

## Domestic Waste Paradox

by

Humphrey Boogaardt

The way domestic waste is collected may vary widely depending on where you live. These notes relate to practices I observed in parts of Perth, Western Australia <sup>1</sup>. There are paradoxes in the process <sup>2</sup>. There is the standard bin collection from the verge, the service of which is paid for through the council rates. Residents separate their waste according to the categories landfill (red-bin), greens (green-bin) and recyclables (yellow-bin). Then there are the twice-yearly free verge collections.

At the verge collection the waste categories are often only greens and waste. In the “waste” pile it is not uncommon to find many recyclable items like cardboard and metal. A lot of residents need to be educated how it works. Regarding cardboard people could have cut most of it up and put it in the yellow recycle bin. The metal has not been put in the recycling bin because the “type” was not listed in the council's recycling guidelines. In both cases valuable resources go to landfill, it means that a lot will end up unnecessarily in landfill and costs the rate payer extra tipping fees. From my observation when going past the piles in the verge there are a lot of recyclables amongst the waste. But what to do with a bulk rubbish item created just days after the verge collection? This has changed since the introduction of ‘Verge Valet’. Store it till the next verge collection in just under six months? Or go at your own expense to the tip and pay a fee for dumping the item (assuming it is not recyclable). In that case the individual pays for everything while it saves the council money. While if possible, waiting for the next verge collection there would be no extra costs to the individual since the costs paid for by annual council rates. And, likely the waste brought to the tip will be sorted better under guidance of tip personnel, than what is often observed along the verge.

There is also a lengthy list of items you can put in the yellow recycling bin. I always wonder that if I put a piece of clear window glass in the bin how it can be distinguished at the recycling centre from a piece of clear bottle glass on the council list? That problem does not exist when going to a recycling depot run by the same council where all glass can be dumped in the same container. Similarly, there are prescriptions of what metals can be recycled if you put them in the yellow-bin. However, when you take any metal to the council run recycling centres you can dump it there in one big pile. So why can I put fewer distinct types of glass or metal in my yellow bin than are accepted by the staff at

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<sup>1</sup> Changes are made in various parts of Perth regarding domestic waste. Some comments may be out of date, but general philosophy is still valid.

<sup>2</sup> This document is an updated and expanded version of the original from 2016.



the recycling depots? What is the technical difference between clear bottle glass and window pane glass? At the same time, you can have all types of bottle colors in the same bin.

Council guidelines also specify what can be put into the Green-bin, namely only plant stuff from the garden. So, if lettuce is grown in the garden, then let say the outer leaves can be put in the green-bin. However, the outer leaves are from a lettuce bought in the shop they must go in the waste-bin. The same for a rotten apple from a tree in the garden can go in the green-bin, but a rotten apple in the kitchen that was bought in the shop must go in the waste-bin. This has changed when FoGo bins were introduced.

From hearsay when a council increases the disposal costs of chemicals the amount of chemicals found dumped illegally somewhere increases. What does cost to retrieve drums with chemicals dumped somewhere in the bush and cost compared with increased tipping fee? That is not even considering the environmental cost spilled chemical when dumped illegally.

I understand there must be an incentive for proper recycling and there is a cost which is quite high to deal with waste disposal. Because of the high cost of waste, I suppose there should be a disincentive for not recycling. We should come up with a totally different model of costing waste disposal. Make access to the tip free. Have more inspectors at the tip that check what is about going to be dumped. If there are recyclables in the “waste” money / fine must be paid and recyclables to be taken out of the waste <sup>3</sup>. Introduction of a “tipfee” levy for when a chemical product is purchased, so then it can be brought to the tip at no cost.

In Xàtiva, Spain, you can bring to the ‘Ecoparque’ (= a recycling centre) your garden waste, metal, old paint, chemical’s containers, wood (including doors), plastic chairs and building waste. When you enter the Ecoparque you enter your DNI (=Spanish national ID number), they check the amount together it is converted to a discount on your local council taxes. You dump the waste into designated containers. It is a private company that runs the Ecoparque on behalf of the city. In Australia we do not have national ID card councils may have to provide ‘Rewards’ cards to owners to get discount. Tenants are to be provided by the landlord with this ‘rewards’ card, the credits go to the landlord. Once a year the discount values are refunded to the tenant or deducted from the rent. This is important because otherwise there is no incentive for tenants to bring waste to an Ecoparque.

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<sup>3</sup> More stringent and extensive systems are needed for waste from the building industry, they are extremely wasteful which well documented.

Many councils in The Netherlands <sup>4</sup> use communal in-ground waste collection systems that require pre-separation of waste by the resident (Fig 1, 2). Most of these councils also have you to use a pass to open the container for general landfill waste then you are charged €0.80. The recycling container is free. The idea behind this is that the more people recycle the more money they save, that is the fewer times they get charged €0.80. What happens is that many people put their general waste in the recycling bin or dumping the bag next to the container, in both cases saving €0.80 (Fig 2-a). So, it financially profitable not to adhere to the rules and the spirit of the recycling idea. However, the council is worse off because they must tidy up, what is in the recycling bins gets rejected by the recycler. For good clean plastic council may get €260 / ton which they miss out on when contaminated. In addition, the council must pay the incinerator to accept this contaminated plastic and then producing more CO2 when burned. In the province of Twente, The Netherlands, 90% of collected plastic is rejected by the recycling company. In Bologna, Italy, there is a similar setup with similar problems (Fig 2-b)



Fig 1-a : Various waste deposit containers in the Netherlands.

Therefore, some academics / experts in the Netherlands plea that there should be post-separation of plastics. That means that besides high valued plastics like PET with deposits on them, all other plastic goes to general waste and can mechanically sorted in post-separation process. Here governments policy has not considered that the packing industry uses new plastic instead recycled because it is cheaper due to low oil prices. The plastic to be recycled gets then not sold because it is more expensive. The question is what happens with that plastic? Should there be a levy on virgin plastic?

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<sup>4</sup> Information from The Netherlands is what I have observed and described in various Dutch current affairs programs.



Fig 1b. Three images of inner city in-ground rubbish containers in Bologna, Italy (2023).

A 10¢ deposit scheme, as in WA, will help with recycling of the PET bottles. Options to dispose of the non-recyclable plastics in bins at supermarkets Woolworths and Coles may help. In the Netherlands (2023) the ‘bottle deposit’ value is indicated as a sub-entry on a receipt at a supermarket.

There have been suggestions that rubbish trucks weigh every bin and according to weight charges the owner. Looking at the Dutch experience with the underground bins, it is likely that waste will be dumped in the recycling bin of which the content will go to landfill, because it is contaminated. Defeating the whole purpose of the scheme. Only if the bin is scanned for its content before emptied, the scheme could work. Logistically it means that recycling bin must be collected first so that when the scanner assesses the bin being contaminated it leaves it to be collected by the general waste truck. The latter will

charge the owner for the whole content of the waste bin going to landfill. Even this scheme probably does not work fully, with a likely increase in illegal dumping.



Fig 2-a : Rubbish next to the waste deposit containers. The visual result of that a pass is needed to operate them.

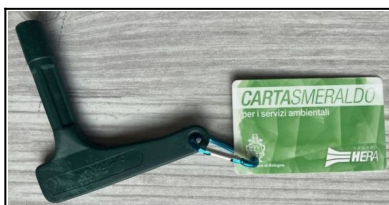
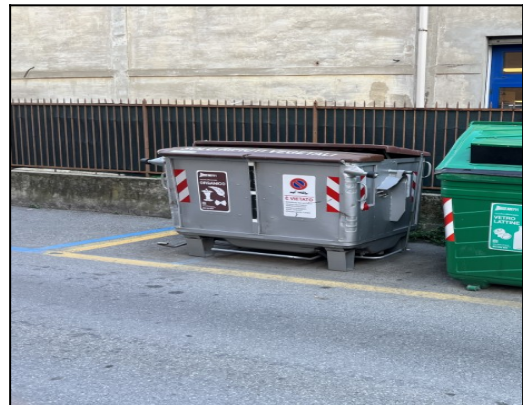


Fig 2-b. Different type waste containers in Bologna, Italy (2023). Recycling Yellow for plastic containers, Blue for paper and cardboard, Green for glass. The black container for general waste on the right can only be opened with the swipe card and here also waste dumped next to it. The black key is to open the brown lidded FoGo bin.

The other issue is not a waste management point but a need to emphasise to reduce plastics especially in the first place. In Italy in 2023 in supermarkets you are required to use disposable plastic gloves when selecting your fruit and vegetables. That adds to quite a volume of plastic waste every day. At the checkout they automatically charge you (€0.01-0.05) for a plastic carry bag even if you do not need one because you brought your own. A more senior person must adjust the bill if you want the amount to be removed, because the very small amount most people probably do not bother to ask for refund. From personal observations in Italy (2023) the amount of plastic used is enormous. A large part from bottled drinking water that everyone appears to be using, while the official water from the taps is fine. Chemical analyses for tap drinking water are available from official websites. Noticed in Spain (2023) in various supermarkets that pieces of cheese vacuum sealed in plastic by the producer is wrapped around with plastic-foil to have a price sticker on it.

Coming back to the illegal dumping, has there ever been a holistic analysis done to compare the actual cost of waste disposal incorporating the loss of revenue because something was illegally dumped and the cost of recovering the illegal dump. The question is that a good business model? Economists and accountants will say what will this all cost and who pays. This is a fair question. A problem is that normally input (resources) cost and the output (waste) cost are not part of the equation. The cost analysis appears to be on a very narrow viewpoint. Waste disposal needs to be looked at from Gaia's perspective. Items that end up in landfill while they could have been recycled represent a cost against the population at large.

Bypassing the aim of the recycling by bad behavior makes it difficult for people to stay motivated to recycle. As the example from The Netherlands shows to continue doing the right thing while knowing that there is only a 10% chance that what you have recycled is recycled takes conviction. This realisation could see fewer people to put an effort into waste separation.

The concept of "polluter pays" is correct, but how do get the polluter to pay is the question. A government regulated levy when purchased on all products that can be used to make people to separate waste. Financial incentives like deposit schemes appear the best way. Schemes like they devised in The Netherlands have the opposite effect. To reduce the amount of non-recyclable plastic waste the manufacturers and retailers must pay for the disposal by the end users of the products and packaging. The government needs to regulate that product and packaging needs to be recyclable. May be a plastic levy on all goods wrapped in plastic, the levy shown as a sub item on the receipt.

The domestic waste paradox is near intractable problem. User pays does not appear to work. Are fines for not doing the right going to work? Probably not because how can you police it. There definitely needs to be a shift in attitude towards plastics and waste in general. A “deposit levy” may be the way to go, even if the consumer themselves are not interested in getting the deposit back, there are likely others interested in making money from it.



Fig 3. In a short stay accommodation in Ourense, Spain, different colored bins for various waste products.

The “waste paradox” applies also for construction waste, even from small renovations, is a major problem as is shown in figure 3. In some places short stay operators use different colored compostable bags for their guests. In relation to construction waste progress is made with ‘recycling’, I argue that for 95% waste is not ‘recycled’ but ‘downcycled’. Recycled means that a product can be reused or used as input for the same material, like in the case of PET bottles. Downcycled is let’s say crushed brick and concrete that are used as a road-base.



Figure 3. At least 3 leaves of strapped bricks dumped after small renovation in Floreat, WA. Not visible 20 steel rods 4m long and of 5mm diameter that were dumped. This is only what was visible.

So it is necessary to rethink the waste issue which is much more complicated than sketched out in this essay. There need to be policy discussions between all levels of government and involvement of the private sector. In Australia many of the companies that deal with waste disposal are internationally owned and so should have great knowledge to other practices to improve what we do here and what they do over there.