A Load of Rubbish?
Introducing a Deposit Return Scheme to the UK

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Summary

A UK-wide deposit return scheme (DRS) can be expected to increase recycling rates for beverage bottles and cans from 70-75 per cent to 85-90 per cent, but at a disproportionate cost.

A DRS is expected to cost over £1 billion in its first year and £814 million per annum thereafter. The tangible economic benefits are expected to be less than £100 million per year. In financial terms, a DRS would be highly inefficient, largely because kerbside collection already recovers 72 per cent of these containers.

The government's impact assessment is only able to claim a net economic gain by including intangible benefits of £986 million per annum from a reduction in litter. This figure is highly questionable. The impact assessment neglects to include the much larger costs of unpaid labour that will be incurred by households having to collect, store and return empty containers. When the full costs and benefits are included in the analysis, there seems to be no economic case for a deposit return scheme.

What is a Deposit Return Scheme?

Under a Deposit Return Scheme (DRS), consumers are charged a small deposit for every single-use plastic/glass/metal drinks container they buy. The deposit is redeemed when the bottle or can is taken to a reverse vending machine or manual collection point. The aim is to increase recycling/recovery rates and reduce littering. The Department for Environment, Food and Rural Affairs has proposed a DRS with a deposit of 10-20p as part of a 'crack down on plastic pollution' (DEFRA 2018). It will work in tandem with the existing system of kerbside collection which covers 99 per cent of households.

DEFRA's impact assessment predicts that the scheme will cost £204 million to set up, with annual running costs of £814 million, i.e. a cost of £1,018 million in the first year. It predicts economic benefits worth £1,093 million in the first year. Over ten years, it expects the benefits of the scheme to exceed the costs by £2.1 billion.

The problem

Recent years have seen growing concern about single-use plastics, with the BBC's *Blue Planet II* series drawing attention to the amount of plastic pollution in the ocean and the danger it poses to sea life.

The EU's target for 2020 is to have 50 per cent of all waste from households recycled. In 2017, the UK achieved 45.7 per cent (DEFRA 2019). 13-14 billion plastic drinks bottles are used in Britain each year, of which around nine billion are made of polyethylene terephthalate (PET) (Voluntary and Economics Incentives Working Group 2018: 12-13). Between 4.3 billion and 5.6 billion drinks are sold in glass bottles and between 8.1 billion and 9.6 billion drinks are sold in metal cans (ibid.)

In 2017, the recycling rate for drink containers made of PET was 74 per cent. Recycling rates for glass and metal containers were both 70 per cent (Valpak 2019). DEFRA (2018b: 60) notes that these recycling rates are 'significantly lower than many other major developed economies'.

DRS systems in other countries

Deposit Return Schemes in other countries have deposits ranging from 8p (Sweden) to 22p (Germany). Table 1 shows the recycling rate for PET, glass and aluminium beverage containers in fourteen countries which have a DRS. Estimates vary, so more than one figure is shown for some countries. They usually exceed 80 per cent. In Finland, Norway, Germany, Lithuania and the Netherlands, they exceed 90 per cent.

Table 1: Beverage container recovery rates

	Date of introduction	Drink containers covered	Total recovery rate	Glass (FEVE)	Aluminium (European Aluminium)	PET (CM)
British Columbia	1970	PET, metal, glass	84%* 82%§	89%† 92%*	87%‡ 90%*	75%*
South Australia	1977	PET, metal, glass	77%§	79%*	84%*	71%*
New York	1983/2009	PET, metal, glass	65%*	-	-	-
Sweden	1984 (metal)/1994 (PET)	PET, metal	85%§ 88%*	N/A	85%‡ 83%*	94%*
California	1987	PET, metal, glass	81%*	74%*	95%*	75%*
Iceland	1989	PET, metal, glass	90%*	86%*	94%‡	87%*
Finland	1996/2008 (PET) 2012 (glass)	PET, metal, glass	93%*	94%† 89%*	99%‡ 97%*	92%*
Norway	1999	PET, metal	96%*	N/A	96%‡ 97%*	95%*
Israel	2001	PET, metal, glass	77%*	77%*	-	77%*
Denmark	2002	PET, metal, glass	89%*	85%† 89%*	90%‡ 89%*	89%*
Germany	2003	PET, metal, glass	97%*	86%†	99%‡ 96%*	98%*
Estonia	2005	PET, metal, glass	82%*	63%† 87%*	71%‡ 87%*	90%*
Netherlands	2005	PET	95%*	N/A	N/A	95%*
Croatia	2006	PET, metal, glass (refillable)	“Up to 90%”*	50%†	52%‡	-

	Date of introduction	Drink containers covered	Total recovery rate	Glass (FEVE)	Aluminium (European Aluminium)	PET (CM)
Ontario	2007	PET, metal, glass (alcohol only)	89%*	95% beer 82% wine & spirits*	82%*	53%*
Northern Territory (Australia)	2012	PET, metal, glass	75%§ 54%*	60%*	61%*	41%*
Lithuania	2016	PET, metal, glass	93%§	-	-	-
UK	N/A	N/A	-	70%◊	70%◊	74%◊

*CM Consulting and Reloop (2016)
† European Container Glass Federation (FEVE) (2019)
‡ European Aluminium (2018)
¶ Valpak (2019)
§ Government statistics: South Australia https://www.epa.sa.gov.au/environmental_info/container_deposit#return; Northern Territory http://www.territorystories.nt.gov.au/jspui/bitstream/10070/305177/1/2017_2018_CDS_annual_report.pdf; British Columbia http://www.bottlebill.org/legislation/canada/britishcolumbia.htm; Lithuania https://www.openaccessgovernment.org/recycling-lithuania-deposit-system-exceeds-all-expectations/45003/; Sweden http://pantamera.nu/om-oss/returpack-in-english/about-returpack/

Note that the figures above are for beverage bottles only. For plastic bottles in general, recycling rates tend to be lower. The charity RECOUP (2018: 4) says that 59 per cent of plastic bottles are recovered from households, and the recycling company SUEZ (2018: 3) quotes a figure of 57 per cent. Both these figures include containers such as shampoo and milk bottles which would not be affected by a DRS and should not be compared with the figures shown above which are for beverage containers only.

This can cause confusion, such as when the BBC (2018) reports that 'In Norway, 95% of all plastic bottles are now recycled, compared with England at the moment where the rate is 57%', or when the *Guardian* claims that 'Recycling rates for plastic bottles stand at 57%, compared with more than 90% in countries that operate deposit return schemes' (Lavelle and Zhou 2017). These are apples and oranges comparisons. The recycling rate for plastic drink bottles is 74 per cent in the UK and 95 per cent in Norway - and Norway is exceptional. Parts of the USA, Canada and Australia, which have had a DRS in place for many years, have recovery rates that are similar to - or lower than - the UK.

It nevertheless seems likely that more bottles would be recovered with a DRS. According to a report for the UK government by the Voluntary and Economics Incentives Working Group (2018: 33), the average return rate in jurisdictions which have a deposit of $0.10 or less is 71 per cent and the average return rate in jurisdictions where the deposit is more than $0.10 is 86.7 per cent. With a deposit of 10-20p being suggested, the higher of these two averages may be the best guide. If the UK's recovery rate rose from the current 72 per cent to the DRS average of 86.7 per cent, the system would be responsible for collecting 15 per cent of total beverage containers, a relative increase of 21 per cent.[1]

[1] The government makes a similar assumption in its impact assessment, predicting a recycling rate of 85 per cent.

In this scenario, a DRS would recover an additional 1.1 billion extra PET bottles. Clearly, it would be better to recover and recycle this additional waste rather than send it to landfill or incinerate it, but this relatively small proportion should not be recovered at any cost. The question is whether the benefits of operating a deposit return scheme alongside kerbside collection are worth the additional expenditure.

Costs: businesses

The German DRS cost around £600 million to set up in 2003 and has ongoing costs of £700 million a year (BBC 2018b). The Voluntary and Economics Incentives Working Group (2019: 27) cites a range of estimates between £400 million and £900 million for the initial set up of a DRS in the UK. The British Retail Consortium says that each reverse vending machine costs between €15,000 and €80,000 and believes that setting up the system in the UK would cost £900 million in total. The environmental consultancy Eunomia estimates that each reverse vending machine costs £32,000 initially with running costs of £2,700 per annum. These costs can be higher or lower depending on the machine's complexity which, in turn, depends on the size and type of materials it accepts. The Packaging Federation estimates that around 30,000 machines would be needed nationwide.

The government's impact assessment estimates that the total set up cost will be £1,093 million, with running costs of £814 million per annum. It expects these costs to be met by producer fees and unclaimed deposits in about equal measure. It does not anticipate taxpayers' money being used.

The expense of setting up and operating the system is only the most obvious cost. For shopkeepers, the loss of revenue from losing floor space is another concern. Reverse vending machines are expected to cost a typical supermarket store around £62,000 worth of retail space (Environmental Audit Committee 2017: 30). The Association of Convenience Stores (2017: 1-2) estimates that storing returned containers will cost its sector £17.4 million per annum and that operating a manual return service will require 114 hours of extra work per store per annum. As one shopkeeper says: 'We are fighting for every inch of space. If someone comes in with a black bag of plastic bottles, where are you going to keep this stuff?' (ibid.: 12).

DEFRA (2019c: 38) has suggested that 'all retailers would be obligated to provide a return point unless they fall below a potential de minimis which would exempt them from the obligation'. It intends to pay retailers a handling fee but the experience of other countries which have a DRS suggest that this may not cover the costs (Association of Convenience Stores 2017: 4).

On the other hand, some businesses could make a profit if enough deposits go unredeemed. It is estimated that beverage producers in Germany have made €3 billion (£2.6 billion) in unclaimed deposits since the DRS was introduced in 2003 (Oltermann 2018).

Costs: consumers

People who do not recycle their beverage containers will face an effective price rise under the DRS, but consumers in general are likely to see prices rise somewhat as a result of businesses passing on the costs of running the system.

A less obvious, but highly significant, cost is the unpaid work required of consumers to make the DRS function. Under the existing system of kerbside collection, which collects plastic bottles from virtually all residences (see Table 2), residents simply separate their recycling from their non-recyclable waste and place them in two outdoor bins. Under a DRS, they would need to store all DRS-compliant cans and bottles in their home until they are able to take them to a reverse vending machine.

Table 2: Percentage of local authorities collecting each material 2017/18 (WRAP 2018)

	Glass	Cans	Plastic bottles
England	89%	100%	99%
Wales	91%	100%	100%
Scotland	78%	100%	100%
Northern Ireland	100%	100%	100%
UK	88%	100%	99%

This requires space in the home to store the containers and varying degrees of hassle depending on where the nearest machine is. For many shoppers, it will mean putting empties in the car and taking them back to the supermarket from which they were bought, queueing for the machine, taking a voucher and cashing it elsewhere in the store. For those who do not have a car or rely on home delivery, it will require an otherwise unnecessary journey. The opportunity cost of even a few minutes extra labour per week adds up to a considerable amount when multiplied by every household in the UK (see Discussion below). Most of this work is already done more efficiently by kerbside collection and would be duplicated by a DRS.

Costs: local authorities

If the UK introduces a DRS it will be unusual in bringing it about when there is already comprehensive kerbside collection/recycling in place. Studies from Australia suggest that a DRS would cannibalise 17-25 per cent of the materials from kerbside collection (Lee et al. 2018: 4). This is a concern for local authorities who make money from the sale of recyclable materials. The recycling company SUEZ (2018: 3) estimates that a DRS would cost the average local authority between £113,000 and £192,000 a year. Nationwide, this amounts to between £47 million and £80 million. Strictly speaking, this is not an economic cost as the wealth is merely being transferred, but the government will need to find ways to compensate local authorities.

It has been argued that a DRS could save local authorities money by lowering the costs of waste management. English councils spend £3.3 billion a year on rubbish collection and recycling (Environmental Audit Committee 2017: 23). SUEZ argues that a DRS would reduce the £683 million annual cost of litter collection and that the system would be cost-neutral if littering costs fell by 7-12 per cent (SUEZ 2018: 3).

No relevant research on littering has been conducted in Europe but evidence from the USA, cited by Eunomia (2017: 57-61), suggests that a DRS would cut plastic bottle littering by at least 80 per cent, equivalent to 600,000 bottles a day. This could be realistic but Eunomia's suggestion that local councils could therefore save money by reducing the number of street bins seems less plausible, not least because the total amount of litter did not generally decline in US states after the introduction of a DRS.

DEFRA (2019b: 27) estimates that the cost of litter collection in the UK is £438 million per annum and that there will be savings of £50 million per annum to councils from reduced litter collection costs, but it is far from certain that there are enough marginal costs to cut in litter/rubbish collection given the large fixed costs.

Benefits: increased recovery/recycling rates

If a DRS achieves the same average recovery rates as seen in countries where the deposit is ten cents or more, it would produce more materials to be sold for recycling. In recent years, the price of recovered clear

PET has averaged £176 per tonne, recovered glass has been worth around £15 per tonne, and recovered aluminium cans have averaged £1,016 per tonne (WRAP 2019).

Based on the assumption that a DRS would increase recycling rates to 85 per cent, DEFRA (2019b: 25) estimates that the extra recyclables would be worth £37 million per annum, with most of it coming from aluminium cans (see Table 3). This amounts to less than five per cent of the cost of running the scheme.

Table 3: DEFRA's projection of the value of the additional materials recovered under a DRS

	Extra recoveries (tonnes)	Material revenue
PET	47,614	£8,285,870
Steel	6,952	£878,831
Aluminium	23,884	£24,512,402
Glass	275,390	£3,143,033
Total	353,840	**£36,819,091**

Benefits: Carbon dioxide emissions

According to the Voluntary and Economics Incentives Working Group (2018: 59), 'preventing one tonne of plastic from being used saves 3,100kg of CO2 equivalent compared to saving 1,623kg CO2 if one tonne of plastic is recycled'. DEFRA (2019b: 26) values the reduction in greenhouse gas emissions at £12 million in the first year, rising to £28 million per annum by 2032.

Benefits: waste gatherers

It is generally agreed that DRSs offer a way for children and the homeless to make a little money from gathering discarded bottles (Barrin 2018). This, in turn, presumably leads to less litter. Whilst this is an economic benefit to them, cheaper make-work schemes are surely available.

Benefits: littering and ocean pollution

When the plans for a DRS were announced, the government's principal concern appeared to be ocean pollution. Environment Secretary Michael Gove said that plastic is 'wreaking havoc on our marine environment … We have already banned harmful microbeads and cut plastic bag use and now we want to take action on plastic bottles to help clean up our oceans' (DEFRA 2018).

It is doubtful whether a DRS in the UK would make any measurable difference to this type of littering. Ten rivers transport 88-95 per cent of all the plastic found in the oceans (Schmidt et al. 2017). Eight of them are in Asia. The other two are in Africa. The amount of plastic debris in British waters is much lower than the global average (Maes et al. 2018: 795) and the most common plastic items found in these waters are plastic bags, sheets and fishing gear, not bottles (ibid.: 796). The UK government may have been inspired to act by *The*

Blue Planet II but there is little reason to believe that the marine pollution shown in that documentary - which was mostly filmed in the Indian and Pacific Oceans - would be alleviated by a bottle deposit scheme in Britain.

Interestingly, ocean pollution is barely mentioned in DEFRA's impact assessment and the government has made no attempt to estimate what effect, if any, a DRS would have on this well-publicised problem. Instead, the impact assessment focuses on littering in Britain and this is where the impact assessment finds the greatest benefits. As mentioned above, DEFRA estimates that litter collection costs will fall by £50 million, but this is small beer compared to its valuation of the psychological benefits of people seeing less litter.

Based on a 2011 study which found that people would be willing to pay an extra £47.40 in council tax to achieve a one point reduction in litter, DEFRA estimates that a DRS would produce the equivalent of £986 million in intangible benefits. This valuation of the 'disamenity of litter' represents 90 per cent of the total economic benefit DEFRA claims for the policy. Without it, the economic case for a DRS disappears.

Discussion

DEFRA's impact assessment acknowledges that the 'potential cost to consumers for the time required to return drinks containers to [reverse vending machines] or manual take-back points' is a 'key non-monetised cost' and yet it makes no attempt to put a value on it. It is likely to be huge. I have been unable to find reliable estimates of how much time is required of shoppers to make the system work but, for the purpose of illustration, if each household in the UK spends just five minutes a week moving, storing and reclaiming the deposits from their beverage containers, the economic cost would equate to £1,687 million per annum (based on the median hourly income of £14.31).

This sum comfortably outstrips the less tangible benefit of £986 million for the 'disamenity of litter', and there are two reasons to believe that the £986 million figure is an overestimate. Firstly, the study from which it is derived is based on stated preferences, which are notoriously unreliable because respondents do not have skin in the game. They can express a preference for paying higher council tax to support any cause of which they approve but they do not have to put their hand in their pocket.

Secondly, DEFRA (2019b: 26) assumes that if the DRS leads to a 85 per cent return rate, there will be an 85 per cent reduction in drinks container litter. This is fallacious logic. Containers recovered through kerbside collection are always going to be more likely to be recycled - and less likely to be littered - than containers bought 'on the go'. It is also bad maths. Even if the current rate of 'on the go' recycling was the same as the overall rate (72 per cent), raising it to 85 per cent in no way implies that littering will drop by 85 per cent.

Moreover, if the public truly believed that it is worth spending £986 million to see the volume of litter reduced by 17 per cent, as DEFRA's reading of the survey implies, councils could raise taxes and greatly improve their anti-litter work. Such a sum would more than double the amount spent on litter collection and would, presumably, result in litter of all kinds being reduced by more than 17 per cent. Therefore, even if we take the £986 million figure seriously, spending it on a DRS is not the most efficient way to use it if tackling litter is the objective.

This is not to deny that people object to seeing litter, nor that their lives would be slightly improved if there were less of it. Many of the costs of littering are intangible and emotional, but they are nonetheless real. But the costs to consumers of having to cart their empty cans and bottles to a reverse vending machine are equally real and arguably more tangible. They are certainly easier to quantify. By including an implausibly large figure for emotional benefits to the public while ignoring the public's unpaid labour costs, the impact assessment is skewed towards finding a net benefit. DEFRA's deposit return scheme is unquestionably loss-making in financial terms, but it is almost certainly loss-making in broader economic terms too.

Conclusion

The proposed bottle deposit scheme is an expensive way of achieving very little. It promises to produce recyclable materials worth £37 million and reduce litter clean-up costs by £50 million, as well as producing 'greenhouse gas emissions savings to society' of £12 million. There are reasons to doubt the estimate for litter clean-up, but even if all these figures are correct, it will produce less than £100 million of benefit for more than £800 million of costs. The DRS can only be presented as producing a net gain if one accepts that a modest reduction in littering will have the same effect on the nation's happiness as a £986 million windfall, and if one ignores the opportunity costs incurred by people being made to store their empties at home before taking them to a collection point.

It is easy to imagine people who do a regular supermarket shop getting into the routine of stashing their empties in a cupboard before loading them into the car, driving to the store and taking them to the machine. But the vast majority of these containers are being recycled via kerbside collection already. The issue is with bottles and cans bought 'on the go', for which recycling rates can be below ten per cent (DEFRA 2019c: 16). Fifteen per cent of plastic drinks bottles and 30 per cent of canned drinks are used outside the home (Lee et al. 2018: 2). These are the materials that the government wants to collect, but a DRS is a very blunt tool for doing it.

At the very least, the government should exclude containers larger than 500ml from the scheme. These are rarely used 'on the go' and are generally recovered through kerbside collection. It should also consider excluding glass bottles which have a very low value in the recycling market and which, in contrast to plastics, have generated little public concern. Glass bottles have the benefit of not being merely recyclable, but reusable. Effective circular economies for glass bottles already exist in industries such as brewing and would not benefit from a DRS. Exempting glass could also encourage manufacturers to switch from disposable plastic to reusable glass and would lower the costs of the DRS since machines that take fewer (and smaller) materials are cheaper to run. In Germany, the DRS led to *fewer* bottles being made from recyclable materials as manufacturers sought to keep retail prices low (Oltermann 2018). According to Barrin (2018), 'the number of recyclable bottles on the German market has dropped from 80 per cent to 50 per cent since 2003'. This is an unintended consequence that the UK government surely wishes to avoid.

Even under a DRS, it will often be inconvenient for consumers to return 'on the go' containers. Officials could do more to make out-of-home recycling easier without resorting to an expensive and inefficient deposit system. DEFRA (2019c: 16) notes that 'only 49% of the 391 local authorities in the UK provide recycling "on-the-go" collection units in public spaces'. There is clearly room for improvement here, and although containers recovered from street bins are more likely to be contaminated with other waste (and therefore harder to recycle), this could be addressed by using more three-way bins like the one shown in Figure 1.

There are undoubted benefits from recovering more recyclable materials and reducing litter, but the benefits of a policy must outweigh its costs. The DRS, as currently proposed, does not seem to do this.

Figure 1: Jumbo 3-way recycling bin[2]

[2] Reproduced with permission from http://larkin-eng.com

References

Association of Convenience Stores (2017) ACS Submission: Deposit Return and Reward Schemes. https://www.acs.org.uk/sites/default/files/lobbying/acs_submission_-_defra_deposit_return_scheme.pdf

Barrin, M. (2018) Bottled gold – the unexpected side effects of recycling in Germany. *Geographical*, 29 June. http://geographical.co.uk/people/development/item/2819-bottled-gold

BBC (2018) Plastic recycling: How do bottle deposit schemes work? 29 March.

BBC (2018b) Drinks bottles and can deposit return scheme proposed. 28 March.

CM Consulting and Reloop (2016) Deposit Systems for One-Way Beverage Containers: Global Overview.

DEFRA (2018) Deposit return scheme in fight against plastic. https://www.gov.uk/government/news/deposit-return-scheme-in-fight-against-plastic

DEFRA (2018b) Our Waste, Our Resources: A Strategy for England. HM Government.

DEFRA (2019) UK Statistics on Waste. 14 February.

DEFRA (2019b) Introducing a Deposit Return Scheme on beverage containers. Impact Assessment. 15 February. https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultia.pdf

DEFRA (2019c) Consultation on introducing a Deposit Return Scheme in England, Wales and Northern Ireland. February. https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultdoc.pdf

Environmental Audit Committee (2017) Plastic bottles: Turning the tide. House of Commons. 19 December. https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/339/33908.htm

European Aluminium (2018) https://european-aluminium.eu/media/2275/european-aluminium-press-release-2015canrecyclingresult.pdf

European Container Glass Federation (FEVE) (2019) Container glass recycling in Europe. https://www.glass-international.com/news/view/feve-european-glass-packaging-recycling-rate-at-74 - claims to be recycling figures

Lee, P. Garcia, T., Bertham, O. and Fitzsimons, D. (2018) How a deposit return scheme for 'on the go' could be designed for the UK. Oakdene Hollins. https://www.suez.co.uk/-/media/suez-uk/files/publication/drs-onthego-report-uk-1803.pdf

Maes, T. (2018) Below the surface: Twenty-five years of seafloor litter monitoring in coastal seas of North West Europe (1992–2017) *Science of the Total Environment* 630: 790-8.

Oltermann, P. (2018) Has Germany hit the jackpot of recycling? The jury's still out. *The Guardian,* 30 March. https://www.theguardian.com/world/2018/mar/30/has-germany-hit-the-jackpot-of-recycling-the-jurys-still-out

RECOUP (2018) UK Household Plastics Collection Survey 2018.

Schmidt, C., Krauth, T. and Wagner, S. (2017) Export of plastic debris by rivers into the sea. *Environmental Science and Technology.* 51(21): 12,246-53

SUEZ (2018) How a deposit return scheme for 'on the go' could be designed for the UK (commentary). https://www.suez.co.uk/-/media/suez-uk/files/publication/drs-onthego-report-uk-1803.pdf

Valpak (2019) Drink container recycling rates. https://www.valpak.co.uk/docs/default-source/information-zone/databite-no-3---drinks-container-recycling-rates.pdf?sfvrsn=e2dc6d10_4

Voluntary and Economics Incentives Working Group (2018) Voluntary and Economics Incentives Working Group Report. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/694916/voluntary-economic-incentives-working-group-report-drinks-containers-final.pdf

WRAP (2018) Household Kerbside Dry Recycling Collections. http://laportal.wrap.org.uk/Statistics.aspx

WRAP (2019) Market knowledge portal. http://www.wrap.org.uk/content/market-knowledge-portal-1

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