

## Desperation for Refrigeration

Article by **Marta Sapala**

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**Kitchen white goods – ubiquitous modern appliances revered for lightening household chores – are seen as a necessity. The fridge, in taking on bulky proportions, has transformed from basic food storage utility to luxury item. Has what was once practical, yet conceals greenhouse gases, become a guilty environmental consumer trap?**

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It whirred away for six years, then one day it just froze. The humming stopped, and the next 24 hours saw the temperature inside it slowly equal that of the kitchen. Its refrigerant had dissipated into the atmosphere; the repairman who topped it up pocketed his handsome fee, declaring: 'I can't provide you with a guarantee, because the gas could well have leaked out again by tomorrow'. Two days later it had done just that. With it being the end of August, it was hot, and I thought: what would it be like to live without a fridge at all?

### **A cool embrace**

It took me a few days to adjust to this new way of living. I mercilessly threw things away as though what had previously been in hibernation had suddenly begun to decompose. Then I started shopping carefully: microscopic quantities, with a specific day in mind, prioritising whatever looked like it was losing vitality. And after finally converting the orphaned vessel into a wardrobe, I let the world know on Facebook, using a stock photo to illustrate it. It was a void, draped in the frosty hue of Arctic ice. 'I'm looking for people who live without a fridge,' I wrote. Dozens responded.

They – for the most part – did not choose the fridge-less life. They were forced into it by the situation: a renovation, moving out, a breakdown. One person lost their house and moved into a security office on an industrial estate; another went to work on an eco-farm, which simply didn't have a fridge. Another had moved to their aunt's whilst their studio was getting renovated. The fridge was in the kitchen – working, even. But, despite the makeshift duct tape, the door wouldn't close. Suddenly, it was possible to simply do without.

I looked at kitchen after kitchen, at the idle spaces therein, at the cracks, the shadows, the afterimages, the imperfections. Fridges-turned-whiteboards, fridges-turned-cabinets, fridges with no discernible purpose; unplugged fridges, giving off the smells they once managed to absorb, dormant yet alert, with mustards and sauces rattling amongst the shelves.

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Their owners and users said the same thing: surprisingly, they throw away a lot less food. They buy more often, for less. They cook less extravagantly, and leftovers – if any – are eaten the next day. Meat spoils easily, so they gave it up. And butter? They only eat it in winter (yes, the windowsill works great). They drink beer as soon as they buy it. Stew (vegetable, of course) can be stored in the oven and the soup – if it turns sour – can be eaten.

Scientists studying the extent of food waste know all too well that such claims are not to be taken seriously. Humans – when asked to testify about what perfectly edible food they throw away – tend to obfuscate, hide and deny. But the link between the technology used to extend the shelf life of food and how much of it we throw away is a clear one; indeed, it is a hot topic for scientists who study the so-called archaeology of household waste. The bigger the fridge, the bigger the shopping. The bigger the shopping, the bigger the waste. We treat it as a space where time stops, a fortress inaccessible to the rest of the (micro)world. The door closes, the cold light goes out; the food – organic matter, a terrain of constant processes – becomes immortal.

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Only, it doesn't. The cold merely slows down cellular metabolism and numbs microorganisms, slowing down their spread. But it doesn't stop it. That's what frost does – and even frost can't completely halt decomposition.

### **Top shelf, 10 degrees Celsius: mustards and jams**

Experts estimate there are nearly 1.4 billion domestic fridges and freezers in the world. Statistically, in Europe, the space of a single refrigerator is shared by two people. However, artificial cold accompanies food not only in the final stage of its life (in our homes), but also throughout its journey. It allows us to deceive seeds into thinking it's time to prepare for germination; we keep brewing bacterial cultures in check, preventing them from growing too large; we inhibit the action of plant hormones responsible for fruit ripening or stimulate sugar metabolism in tubers. The cold gives us the upper hand in the fight against the competition: the rest of the world. This world is invisible to us; it graces us with proteins, carbohydrates and fats. Helping plant tissues to maintain their firmness, low temperatures also make food more appealing visually. There's a nice word for this: turgor. Without turgor, that lettuce sitting in your fridge would be in the bin.

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Sometimes the cold also accompanies the food on its final journey. If it is not sold within the allotted time and is written off as waste, it ends up in a cold sarcophagus hidden behind an armoured door. The moment it is scooped up by the bin lorry is like the first breath of tropical air after leaving an air-conditioned room; it's not long before the natural processes get underway.

Any break in the chain of chill is – according to the modern approach to food distribution – an emergency. Hibernating food suddenly gasps for air and starts to make up for lost time. An apple, kept in a cold warehouse for a year, from which virtually all oxygen has been pumped out, lingers in dormancy.

A wisp of air brings it to life. It wants to ripen, to wrinkle, to give its seeds to the world. And this does not necessarily go hand in hand with its appeal as food.

### **Middle shelf, 4 degrees Celsius: ham (wrapped, of course)**

In the sociology of poverty, several indices are used when trying to assess the extent of economically deprived communities. Not having a fridge – along with the absence of a telephone, colour TV, limited access to protein, and leisure activities being out of reach – is one of them.

There are just over 27,000 households in Poland living without the equipment which allows food to be cooled to a temperature of 4 degrees (which, according to researchers, is the optimum temperature to limit the spread of one of the most virulent bacteria – listeria). That's as much as the entire municipal housing stock of Gdańsk. Those going without do not consciously choose to live a fridge-free life. Often, they live without a kitchen, electricity, or money; indeed, they may live without any of these, just about getting by from one day to the next, in buildings that can hardly be called a dwelling.

Those who consciously choose to live without a fridge are a handful that fall within the statistical margin of error. Electing to go without an appliance so ubiquitous in homes that it would never occur to anyone to analyse it in terms of superfluity, may seem extreme. Or a bold act of self-awareness.

Because the fridge, especially against the backdrop of deceptively dangerous smartphones, Earth-warming air conditioning, and clothes dryers which use dirty energy to hasten natural processes, may seem innocent. But it's not. It has a clear contribution to the situation in which the Earth currently finds itself. It is tangible, and calculated in the cubic decimetres of cooling agents released into the atmosphere, as well as in degrees Celsius, which heat it up. Although F-gases, or hydrofluorocarbons (HFCs) – the successors to CFCs – may not destroy the ozone layer, when they are released into the atmosphere – even as a result of an accident or improper disposal – they cause several thousand times more damage than carbon dioxide.

### **When F-gases, the successors to CFCs, are accidentally released into the atmosphere, they cause up to several thousand times more damage than carbon dioxide**

The fact that something needs to be done about this has been long-discussed. In 2016, nearly two hundred countries signed an amendment to the Montreal Protocol in Kigali. According to the agreement, virtually the entire world is to stop selling and servicing appliances cooled by F-gases by 2028, replacing them with organic refrigerants. Despite this, millions of fridges, coolers and freezers remain on the market. Evidence of their damaging potential is hidden on their safety information panels. Each one, especially if not disposed of properly, can carry serious consequences for the climate.

In 2017, the Drawdown report was published, which, in light of recent statements made by the Intergovernmental Panel on Climate Change (IPCC), could be considered worryingly optimistic. The researchers carrying out the study decided to determine the potential of one hundred selected efforts to curb climate change, ranking them in order from most to least effective. Cooling appliances – refrigerators and air conditioners – came first. According to the report, if we were able to prevent leaks when replacing refrigerants, we would save the atmosphere nearly 90 gigatons of carbon dioxide emissions.

In third place, saving 70 gigatons, was the reduction of food waste: the two categories remain in a strong, chilly embrace with one another.

**Bottom shelves, between 7 and 10 degrees (adjustable humidity): lemons and lettuce separate**

Ever since the first settlers, humankind has tried to extend the shelf life of the food available at any given time. In doing so, man took advantage of nature's helping hand, in winter using ice from frost-cut lakes or transported from glaciers. Large blocks of ice cut in January could be kept year-round; all one had to do was transport them to ice houses dug underground and cover them with sawdust. The insulated goods would lie dormant until next winter, bringing delight to the residents of manors and palaces.

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But the world's hunger for cold was growing, and by the end of the 19th century it was clear it could not be satisfied by nature alone. Thankfully, technology came to the rescue; by controlling the metabolism of food, man began to master the entire system of food production and distribution. If one were to think of equipment symbolic of the Anthropocene era, the refrigerator would certainly come to mind.

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The ability to control temperature is one of the core pillars of today's globalised food production and distribution system. But it also has a huge impact on what goes onto – and comes off of – the dining table. Without refrigeration, we would be eating shrivelled apples and potatoes dotted with sprouts in the pre-harvest season, and fresh dairy, meat and fish would still be occasional delicacies, available to the privileged in one way or another. Tropical fruits would disappear from general sale, going into hibernation from the moment they are harvested until the moment they enter the shop floor. We would eat more modestly, probably in accordance with the natural crop cycle in our geographical zone – crops that grow nearby do not need to travel thousands of miles to reach our plates. The cold, or rather the way we use it, has not only widened our horizon of choice, but has also instilled in us the belief that we can actually have everything, here and now, right away, at our fingertips. It is also one of the reasons why we have stopped viewing food as an extremely valuable resource whose shelf life can be extended by putting in the effort: drying, salting, curing, fermenting, preserving. Now all we have to do is open the fridge door.

**Freezer, minus 18 degrees: not just for ice cubes**

The Warsaw Museum of Technology has in its collection the oldest Polish refrigerator, dating from 1969. The L9 model, manufactured by Wrocław Metal Works (Wrocławskie Zakłady Metalowe) *Polar*, has a capacity of 40 litres. With just enough space to chill a few bottles, nowadays such a volume could, at most, be enough for a camping trip or minibar.

The Einstein refrigerator, as this type is called, was popular before condensing refrigerators came along, and its performance is not very impressive. It could maintain a temperature of about ten degrees, and go down to minus three in its microfreezer, which had about enough capacity for a few chops. That said, it was fairly cheap and – unless it leaked – virtually indestructible. Butter, milk, cheese and leftovers from dinner were stored in it. It can still be found in some homes, and on online marketplaces for around 200 Polish złoty (just under £40). Note: it still refrigerates.

Today, the average fridge bought in Europe has a capacity of around 200 litres – still quite a lot less than on the other side of the Atlantic. And it is its size (especially its depth, which makes food stuffed under the back panel disappear from view) that drives up household waste. A large refrigerator is well-equipped for excess stockpiling and waste; it brims with freshly-bought groceries and leftover lunches, merely delaying the inevitable execution of the death sentence passed the moment they were swept off the plate. The modern-day refrigerator is like a repository of remorse, a sarcophagus illuminated by an Arctic hue; the emotions that come with throwing away food (shame, embarrassment, anger, regret) – deposited within – quickly cool off. They decay, just like food. After all, it's far easier to tip soup that's 'gone bad' down the sink than it is fresh soup, still steaming, straight from the saucepan. One may think: oh well, it's gone off, nothing I can do about it.

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Refrigerators, by extending the lifespan of fresh food, give us time in credit, which must be swiftly repaid when they refuse to cooperate. If the flow of cold is ever interrupted, at home it's not too big a deal. Everywhere else, however, the procedures are crystal clear: the food must be disposed of.

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When the industrial freezers at one of Poland's food chains, located in the basement of a building dating back to the 1950s, went down a few years ago, some of what was doomed to thaw went to the staff. Having been eating melting cream cakes all day, they were unable to save it all, however. The wheelie bins filled up that day.

**Drawer (set to chill mode), minus 1 degree Celsius: fish and meat**

In 2017, the World Food Summit in Copenhagen debated how to reduce food waste. One of the many ideas raised came from the director of a multinational food company. The solution, ladies and gentleman, is predictability, he said. Call restaurants to tell them what you are going to eat; let the shops know what you are going to buy. Smart fridges will help with this – upon entering a shop, they will scan the interior using cameras, send you a shopping list and suggest that you do something about that cauliflower stuffed in the bottom drawer. Hey, Marta, fancy some cauliflower soup today? Please eat me, Marta, because if you don't, I'll write about it on your profile and you'll be embarrassed.

**Smart fridges could make throwing away food less intimate, and therefore less likely. The price? Your privacy.**

A cool 'home hub' connected to the internet (that's the marketing buzzword used by manufacturers of smart fridges) could make throwing away food less intimate, and therefore less likely. The price paid for this will be, as usual, information about our daily lives: what we buy, eat and throw away. Those who gain access to this knowledge will, no doubt, be delighted.

We managed without a fridge for several weeks. Eventually, we bought a new one. A free-standing one, of average size (by European standards), only without the drawers that keep vegetables in a state of delicious turgor (a pity, I know). Neither does it have an ice maker, an in-built touch screen, or any kind

of surveillance apparatus. It's filled with a refrigerant that, theoretically, has no greenhouse potential, but is now beginning to gurgle alarmingly.

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Marta Sapala is a journalist who studied at the University of Warsaw. She works with “Polityka” and “Zwierciadło”. She is the author of several books, including “Less. An intimate shopping portrait of Poles” and “In vain”.

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