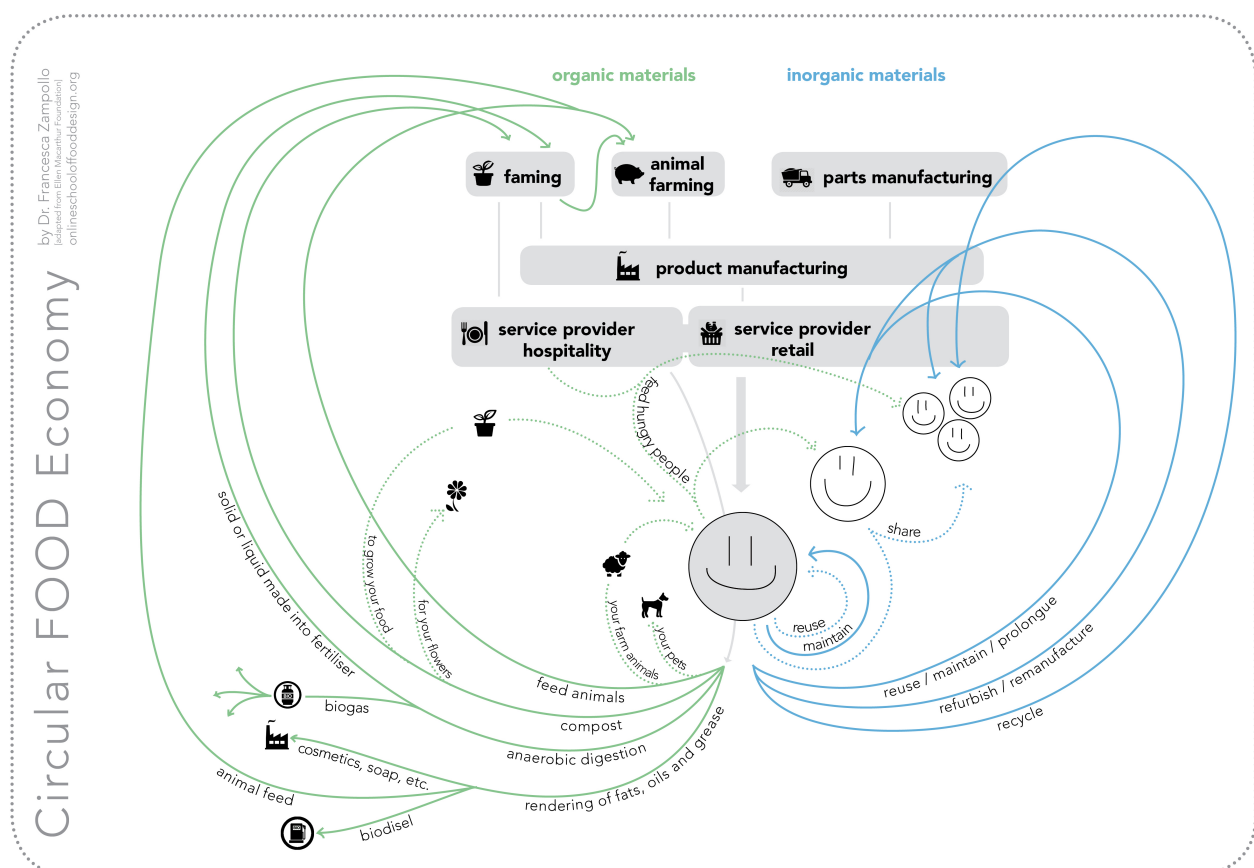
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The Circular Economy is a way of thinking, it is a goal that every designer and food designer should aim at. In this paper, I propose a model for the Circular *Food* Economy, a model that is specific to the food industry.

The Ellen MacArthur Foundation defines the Circular Economy as “restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimising negative impacts”. In order to understand circular economy it's useful to start from what was there before we started thinking circularly: the *linear economy*. In the linear economy, which unfortunately is the approach still used for much product design today, consists of taking raw materials from the planet's resources and use them to manufacture products; these products are used by consumers and then disposed of, ending up in the landfill. This type of economy is linear, from one step to the other, finishing with waste in the landfill. Subsequently, with the *reuse economy* we started creating one or more loops: the product or material is reused or recycled and, after this second life, still end up in the landfill. Here the attention to avoiding landfill was minimal and waste was still largely produced.

Nowadays there is a big effort being made to consider recycling as the last resource before landfill, and instead prompt reusing and remanufacturing towards a zero waste future. The ultimate goal for a truly environmentally and economically sustainable future should be reducing waste and minimising any type of negative impact. This mind-frame is what makes the *circular economy*, an economy that doesn't see waste but only resources.

Let's take a closer look at my model for the Circular Food Economy. This model is based on the circular economy model from the Ellen MacArthur Foundation, but includes various additions and a more detailed - in my opinion - visualisation of resource movement.



The economy is made by moving around organic materials, many of which are edible, and inorganic materials, all your plastic, metals, glass, etc. At the top of the diagram materials are made: farms and animal farms, and factories where inorganic materials are gathered and refined.

Materials then go through some manufacturing process: here is where metal becomes pots, glass becomes jars, and plastic becomes packaging, for example. The vast majority of plant products and animal products go through some type of manufacturing process. Here the organic and inorganic materials then meet: the jam meets the jar and a label and lid, and it becomes a jar of jam, the yogurt meets the plastic packaging and it becomes a yogurt cup, etc.

Once the product is processed, packaged and ready for distribution, it goes usually to a service where it is sold. These can be stores, shops, warehouses, markets, etc. A small amount of plant products, the part which is not processed, goes straight to the service provider: these are basically only fresh fruits and veggies. The same can happen for some type of fresh fish. Fresh meat, on the other hand, always undergoes a processing stage where the animal is killed, dismembered, and portioned. At the service stage products are sold, and here they meet the consumer.

The consumer uses the non-edible products, and eats the edible products. Let's see what happens to the non-edible products first, after the consumer has used them.

The first thing that the conventional circular economy model leaves out (at least visually), is the possibility for the user to reuse the product. This is the case of products that have solved their first function, and now can be used for a second function which was not intentionally designed. A simple example are drinking glasses that once were jars of olives, or jam, or whatever else. For example, when I finish the jam, so when the jar has finished its first function, I choose to reuse the jar for another purpose, using it as a drinking glass. This is quite simple, many people are already doing this, and certainly everybody could do it. In this case the object does not need to be altered, or fixed in any way before being used for a second purpose.

Then there are the products that broke or that have a malfunction and that can be repaired by the consumer herself; good design would have taken this possible maintenance into account, and would have designed protocols to help the consumer in this repair. For example, if my coffee grinder brakes but the parts and instructions are simple enough, I can fix it myself, if a part is broken I can call the manufacturer and they're going to send me the piece I need.

Another aspect that the circular economy model leaves out, is sharing and everything that is the sharing economy. Consider a pasta maker that travels between friends according to who needs it that week: sharing happens when the life of the product is still in its prime, when it's still functional. The product can be shared with someone we know, or within a small group of people, or it could be shared with strangers, like in the case of an airbnb apartment.

Now we enter into the possibilities for discarded products and materials when the product no longer is usable and functional, or when the consumer no longer needs it.

First of all the product can be sent back to the service provider where, if necessary, it is repaired, and where it can be sold to someone else who is able to reuse it or give it the necessary maintenance (e.g. second hand shops, eBay, etc.). I want to spend a moment here saying that I believe too little effort is done to educate people on the values of buying second hand. Second hand purchases was the norm up until 60 or 70 years ago, but then all of a sudden the culture of "the new" has invaded us, so much so that now for most people buying second hand is somehow unthinkable. Instead, I believe the reusing economy is a wonderful space for opportunities for designers and food designers.

Products can then be refurbished and remanufactured. In this case, when a products are discarded they go back to the manufacturer where, through a service provider, they are sold to other people.

And finally products are dismantled and materials recycled, which means that materials go back to the parts manufacturer, then to the product manufacturer, the service provider, and back to the consumer as completely new products.

And now for the organic products amongst which there is of course food. Let's remember that organic products are not only food, but they also include flowers, some body care products, some clothes, paper, etc.

When it comes to food specifically, the first thing that we can do with leftovers, and this is something that is not in the original circular economy model, is donating them with or without sharing economy services. There are for example apps like Leftover Swap that allow you list your leftover food, and whoever in the neighbourhood would love to have it, can come over and pick it up. Donating leftovers is of course something food services can do, for example donating their food to charities. From now on, it's worth remembering that every option the user has with her own leftovers, the food service provider also has.

What else to do with leftovers? A portion could be given it to family pets and farm animals, if you have any. This might seem obvious, but I think it is important to visualise this, as to make it clear that we have this option too; food designers could, for example, easily design a pick-up and drop-off service from houses to farms for households without their own goats, rabbits, or chickens.

Then, food can become compost. Compost is another highly underrated solution that anybody can implement to transform food waste into a high value resource. You could compost your own food and use it for your flowers or your own balcony garden. All that is needed to compost are two buckets, dry leaves or cardboard, and food scraps. For those who can't, or don't want to compost, food scraps can still be donated. Grow NYC for example organised 42 food scraps collection points where people can go whenever convenient to donate their food waste which will be used to make compost. Compost then of course is used to grow more organic materials and therefore goes back into the cycle.

For the next few options there needs to be a system in place; these are either solutions adopted by the town where you live, or by private services in your area. Again, this is yet another area with scope for design.

Organic material can undergo a process called *anaerobic digestion*, which produces either biogas or fertiliser made from solid and liquid components. Biogas can then be used at any point in the circular economy, and the fertiliser goes back into farming.

Finally, fats, oils and grease which cannot be composted, can be rendered to make biodiesel, animal feed, and some types of cosmetics, soap, etc.

To conclude, I want to bring your attention to something we all should think about everyday, and before buying any product. As a global economy today, we use resources 1.5 times the regeneration capacity of planet Earth. According to WWF and Global Footprint Network, in 2017 humanity used up its allowance of planetary resources (such as water, soil, and clean air) by August 2. This means that humanity lived on "credit" for the rest of the year. We started using more resources than earth is able to regenerate back in 1971, and since then, Earth Overshoot Day as arrived earlier every year. It was August 13 in 2015, September 22 in 2003, and October 21 in 1993. <http://www.overshootday.org/>

Circular Economy definitely is a good way to move forward. The Ellen MacArthur Foundation website lists the three principles of Circular economy: "1) Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows. 2) Optimise resource yields by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles. 3) Foster system effectiveness by revealing and designing out negative externalities, which includes reducing damage to human utility, such as food, mobility, shelter, education, health, and entertainment, and managing externalities, such as land use, air, water and noise pollution, release of toxic substances, and climate change." You can see how the application of each of these three principles is visible in the Circular Food Economy model too. As

food designers we should remember these principles in your future practice, and thus contribute to this planet with sustainable propositions.