Impacts of the reform of the waste tax and CO2 levy for waste incinerators

Trinomics

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This study has benefited from valuable insights gained from interviews and a sounding board session with various stakeholders and experts in the waste sector.

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Executive Summary

The Dutch government is considering a comprehensive package of fiscal measures targeting waste incineration. The goals of the fiscal measures are twofold: filling the tax revenue gap of €567 million due to a levy on virgin fossil polymer not being introduced anymore, and achieving a CO_2 emission reduction of 2 Mt CO_2 in 2030. Further, the proposed measure package also intends to accelerate the transition to a more circular economy.

This study analyses the expected impact of the package of fiscal measures on waste incinerators and the existing waste management infrastructure in the Netherlands. A behavioural impact mapping has been done to shed light on the expected impacts of the proposed measures package. This is complemented with a quantitative cost benchmarking with selected countries and an assessment of waste incineration and recycling capacity in these countries to understand the potential for shifts in Dutch waste trade flows. Insights from these analyses have been used to inform a reflection of the Ministry of Finance's (FIN's) revenue estimates resulting from the fiscal measures. The analysis in this study builds on publicly available data, a literature review, interviews with key experts and a sounding board meeting with key stakeholders. Ultimately, the findings from this study will inform the Dutch government's decision-making process with concern to these fiscal measures.

The proposed fiscal measures are centred around the waste disposal tax (*NL: afvalstoffenbelasting – ASB*) and the CO_2 levy on waste incinerators. These are the two main fiscal policies that affect the cost of waste treatment in the Netherlands. The proposed package of fiscal measures seek to achieve CO_2 emission reductions and meet an additional tax revenue of €567 million through the following:

- **Reforms to the ASB** through measures that increase the tax base of the ASB on landfill operators and waste incinerator plants (WIPs);
- **Reforms to the CO_2 levy** through measures that increase the costs of CO_2 emissions in WIPs;
- **Abolish the CO_2 levy budgetary rebate mechanism** for revenues obtained from WIPs so that they can be used for the State budget as part of the additional €567 million revenue demand;
- **Generic increase in the ASB tax rate** as a budgetary reconciliation measure (*NL: sluitpost*) with the increase depending on what is needed to achieve the additional €567 million revenue.

Table 0-1 provides an overview of the proposed fiscal measures and whether it affects the tax base for waste incineration and/or landfilling.

Table 0-1: Overview of the fiscal measures

Type of measure	Description of each fiscal measure	Affected waste tax base	
		Incinerated	Landfilled
ASB reform	Make bottom ash ineligible for deduction under the in-out method	x	
	Introduce an exemption for landfilling of WIP cleaning residue		x
	Abolish exemption of sewage sludge processing in WIPs	x (sludge)	
	Increase ASB rates for waste for “landfilling with an exemption”	x	x
	Make captured CO_2 ineligible for deduction under the in-out method	x	
CO_2 levy reform	Increase CO_2 levy rate for WIPs	x	
	Reduce dispensation rights (DPRs) to zero for WIPs by 2033	x	
	Restricting WIPs to trading DPRs with other WIPs only	x	
Budgetary rebate	Abolish the budgetary rebate mechanism for revenues obtained from WIPs under the CO_2 levy, to be used for the State budget		
ASB rate increase	Generic increase in ASB rate	x	x

The proposed fiscal measures drive behavioural changes among stakeholders across the waste value chain, with WIPs being the most affected stakeholder group. While WIPs and landfill operators will be affected first, other actors in the value chain will also be indirectly affected. The mapping in Figure 0-1 below visualises the expected behavioural impacts of implementing the proposed fiscal measures. As most of the measures directly apply to WIPs, they will be most affected by the fiscal measures. While there will be some impact of the fiscal measures on landfilling, this is expected to be low due to the landfill ban. The figure therefore focuses on the impacts of the measures on WIPs and effects that may result from that.

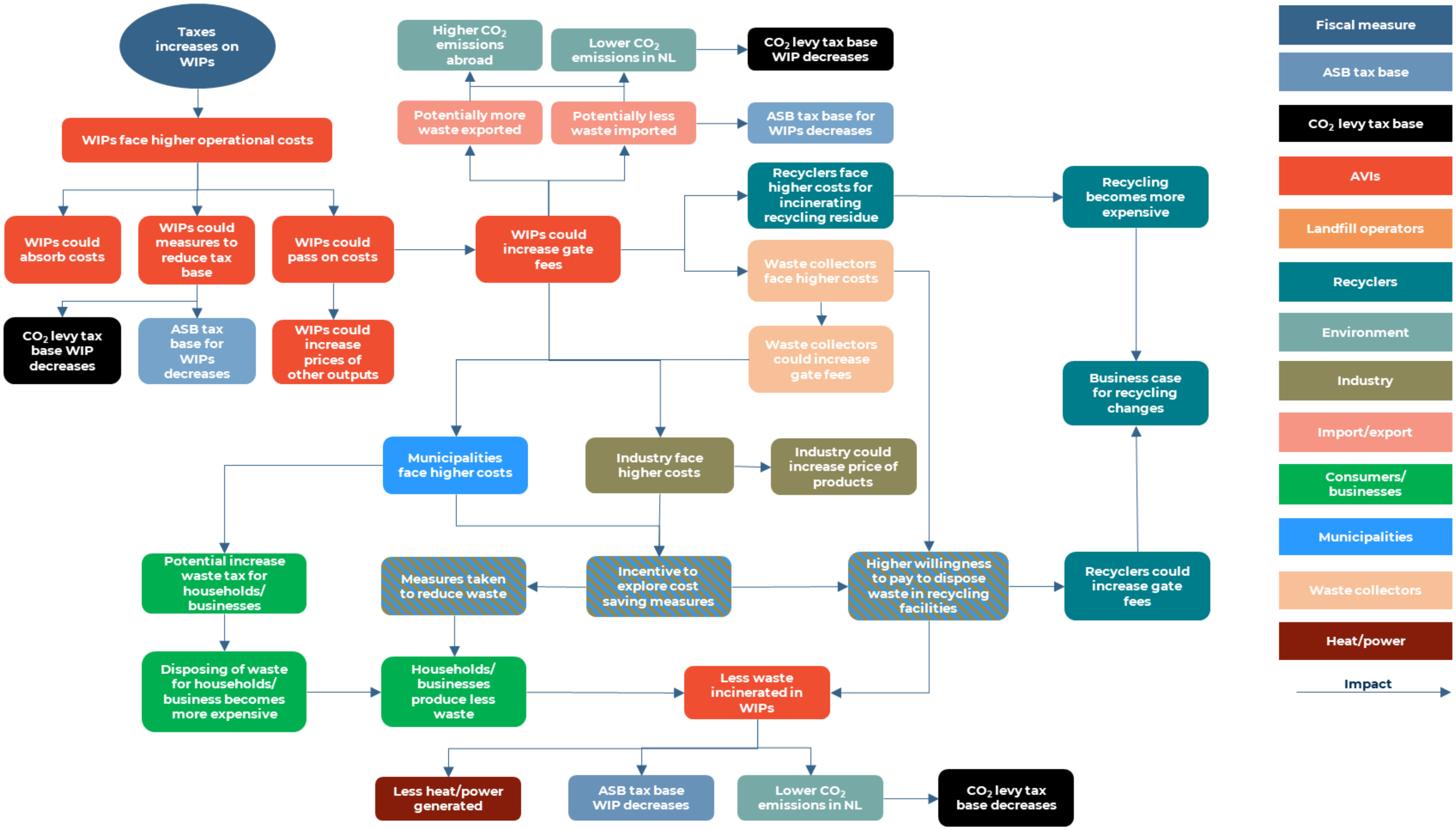
For WIPs, the possibility to reduce their exposure to the cost increases from the fiscal measures appears to be limited or – in the case of carbon capture and storage (CCS) – subject to many uncertainties. Options for WIPs to reduce their tax base include the following:

- **Optimising the incineration efficiency and bottom ash cleaning process:** this could reduce the tax base under the ASB, but only by a small margin.
- **Improved post-sorting:** this can also reduce the total waste volume sent to incineration and thus lower the tax burden. At the same time, it would also lead to a decrease in the amount of combustible waste, lowering the income of WIPs.
- **Investments in CCS:** the current business case for CCS in Dutch WIPs is highly uncertain. At the moment, the (expected) costs under the CO_2 levy are not high enough to incentivise CCS investments on its own and the business case for CCS depends strongly on the subsidy from the Sustainable Energy Production and Climate Transition Incentive scheme (SDE++). However, there are various uncertain factors associated with the SDE++, and as a result the SDE++ may not sufficiently cover the CCS costs for a positive business case. These uncertain factors include the availability and predictability of waste input streams, the stability of national legislation, increasing investment and operational costs and the long-term financial risks involved. In theory, increasing the CO_2 levy costs as foreseen under the fiscal measures would improve the incentive to invest in CCS; WIPs that do not implement CCS would face even higher CO_2 levy costs compared to WIPs with CCS. At the same time, the fiscal measures – and particularly the ASB measures – could exacerbate some of the current uncertainties associated with the business case of CCS related to waste input streams (i.e., volume risks due to improved sorting and recycling as well as greater exports and less imports of waste) and financial risks. Conversely, the fiscal measures could make the business case for CCS more uncertain. The extent to which the fiscal measures affect the business case for CCS might be different for different WIPs. This depends, amongst others, on the exposure of a WIP to volume risks, its position in the waste market and access to CCS infrastructure. Investments in CCS are thus more likely to take place in WIPs with closer proximity to CCS facilities, such the large-scale CCS infrastructure project Aramis (in the Port of Rotterdam) that is crucial for CCS adoption in WIPs, as they would have lower CO_2 transportation costs. However, even if WIPs would have the confidence to invest in CCS, the continuous delays with Aramis makes it is uncertain if these CCS projects can be realised on time to sufficiently offset the rising CO_2 levy costs for a positive business case.

While WIPs could absorb some of the cost increases, this is not economically sustainable in the long term. WIPs have limited ability to absorb increased costs due to narrow profit margins. While some cost absorption is possible, it is found not sustainable at the scale of the envisaged increases under the fiscal measures, which are substantially higher than the operating margins of WIPs.

WIPs will likely have to pass on the cost increases from the fiscal measures, with an increase in the gate fees as the primary means to recover these cost increases. The possibilities for WIPs to increase prices of their outputs (i.e., heat, electricity, captured CO_2 and materials from residual streams) are limited due to market and regulatory constraints. Specifically on captured CO_2 for utilisation (CCU) the fiscal measures could even lead to a reduction in investments in CCU due to the increased volume risks and making captured CO_2 ineligible for deduction under the ASB. Thus, it is most likely that WIPs offset their increased tax burden through higher gate fees.

Figure 0-1: A mapping of the behavioural impacts of tax increases with a focus on effects from WIPs



Source: own illustration

An increase in the gate fees of WIPs will affect the entire waste incineration ecosystem. The increase in the gate fees will likely be passed on to waste collectors, municipalities, and ultimately businesses and households. The main impacts per stakeholder are summarised in the following:

- **Recyclers**: on the positive side, the willingness to pay for recycling could increase given that waste incineration would become more expensive. This may increase overall recycling rates. However, an increase in the actual uptake of recycling is not guaranteed due to the fact that the choice of the waste management approach depends on other factors as well, especially the availability of technology and the demand for the recyclates. On the more negative side, recyclers would face higher costs due to more expensive incineration costs for recycling residues. Overall, it can be expected that Dutch recyclers may increase their gate fees to capitalise on the increased willingness to pay but also to cover their own higher costs for incinerating recycling residues. However, the competitiveness of recyclates versus virgin materials and cheap recyclates from abroad remains a key barrier. Without changes to factors such as the demand for recyclates, the extent to which recyclers in the Netherlands can increase their gate fees is limited. Increasing gate fees would make recycling in the Netherlands more expensive and would make it more likely that more of the waste currently recycled in the Netherlands would be sent to countries where it is cheaper to recycle or incinerate. This affects both imported and domestic waste that is currently recycled. Particularly for plastic bottles, metal packaging and drink cartons (PMD) with a high recycling residue, the increase in the CO_2 levy costs for incinerating recycling residue in the Netherlands could be higher than the costs for transporting recyclable Dutch PMD waste to France, Belgium and Germany for further treatment. As a result, the fiscal measures might put additional cost pressure on Dutch recyclers and worsen their business case.
- **Municipalities**: in light of national programmes like the *Circular Dutch Economy by 2050*, municipalities promote a general reduction in waste generation and improved sorting efforts. In case of the fiscal measures, municipalities are expected to pass on the increased costs to tax payers via a higher waste collection tax. The waste collection costs would increase because waste collectors face higher gate fees. They might respond by seeking more cost-effective contracts, improving sorting and reducing residual waste.
- **Waste generators (i.e., households and businesses/industry)**: waste generators would face higher fees for waste management when the costs of the fiscal measures are passed on in gate fees. This cost increase might incentivise businesses to improve their sorting practices and reduce the overall waste production in order to reduce costs. For households, expected direct behavioural changes due to the increasing waste collection tax may be more limited. Complementing measures and initiatives such as the introduction of alternative taxation systems like DifTar and awareness campaigns would be needed to incentivise waste reduction and better sorting among households.
- **Users of energy production (power and heat)**: if less waste is incinerated, there is also a reduced power and heat output. While WIPs currently only supply about 1% of the Dutch total energy consumption (electricity and heating), some regions are particularly reliant on heat from WIPs. To avoid a gap in energy provision to those regions, investments would be needed to incentivise innovation or to explore alternatives, such as geothermal heat or heat from sludge incineration.

Higher gate fees would make Dutch WIPs less competitive than foreign ones, potentially increasing waste exports and lowering imports:

- **Waste exports**: for the export of waste for incineration, the determining factor is the CO_2 levy, which mainly affects WIPs with limited CCS potential. In this case, the new fiscal measures could lead to a potential shift of Dutch waste to Germany, and to a limited extent to Sweden which have free waste incineration capacity. Waste export to Belgium, France and Poland is deemed less likely due to capacity constraints. In Belgium and Poland, there are also legal restrictions on the import of certain types of waste. At the same time, there are some factors which could delay/minimise the impact of the fiscal measures on increasing waste exports. Particularly, long-term contracts could keep gate fees temporarily lower, certain contracts with municipalities could restrict the shipment of waste abroad, and waste management facilities further away from country borders can be deterred from exporting due to transportation costs. Furthermore, if WIPs would implement CCS, they could limit their cost increase from the CO_2 levy to such an extent that their gate fees can remain competitive with foreign WIPs. However, the extent to which CCS will be significantly applied in WIPs is highly uncertain due to uncertainties regarding the CCS business case, particularly due to volume risks, and when the necessary CCS infrastructure will be in place. Full CCS deployment by 2030 remains therefore unlikely, while carbon costs will already be significant enough to make the export of Dutch waste financially attractive. Even if the CCS infrastructure and capacity is increased later, the waste volumes may not fully recover as some incineration may have already been closed down due to the earlier waste reductions.

- **Waste imports**: for the import of waste for incineration, the current trajectory of the CO_2 levy already makes the import of waste to the Netherlands less economically attractive. On top of this, the higher ASB and CO_2 levy rate would make incineration in the Netherlands even more expensive compared to incineration domestically in the analysed countries. This could lead to a significant decrease in imports of waste to Dutch WIPs or imports even fully dropping away, whether it be from a shift to WIPs in other countries or a reduction in waste generation in the exporting country. Additionally, the new fiscal measures could have a negative impact on the business case for recycling in the Netherlands since recyclers are indirectly impacted by the measures due to incineration of recycling residues. At the same time, there are non-economic factors which could delay the shift in imports similar to exports, such as long-term contracts and capacity constraints, as well as the uptake of CCS in Dutch WIPs.

The magnitude and speed at which the fiscal measures will affect each Dutch WIPs can vary significantly. The extent to which Dutch WIPs will be affected by the fiscal measures will depend on factors such as their exposure to volume risks (e.g., their currently reliance on imported waste), their market position in the waste market, and their proximity to foreign competitors and CCS infrastructure. Furthermore, if a WIP has a long-term contract with a municipality or a waste collector, its waste input streams might be secured for a certain amount of time. Only at the time of contract renewal, the waste providers might opt for the cheaper option, i.e., exporting the waste.

The fiscal measures are expected to reduce the volume of waste incineration in the Netherlands and the associated environmental impacts, although a part may be shifted abroad. Reduced waste incineration would result in lower direct CO_2 emissions and a reduced release of harmful pollutants into the air, water, and soil. At the same time, some behavioural responses to higher waste incineration costs may lead to increasing environmental pollution due to an increased risk of waste mixing, dumping, and littering, though no evidence has been found in literature that these effects would occur on a large scale. Moreover, if the waste is not treated in the Netherlands but abroad, it would reduce the environmental impact domestically but increase environmental impacts abroad. This would lead to resources being lost and could result in comparatively higher emission of CO_2 and other pollutants outside of the Netherlands (e.g., if it goes to landfills or to less efficient WIPs). At the same time, the general global emissions may also decrease. This is because the disposal costs in the countries currently exporting waste to the Netherlands would increase, either due to increasing costs in the Netherlands or due to falling back on alternative solutions that are more expensive than the current situation. This may encourage the exporting countries to reduce waste or recycle more, which in turn lowers the environmental impact.

The reduction in waste volumes due to the fiscal measures likely to be larger than the one used for the revenue estimates of FIN as a result of lower waste imports and increased waste exports. Table 0-2 compares the estimated reduction in waste volumes between the FIN analysis of May 2025 and this study, both relative to the 2030 base case. While the reduction in landfilled waste is similar across both analyses, greater differences appear in the reduction of waste incinerated. Already in the base case, a decrease in waste incineration can be expected. This is due to the planned increase in

CO_2 levy costs which can already make Dutch WIPs less competitive to incinerate foreign waste, with a possibility that imports of waste for incineration fully drop away (lower range base case). The fiscal measures would accelerate this decrease in waste for incineration as they encourage waste reduction and improving waste sorting practices. Additionally, the increasing costs for Dutch WIPs would fasten the decrease in imports, if these imports did not yet fully drop away in the base case (upper range base case). In addition, waste from the Netherlands could be exported for incineration abroad as a result of the fiscal measures, which is not yet included in the estimates in Table 0-2.

Table 0-2 Comparison of the estimated waste volumes in the 2030 base case and reduction in waste volumes in the FIN analysis and this study compared to the 2030 base case

Waste volume in the Netherlands*	*Estimate by*	*Total volume treated in 2030 (base case)*	2030 reduction after fiscal measures vs 2030 base case	2035 reduction after fiscal measures vs 2030 base case
Landfilled waste	*FIN analysis*	*No change from 2021*	-0.1 Mt	-0.2 Mt
	This study	***1.3 Mt***	**-0.2 Mt** (Δ = -0.1)	**-0.3 Mt** (Δ = -0.1)
Incinerated waste	*FIN analysis*	*No change from 2021*	-1.1 Mt	-1.3 Mt
	This study	***5.9 – 7.2 Mt***	**-2.5 – -1.1 Mt** (Δ = -1.4 – 0)	**-2.9 – -0.9 Mt** (Δ = -1.6 – +0.4)

** Does not include potential impact of export. In the lower range base case, waste imports fully drop away while in the higher range base case imports remain unchanged. Δ shows the difference with the estimates of this study with the FIN analysis, with a negative value representing a higher waste reduction than the FIN analysis and a positive value a lower reduction than the FIN analysis.*

While Dutch WIPs could dampen the reduction in waste through CCS, the estimated waste reduction volumes are more likely to be closer to the higher bounds representing no CCS uptake. The ranges in waste reduction in Table 0-2 represent the situation without and with CCS uptake in WIPs, where a higher waste reduction corresponds to no CCS uptake (i.e., -2.5 Mt in 2030 and -2.9 Mt in 2035). As discussed earlier, the business case for CCS in WIPs is already highly uncertain in the base case, and the fiscal measures are expected to make the business case of CCS even more uncertain. The estimated reductions in waste volumes are therefore more likely to be closer to the higher bounds, i.e. the situation without CCS uptake in WIPs.

Consequently, the generic increase in the ASB tax rate may need to be higher than in the FIN estimates to achieve the additional €567 million revenue demand of the fiscal measures. With the reduction in waste being higher than estimated in the FIN analysis of May 2025, the tax base for the ASB on incineration may be smaller and thus the tax revenue estimates lower. However, further increasing the ASB tax rate could intensify the impacts identified as associated with the package of fiscal measures. This may cause a greater reduction in waste, which could again result in the increased ASB tax rate being insufficient to achieve the €567 million revenue demand.

Managementsamenvatting

De overheid overweegt een pakket aan fiscale maatregelen gericht op afvalverbranding in te voeren. De doelstellingen van de fiscale maatregelen zijn tweeledig: het aanvullen van het gat in de belastinginkomsten van 567 miljoen euro doordat de polymerenheffing die niet meer wordt ingevoerd, en het bereiken van een CO_2-emissiereductie van 2 Mt CO_2in 2030. Verder is het voorgestelde maatregelenpakket ook bedoeld om de overgang naar een meer circulaire economie te versnellen.

Deze studie analyseert de verwachte impact van het pakket aan fiscale maatregelen op afvalverbrandingsinstallaties (AVI's) en het huidige afvalbeheer in Nederland. Eerst zijn de verwachte gedragseffecten van het voorgestelde maatregelenpakket zijn in kaart gebracht. Dit is aangevuld met een kwantitatieve kostenbenchmarking t.o.v. een aantal landen en een beoordeling van de afvalverbrandings- en recyclingcapaciteit in deze landen om inzicht te krijgen in potentiële verschuivingen van Nederlandse afvalstromen naar het buitenland. Inzichten uit deze analyses zijn vervolgens gebruikt voor een appreciatie van de budgetramingen van de fiscale maatregelen die door het Ministerie van Financiën (FIN) zijn gemaakt. De analyse in deze studie is gebaseerd op publieke informatie, een literatuurstudie, interviews met experts uit de afvalsector en een klankbordbijeenkomst met stakeholders uit de sector. De bevindingen van deze studie zullen de besluitvorming van de overheid met betrekking tot deze fiscale maatregelen informeren.

De voorgestelde fiscale maatregelen hebben betrekking op de afvalstoffenbelasting (ASB) en de CO_2-heffing op AVI's. Dit zijn tevens de twee fiscale beleidsmaatregelen die van meeste invloed zijn op de kosten van afvalverwerking in Nederland. Het voorgestelde pakket fiscale maatregelen heeft als doel om CO_2-emissies te reduceren en een extra belastingopbrengst van 567 miljoen euro te realiseren door middel van de volgende maatregelen:

- **Hervormingen van de ASB** door maatregelen die de grondslag van de ASB voor stortplaatsen en AVI's verhogen;
- **Aanscherping van de CO_2-heffing** door maatregelen die de kosten van CO_2-emissies van AVI's verhogen;
- **Afschaffing van de budgettaire terugsluis onder de CO_2-heffing** op inkomsten afkomstig van AVI's, zodat deze kunnen worden gebruikt voor de rijksbegroting om de extra inkomsten van 567 miljoen euro te behalen;
- **Generieke verhoging van het ASB-belastingtarief** als sluitpost, waarbij de verhoging afhangt van wat na de bovenstaande maatregelen nog nodig is om de extra inkomsten van 567 miljoen euro te behalen.

Tabel 0-1 geeft een overzicht van de voorgestelde fiscale maatregelen en of deze van invloed zijn op de belastinggrondslag voor afvalverbranding en/of storten.

Tabel 0-1 : Overzicht van de fiscale maatregelen

Type maatregel	Beschrijving per fiscale maatregel	Grondslag afval	
		Verbrand	Gestort
Hervorming ASB	AVI-bodemassen niet meer in aanmerking laten komen voor grondslagvermindering volgens de in-out methode	x	
	Een vrijstelling invoeren voor het storten van reinigingsresidu afkomstig van opwerkingsprocessen van AVI-bodemassen		x
	Afschaffen van de vrijstelling op verwerking van zuiveringsslib in AVI's	x (slib)	
	Verhogen van ASB-tarieven voor storten met ontheffing	x	x
	Afgevangen CO_2 niet meer in aanmerking laten komen voor grondslagvermindering volgens de in-out methode	x	
	Verhogen van het CO_2-heffingstarief voor AVI's	x	

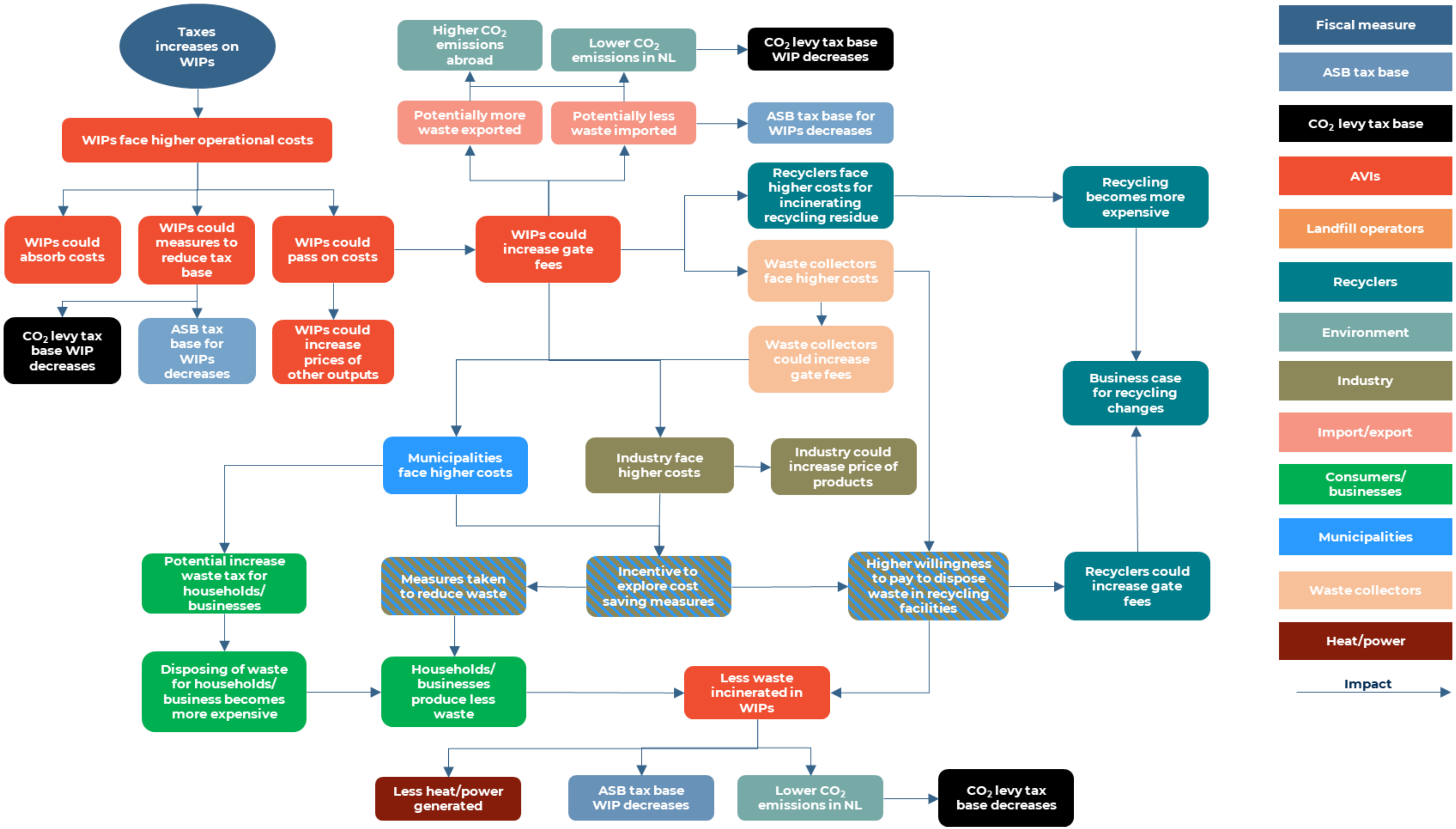
Aanscherping CO_2heffing	Verminderen van dispensatierechten (DPR's) voor AVI's tot nul in 2033	x	
	Handel van DPR's van AVI's beperken tot uitsluitend handelen met andere AVI's	x	
Budgettaire terugsluit	Afschaffen van de budgettaire terugsluis voor inkomsten afkomstig van AVI's onder de CO_2-heffing, ten goede aan de rijksbegroting.		
Verhoging ASB-tarief	Generieke verhoging van het ASB-tarief	x	x

De voorgestelde fiscale maatregelen leiden tot gedragsveranderingen over de hele afvalwaardeketen, waarbij AVI's het meest getroffen worden. Terwijl AVI's en stortplaatsen als eerst door de maatregelen worden geraakt, zal dit ook indirect van invloed zijn op andere stakeholders in de afvalwaardeketen. De mapping in Figuur 0-1 hieronder visualiseert de verwachte gedragseffecten door de voorgestelde fiscale maatregelen. Aangezien de meeste maatregelen gericht zijn op AVI's, zullen zij het meest geraakt worden de fiscale maatregelen. Hoewel de fiscale maatregelen het storten van afval ook zal raken, zal dit effect naar verwachting beperkt zijn door het stortverbod. De figuur richt zich daarom op de effecten van de maatregelen op AVI's en de effecten die daaruit kunnen voortvloeien.

Voor AVI's lijken de mogelijkheden om hun blootstelling aan de kostenstijgingen door de fiscale maatregelen te verminderen beperkt of - in het geval van koolstofafvang en -opslag (CCS) - onderhevig aan veel onzekerheden. De opties voor AVI's om hun belastinggrondslag te verlagen zijn als volgt:

- **Optimalisering van het afvalverbrandings- en bodemasreinigingsproces:** dit kan de ASB-grondslag verlagen, alhoewel slechts beperkt.
- **Betere nasortering:** dit kan ook het totale volume dat naar afvalverbranding gaat verminderen en zo de belastingdruk bij AVI's verlagen. Tegelijkertijd leidt dit ook tot een afname van de hoeveelheid brandbaar afval, waardoor de inkomsten van AVI's weer dalen.
- **Investeringen in CCS:** de huidige business case voor CCS in Nederlandse AVI's is erg onzeker. Op dit moment zijn de (verwachte) kosten onder de CO_2-heffing niet hoog genoeg om investeringen in CCS alleen te stimuleren, en is de business case voor CCS sterk afhankelijk van de Stimuleringsregeling Duurzame Energieproductie en Klimaattransitie (SDE++) subsidie. De SDE++ is echter onderhevig aan verschillende onzekerheden, waardoor de SDE++ de kosten voor CCS mogelijk onvoldoende dekt om tot een positieve business case te komen. Dit gaat o.a. om de beschikbaarheid en voorspelbaarheid van afvalstromen, de stabiliteit van de nationale wetgeving, stijgende investerings- en operationele kosten en financiële risico's op lange termijn. In theorie zou een aanscherping van de CO_2-heffing, zoals onder de fiscale maatregelen, de prikkel in CCS te investeren moeten verhogen; de CO_2-heffingskosten van AVI's die geen CCS toepassen zullen verder oplopen t.o.v. AVI's met CCS. Tegelijkertijd vergroten de fiscale maatregelen – en met name de ASB-maatregelen – mogelijk juist de onzekerheden in de business case van CCS. Dit betreft onzekerheden in afvalinputstromen (d.w.z. volumerisico's als gevolg van verbeterde sortering en recycling, alsook een grotere export en minder import van afval) en de financiële risico's. De fiscale maatregelen kunnen er dus toe leiden dat de business case voor CCS in AVI's juist onzekerder wordt. De mate waarin de fiscale maatregelen de business case voor CCS beïnvloedt, zal verschillen voor verschillende AVI's. Dit hangt onder meer af van de blootstelling van een AVI's aan volumerisico's, de positie op de afvalmarkt en toegang tot CCS-infrastructuur. Investeringen in CCS zullen dus waarschijnlijk eerder plaatsvinden in AVI's die dichter bij CCS-faciliteiten liggen, zoals het grootschalige CCS-infrastructuurproject Aramis (in de haven van Rotterdam) dat cruciaal is voor CCS in AVI's, aangezien de transportkosten voor CO_2 dan lager zullen zijn. Maar zelfs als AVI's voldoende vertrouwen hebben om in CCS te investeren, is het – door de voortdurende vertragingen bij Aramis – onzeker of een CCS-investering op tijd gerealiseerd kan worden om de stijgende kosten van de CO_2-heffing voldoende te mitigeren en tot een positieve business case te komen.

Figuur 0-1: Een mapping van de gedragseffecten van fiscale maatregelen met een focus op AVI's en daaruit volgende effecten



Bron: eigen illustratie

Hoewel AVI's een deel van de kostenstijgingen mogelijk kunnen absorberen, is dit op de lange termijn economisch niet houdbaar. Door de beperkte winstmarges kunnen AVI's de gestegen kosten slechts tot op een zekere hoogte absorberen. Hoewel de kostenstijging dus deels geabsorbeerd kan worden, is dit niet op lange termijn houdbaar. De beoogde kostenstijgingen door de fiscale maatregelen zijn namelijk aanzienlijk hoger zijn dan de gemiddelde bedrijfsmarges van AVI's.

AVI's zullen de kostenstijgingen waarschijnlijk moeten doorberekenen, met een verhoging van de poorttarieven als voornaamste wijze om deze hogere kosten te compenseren. AVI's kunnen de prijzen van hun outputs (d.w.z. warmte, elektriciteit, afgevangen CO_2 en materialen uit reststromen) door marktbeperkingen en regelgeving slechts beperkt verhogen. Bij afgevangen CO_2 voor gebruik (CCU) zouden de fiscale maatregelen zelfs tot minder investeringen in CCU kunnen leiden. Dit komt door de toegenomen volumerisico's door de fiscale maatregelen en de fiscale maatregel dat afgevangen CO_2 niet meer in aanmerking komt voor grondslagvermindering onder de ASB. Het is dus het meest waarschijnlijk dat AVI's de hogere belastingdruk via hogere poorttarieven zullen compenseren.

Een verhoging van de poorttarieven van AVI's zal het hele afvalecosysteem beïnvloeden. De hogere poorttarieven zullen waarschijnlijk worden doorberekend aan afvalinzamelaars, gemeenten en uiteindelijk bedrijven en huishoudens. De belangrijkste consequenties bij hogere AVI-poorttarieven worden hieronder per stakeholder samengevat:

- **Recyclers**: aan de ene kant zal bereidheid om te betalen voor recycling groeien aangezien afvalverbranding duurder wordt. Dit kan ertoe leiden dat er meer afval gerecycled zal worden. Een toename in recycling is echter geen gegeven, omdat de keuze in afvalbeheer ook afhangt van andere factoren, met name de beschikbaarheid van technologie en de vraag naar de gerecyclede producten. Aan de andere kant krijgen recyclers te maken met hogere verbrandingskosten voor recyclingresiduen. In het algemeen kan verwacht worden dat Nederlandse recyclers hun poorttarieven wat zullen verhogen om te profiteren van de toegenomen betalingsbereidheid voor recycling, maar ook om hun hogere kosten voor verbranding van recyclingresiduen te dekken. De concurrentiepositie van Nederlands recyclaat ten opzichte van virgin materiaal en goedkope recyclaat uit het buitenland blijft echter een belangrijke barrière voor Nederlandse recyclers. Als er geen verandering komt in bijvoorbeeld de vraag naar recyclaat, is de mate waarin Nederlandse recyclers hun poorttarieven kunnen verhogen beperkt. Daarnaast maken hogere poorttarieven recyclen in Nederland duurder. Hierdoor neemt de kans toe dat afval dat nu in Nederland wordt gerecycled deels verschuift naar landen waar het goedkoper is om dit afval te recyclen of te verbranden. Dit geldt voor zowel geïmporteerd als binnenlands afval dat nu in Nederland gerecycled wordt. Met name bij plastic flessen, metalen verpakkingen en drankenkartons (PMD) met een hoog recyclingresidu zouden de hogere kosten onder de CO_2-heffing de Nederlandse verbrandingskosten voor recyclageresidu dusdanig verhogen, dat het goedkoper kan worden om recyclebaar Nederlands PMD-afval naar Frankrijk, België en Duitsland te transporteren voor verdere verwerking. De fiscale maatregelen zullen dus waarschijnlijk tot een extra kostendruk bij Nederlandse recyclers leiden, en daarmee hun business case verslechteren.
- **Gemeenten**: in het licht van nationale programma's zoals *Circulaire Economie in 2050*, zijn gemeenten al bezig om afvalproductie te verminderen en beter te sorteren. De verwachting is dat gemeenten de hogere kosten van de fiscale maatregelen door zal berekenen aan de belastingbetaler via een hogere afvalstoffenheffing. De kosten voor afvalinzameling zullen namelijk stijgen doordat afvalinzamelaars te maken krijgen met hogere poorttarieven. Een mogelijk gevolg hiervan is dat gemeenten meer kosteneffectieve contracten met afvalinzamelaars zullen te zoeken, afvalsortering verder verbeteren en restafval sterker te verminderen.
- **Afvalproducenten (d.w.z. huishoudens en bedrijven/industrie)**: afvalproducenten zouden te maken krijgen met hogere tarieven voor afvalbeheer wanneer de kosten van de fiscale

maatregelen worden doorberekend in poorttarieven van afvalverwerkers. Deze kostenstijging kan bedrijven ertoe aanzetten hun afval beter te sorteren en hun afval te verminderen om de kosten te drukken. Voor huishoudens zijn de verwachte directe gedragsveranderingen door de hogere belasting op afvalinzameling mogelijk beperkter. Dit vergt aanvullende maatregelen en initiatieven zoals DifTar en bewustwordingscampagnes om afvalvermindering en betere afvalsortering bij huishoudens te stimuleren.

- **Gebruikers van energie (stroom en warmte)**: als er minder afval wordt verbrand, wordt er ook minder stroom en warmte door AVI's geproduceerd. Hoewel AVI's momenteel slechts ongeveer 1% van het totale Nederlandse energieverbruik (elektriciteit en verwarming) leveren, zijn sommige regio's nog afhankelijk van de warmteproductie van AVI's. Om een gat in de energievoorziening van die regio's te voorkomen, zijn investeringen nodig om innovatie te stimuleren of alternatieve warmtebronnen aan te boren, zoals aardwarmte of warmte uit slibverbranding.

Door hogere poorttarieven zullen Nederlandse AVI's minder concurrerend zijn dan buitenlandse AVI's, waardoor de export van afval mogelijk toeneemt en de import afneemt:

- **Export van afval**: bij de export van afval voor verbranding is de CO_2-heffing de bepalende factor, waarbij met name AVI's met een beperkt CCS-potentieel worden geraakt. De voorgestelde fiscale maatregelen zouden er mogelijk toe kunnen leiden Nederlands afval naar Duitsland, en in beperkte mate naar Zweden, verschuift om daar verbrand te worden. In die landen is namelijk nog afvalverbrandingscapaciteit beschikbaar. Export van afval naar België, Frankrijk en Polen wordt minder waarschijnlijk geacht vanwege capaciteitsbeperkingen. Daarnaast zijn er in België en Polen juridische beperkingen op de invoer van bepaalde soorten afval. Tegelijkertijd zijn er een aantal factoren die het effect van de fiscale maatregelen op meer export van afval kunnen vertragen of beperken. Met name langetermijncontracten zouden de poorttarieven tijdelijk lager kunnen houden, maar ook bepaalde contracten van gemeenten zouden de export van hun afval naar het buitenland kunnen beperken. Ten slotte zouden afvalinzamelaars die verder van de grens liggen door de hogere transportkosten mogelijk minder snel geneigd zijn hun afval te exporteren. Als AVI's in CCS zouden investeren, zouden ze bovendien de stijging in CO_2-heffingkosten dusdanig kunnen beperken dat hun poorttarieven mogelijk concurrerend blijven t.o.v. buitenlandse AVI's. Het is echter zeer onzeker of AVI's CCS op grote schaal toe zullen passen vanwege de eerdergenoemde onzekerheden rondom de business case voor CCS bij AVI's. Met name volumerisico's en wanneer de benodigde CCS-infrastructuur aanwezig zal zijn leiden tot grote onzekerheden in de business case. Een volledige benutting van het CCS-potentieel bij AVI's in 2030 lijkt daarom onwaarschijnlijk, terwijl de CO_2-heffingskosten al dusdanig hoog zijn om om de export van Nederlands afval financieel aantrekkelijk te maken. Zelfs als de CCS-infrastructuur en -capaciteit later voldoende wordt uitgebreid, zullen de afvalvolumes zich mogelijk niet volledig herstellen. Sommige verbrandingslijnen bij Nederlandse AVI's zullen mogelijk namelijk al zijn gesloten vanwege de eerdere afvalvermindering.

- **Import van afval**: de import van afval voor verbranding in Nederland wordt al onder het huidige traject van de CO_2-heffing economisch minder aantrekkelijk. De hogere ASB- en CO_2-heffingstarieven zullen verbranding van buitenlands afval in Nederland vervolgens nog duurder maken, waardoor van verbranding van buitenlands afval in eigen land in de geanalyseerde landen economisch aantrekkelijker wordt. De fiscale maatregelen zullen er dus waarschijnlijk toe leiden dat de import van afval voor verbranding in Nederlandse AVI's substantieel daalt of zelfs volledig wegvalt. Deels zal dit komen doordat de verbranding van buitenlands afval verschuift naar andere landen, maar ook deels doordat een daling van afval in het exporterende land. Daarnaast zullen de nieuwe fiscale maatregelen waarschijnlijk een negatief effect hebben op de business case voor recycling in Nederland. Nederlandse recyclers worden namelijk door de maatregelen geraakt via de hogere verbrandingskosten voor recyclingresiduen. Tegelijkertijd zijn er niet-economische factoren die de daling van afvalimport kan vertragen of beperkten zoals ook bij export zoals langetermijncontracten en capaciteitsbeperkingen, evenals CCS in Nederlandse AVI's.

De mate waarin Nederlandse AVI’s door de fiscale maatregelen worden geraakt en de snelheid daarvan zal voor elke Nederlandse AVI’s anders zijn. De mate waarin Nederlandse WIP's beïnvloed zullen worden door de fiscale maatregelen zal afhangen van factoren zoals hun blootstelling aan volumerisico's (bv. hun huidige afhankelijkheid van geïmporteerd afval), hun marktpositie op de afvalmarkt en hoe dichtbij ze bij buitenlandse concurrenten en CCS-infrastructuur zitten. Daarnaast zullen de afvalstromen bij AVI’s die een langetermijncontract hebben met een gemeente of een afvalinzamelaar hebben voor een bepaalde tijd gegarandeerd zijn. Pas wanneer dat contract vernieuwd moet worden, zullen afvalontdoeners mogelijk kiezen voor goedkoper opties zoals het exporteren van afval.

De fiscale maatregelen zullen naar verwachting leiden tot minder afvalverbranding in Nederland en een daling van de bijbehorende milieueffecten, hoewel een deel zich mogelijk naar het buitenland verplaatst. Minder afvalverbranding leidt tot een lagere directe CO_2-uitstoot en minder uitstoot van schadelijke verontreinigende stoffen in de lucht, het water en de bodem. Tegelijkertijd kunnen de hogere afvalverbrandingskosten ook tot meer milieuvervuiling leiden, doordat het risico op afvalvermenging, illegale stort en zwerfvuil toeneemt. Echter, in de literatuur is geen bewijs gevonden dat deze effecten zich op grote schaal zullen voordoen. Daarnaast zal het afval dat niet in Nederland maar in het buitenland wordt verwerkt de milieueffecten in eigen land weliswaar verminderen, maar de milieueffecten in het buitenland vergroten. Naast verlies van grondstoffen in Nederland kan een dergelijke verschuiven tot een relatief hogere uitstoot van CO_2 en andere verontreinigende stoffen buiten Nederland leiden (bv. als het afval wordt gestort of naar minder efficiënte AVI's gaat). Tegelijkertijd kan de wereldwijde CO_2-uitstoot ook afnemen. De afvalkosten in de landen die momenteel afval naar Nederland exporteren zullen namelijk stijgen, hetzij door de hogere poorttarieven in Nederland, hetzij doordat alternatieve oplossingen voor afvalverwerking gevonden moeten worden die duurder zijn dan de huidige situatie. Dit kan ertoe leiden dat in de exporterende landen minder afval wordt geproduceerd of meer wordt gerecycled, wat weer tot lagere milieueffecten leidt.

De afvalvolumes door de fiscale maatregelen zullen waarschijnlijk sterker dalen in de budgetramingen van FIN door er minder afvalimport en meer export wordt verwacht. Table 0-2 vergelijkt de geraamde daling in afvalvolumes tussen de FIN-analyse van mei 2025 en deze studie, beide ten opzichte van het afvalvolume in 2030 in het basispad. Hoewel de afname van gestort afval in beide analyses vergelijkbaar is, verschilt in de reductie in verbrand afval na fiscale maatregelen. De raming in deze studie veronderstelt dat een daling in afvalverbranding in Nederland al in het basispad verwacht kan worden. Het huidige traject van de CO_2-heffing kan er namelijk al toe leiden dat Nederlandse AVI's minder concurrerend worden om buitenlands afval te verbranden. Hierdoor valt de import van afval voor verbranding mogelijk volledig wegvalt (onderkant bandbreedte basispad). De fiscale maatregelen zouden vervolgens tot een sterkere afname in verbrand afval kunnen leiden doordat afvalvermindering en betere afvalscheiding worden gestimuleerd. Daarnaast zouden de hogere kosten voor Nederlandse AVI’s de daling in afvalimport kunnen versnellen, als de import niet al in het basispad volledig is weggevallen (bovenkant bandbreedte basispad). Ten slotte wordt mogelijk meer afval uit Nederland geëxporteerd voor verbranding in het buitenland door de fiscale maatregelen, wat nog niet is meegenomen in Tabel 0-2.

Tabel 0-2 Vergelijking van de geraamde afvalvolumes in het 2030 basispad en afvalreductie in de FIN-analyse en deze studie ten opzichte van het 2030 basispad

Afvalvolume in Nederland*	*Raming in*	*Totaal verwerkt volume in 2030 (basispad)*	2030 reductie na fiscale maatregelen vs het 2030 basispad	2035 reductie na fiscale maatregelen vs het 2030 basispad
Gestort afval	*FIN-analyse*	*Geen verandering vanaf 2021*	-0,1 Mt	-0,2 Mt
	Deze studie	***1,3 Mt***	**-0,2 Mt**	**-0,3 Mt**

			(Δ = -0.1)	(Δ = -0.1)
Verbrand afval	*FIN-analyse*	*Geen verandering vanaf 2021*	-1,1 Mt	-1,3 Mt
	Deze studie	***5,9 - 7,2 Mt***	**-2,5 - -1,1 Mt** (Δ = -1.4 - 0)	**-2,9 - -0,9 Mt** (Δ = -1.6 - +0.4)

** Bevat niet de potentiële impact van export. Aan de onderkant van de bandbreedte van het basispad valt de import van afval volledig weg, terwijl aan de bovenkant van de bandbreedte van het basispad de import ongewijzigd blijft. Δ toont het verschil met de schattingen van deze studie met de FIN-analyse, waarbij een negatieve waarde betekent dat een hogere afvalreductie dan de FIN-analyse is ingeschat en een positieve waarde voor een lagere reductie dan de FIN-analyse.*

Hoewel Nederlandse AVI's de daling van afval zouden kunnen dempen door CCS toe te passen, is het waarschijnlijker dat de daling van afvalvolumes aan de hoge kant van de bandbreedte zit, wat de situatie zonder CCS voorstelt. De bandbreedtes in afvalreductie in Tabel 0-2 geven de situatie zonder en met CCS in AVI's weer, waarbij een hogere afvalreductie overeenkomt met geen CCS (oftewel -2,5 Mt in 2030 en -2,9 Mt in 2035). Zoals eerder benoemd is de business case voor CCS bij AVI's al zeer onzeker in het basispad, en de fiscale maatregelen zullen de business case voor CCS naar verwachting nog onzekerder maken. Een sterkere daling in afvalvolumes is daarom waarschijnlijker, oftewel de situatie met AVI's zonder CCS.

Het generieke ASB-belastingtarief moet dus mogelijk verder worden verhoogd dan in de FIN-ramingen om de extra inkomsten van 567 miljoen euro via de nieuwe fiscale maatregelen te realiseren. Doordat de afvaldaling mogelijk groter is dan is geraamd in de FIN-analyse van mei 2025, zal de ASB-grondslag op verbranding kleiner zijn en kunnen de budgetramingen dus lager uitvallen. Een verdere verhoging van het ASB-belastingtarief kan er echter weer toe leiden dat de gedragseffecten door de fiscale maatregelen wordt versterkt. Het gevolg hiervan is nog een grotere daling van afval, wat er weer toe leidt dat het verhoogde ASB-belastingtarief niet volstaat om de benodigde 567 miljoen euro aan extra inkomsten te genereren.

List of abbreviations

ASB	Dutch waste disposal tax (NL: afvalstoffenbelasting)
BEC	Biomass energy plant
CAPEX	Capital expenditures
CBS	Centraal Bureau voor de Statistiek
CCS	Carbon capture storage
CCU	Carbon capture utilisation
DPRs	Dispensation rights
EC	European Commission
EIB	European Investment Bank
EPR	Extended producer responsibility
ETS	EU emissions trading system
EVOA	EU Waste Shipment Regulation
FIN	Dutch Ministry of Finance
GHG	Greenhouse gas
GJ	Giga joule
LHV	Lower heating value
MEUR	Million euro
MJ	Mega joule
MSW	Municipal solid waste
NABU	Naturschutzbund Deutschland
NECP	National Energy and Climate Plan
NMDA	Niet-meer-dan-anders (NMDA) tariff
NUTS	Nomenclature of Territorial Units for Statistics
OPEX	Operational expenditures
PFAS	Per- and Polyfluoroalkyl Substances
PJ	Peta joule
PMD	Plastics, cans and beverage cartons
RDF	Refuse-derived fuel
RWS	Rijkswaterstaat
SDE++	Sustainable energy production subsidy scheme
WIP	Waste incineration plant

1 Introduction

1.1 Context

The Dutch government is proposing several measures to further foster the achievement of the 55% emissions reduction target for 2030. These efforts focus predominantly on the exploration of different means for CO_2 pricing. With the aim of meeting tax revenue of €567 million, and reducing carbon emissions, the government originally proposed the introduction of a levy on virgin fossil polymers. However, this measure has been ruled out and the government is now investigating a package of alternative fiscal measures consisting of two main interventions: **a reform of the waste tax (*hervorming afvalstoffenbelasting – ASB*)** and **a more stringent CO_2 levy on Dutch waste incineration plants**.[1]

Comparable to the aim of the levy on virgin fossil polymers, the goals of these interventions are twofold: **Filling the tax revenue gap of €567 million** due to the virgin fossil polymer levy not being introduced anymore, and **achieving a CO_2 emissions reductions of 2 Mt CO_2 in 2030**.[2] Further, the proposed measure package also intends to accelerate the transition to a more circular economy.

Therefore, the Dutch Ministry of Finance (FIN) is seeking a more in-depth analysis of the potential impacts of the proposed package of fiscal measures. This analysis aims to **check the validity of the estimates** as well as **identify potential further behavioural impacts** that have not yet been identified, and also includes an assessment of the **potential impacts on waste exports**. The analysis is ultimately aimed to facilitate the Dutch government's decision-making process with concern to these fiscal measures.

1.2 Objective

The primary objective of this study is to examine the impact of various fiscal measures on waste incinerators and existing circular infrastructure (e.g., sorting and recycling plants), with the following sub-objectives:

1. **Sub-objective 1** is to develop a comprehensive overview of the potential behavioural impacts that would be expected from the proposed package of fiscal measures; and
2. **Sub-objective 2** is to quantitatively assess the potential possibilities regarding waste export and import.

The analysis will consider the impact of the package of fiscal measures as further described in Chapter 3. To achieve this, a mixed-method approach has been applied, including the following methods:

- A **behavioural impact mapping** to shed light on the expected impacts of the proposed measures package;
- An **assessment of the FIN analysis** already conducted to verify the findings or uncover discrepancies; and
- A **quantitative cost benchmarking** and an **assessment of waste incineration and recycling capacity** to understand the potential for shifts in Dutch waste trade flows.

All of these steps have been informed by publicly available data, literature review, interviews with key experts and a sounding board meeting with key stakeholders. A list of interviewees can be found in Annex A .

[1] Rijksoverheid (2025). Kamerbrief over fiscale beleids- en uitvoeringsagenda 2025.
[2] Rijksoverheid (2025). Kamerbrief over fiscale beleids- en uitvoeringsagenda 2025.

1.3 Scope

This study focuses on the waste management system in the Netherlands, with a special focus on waste incineration plants (WIPs). The following aspects are **out of scope** of this study:

- Provision of a quantitative assessments of the behavioural impacts beyond analysing the quantitative results resulting from the previous FIN study;
- Coverage of waste incineration that happens outside of a WIP (e.g., mono-incinerators of sewage sludge or biomass power plants);
- Assessment of the impacts on other waste management approaches and their national impacts (such as on the self sufficiency regarding landfilling);
- Assessment of the impacts on specific sectors that generate the waste for incineration beyond a high level categorisation (i.e. industry, citizens, municipalities);
- Assessment of the impacts of potential changes in policies affecting actors in the waste management system in the Netherlands, such as that the potential inclusion of WIPs in the EU Emissions Trading System (ETS);
- Quantitative assessment of the impacts that may arise as a result of the cost benchmarking and opportunity assessment as described in Chapter 5;
- Legal and regulatory analysis, especially regarding the (im)possibilities of importing and exporting waste; and
- A behavioural impact assessment of reduced financing under the Climate Fund (measure 3 as described in Chapter 3.2) on initiatives that can be supported.

1.4 Structure of this report

This report is structured as follows:

- **Chapter 2 Waste incineration in the Netherlands: System structure and key actors** provides an overview of the current waste flows in the Netherlands and the key actors involved in the system of waste incineration.
- **Chapter 3 Package of fiscal waste measures** describes the fiscal measures as suggested by the Ministry of Finance.
- **Chapter 4 Behavioural impacts assessment** shows per key stakeholder which impacts are to be expected from the suggested package of fiscal measures.
- **Chapter 5 Deep-dive on the potential impacts of the fiscal measures on waste trade flows** assesses the impacts of the proposed measures on waste flows, and waste treatment capacity, a cost benchmarking, and the impact on waste trade flows.
- **Chapter 6 Conclusions** summarises the main findings.
- **Annex A Stakeholders consulted** provides a list of the stakeholders interviewed for this study.
- **Annex B Detailed methodological notes** describes the methodology applied in Chapter 5 in more detail.

2 Waste incineration in the Netherlands: System structure and key actors

The Dutch waste incineration ecosystem is complex and based on the interplay of diverse stakeholders with different interactions. Section 2.1 delves into the current waste situation in the Netherlands, highlighting the common waste management approaches. Section 2.2 elaborates on the key stakeholders within this ecosystem, investigating their roles and relationships.

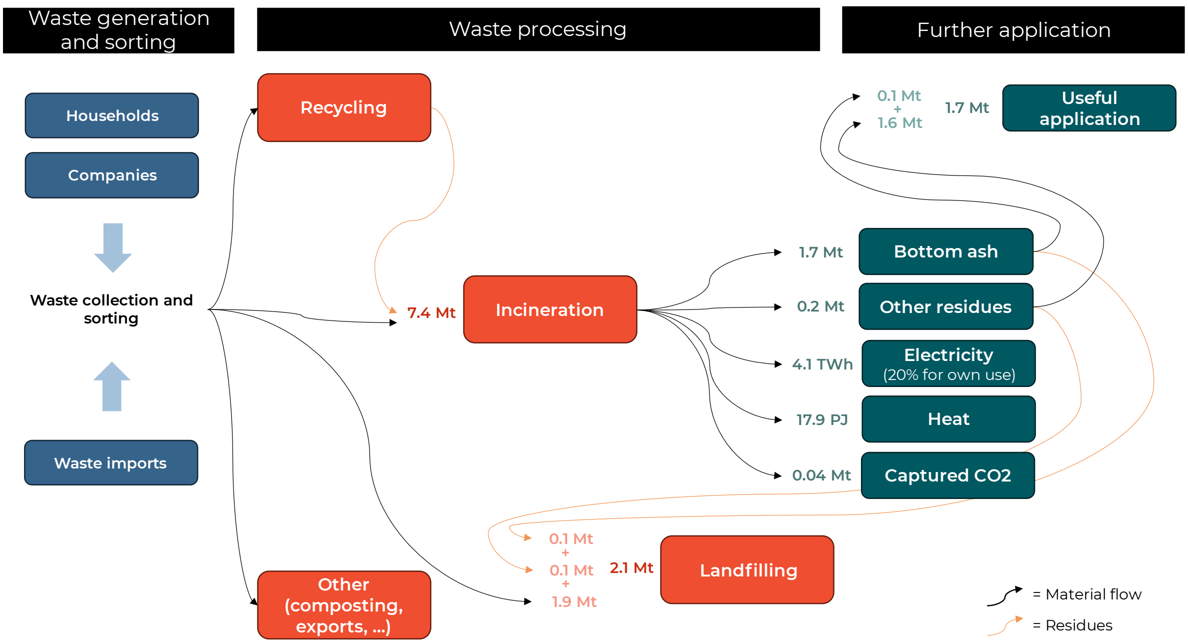
2.1 Current waste generation and processing in the Netherlands

Waste management can be split into three main steps:

1. **Waste generation and sorting** (including sorting at source as well as the intermediate steps before being actually processed);
2. **Waste processing**; and
3. **Further application of waste materials**.

Waste, as defined in the Dutch Environmental Management Act (*NL: Wet milieubeheer*), includes all materials that a holder discards, intends to discard or has to discard.[3] The figure below provides an overview of the waste management steps in the Netherlands with figures focused on waste incineration.

Figure 2-1: Flow of waste materials in the Netherlands in 2022, focussing on incineration



Source: Own illustration. Based on: RWS (2024). Afvalverwerking in Nederland, gegevens 2022.

[3] Dutch government (2025). Wet milieubeheer.

In total, **about 84 million tonnes (Mt) of waste were treated** in the Netherlands in 2022, with most of the waste stemming from the Dutch economy. About one third comes from abroad.[4] Before being sent to further processing, waste is generally first sorted which can happen via **pre-collection separation** of waste, which is often applied only to organic waste, glass and paper/board waste. For example, roughly 60% of Dutch municipal waste is sorted via pre-collection.[5] The second option is **post-collection sorting**, which is applied by some of the large municipalities (incl. Amsterdam, Rotterdam, Leiden and Utrecht). Post-collection sorting entails the bundling of waste and in practice mainly concerns plastics, cans and beverage cartons (PMD waste) and biowaste. This approach makes it difficult to generate mono-streams of waste – containing one specific material or narrowly defined group of materials – which are valuable to recyclers.[6]

The ability to separate waste streams, among other factors, impacts the choice of the waste processing approach. For example for plastic packaging waste, pre-sorted industrial waste is 100% sent to recycling, whereas of the pre-sorted household waste 57% is sent to recycling and 43% to incineration.[7] On average, with differences between the different waste streams, the **dominant processing method in the Netherlands is recycling, followed by incineration**. Furthermore, a huge part is exported for treatment abroad. Only a small fraction (2.1 Mt) is sent to landfill. Regarding the use after processing, the so-called further application, most recycled materials were turned into (secondary) raw materials, while waste incineration contributes to the production of electricity, heat, and to a small extent, captured CO_2. Each waste processing approach is further elaborated in the following sub-chapters.

2.1.1 Waste incineration

WIPs in the Netherlands had in 2022 a total capacity to incinerate 8.3 Mt of waste per year.[8] However, this capacity was not fully utilised, mainly due to issues such as malfunctioning and maintenance work. Hence, the **WIPs incinerated 7.4 Mt of waste** that year, which is slightly less than in the previous two years. Despite this, the trend over the past decade has remained rather stable. The trend, and source of waste incinerated in the Netherlands is illustrated in Figure 2-2.

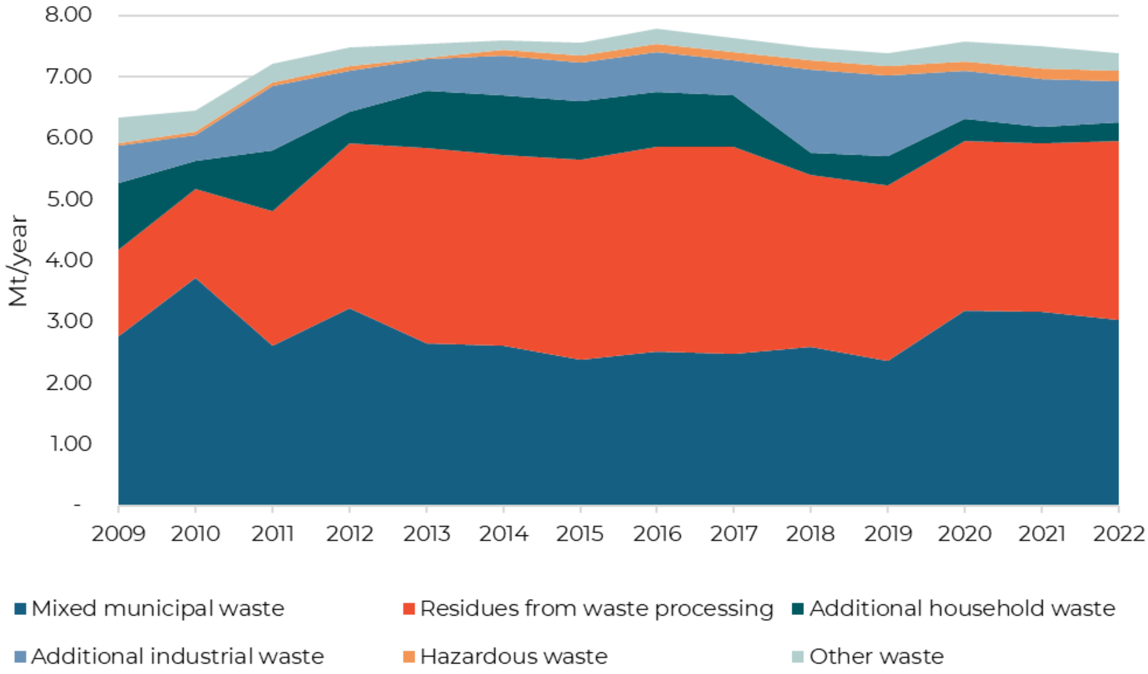
The source of the incinerated waste has remained relatively stable over the years, with mixed municipal waste and waste processing residues being the most important sources. The share per source in 2022 was as follows:[9]

- **Mixed municipal waste (3 Mt; 41%):** Mainly waste from households but also from sources such as shops, offices and public institutions;
- **Residues from waste processing (2.9 Mt; 40%):** Mainly residual materials after separation. This mainly concerns waste that is delivered unsorted and separated at the sorting location into a stream of waste for incineration and a stream that can be recycled (i.e. post-separation).[10] It also includes residues from recycling and other waste processing methods;
- **Additional industrial waste (0.7 Mt; 8%):** Waste produced in industrial processes that does not reassemble household waste. For example, it can consist of residual materials, packaging materials, chemical waste, sludge, contaminated materials, etc.;
- **Additional household waste (0.3 Mt; 4%):** Waste that is not collected under municipal contracts, such as medical waste (e.g. from home dialysis) , as well as waste self-delivered to non-municipal sites;
- **Hazardous waste (0.2 Mt; 3%):** Waste that poses significant risks to human health or the environment due to its toxic, flammable, corrosive, or reactive properties; and

[4] CBS (2024). Afvalbalans, afvalsoort naar sector; nationale rekeningen.
[5] NVRD (2024). Benchmark Huishoudelijke Afval.
[6] Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry.
[7] De Leeuw (2022). Reducing greenhouse gas emissions from municipal solid waste incineration by carbon capture and enhanced recycling.
[8] CLO (2025). Afvalverbrandingsinstallaties, aantal en capaciteit, 1970-2022.
[9] Rijkswaterstaat (2024). Afvaldatabase. (Landelijk niveau – Afvalverwerking Nederland – Afvalverbrandingsinstalaties)
[10] TNO (2024). Een verkenning naar de verbranding van Nederlands afval en de milieuprestatie in 2030 en 2050.

- **Other waste (0.3 Mt; 4%)**.

Figure 2-2: Share of source of total waste incinerated in the Netherlands, 2009-2022



Source: RWS (2024). Afvaldatabase. (Landelijk niveau – Afvalverwerking Nederland – Afvalverbrandingsinstallaties).

The composition of the waste entering WIPs is similar to other EU countries; besides **plastics, which is lower in the Netherlands than in other EU countries**.[11] Most of the Dutch municipal waste that is incinerated is organic waste, which accounts for about one-third. This is followed by paper waste, accounting for about 25%, and plastics, accounting for 12%. Less frequent are glass, textiles and metal (accounting for 12% in total). The remaining fifth is made up of composting residues, industrial waste, hospital waste and residue from municipal waste services.[12]

Some Dutch WIPs also rely on waste imports for incineration. In 2022, about 6.3 Mt of incinerated waste originated from the Netherlands, and 1.1 Mt was imported.[13] The Netherlands also exported combustible waste in a similar magnitude to the amount imported. More information on the waste flows for incineration can be found in Section 5.1.1.

Incineration residues

As an output, **WIPs produce heat, flue gas and residues**. The produced heat can be sold to households, companies and industry as steam, district heating or electricity, as further discussed in the sub-chapter below. Flue gas is mostly cleaned and then released to the environment as CO_2 and water vapor. Residues consist mainly of bottom ash, with the remaining residues being spray-dried salt, filter cake, slip, gypsum, and dry matter from fly ash.

In 2022, about 26% of the input waste resulted in incineration residues. About 90% of the residues are bottom ash, weighing 1.7 Mt.[14] About 10% of the bottom ash consists of metals and the rest materials that could potentially be reused for useful applications. For example, when bottom ash reaches a certain quality level, it can be reused as input materials for construction. In 2021, about 86% of the

[11] De Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry.
[12] De Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry
[13] CLO (2025). Afvalverbrandingsinstallaties, aantal en capaciteit, 1970-2022.
[14] RWS (2024). Avfalverwerking in Nederland, gegevens 2022.

produced bottom ash could be repurposed for use under roads as a substitute for gravel or sand, or in concrete products.[15] The rest of the bottom ash cannot be further processed or is the resulting cleaning residue from processing the bottom ash. The incineration residues other than bottom ash were 0.2 Mt in 2022, of which nearly 60% were sent to landfill.[16]

Power and heat generation

All of the Dutch WIPs produce energy in form of heat or electricity for further use in their processes.[17] In 2022, the total energy output (i.e., electricity and heat) from WIPs amounted to **33 PJ, which corresponds to about 1.1% of the Netherlands' total energy consumption**. Out of this energy, **4.1 TWh electricity** was generated, of which approximately 80% was supplied to the grid or to other external facilities. The remaining 20% was used internally, predominantly for flue gas treatment and ancillary processes on the waste incinerator site.[18]

Additional to the electricity, the WIPs delivered **18 PJ of heat** in 2022, mainly for industrial processes and greenhouse heating.[19] About **20% of the heat was used for district heating** in the Netherlands. This heat is often used to replace natural gas heating.[20]

CCS and CCU

Another business activity of WIPs is the capturing and utilisation/storage of carbon emissions (CCU/CCS). This can serve as a CO_2 emission reduction technology and generate additional income. In 2022, **WIPs captured 44 ktCO_2**.[21] WIPs have additional CCU projects planned with a capacity to capture at least 415 ktCO_2/year.[22]

In the Netherlands, the captured carbon from WIPs is mainly **sold to greenhouse horticulture**, where it contributes to CO_2 emissions reduction as less natural gas needs to be burnt to produce CO_2. However, the captured CO_2 that is transported to greenhouses is **not considered as an emission reduction under the CO_2 levy that WIPs fall under (nor EU ETS)** since the CO_2 delivered to greenhouses is released shortly after delivery, either by venting from the greenhouse or after harvest of the crop.[23] The revenues for WIPs generated from the sales of CO_2 is estimated to be €108/t CO_2 in 2025.[24] The demand for CO_2 of greenhouses fluctuates throughout the year, with a peak in the summertime due to growth season, in combination with a lower heat demand.[25] Additionally, captured carbon is utilised by the food industry and the production of construction materials.[26] These are, however, still explorative business activities.

[15] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
[16] RWS (2024). Avfalverwerking in Nederland, gegevens 2022.
[17] TU Delft (2024). Afvalverwerking.
[18] RWS (2024). Avfalverwerking in Nederland, gegevens 2022.
[19] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
[20] CE Delft (2022). The natural gas phase-out in the Netherlands.
[21] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[22] Based on CCU projects from companies with WIPs with a positive SDE++ subsidy decision for the subsidy rounds 2020-2023 from RVO (2025). SDE-projecten in beheer juli 2025. In de SDE++ 2024 round, subsidies were requested for an addition 0.08 Mt in CCU projects, but the assessment of applications has not been concluded yet available as indicated in KGG (2025). Update SDE++: resultaten 2024 en openstelling 2025.
[23] This does reduce the need for greenhouse horticulture to generate their own CO_2, and thus may displace some use of natural gas and with that, reduce the CO_2 emissions in greenhouse horticulture. Greenhouses fall under a separate CO_2 levy than that the one WIPs fall under.
[24] Based on the preliminary *correctiebedrag* for CCU from PBL (2025). Voorlopige correctiebedragen 2025. This represents the avoided costs of generating CO_2 in greenhouses.
[25] Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry.
[26] Twence (n.d.). CO2 afvangen en leveren.

CCS in WIPs is currently not yet occurring. There are plans for CCS in WIPs for 1.2–2.0 Mt CO_2 per year,[27] although the investment decisions for these plans have yet to be taken. Therefore, there is no certainty yet that the planned CCS capacity in the WIPs will be realised.

Environmental impacts

WIPs have climate impacts through their greenhouse gas (GHG) emissions from waste incineration and might contribute to environmental pollution. In 2021, the WIPs emitted about 7.5 Mt CO_2, out of which 2.7 Mt was linked to fossil fuel-based waste and the rest is biogenic CO_2. Out of the total emissions, about 0.4 Mt fossil CO_2 were linked to imported waste.[28]

Furthermore, other environmental pollution aspects can be linked to the WIPs' activities:

- **Potential contribution to contamination with dioxins, PFAS and heavy metals.** While the extent to which waste incineration contributes to environmental contamination is yet clear, some studies show that the environmental surrounding of WIP shows high contamination values, such as PFAS in water bodies and dioxins in eggs.[29]
- Depending on the type and composition of waste, as well as transport distances involved (especially when importing waste), incineration has impacts in terms of **toxic and ozone-related effects**.[30]
- The residues of incineration can also contribute to contamination. Unwashed bottom ash can be immobilised in concrete blocks and floors, for example. Thereby, contaminants may still be released to the environment over time or through reuse.[31] WIPs can mitigate this through washing and cleaning bottom ash. Also, from a resource perspective, it would be more favourable to wash the ash to a level at which it can be freely **applied to further use than landfilling** it.[32] Cleaning of bottom ash is already occurring in WIPs.
- Lastly, incineration is a less favourable waste management approach in terms of circular economy, especially compared to recovery and recycling, since it leads to a **permanent loss of potential secondary materials**.

2.1.2 Waste landfilling

The Netherlands has a **landfilling ban in place since 1995**, on combustible and biodegradable waste.[33] The ban was updated in 2018 to extend to additional waste streams. This regulation bans the landfilling of several waste streams, including batteries, oil filters, end-of-life vehicles, tyres, bio-waste, sewage sludge and WIP bottom ash.[34]

However, there are **exceptions to these prohibitions** if no other form of management than landfill is (temporarily) possible. A reason for exception is if the waste management faces challenges over longer periods. The provincial executive (*NL: Gedeputeerde Staten)* or the minister, by means of a ministerial regulation, can then designate waste materials for which, in their opinion, temporary storage is not possible and no other method of waste management is possible other than landfill.[35] This is referred to as **landfilling with an exemption** (*NL: storten met ontheffing*).

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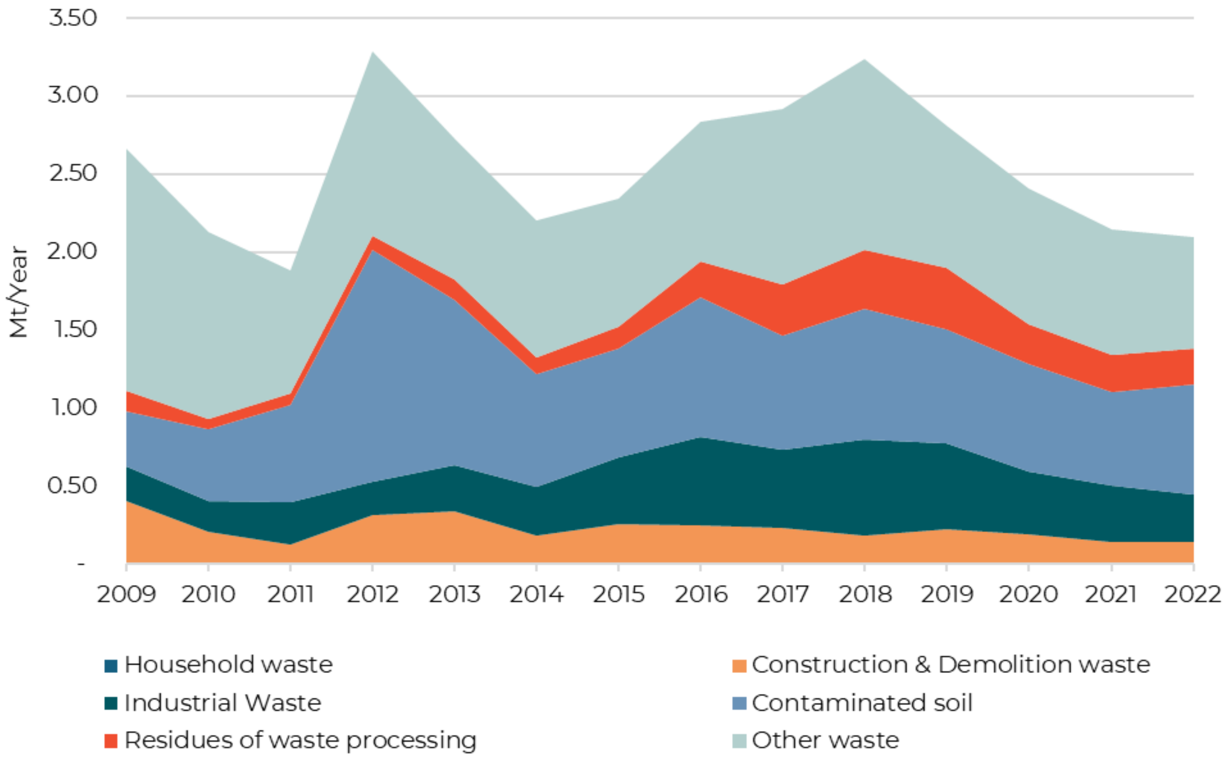
[27] This includes both fossil and biogenic CO_2. The lower range reflect the capacity indicated specifically for CCS and the higher range includes capacity for captured CO_2 for which it is not specified whether it is for CCS or CCU as extracted from ABDTOPConsult (2024). Verkenning maatwerkafspraken afvalverbrandingsinstallaties.
[28] Based on an emission factor of 1.01 tCO_2/t-waste and a biomass fraction of 64% in line with the numbers used by FIN for the budget estimation.
[29] Arkenbout, A. and Bouman, K. (2025). Biomonitoring Research on persistent organic pollutants (POPs) in the surrounding environment of the WtE waste incinerator REC, Harlingen, the Netherlands 2025.
[30] CE Delft (2022). Italiaans restafval verbranden in Nederland.
[31] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
[32] CE Delft (2022). Milieuprijzen afval.
[33] Overheid.nl (2025). Besluit stortplaatsen en stortverboden afvalstoffen.
[34] Overheid.nl (2024). Besluit stortplaatsen en stortverboden afvalstoffen.
[35] RWS (n.d.). B12 Storten.

In 2022, **2.1 Mt of waste was sent to landfills**. Out of this, 1.8 Mt was actually disposed of and 0.3 Mt was used as building materials as stipulated in the Soil Quality Decree.[36] Over the past years, there was a particular decrease in the amount of commercial waste, shredder waste (i.e., metals) and asbestos sent to landfill. Simultaneously, the amount of soil cleaning residues deposited has increased as soil is now increasingly undergoing cleaning procedures.[37] The amount of residues from processing has also decreased over the past five years. 65% of the residues currently originate from the processing of construction and demolition waste. The remaining 35% come from processing industrial waste. Since 2010, household waste is not landfilled anymore. The total share of the waste landfilled by source is visualised in Figure 2-3. Thereby, the peak in 2012 can be explained by the fact that landfill tax was abolished on 1 January 2012, among others.[38] To the increase until 2018 contributed, among other things, a growing amount of residual materials from WIPs, especially bottom ash.[39]

Figure 2-3: Sources of waste landfilled in the Netherlands, 2009-2022

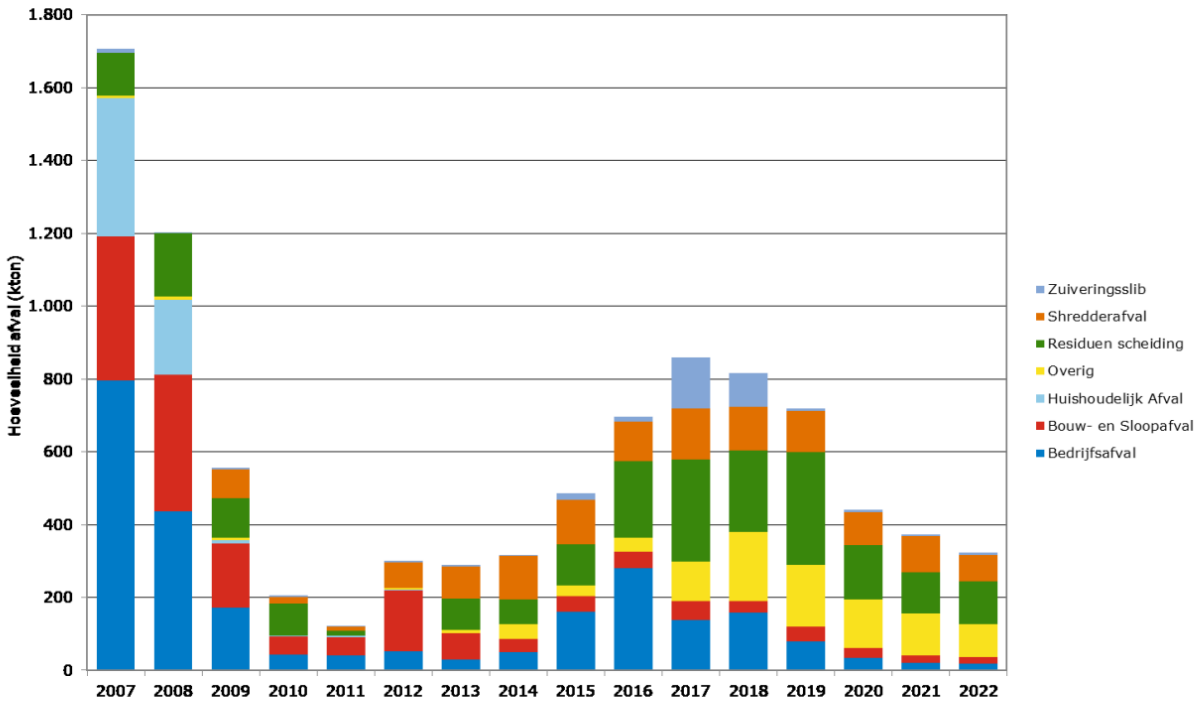


Source: RWS (2024). Afvaldatabase. (Landelijk niveau – Afvalverwerking Nederland – Stortplaatsen).

Of the 1.8 Mt of waste actually being disposed of in landfills, 0.3 Mt related to **landfilling with an exemption** in 2022 (Figure 2-4).[40] Since 2017, there has already been a sharp decline in waste landfilled with an exemption. This decline can be attributed to different factors. The main ones are the costs for waste landfilled with an exemption having increased over that period and a decrease in imported waste.[41]

[36] RWS (n.d.). Storten van afval 2022.
[37] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[38] CLO (2013). Stortplaatsen, aantal en capaciteit, 1991-2012.
[39] RWS (2022). Afvalverwerking in Nederland, gegevens 2020.
[40] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[41] Ecorys en CE Delft (2024). Evaluatie afvalstoffenbelasting.

Figure 2-4: Volume of waste landfilled with an exemption, 2007-2022



Source: RWS (2024). Afvalverwerking in Nederland, gegevens 2022.

Environmental impacts

In general, landfilling is associated with various environmental pollution impact, such as:[42]

- Underground water pollution due to the leaching of organic, inorganic, and various other substances of concern (SoC) contained in the waste,
- Air pollution due to suspension of particles,
- Odor pollution from the deposition of municipal solid waste, and
- Marine pollution from any potential run-offs.

In the Netherlands, there are differences in environmental impact between modern and old landfills. About 6% of former Dutch landfills[43] have been classified as serious and urgent cases for environmental health reasons. The greatest risk linked to that is **soil contamination**.[44]

Nowadays, the Netherlands has strong regulations in place, which aim to minimise these environmental impacts. Hence, a main **environmental impact is the loss of resources**. However, as Dutch waste is currently not supposed to be landfilled when other waste management options are possible, modern landfills are sinks for residues or 'hazardous material' from the recycling process that are not applicable for further save use.[45]

[42] Siddiqua, A., et al. (2022). An overview of the environmental pollution and health effects associated with waste landfilling and open dumping.
[43] "Former" means that operations ceased before 1 September 1996. After that date, operational landfill sites fell under the 'statutory regulations for the aftercare of operational landfill sites (Aftercare Regulations under the Environmental Management Act, formerly the Leemtewet). (Informatiepunt Leefomgeving)
[44] Bodembeheer van de Toekomst (2021). Informatieblad Beheer en gebruik van voormalige stortplaatsen onder de Omgevingswet
[45] Cocoon (2018). Landfill management in the Netherlands.

2.1.3 Waste recycling

The Netherlands has well-established recycling infrastructure.[46] In 2022, nearly 60% of total municipal waste was recycled, placing the country among the **frontrunners in the EU** in terms of circularity performance.[47] Thereby, depending on the waste stream, recyclers in the Netherlands can be strongly dependent on the import of waste. For example, the Netherlands is a **net importer of plastic waste for recycling** and it is expected that by 2030, Dutch plastic recyclers will not be able to cover half of their feedstock needs. This would be required to meet the domestic demand resulting from mandatory content requirement and simultaneously support the position of the Dutch plastics industry within Europa.[48]

In general, the **recycling efficiency depends on the waste stream**. For example, the capture rate[49] in the Netherlands – a performance indicator of the effectiveness of waste separation – varies between 29% for textiles to 86% for wood. Room for improvement exists especially for plastics and textile waste, as well as, to a smaller extent, bio-waste, paper and cardboard, and glass.[50]

Additionally, while a high rate of recycling is theoretically feasible in the Netherlands, the flourishing of the sector is still limited. For example, 30% of the total plastic waste is recycled. However, out of this, about **50-80% of the materials can be recovered, the rest is incinerated**.[51] Furthermore, less than 10% of plastic packaging in the Netherlands is currently reused as secondary materials.[52] Additionally, most of the recycled waste (i.e. non-organic waste streams) is of low-quality, meaning that most of the material's value is lost.[53] Besides the waste's quality, the ability for waste recycling depends on regulations, the costs for recycling compared to incineration, and the sustainability approach of the waste manager.[54]

The main reason why the recycling industry in the Netherlands struggles to flourish is that **secondary streams often cannot compete with virgin materials**, both in terms of price and, in some cases, quality. This is particularly evident for plastics, where the technical and/or economic possibilities to recycle plastic types back to the same quality as their virgin equivalent remain limited. As a result, the business case for investments in advanced sorting and recycling infrastructure remains weak. Quality differences between waste streams, and even within a single category, reinforce this dynamic. Consequently, a large share of material still ends up being incinerated, which generates energy but simultaneously leads to the loss of valuable resources and additional costs through the waste tax and CO_2 levy.

Environmental impacts

Recycling processes themselves can still have negative environmental impacts, i.e. due to CO_2 emissions. Additionally, the recycling output is not used to generate energy as done for incineration. However, the stronghold of recycling is the avoidance of CO_2 emissions due to the production of primary materials. Thereby, the potential for CO_2 savings depends on the waste stream: Besides the

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[46] This study focusses on the current recycling infrastructure (i.e., mechanical recycling) and does not explore upcoming technologies such as chemical recycling (e.g., gasification, pyrolysis or depolymerization). Only where relevant and information is available does this study specify recycling methods, which can differ for different waste stream types.
[47] EEA (2024). Waste recycling in Europa.
[48] KPMG (2023). Plastic feedstock for recycling in the Netherlands.
[49] Weight of a certain material separately collected for recycling / the weight of the material in total municipal waste
[50] EEA (2023). Early warning assessment related to the 2025 targets for municipal waste and packaging waste – The Netherlands.
[51] The lower range is based on to the share of PMD waste currently incinerated according to NVRD (2023). Benchmark huishoudelijk afval 2023. However, about 40% of the PMD waste is not sorted and directly goes to incineration. Of the waste that does get sorted, about 80% goes to recycling. The range corresponds to findings from interviews, with interviewees referring to the lower end of the range for plastic recycling.
[52] RIVM (2024). Recycled plastic packaging in the Netherlands still falls short.
[53] De Leeuw (2022). Reducing greenhouse gas emissions from municipal solid waste incineration by carbon capture and enhanced recycling.
[54] Ecorys (2024). Evaluatie afvalstoffenbelasting.

recycling of cardboard, all waste streams generate on average savings in CO_2 emissions.[55] The avoided CO_2 emissions are especially high for materials such as certain polymers, textiles, metals and oils.[56] Additional to the savings in CO_2 emissions, recycling can avoid resource extraction and energy consumption for primary material production.[57]

2.1.4 Waste import and export

The Netherlands plays a significant role in the import and export of waste. Specifically, the **Netherlands has been historically a major importer in the EU of waste streams for incineration**, including residues after sorting municipal waste. Between 2009 and 2011, waste exports for incineration exceeded imports, but since then, the Netherlands has imported more waste than it exports.[58] Waste imports for incineration steadily increased up to 2017, but since then, have declined, where currently, the Netherlands is a net exporter of waste for incineration since 2020.[59] This decline may be attributed to several factors, including the removal of the exemption from the waste tax on imports as well as the impact of the Covid-19 pandemic on trade dynamics.

Despite the available capacity for incineration and recycling within the country, the Netherlands was the **greatest exporter of untreated[60] mixed municipal waste for incineration in the EU**,[61] with Germany being the main destination (a further discussion on waste exports can be found in Section 5.1.1). The main reason for exporting waste that could also be processed within the Netherlands is likely cost and capacity aspects. Interviewees explained this already occurs for municipalities in proximity to the German border. The remaining exported waste was destined for specialised cement kilns or used for energy generation in biomass power plants.[62]

2.2 Key stakeholders

The waste ecosystem includes various stakeholders ranging from waste generators to waste processors. The following sections describe the key stakeholders, focussing on waste incineration in the Netherlands, as waste incineration is directly affected by the package of fiscal measures. Thereby, a high-level approach has been taken and it must be acknowledged that, in reality, the lines between the different actors are often less strict. For example, one enterprise might serve as a waste collector, incinerator and recycler. The stakeholders are described following the order of the waste value chain.

2.2.1 Waste generators

The waste for incineration stems from diverse sources whereby **mixed municipality waste has accounted for the greatest share** over the past two decades as shown in Section 2.1.1. This has been followed by waste from companies, other waste, bulky waste from households and hazardous waste. Lastly, there is also international waste which is processed in the Netherlands. However, this has been declining over the past years (see Section 5.1.1).

Non-hazardous industrial waste makes up for a smaller share of the total waste incinerated since industry is already more often obliged to separate waste, which allows for recycling, for example via the Extended Producer Responsibility (EPR) schemes. Industrial waste would only be sent to incineration if sorting and recycling is economically not feasible.

[55] Unegg, M., et al. (2023). Assessing the environmental impact of waste management: A comparative study of CO2 emissions with a focus on recycling and incineration.
[56] CE Delft (2021). Klimaatimpact van afvalverwerkroutes in Nederland.
[57] EPA (n.d.). Recycling basics and benefits.
[58] ABDTOPConsult (2024). Verkenning maatwerkafspraken afvalverbrandingsinstallaties.
[59] See Figure 5-1, including waste incinerated at WIPs categorised as either D10 or R1.
[60] It is important to note that mixed municipal waste can also be transported in other forms, such as refused-derived fuel (RDF), which is not included in this Eurostat dataset.
[61] Eurostat (2024). Waste shipment statistics.
[62] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.

Waste generators have limited direct influence on how waste is managed or processed. For households, the potential impact depends predominantly on the regulatory framework they engage in. For example, the ability for households to improve the separation of their waste largely depends on the waste collection approach chosen by the municipality. Interviewees raised that citizens have often only little awareness of further waste processing approaches. The citizens might correlate increasing waste collection fees rather with political decision making than with increasing gate fees. The choice of waste management approaches for industry is often dedicated by regulation and EPR schemes, as well as economic considerations. For the providers of residues, there is often no other option than incineration, especially given the landfill ban.

2.2.2 Waste collectors and separation

Waste collection entails the gathering of waste, including preliminary sorting and temporary storage of waste, and the transport of this waste to a location for processing or a place of use.[63] Waste collectors in the Netherlands are a **mix of public, semi-public, and private companies** that operate under **contract to municipalities or directly with commercial and industrial clients**. For household waste, collectors operate always under municipal responsibility. For industrial waste, they act within market conditions and environmental regulations (e.g., landfill bans, separation duties). Waste collectors are hence service providers that often **operate under predetermined conditions**, i.e. regarding the decision how the waste collected will be treated.

The collection of **household waste** is the responsibility of the municipalities, which is defined by the Dutch Environmental Management Act (*NL: Wet milieubeheer (Article 10.21)).*[64] The waste management approach can differ per municipality. In 2023, waste collection was most frequently conducted by public utilities and municipal services, covering two-thirds of Dutch households. 15% of Dutch households were covered by private companies, 14% by joint arrangements and 5% by public-private partnerships.[65] Municipalities often find agreements for joint MSW management.[66] Most household waste is collected using the kerbside collection approach (5 Mt) and bring/drop-off collection (3 Mt).[67] Furthermore, for the processing of municipal waste, i.e. resulting packaging waste, its further treatment is determined by EPR schemes, i.e. Verpact. The role of municipalities is discussed further in Section 2.2.6.

Businesses must separate their industrial waste, dispose it separately, and pay for the transfer of their waste. **Industrial waste** is collected by the enterprises contracting collectors under market conditions. Here, the collector often decides on the further waste management approach. However, enterprises can freely choose the waste collector and are thus often **guided by client preferences, costs, and legal obligations** (e.g., landfill ban, separation requirements). Industrial waste generators can also collaborate under the same scheme as the MSW collection, especially when the produced waste reassembles the composition of household waste.

The **financing of the waste collection** also differs per source of waste. Industrial waste generators agree on costs before contracting, and hence follow market terms. For municipal waste, the financing is organised via the responsible municipalities that recover their costs from its residents via a waste collection levy (NL: *afvalstoffenheffing*).[68][69] Thereby, the households can be charged with a general

[63] RWS (n.d.). B4 Inzamelen, vervoeren, handelen en bemiddelen.
[64] Afvalstoffenverordening
[65] RWS (2024). Afvalstoffenheffing 2023.
[66] Ecorys and CE Delft (2024). Evaluatie afvalstoffenbelasting.
[67] CBS (2024). Municipal waste; quantities.
[68] Besides the waste collection levy, there is also a cleaning fee (*reinigingsrecht*). The main difference between the levy and the fee is the obligation to pay for the citizen. In the case of the cleaning fee, the citizen must actually use the collection service. This is not the case with the waste collection levy. Hereby, citizens must pay the levy because they are users of a property that is subject to a collection obligation. However, since most municipalities have opt for the waste collection levy, the cleaning fee will not be further considered in this report.
[69] RWS (2024). Afvalstoffenheffing 2023.

tariff, or a differentiating tariff (DifTar) for different types of waste streams.[70] In 2023, 55% of Dutch municipalities, especially in the East of the country and in medium-sized cities[71], applied a DifTar; 42% determine the waste collection levy based on the household-size. 3% of the municipalities have a fixed tariff system without distinctions between household size or the amount of waste collected.[72] Additional to the tax, municipalities can request compensation for the collection of packaging materials when they collaborate with waste companies recognized by Verpact.

The **general waste collection levy rate showed an increase of nearly 5%** compared to 2022.[73] Given that the volumes of household waste collected and separated have hardly increased, this cost increase can be attributed to **higher collection and processing rates** and as well as **higher wage and vehicle costs**. In general, it was found that municipalities with high recycling rates have lower waste management costs, especially due to lower costs for incineration.[74]

2.2.3 Waste incineration plants (WIPs)

A WIP is defined by EU law, and as such adopted by the Netherlands, as a technical unit designed for the thermal treatment of waste (e.g., through oxidation), whether or not the heat generated is recovered.[75] In the Netherlands, there are currently **nine enterprises that run twelve WIPs**. Additionally, there are also specialised incineration plants, such as Thermal Soil Remediation Plants (TSRPs) and Sludge Incineration Plants (SIPs). TSRPs remediate contaminated soil due to the combustion of natural gas and SIPs process dried municipal sewage sludge.[76] The focus on this section is on the WIPs as they are directly affected by the fiscal measures.

According to consulted stakeholders, Dutch WIPs are leading in Europe in terms of heat extraction, post-separation of certain waste streams and CCU, among other things. The WIPs rely mainly on **continuously operating furnaces**, besides one intermittent one, which is specialised on certain waste inputs. They apply a 'moving grate' process and have a minimum and maximum throughput of waste to be incinerated, which is defined by mechanical and thermal thresholds.[77] This means that WIPs have optimal amount of waste to be incinerated to be able to work most effectively. Considering the decrease of waste available for incineration due to a stronger overall push for reducing and recycling waste,[78] stakeholders expect that the **competition for combustible waste** increases in the future.

The high demand for Dutch waste can lead to competition between the WIPs. Four of the companies are wholly publicly owned, with the owners being municipalities and, in the case of HVC, also eight water boards. ARN is both publicly and privately owned (51% public; 49% private). Attero, AVR, EEW and PreZero are fully privately owned.[79] Some interviewees indicated that the **different ownership models, operating structures and the contract details can increase competition among the WIPs**. On the one hand, when municipalities are the shareholder of a WIP, they mostly want to process as much waste as possible within their own waste processing facilities, to the extent allowed by Dutch public procurement rules. [80]On the other hand, other WIPs, and particularly private WIPs, have to compete in public tenders and thus face real market conditions. Additionally, the contract duration has an impact on the ability of WIPs for long-term planning regarding waste inputs.

[70] Ecorys (2024). Evaluatie afvalstoffenbelasting.
[71] Vang (2025). Informatie over het inzetten van diftar als beleidsstrategie.
[72] RWS (2024). Afvalstoffenheffing 2023.
[73] RWS (2024). Afvalstoffenheffing 2023.
[74] NVRD (2024). Benchmark Huishoudelijk Afval.
[75] Directive 2010/75/EU; Overheid.nl (2024). Activiteitenbesluit milieubeheer.
[76] De Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry.
[77] De Leeuw (2022). Reducing greenhouse gas emissions from municipal solid waste incineration by carbon capture and enhanced recycling.
[78] For example as part of the goals for the Dutch economy to be completely circular by 2050.
[79] ABDTOPConsult (2024). Verkenning maatwerkafspraken afvalverbrandingsinstallaties.
[80] .Whether municipalities can directly award waste processing contracts to the WIPs they own depends on the extent of the other (commercial) activities of their WIPs.

To fill the optimal incineration capacity, some WIPs also depend on imports. All WIPs in the Netherlands currently have the **R1 status**, which means that they are considered as energy efficient under EU legislation on waste. It also means that R1-classified waste imported from other countries to Dutch WIPs is considered a *recovery* activity and not a *disposal* activity, and thus facing fewer legislative restrictions than if they did not have the R1 status.[81]

However, waste incineration in the Netherlands is **relatively expensive** on average compared to the Netherland's main EU waste trading partners (for more information see Section 5.2). In general, WIPs charge gate fees of waste providers to accept material inputs. Information regarding the gate fees of WIPs is scattered but it was found that the height of these fees depends on the waste's caloric value. WIPs charge higher fees for low-caloric waste (such as certain paper, dry wood, textiles, and food waste) than for household waste, and lower fees than for household waste for waste with a high-caloric value (such as certain industrial waste). Nonetheless, overall and based on average tariffs for low- and high-caloric value waste, **industry is mostly charged the same gate fees as those required for municipal waste**.[82]

Additional income to WIPs is generated by selling residues for further use or providing energy to external stakeholders. Moreover, some WIPs include a final waste separation stage at the incineration site. These are AEB Amsterdam, Attero Noord BV and AVR Rijnmond.[83]

2.2.4 Recycling industry

Another key stakeholder in the ecosystem of waste incineration, and waste management in general, is the recycling industry. Recyclers and WIPs complement each other, and some enterprises that run a WIP are also active as recyclers (i.e., HVC and Attero). Furthermore, Omrin announced in its strategy to increasingly invest in recycling facilities.[84] At the same time, interviewees acknowledged that recyclers focus more on different waste streams than WIPs. Additionally, the technological standards of recycling in the Netherlands are high, but recycling still **produces residues that require further thermal treatment**.

As stated by some interviewees, recyclers in the Netherlands are **under high economic pressure** as they have rather high costs compared to recyclers in other countries, whereby the costs differ per waste stream. Consulted stakeholders said that many business models for recycling rely on EPR responsibilities. However, programmes, such as Verpact, also collaborate with recyclers abroad and choose for the most cost-effective options. Additional to the cost pressure, recyclers depend on high-quality waste streams, which require sufficient sorting efforts. The recyclers' ability to cover these costs due to revenues is low since their products compete with currently cheaper virgin materials, as well as with cheaper recyclates offered by, mostly, non-EU countries such as China and the United States.[85]

In the Netherlands, the programme Verpact[86] aims to overcome the current lack of a level playing field between recyclers and the other material providers. Verpact operates under the legal producer responsibility for packaging (EPR) and is responsible for the collection and sorting of packaging waste in the Netherlands. Verpact charges companies for the packaging waste that is generated linked to their products. The revenue thereof is used to compensate municipalities, waste separators and recyclers of packaging material. However, interviewees have stated that the compensation paid out by Verpact is insufficient to cover the waste management costs of municipalities, and thus does not contribute to making recycling an interesting business case.

[81] CLO (2025). Afvalverbrandingsinstallaties, aantal en capaciteit, 1970-2022.
[82] CE Delft (2021). Waste incineration under the EU ETS.
[83] Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry.
[84] Omrin: Strategie 2025-2029.
[85] EEA (2025). Competitiveness of secondary materials.
[86] Verpact

2.2.5 Landfill operators

In the Netherlands, some landfills are owned by private actors, others are publicly owned. Landfilling itself, however, is characterised as a public service. In this sense, the government has a particular responsibility to ensure the maintenance of existing landfills and to take action if necessary landfill capacity is at risk. Furthermore, in the Netherlands the principle of national self-sufficiency with regard to landfill applies. This means that **no Dutch waste may be landfilled abroad and no foreign waste may be landfilled in the Netherlands**.[87]

Currently, there is still available capacity for landfilling of more than 30 million m^3.[88] Similar to other waste processors, landfills can generate **revenues via gate fees**. Therefore, price competition between different landfill sites is likely. Since there are only few opportunities for differentiation, price is one of the most important factors in the market.[89] The gate fees, again, **differ by waste stream**.

2.2.6 Municipalities

As described above, municipalities are responsible for the collection of household waste and can decide on the waste collection and sorting approach, as well as on the subsequent waste management method. The applied regulatory framework can contribute to the determination of how much waste is produced and how it is treated. For example, municipalities in the east of the Netherlands – which mostly applies DifTar – has a higher separation rate of collected waste.[90]

The municipalities are obliged to guarantee a **well-working waste management system at reasonable prices**. For political reasons, it is likely that they would want to avoid tax increases, or, if unavoidable, would like to present recognisable changes in the waste collection approach to justify tax increases to citizens. Besides striving for political acceptance, municipalities seek to achieve broader political goals. This could be the contribution to achieving a fully circular economy by 2050. As also stated by interviewees, municipalities mostly **aim to reduce waste at its source and increase recycling efforts**. Furthermore, municipalities can directly impact the chosen waste management approach if they can award the processing of that waste to the WIPs they own and the waste to be managed does not have to be publicly tendered according to Dutch public procurement rules .

[87] RWS (n.d.). A4 Algemene uitgangspunten en algemeen beleid.
[88] RWS (n.d.). Storten van afval 2022.
[89] SEOR (2010). De toekomst van de stortsector: Op weg naar 2030.
[90] RWS (n.d.). Afvalcijfers gemeentelijk.

3 Package of fiscal waste measures

There are **two main fiscal policies** that affect the cost of waste treatment in the Netherlands: the waste disposal tax (*NL: afvalstoffenbelasting (ASB)*) and the CO_2 levy on industry (*NL: CO_2-heffing industrie*). These are also the two instruments subject to the changes as proposed in the package of fiscal measures by FIN to meet the tax revenue of €567 million.

This section first provides a brief explanation of the current ASB and CO_2 levy schemes, followed an explanation of each of the proposed fiscal measures.

3.1 Main fiscal policy instruments on waste

3.1.1 ASB

The **waste disposal tax (*NL: afvalstoffenbelasting (ASB)*)** is a national levy imposed on the landfilling and incineration of waste. This tax is part of the Environmental Tax Act (*NL: Wet belastingen op milieugrondslag*) and has been in force since 2014, with the exemption for sewage sludge being added in 2015. While the main aim of the levy is to generate tax income, it also seeks to encourage waste separation and recycling, and discourage landfill and incineration.[91] The tax is based on the weight of waste and the current rate for 2025 is €39.7/t of waste.[92]

The ASB applies to **all waste delivered** to the facilities subject to the ASB for incineration and for landfilling for disposal. This includes residues of recycling delivered to the facilities under the ASB for further treatment. Additionally, the ASB covers all domestic waste that is **exported and incinerated or landfilled abroad** in facilities under the ASB.[93] For waste streams exported for recycling, exporters have to estimate the share of residues that would result from the recycling activities and may be incinerated and landfilled, where the ASB is then charged on these expected residues. This prevents waste exported from avoiding taxes on recycling waste residues.

A specific feature of the ASB is the ***in-out method***. Currently, waste processors are liable for paying a waste tax on materials that are incinerated or landfilled. However, within an incineration or landfill facility, waste is often further sorted for recycling or processed for beneficial use. Therefore, any waste that leaves the facility is deducted from the taxable amount under the ASB (i.e., the ASB tax base).

3.1.2 CO_2 levy

WIPs also face a **CO_2 levy** for their fossil CO_2 emissions from waste incineration. This CO_2 levy is part of the broader CO_2 levy on industry. Since 2021, this levy aims to incentivise reductions in CO_2 emissions from the facilities subject to the levy. For WIPs, the levy is only charged on the non-biogenic (i.e., fossil) fraction of their CO_2 emissions; the CO_2 emissions related to the biogenic fraction of waste is considered to be zero. In this sense, WIPs have to pay a CO_2 price for every tonne of fossil CO_2 they emit, where fossil CO_2 emissions account for almost 40% of CO_2 emissions. The tax rate is set by the government and is intended to increase annually towards 152 EUR/t CO_2 in 2030. The current levy rate for 2025 is 87.90 EUR/t CO_2.[94]

Each facility subject to the CO_2 levy is exempted from the CO_2 levy for a portion of their emissions. This is operationalised through **dispensation rights (DPRs)**, which are tradable emission allowances that represent the emissions for which a facility is not taxed under the CO_2 levy. If a facility emits more

[91] Ecorys (2024). Evaluatie afvalstoffenbelasting.
[92] Informatiepunt Leefomgeving (2025). Afvalstoffenbelasting omhoog per 1 januari 2025.
[93] Wet belastingen op milieugrondslag; Article 23
[94] Nea (2025). Afvalverbrandingsinstallaties.

than the number of DPRs it holds, it must pay the CO_2 levy on the excess emissions not covered by DPRs.

The amount of DPRs that WIPs receive decreases annually and is determined as follows:

DPRs (Year t) = historical emissions x Process emission factor x National reduction factor (Year t) x WIP correction factor (Year t)

WIPs have so far received more DPRs than their emissions, and thus, have not paid any tax under the CO_2 levy thus far. However, the DPRs are set to decrease due to a combination of factors:

- The process emission factor is currently set at 0.97, but will drop to 0.91 from 1 January 2028 onwards.
- The national reduction factor will decrease annually from the current value of 1.057 to 0.667 in 2030.
- The WIP correction factor will decrease annually from the current value of 1 to 0.4 in 2030.

Based on the abovementioned factors, DPRs will decrease to 24% of the historical emissions of WIPs in 2030.This means that an increasing volume of CO_2 emissions from WIPs will no longer be exempted from being charged the CO_2 levy.[95] In combination with the increasing CO_2 levy rate, this means that WIPs will face an **annually increasing costs under the CO_2 levy**.

3.2 Proposed fiscal measures

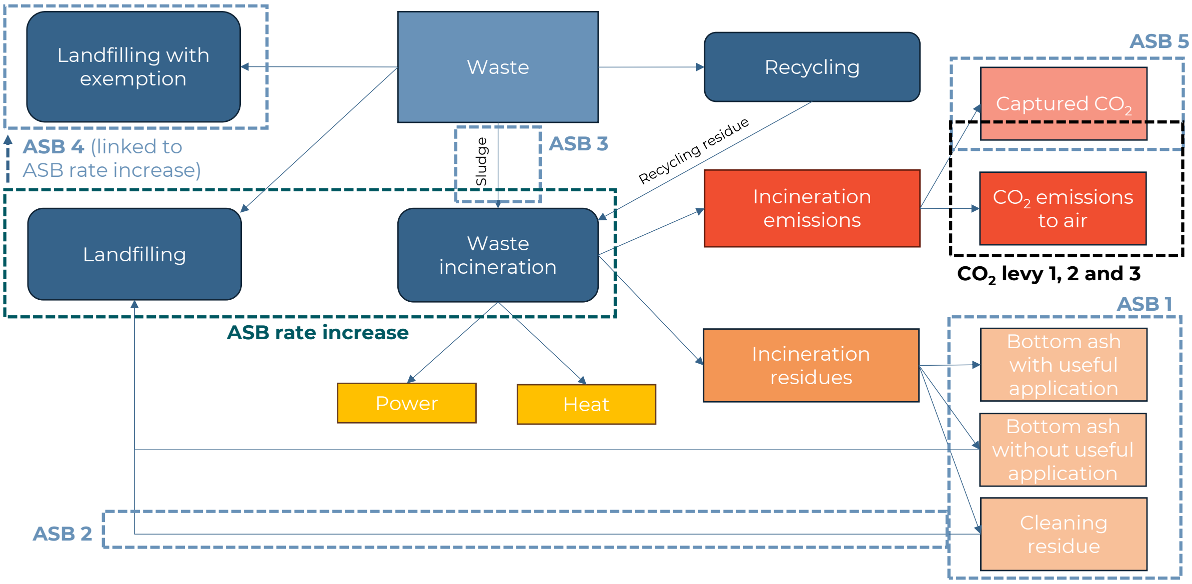
The Dutch Ministry of Finance has proposed to amend these two fiscal policy instruments, as mentioned before, where an overview of these proposals is provided in Table 3-1, including whether it affects the tax base for waste incineration and/or landfilling. Further, Figure 3-1 illustrate the tax bases these measures affect and how they are interrelated, which is further explained in the subsections.

Table 3-1: Overview of the fiscal measures

Measure	Description	Affected waste tax base	
		Incinerated	Landfilled
ASB 1	Make bottom ash ineligible for deduction under the in-out method	x	
ASB 2	Introduce an exemption for landfilling of WIP cleaning residue		x
ASB 3	Abolish exemption of sewage sludge processing in WIPs	x **(sludge)**	
ASB 4	Increase ASB rates for waste for "landfilling with an exemption"	x	x
ASB 5	Make captured CO_2 ineligible for deduction under the in-out method	x	
CO_2 Levy 1	Increase CO_2 levy rate for WIPs	x	
CO_2 Levy 2	Reduce dispensation rights (DPRs) to zero by 2033	x	
CO_2 Levy 3	Restricting WIPs to trading DPRs with other WIPs only	x	
Budgetary rebate	Abolish the budgetary rebate mechanism for revenues obtained from WIPs under the CO_2 levy, to be used for the State budget		
ASB rate increase	Generic increase in ASB rate	x	x

[95] The decrease in DPRs is also occurring for other facilities under the CO_2 beyond WIPs, but the decrease for WIPs is faster due to the WIP correction factor that does not apply to other facilities.

Figure 3-1: Overview of the tax base directly affected by the fiscal measures



Source: Own illustration.

Note that while the CO_2 levy measures does not affect captured CO_2 that is permanently stored (i.e., CCS), it does affect captured CO_2 that is subsequently utilised (e.g., delivered to greenhouse horticulture).

3.2.1 ASB 1: Make bottom ash ineligible for deduction under the in-out method

Bottom ash is the residue left after waste incineration in WIPs. It accounts for about 25% of the original waste volume and consists of clumpy materials (see Section 2.1.1). Raw bottom ash is not directly landfilled but is first processed and purified. After this cleaning, it is often repurposed as a construction material.

This measure would **make bottom ash ineligible for deduction under the in-out method**, and with that increase the current ASB tax base. This measure will make the distinction between other residues important, as there are other streams that will remain eligible for deduction under the in-out method. Therefore this distinction between bottom ash and other incineration residues will be based using *Euralcodes*.

3.2.2 ASB 2: Introduce an exemption for landfilling of WIP cleaning residue

When the bottom ash is cleaned, a sludge-like residue is produced that contains contaminants (called cleaning residue). This residue is sent to landfill, where normally the ASB must be paid.

With this measure, the **cleaning residue is exempted from the ASB on landfilling**. The streams of cleaning residue eligible for the exemption will be identified using *Euralcodes*.

3.2.3 ASB 3: Abolish exemption of sewage sludge processing in WIPs

Sewage sludge results from the water purification processes. In most cases, sewage sludge is thermally or biologically dried and then incinerated in special sludge incineration plants (=mono-incinerators). A small portion is also incinerated in cement kilns, power plants, and WIPs. Currently, incineration of sewage sludge is exempted from the ASB for facilities that fall under the ASB. Facilities such as mono-incinerators do not fall under the ASB.

Under this measure, **the exemption for sewage sludge under the ASB is abolished.** This means that the ASB is applicable to sludge sent to WIPs, including sludge that is exported to WIPs abroad. Sludge sent to mono-incinerators remains exempted from the ASB, whether it be sent to mono-incinerators in the Netherlands or abroad.

3.2.4 ASB 4: Increase ASB rates for waste for "landfilling with an exemption"

Currently, the tax rates in the Netherlands for all waste that is landfilled and incinerated are equal. This includes waste that is currently landfilled with an exemption. Waste landfilled with an exemption refers to waste that can be incinerated or recycled, but receive an temporary exemption to be landfilled (see Section 2.1.2).

This measure seeks to **introduce an increased tax rate for waste landfilled with an exemption.** The increased rate would provide a financial incentive to process waste to the extent that it is technically and/or economically suitable for recycling or incineration. Furthermore, it is ensures that such landfilling is taxed more than the standard ASB rate for incineration. The CO_2 levy is only charged on incinerated waste and not landfilled waste as landfill operators are not subject to the CO_2 levy. The increasing costs under the CO_2 levy could therefore create an unintended effect that waste disposers may start to find ways to landfill incinerable or recyclable waste. By ensuring that the ASB rate for landfilling with an exemption is always higher than the taxes for WIPs, this unintended effect is financially disincentivised.

3.2.5 ASB 5: Make captured CO_2 ineligible for deduction under the in-out method

Similarly to bottom ash described above, the in-out method currently also applies to captured CO_2 (irrespectively if the captured CO_2 is subsequently utilised, e.g., delivered to greenhouse horticulture, or permanently stored). Under the in-out method, WIPs can deduct the weight of CO_2 originating from waste from their tax base. Thus, the portion of the weight derived from the carbon component (C) from the waste, along with any oxygen (O) in the waste, can be deducted from the tax base. The oxygen from the air added during combustion cannot be deducted from the tax base.

This measure would make **captured CO_2 ineligible for deduction under the in-out method**, and with that, it would increase the current ASB tax base.

3.2.6 CO_2 levy 1: Increase CO_2 levy rate for WIPs

As explained in Section 3.1.2, each WIP has to pay the CO_2 levy for their CO_2 emissions that are not covered by DPRs. Under this measure, **the CO_2 levy rate for WIPs increases significantly compared to the current trajectory**. The increase is shown in Table 3-2. By 2030, the rate would reach 295 EUR/t CO_2, nearly double the 152 EUR/t CO_2 under the current trajectory. The CO_2 levy rate for other facilities subject to the CO_2 levy industry would remain unchanged.[96]

Table 3-2: The future CO_2 levy rate in the base case and after fiscal measures

In EUR/t CO_2	2025	2026	2027	2028	2029	2030	2035
CO_2 levy rate in the base case	88	101	114	126	139	152	152
CO_2 levy rate for WIPs after fiscal measure	88	129	171	212	254	295	295

Source: as provided by the Ministry of Finance for this study

3.2.7 CO_2 levy 2: Reduce dispensation rights (DPRs) to zero by 2033

Each WIP is exempted from paying the CO_2 levy for a share of their CO_2 emissions through DPRs as explained in Section 3.1.2. The DPRs are decreasing annually towards 2039. This measure is to further **decrease the DPRs to WIPs after 2030 so that it reaches zero by 2033.** This is done by changing

[96] Note that the motion Van Dijk c.s. calling for the abolishment of the CO_2 levy on industry was not yet adopted by the Dutch parliament when these fiscal measures were proposed and thus not considered in this study.

the WIP correction factor as that is only applicable to WIPs. The rate of decrease of the WIP correction factor is shown in Table 3-3. This means that from 2033 onwards, WIP will no longer be exempted from the CO_2 levy for a part of their emissions and will have to pay the CO_2 levy on their full CO_2 emissions.

Table 3-3: Overview of the developments of the correction factors from 2030 onwards

	2030	2031	2032	2033 and beyond
WIP correction factor (base case)	0.4	0.4	0.4	0.4
WIP correction factor (after fiscal measures)	0.40	0.27	0.13	0

Source: as provided by the Ministry of Finance for this study

3.2.8 CO_2 levy 3: Restricting WIPs to trading DPRs with other WIPs only

The Dutch CO_2 levy covers both industrial installations that are subject to the EU emissions trading system (EU ETS) and installations that are not (non-ETS). Since EU ETS installations already face a carbon price under the EU ETS, the levy that these installations pay is the difference between the CO_2 levy rate and the ETS price on emissions not covered by DPRs.

WIPs currently do not fall under the EU ETS and thus subject to the full CO_2 levy rate for their emissions (before taking DPRs/WIP correction factor into account). As DPRs from ETS and non-ETS installations are fully interchangeable, there is an incentive for ETS-installations under the CO_2 levy to sell their surplus of DPRs to WIPs that have a higher willingness to pay given their exposure to the full CO_2 levy rate. Under this measure, **WIPs are only allowed to trade DPRs with each other**, and not with other installations under the CO_2 levy. This decreases the amount of DPRs available to WIPs to lower their tax base under the CO_2 levy.

3.2.9 Abolishing the budgetary rebate mechanism

Currently, all tax revenues collected under the CO_2 levy for industry are allocated to the National Climate Fund. This includes revenues generated from WIPs. Under this measure, **the budgetary rebate mechanism of the CO_2 levy industry for revenues obtained from WIPs will be abolished, and these revenues will instead be redirected to the national budget**. This reallocation is intended to contribute to the €567 million budgetary requirement.

This measure does not directly influence the operational behaviour of WIPs or the volume of waste generated. Rather, the direct impact is purely fiscal, only affecting the distribution of funds. The primary consequence is a reduction in the financial resources available to the National Climate Fund, which may affect its capacity to support climate-related initiatives.

3.2.10 Generic increase in ASB rate

In addition to the fiscal measures described above, the **overall ASB will also be subject to a general rate increase.** The magnitude of the ASB rate increase will depend on how much of the €567 million in budgetary requirements will be met through the aforementioned fiscal measures. Therefore, it acts as a reconciliation measure (*sluitpost*) to achieve the additional €567 million revenue demand. The **ASB rate increase is therefore yet to be determined**. For the purpose of this study, we have therefore assumed the ASB tax rates, as shown in Table 3-4, which were provided by the Ministry of Finance.[97]

[97] The ASB tax rates shown in the table are not the definitive rates. The definitive rates may be different based on, amongst others, the findings of this study on the expected tax base under the ASB and CO_2 levy as a result of the fiscal measures. For example, if the tax bases are expected to be lower than the one used for determining the generic ASB rate increase shown in the table, the generic ASB rate increase will have to be higher to meet the €567 million revenue demand.

Table 3-4: Future development of the ASB rate per scenario

	Year	Assumed ASB rate (EUR/t waste)
Base case	**2030 & 2035**	€ 39.7
After fiscal measures	**2030**	€ 70
	2035	€ 90

Source: provided by the Ministry of Finance for this study

4 Behavioural impacts assessment of the fiscal waste measures

The fiscal reforms described in Chapter 3 are expected to drive behavioural changes among stakeholders across the waste value chain. While WIPs will be affected first, other actors in the value chain will also respond and be impacted over time. This process is first presented through a mapping, showcasing the cause-and-effect relationships. Thereafter, there is an analyse of the potential behavioural impacts per stakeholder type, with consideration of aspects such as environmental impacts and energy generation. This constitutes a qualitative reflection on the expected behavioural impacts. Furthermore, the measures and subsequent behavioural responses will affect the tax base, which is further examined through a quantitative analysis of the FIN's budgetary projections. FIN's research serves as the starting point for this assessment, complemented by insights retrieved from literature and interviews with relevant stakeholders across the waste value chain.

The chapter is structured as follows:

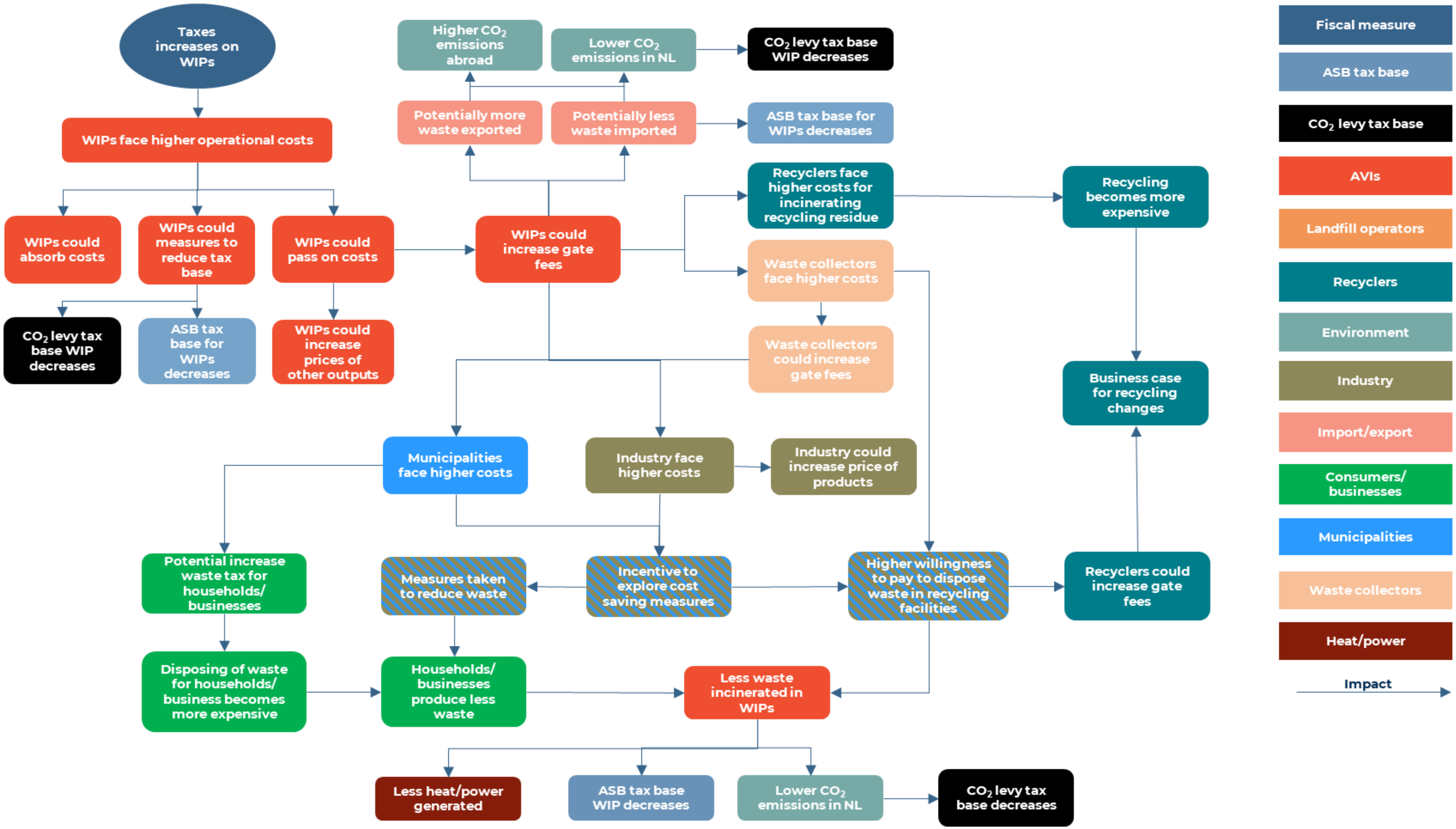
- **Section 4.1** outlines the possible behavioural responses of WIPs and the resulting effects on other actors within the value chain.
- **Section 4.2** presents a quantitative assessment of the changes in the tax base for the ASB for landfilling, the ASB for incineration, and the CO_2 levy on incineration.

4.1 Impact on stakeholder behaviour

The reforms to the fiscal measures are expected to trigger behavioural changes among stakeholders. Initially, WIPs will be affected, however, other actors in the **value chain** will also respond and be impacted over time. This process is illustrated in the figure below, which **each behaviour step** discussed further in the subsections below. The behavioural impacts shown in the figure represent potential outcomes, not all of which will necessarily occur.

As most of the measures directly affect WIPs, the focus of this section is mainly on WIPs. Nonetheless, the impacts of the measures on landfill operators are also discussed in Section 4.1.5.

Figure 4-1: A mapping of the behavioural impacts of tax increases with a focus on effects from WIPs



Source: own illustration

4.1.1 Waste incineration plants (WIPs)

WIPs are the most significantly affected stakeholder by the proposed measures, which expand their tax base and lead to higher operational costs. A detailed cost breakdown is provided in Section 4.2.2.

As a result, three main potential behavioural responses have been identified to cover these increasing costs:

1. **Reduction of the tax base:** WIPs may implement specific actions in response to individual measures aimed at lowering their tax base.
2. **Cost absorption:** WIPs may choose to absorb the additional costs internally, and thus reduce profit margin, to remain competitive.
3. **Cost pass-through:** WIPs may pass on the costs, primarily by increasing gate fees, though this could also involve, for example, raising heat or bottom ash prices.

Each of these responses is examined in more detail below, along with an assessment of the extent to which they are likely to occur.

1. Reduction of the tax base

The measures described in Chapter 3 may **encourage innovation or shifts in the business models of WIPs, focused on lowering the amount the tax would apply to.** The following potential responses have been identified and assessed based on literature and stakeholder interviews:

- **Optimise incineration performance:** WIPs could potentially improve their incineration performance to generate less bottom ash and increase energy recovery. Under the current in-out method, WIPs may be incentivised to generate large amounts of bottom ash, sometimes by incinerating less efficiently, since bottom ash is deducted from the tax base. Literature suggests that this can lead to perverse outcomes, such as higher levels of low-quality bottom ash with contaminants like PFAS. Removing the in-out method under ASB 1 would remove this incentive, encouraging cleaner incineration and higher energy recovery. Even though interviewees indicated that they do not recognise this perverse incentive, they did indicate that incineration efficiency could potentially still be improved at some WIPs. Additionally to the internal improvements, better sorted waste streams would allow for more targeted incineration, allowing for reduced residue production.

  Annex B.1 shows that in recent years, Dutch WIPs produce, on average, bottom ashes equivalent to 25% of the total waste incinerated. In 2022, this share decreased slightly to 23%. This decline could suggest improved efficiency at WIPs. However, literature indicates there may still be potential to further reduce this percentage to around 20%,[98] Overall, lowering the tax base would depend on the incineration efficiency of each WIP and their ability to improve it. The potential reduction is likely to be only a few percentage points, meaning that only a small part of the additional costs of the new measures could be covered.

- **Improve the bottom ash cleaning process:** A more effective cleaning process increases the share of cleaning residues leaving the facility, which are exempt from the ASB if landfilled with exemption (ASB 2). Under regulation, a maximum of 15% (by weight of dry matter) of the bottom ash produced at a WIP may be landfilled as residue from the treatment process.[99] The WIP must pay ASB on this 15%, as the in-out method will no longer apply (ASB 1). Additionally, ASB must be paid again when this material is landfilled with exemption. However, the portion classified as cleaning residue within this 15% is exempt under ASB 2. It is therefore advantageous to minimise other types of residual waste that go to landfill and WIPs can reduce their landfill costs, which are set to rise under ASB 4. Literature suggests that cleaning bottom ash is costly, but the revenues from recovered metals and the cleaned

[98] CEWEP (2018). Bottom ash fact sheet
[99] Ministerie van Infrastructuur en Waterstaat (2025). Ontwerp Circulair Materialenplan: Afvalplan assen AVI's.

ash typically balance out these expenses. Whether the improvement of the cleaning processes is possible depends on the current cleaning processes at individual WIPs and their ability to improve them, provided that bottom ash is processed at the WIP, which is often not the case. There appears to be some room for improvement, as literature indicates that less intensive cleaning methods are currently used to reduce costs, often focusing solely on metal removal.[100]

- **Improve (post-)sorting practices:** Better waste sorting may be a key strategy to reduce the total waste volume sent to incineration. As a result, this lowers the tax burden of the WIPs. For example, enhanced post-sorting can help remove ferrous and non-ferrous metals from the bottom ash of the incinerated waste stream, thereby reducing the tax base under ASB 1. As shown in Annex B.1, there is still significant potential to improve the removal of ferrous and non-ferrous metals that currently end up in bottom ash.

  However, the literature emphasises that substantial investment would be needed to improve sorting practices, which could raise operational costs and potentially impact profitability or lead to cost pass-through along the value chain.[101] Despite this, interviewees generally expect post-sorting to improve as a result of the new measures. Some noted, however, that they were already working on improving sorting practices regardless of the fiscal measures, but the fiscal measures could accelerate this. While improvements in sorting practices of non-combustible waste are expected to reduce the tax base, it may also lead to a decrease in the amount of combustible waste sent to the WIP. This, in turn, could lower energy production and result in reduced revenue.

- **Invest in carbon capture and storage (CCS):** the current business case for CCS in Dutch WIPs is highly uncertain. Key issues with the business case include incentives for investments in CCS being insufficient, the availability and predictability of waste input streams and the stability of national legislation being uncertain, increasing investment and operational costs and the long-term financial risks involved with CCS investments, and the timely availability of CCS infrastructure. As a result, both the literature and interview responses suggest that CCS investments or decisions on investments are currently being postponed (either indefinitely or for several years).[102] These issues are further examined in Box 4-1. To tackle the issue regarding incentives for CCS investments, the fiscal measures related to the CO_2 levy could create a stronger incentive for WIPs to reduce emissions and boost the incentive to adopt CCS (as outlined in Section 4.2.3). However, this could in turn also make the availability and predictability of waste input streams more uncertain, and thus also the business case for CCS. The latter has been emphasized by several interviewees, who expressed concerns that additional fiscal measures could potentially discourage investment in scaling up CCS due to such increasing volume risks as well as the negative impact it may have the financial capacity of WIPs. Furthermore, even some WIPs will have sufficient confidence to invest in CCS, it is uncertain if these CCS projects can be operational and realised on time to mitigate such volume risks. These issues are also discussed in Box 4-1. However, it should be noted that the extent to which the fiscal measures affect the business case for CCS be different for different WIPs. This depends, amongst others, on the exposure of a WIP to volume risks, its position in the waste market and access to CCS infrastructure. Some interviewees indicated that even if investments in CCS would be made, it is more likely that these would be realised in WIPs with closer proximity to CCS facilities, such as the Aramis initiative in the west of the country. Places further away from ongoing CCS initiatives may face additional challenges due to insufficient infrastructure and transporting CO_2 for CCS by truck requires liquefaction, which is more expensive than transporting it in gaseous form (see Figure 4-2).

[100] Ministerie van Infrastructuur en Waterstaat (2021). Besluit van 25 februari 2021 tot wijziging van het Besluit vrijstellingen stortverbod buiten inrichtingen.
[101] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting.
[102] ABDTOPConsult (2024). Verkenning maatwerkafspraken Afvalverbrandingsinstallaties.

Box 4-1 The impact of the fiscal measures on the business case for CCS in WIPs

With the establishment of the **CO_2 levy** on industry in 2021, WIPs were given a **direct price incentive to reduce their CO_2 emissions** for the first time. Before the CO_2 levy, WIPs only faced indirect incentives to cut emissions through policies on waste generation and treatment. The CO_2 levy is therefore the main price incentive for CCS adoption in WIPs.

At the moment, the (expected) costs under the CO_2 levy are **too low to incentive CCS adoption on its own**. WIPs have not faced any costs under the CO_2 levy thus far as DPRs have been sufficient to cover their CO_2 emissions. While DPRs are set to continue to decrease in the future (see Section 3.1.2), this will still not be enough on its own to incentive CCS adoption. The estimated costs for CCS in existing WIPs is 224–273 EUR/t CO_2 captured and stored.[103] Considering that the CO_2 levy only covers fossil CO_2 emissions, the levy rate would have to be higher 622–758 EUR/t CO_2 for the avoided CO_2 costs to exceed the costs of CCS.[104] This is significantly higher than the current CO_2 levy rate of 152 EUR/t CO_2 from 2030. Thus, even if WIPs were to face the full CO_2 levy rate, levy costs that would be avoided are much lower than the costs of CCS. To support the business case of CCS, WIPs can therefore request subsidy under the **Sustainable Energy Production and Climate Transition Incentive scheme (SDE++)**. The SDE++ subsidy scheme has been designed in such a way that it should, in principle, cover the full costs of implementing CCS in WIPs.

As the business case of CCS depends on avoided CO_2 costs, it could be argued that an increase of the costs under the CO_2 levy as foreseen under the fiscal measures could improve the business case for CCS. However, this omits two crucial considerations:

1. The CO_2 levy is a **national instrument** while waste is traded across borders, with a lot of waste trade occurring between the Netherlands and other European countries (see Section 5.1). Increasing the CO_2 levy would therefore increase the risk of more waste being exported and less waste imported (see Section 5.3). This would subsequently reduce the volume of waste processed in the Netherlands, and with that, also **reduce the volume of CO_2 costs avoided (i.e., carbon leakage)**, undermining the business case for CCS.
2. The CO_2 levy is a policy instrument that is subject to **political uncertainty**. Several interviewed stakeholders indicated that given the recently adopted Parliament motion to abolish the CO_2 levy for industry,[105] it is uncertain if the CO_2 levy will be maintained. Without the CO_2 levy, there would also not be any CO_2 costs to avoid.[106] If this is the case, this financial incentive for Dutch WIPs to reduce their CO_2 emissions through investing in CCS disappears.

The current business case for CCS in Dutch WIPs therefore strongly depends on the subsidy from the SDE++.[107]However, there are various uncertainties associated with the SDE++, which would be exacerbated by the fiscal measures – and particularly the ASB measures – and could make the business case for CCS more uncertain. This is discussed below under cost increases, volume risks and other uncertainties.

Cost increases

Under the SDE++, once an applicant has been awarded subsidy, the subsidy amount per unit of produced energy or tonne of captured CO_2 is fixed. Any unexpected cost changes thereafter are to the benefit or disadvantage of the applicant. For CCS, there have mainly been **cost increases** over the years, as shown in Figure 4-2, in terms of capital and operational expenditures (CAPEX and OPEX). The figure shows that for both gaseous and liquid transport, the investment and fixed

[103] CCS variants 6A and 6B from PBL (2025). Eindadvies basisbedragen SDE++ 2025.

[104] Assuming a biogenic fraction of 0.64.

[105] Tweede Kamer (2025). Motie van het lid Inge van Dijk c.s. over de CO2-heffing op de industrie zo snel mogelijk afschaffen.

[106] That is, until the EU ETS is extended to include WIPs. However, this is yet to be proposed by the European Commission, with a potential proposal for inclusion expected by July 2026.

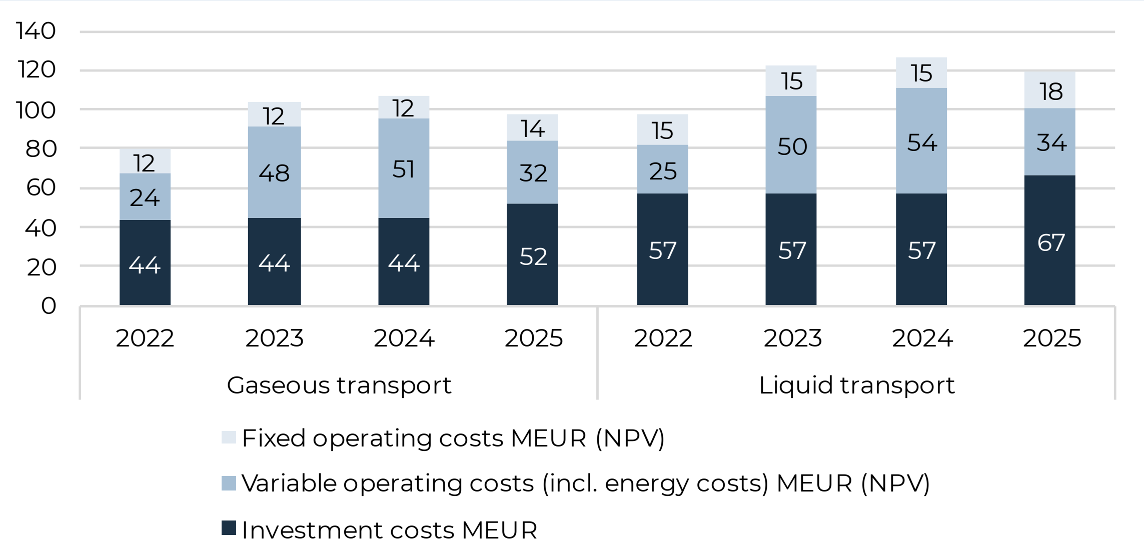
[107] Another way to improve the business case for CCS in WIPs is the recognise the capture and storage of biogenic CO_2 as negative emissions and to allow these negative emissions to be used to compensate emissions under the CO_2 levy and/or EU ETS. This is, however, not related to the fiscal measures and thus not further discussed.

operating costs have increased by about 15-20%. At the same time, variable operation costs have varied over the past years. This is mainly related to variations in energy costs, which increased significantly in 2023 and 2024. In 2025, estimated variable costs have decreased, but are still higher than they were in 2022. The subsidy granted in 2022 to WIPs would therefore not be sufficient for a positive business case anymore.

Furthermore, the SDE++ has an overall **cap on the subsidy intensity** (*maximale subsidie-intensiteit*) of a technology. This is the maximum subsidy per tCO_2 of emission reductions that can be provided under the SDE++. Thus, even if PBL[108] estimated costs of a project exceeds this cap, the subsidy will be restricted to this cap. This is already the case for CCS projects in WIPs with liquid transport for many years.[109] This means that over the past years, the SDE++ subsidy has not been sufficient to cover the costs of CCS projects in WIPs with liquid transport.

Finally, investment costs have increased significantly in 2025 compared to the previous years. This means that more upfront capital is needed to invest in CCS as subsidy is only provided after the CCS installation is operational and capturing CO_2. **With the fiscal measures**, increasing the costs faced by WIPs, this would reduce their **financial capacity** for investing in CCS. This strain on financial resources emerges both through higher operational costs and potential reductions in revenue. If these increased costs are passed on in the gate fees, the net earnings per tonne of incinerated waste may remain unchanged; however, this could lead to a decline in the overall volume of waste processed as explained further in this subsection. As a result, the total income of WIPs would decrease, reducing their financial capacity to invest in CCS. Alternatively, CCS investments could be financed through loans. The increasing investment costs do mean that financing costs would be higher as well, which would then again negatively impact the business case.

Figure 4-2: Evolution of CCS CAPEX+OPEX with gaseous and liquid transport (2022-2025) (MEUR)



Based on data from SDE++ basisbedrag eindadvies reports (PBL) relating to Variant 6A+B (Nieuwe post-combustion-CO_2-afvanginstallaties bij bestaande afval- of biomassaenergiecentrales)
Net present value of operational costs is based on a 7% discount rate and 15 year duration

Volume risks

If waste incineration in the Netherlands becomes less cost-effective than the incineration in other countries, the risk increases that an insufficient amount – or volume – of waste is available for domestic incineration. Under the SDE++ subsidy scheme, support is provided based on actual performance, thus on the volume of CO_2 actually captured and stored. If less waste is incinerated,

[108] Every year, the government agency PBL estimates the costs of all the technologies eligible for SDE++ and uses that to set a technology-specific cap (basisbedrag) for applicants. In addition, there is a maximum subsidy intensity of 300 EUR/tCO_2 (400 EUR/tCO_2 for certain specific ones). If the estimated basisbedrag is higher than the maximum subsidy intensity, then the subsidy that can be applied for is limited to the maximum subsidy intensity.
[109] PBL (2025). OT-model Eindadviezen SCE 2025.

less CO_2 will be actually captured and stored. This creates uncertainty as to whether the initial investment costs will be recovered, an uncertainty that becomes even more pronounced as investment costs have risen over the past years.

The **volume risk** is expected to increase due to declining demand for waste incineration in the Netherlands due to improved waste sorting, reduced waste imports, and increased exports already in the base case (see Section 5.3). **The fiscal measures** would further exacerbate these effects. As a result, the volume of CO_2 available for capture may decrease even more, further undermining the financial viability of CCS projects.

In addition, some interviewed stakeholders mentioned the political uncertainty and unclarity about the **future vision of waste incineration** in the Netherlands. The implementation of CCS typically requires long-term contracts of 10 to 15 years, and a stable legislative framework to mitigate volume risks and make such commitments viable.

Other uncertainties

Another major concern is the uncertainty surrounding the **continuation of the SDE++ subsidies** beyond 2026.[110] As the development of CCS projects requires time, the uncertainty whether WIPs will be ready in time to submit their subsidy application could further undermine the plans for investing in CCS.

Even if WIPs apply for SDE++ subsidies, they could face challenges in **securing SDE++ subsidies** for CCS in case of an oversubscription to the SDE++. CCS at WIPs requires a much higher subsidy than other technologies that it is competing with or subsidy under the SDE++.[111] As a result, CCS at WIPs is unlikely to be awarded SDE++ funding when the SDE++ is oversubscribed.

Finally, a major concern is that also leads to uncertainty in the business case for CCS in WIPs is whether the **necessary CCS infrastructure** will be available on time. The Aramis initiative, a large-scale CCS infrastructure project that is crucial for CCS adoption in WIPs, has faced delays over the years. It is currently slated to be operational around 2030[112] compared to the envisaged operational start-up by 2026 when the initiative was first announced in 2021.[113] Thus, even if WIPs would have sufficient confidence to invest in CCS, it is uncertain whether this will on time to mitigate the risk of Dutch waste being exported. The cost comparison in Section 5.2.5 shows that under the rate increases from the new fiscal measures assumed in this study, the average 2030 costs of waste incineration in Dutch WIPs without CCS are expected to be higher compared to those the investigated countries. Less complex CCS project can be delivered in three to five years if existing infrastructure and access rights are utilised and geological storage resources that are already well characterised. [114] So if Dutch WIPs would make the decide to adopt CCS in the short term and make use of the Aramis initiative, in theory they may be able to sufficiently mitigate the increased CO_2 costs before it reaches a level that they become uncompetitive for Dutch waste compared to WIPs abroad. Dutch WIPs that have decided to invest in CCS would still face the increased costs from the CO_2 levy measures while the CCS facilities are being constructed, although the paid levy could be recuperate by up to five years before the CCS facilities are operational via the carry-back measure under the CO_2 levy.[115] However, if Aramis would to face further delays, the levy paid that cannot be recuperate would increase due to the five year limit of the carry-back measure. Even Dutch WIPs that plan to adopt CCS may then be forced to pass on their CO_2 levy costs in their gate fees, which would in turn increase volume risks and negatively affect the business case for CCS.

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[110] Ministerie van Klimaat en Groene Groei (2025). Update SDE++: resultaten 2024 en openstelling 2025

[111] PBL (2025). Eindadvies basisbedragen SDE++ 2025.

[112] Aramis (2025). Planning.

[113] Aramis (2021). TotalEnergies, Shell Netherlands, EBN and Gasunie form partnership to develop an offshore CCS-project: Aramis.

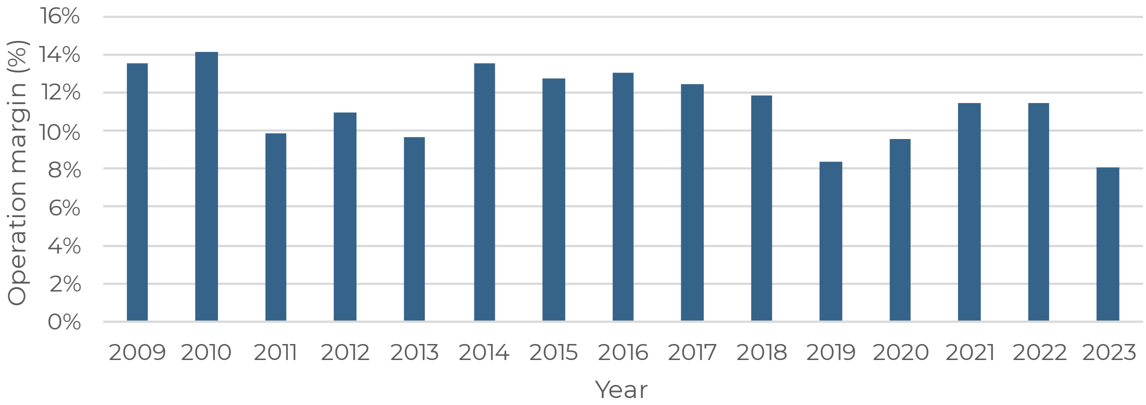
[114] Based on Figure 28 of Global CCS Institute (2022). Global status of CCS 2022.

[115] For more information on the carry-back measure, see NEa (2025). Verrekenen dispensatierechten.

2. Cost absorption

Literature suggests that **companies operating WIPs can, at least partly, absorb cost increases resulting from fiscal measures.**[116] However, this may not be economically sustainable in the long term. As shown in the figure below, average operating margins (as an indicator of profit margins, calculated as the operating results divided by the revenue) for companies in SBI 38.2 *Treatment of waste* have ranged from approximately 8% to 14% in recent years. This corresponds with publicly available reports from companies operating Dutch WIPs[117], which show operating margins in the recent years between 4% and 16%.[118]

Figure 4-3: Average operating margin (%) for companies in SBI 38.2*, 2009-2023



Source: CBS (2023). Bedrijfsleven; arbeids- en financiële gegevens, per branche, SBI 2008

**Note: SBI code 38.2 covers waste treatment plants including not only WIPs, but also landfill operators and composters*

However, the relative tax increases are substantially higher than the operating margins of WIPs. Already in the **base case**, the incineration costs due to the CO_2 levy are about 42 EUR/t of waste (See Section 4.2.2). This is equivalent to 35% of the current estimated average gate fees of Dutch WIPs. The combined fiscal measures are expected to result in a tax increase of 60-70 EUR/t of waste in 2030 and 60-110 EUR/t of waste in 2035.[119] This corresponds to 40-45% of the estimated average gate fee for incineration in 2030 and 50-70% in 2035. Although gate fees do not represent the full income of a WIP, they provide a useful indication that the scale of the tax increase is too large to be fully absorbed. As a result, it is likely that gate fees will need to rise.

3. Cost pass-through

In addition to reducing the tax base and potentially absorbing part of the costs, WIPs will need to pass the remaining tax burden on to other actors in the value chain. Some WIPs may have contracts that allow these costs to be passed through directly. **The primary mechanism for this is raising gate fees (as mentioned in the subsection above), though increases in the prices of heat, electricity, captured CO_2, and residual streams (such as metals or bottom ashes) are also considered.** However, literature suggests that the extent of such secondary income varies widely across WIPs and depends on factors like proximity to district heating networks and fluctuating energy prices. The ability to pass on these costs is also influenced by market competition (greater competition leads to

[116] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting
[117] AVR (2023). Jaarbericht 2023; AEB Amsterdam (2023). Publieksjaarverslag 2023; Twence (2024). Jaarverslag 2024; HVC (2024). Jaarrekening
[118] Two plants had a negative operating results in 2023 due to exceptional circumstances.
[119] A range is provided to take into account that the carbon cost per tonne of waste depends on the carbon content, where a high uptake of CCS (i.e. 80% carbon capture) would lead to a lower tax increase and a no uptake of CCS would lead to a higher tax increase.

higher price elasticity and limits cost pass-through).[120] Interviewees generally agree that passing on costs outside of gate fees is difficult and unlikely:

- **Increase price for heat:** Passing on costs by raising heat prices is currently challenging, particularly in the short term. Heat supplied to households is regulated under the *Niet-meer-dan-anders* (NMDA) tariff, which is linked to the cost of a gas boiler. While this system is set to change under the proposed Collective Heat Act (*NL: Wet collectieve warmte*), which aims to introduce more cost-based tariffs, the law is still in the legislative process, and the timeline for implementation remains uncertain.[121] For industrial heat users, prices are typically governed by long-term contracts. The ability to pass on additional costs within these agreements depends on the contract duration, specific terms, and the availability of alternative heat sources for the industry. One interviewee stated that heat is generally not a particularly attractive business case for WIPs. Currently, there is still an average loss of about 64% of residual heat whereby the differences between waste incinerators are quite large. Investments in this regard might be interesting for those WIPs that could still change operations to a higher Heat/Power ratio, thereby increasing the overall thermodynamic efficiency of the plant.[122]

- **Increase price for electricity:** For electricity, prices are determined by the market, and WIPs account for only 3.5% of total electricity generation (see Section 2.1.1). With contributing such a small share to the total generation, WIPs have very little to no influence on the market price for electricity. Thus, it is highly unlikely that they can pass on additional costs through higher electricity prices as they are fully dependent on the market price. This corresponds to literature findings that WIPs have limited to no ability to sell their electricity at higher prices to offset rising costs.[123]

- **Increasing price for captured CO_2 (CCU)** Currently, captured CO_2 volumes in the Netherlands are low (44 ktCO_2 captured in 2022 as specified in Section 2.1.2), and with only a few WIPs operating a CCU system. As a result, the possibility of passing on costs through increased CO_2 prices is limited, simply because the market is still small. Furthermore, stakeholders noted that prices are determined by the price of natural gas to generate the required CO_2, which makes it unlikely that they will be able to pass on the costs through captured CO_2. At the same time, the external CO_2 supply for horticulture is expected to decline, as large industries increasingly prioritise CCS (driven by ETS costs and subsidies). In addition, the separate CO_2 levy on greenhouse horticulture also incentives greenhouses to reduce their CO_2 emissions. This could lead to scarcity and rising prices of CO_2, potentially benefiting WIPs with existing CCU systems.[124] However, the market is dominated by four major players who act as intermediaries between CO_2 suppliers and users, making it unclear if and how WIPs can actually profit from selling captured CO_2.[125] The business case for CCU is further examined in Box 4-2.

Box 4-2 The business case for CCU investments

WIPs also report that the business case for investing in CCU remains **highly uncertain**,[126] particularly as Dutch policy and the CO_2 levy discourage it over CCS. Avoided CO_2 usage in horticulture does not count as an emission reduction for WIPs, while CCS does count as an emission reduction measure under the CO_2 levy.[127] Nonetheless, some interviewees indicated that WIPs appear to be **more inclined to invest** in CCU than CCS. One of the reasons is that they

[120] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting
[121] Rijksoverheid (2025). Wet collectieve warmte.
[122] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
[123] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting
[124] WUR (2024). Actueel inzicht CO2-behoefte Nederlandse glastuinbouw 2030
[125] New Energy Coalition (2025). Marktstudie Toepassing Biogene CO2
[126] ABDTOPConsult (2024). Verkenning maatwerkafspraken Afvalverbrandingsinstallaties
[127] PBL (2022). Decarbonisation options for the Dutch waste incineration industry

can charge CO_2-offtakers for both the fossil and biogenic CO_2, while under the CO_2 levy only the capture and storage of fossil CO_2 can be **monetised**; biogenic CO_2 is currently rated as zero emissions and thus its storage is also rated as zero.[128] However, interviewees indicated that the new measures are likely to further reduce investments in CCU (and CCS) due to **volume risks** (see Box 4-1). Particularly, ASB 5, making the deduction of captured CO_2 ineligible under the in-out method, would worsen the business case for CCU. Under the current ASB rate of 39.7 EUR/t waste, ASB 5 would reduce the cost savings through CCU by about 11 EUR/tCO_2.[129] This is about 10% of the sales price of CO_2 in 2025,[130] so the impact is not negligible.

- **Increase price for residual streams:** Residual streams, such as metals and bottom ash, may offer revenue opportunities for WIPs. Ferrous and non-ferrous metals are first separated from the raw bottom ash, after which the remaining material can be processed for use in construction. However, monetising bottom ash remains challenging due to strong competition from virgin materials. The potential value also depends on market demand, material quality, and applicable environmental policies. Literature highlights persistently low market demand for bottom ash, and the upcoming Environmental and Planning Act may further limit its uptake by requiring permits for the use of secondary materials such as bottom ash. [131] In general, fiscal policies often seem to favour primary raw materials, such as sand, which further undermines the competitiveness of bottom ash in the market. [132] Interviewees also noted a persistent negative connotation surrounding waste-derived products. This hesitation is largely driven by concerns about their long-term environmental impact, as certain toxic substances may remain in the material (even after treatment), and could potentially leach into the environment over time. However, this may vary depending on the quality of the bottom ash and the extent of processing and cleaning, as explained in Box 4-3.

  One interviewee even stated that bottom ash is actually a cost factor, which is included in the gate fees. Overall, the potential to increase bottom ash prices appears limited, and in mostcases, WIPs may even have to pay to dispose of it.

Box 4-3 Bottom ash quality and implications

Low-quality bottom ash is **cheaper to process** but has limited market appeal, while upgrading it to a higher quality is expensive and generally unprofitable, as buyers are typically unwilling to pay more than required by legal standards.[133] Another source notes that the costs of cleaning bottom ash are typically offset by the revenues from recovered metals and the cleaned ash, and also suggests that WIPs could pass these costs on to waste disposers and bottom ash buyers.[134] As another way to reduce processing costs, **less intensive cleaning methods** are increasingly used, focusing primarily on metal recovery. However, the resulting ash cannot be freely used in construction and may instead be incorporated into shaped products or serve as a substitute aggregate in concrete. These approaches are more cost-effective but yield **lower revenues** due to limited application and are often underpinned by long-term contracts between incinerators and bottom ash buyers. [135]

[128] Rules on potentially allowing negative emissions, which includes the capture and storage of biogenic CO_2,, in the EU ETS is currently being considered as part of the future reform of the EU ETS. Should negative emissions be allowed under the ETS, this would likely also be allowed under the CO_2 levy as the emissions accounting rules under the CO_2 levy mirrors that of the EU ETS.
[129] Based on 27% of the weight of the CO_2 allowed to be deduced from the ASB tax base
[130] Based on the preliminary *correctiebedrag* for CCU of €108/t CO_2 from PBL (2025). Voorlopige correctiebedragen 2025. This represents the avoided costs of generating CO_2 in greenhouses.
[131] ABDTOPConsult (2024). Verkenning maatwerkafspraken Afvalverbrandingsinstallaties
[132] Drift & TAUW (2024). Analyse prikkels richting duurzaamheid in secundaire bouwstoffenketens
[133] Drift & TAUW (2024). Analyse prikkels richting duurzaamheid in secundaire bouwstoffenketens
[134] Ministerie van Infrastructuur en Waterstaat (2021). Besluit van 25 februari 2021 tot wijziging van het Besluit vrijstellingen stortverbod buiten inrichtingen
[135] Ministerie van Infrastructuur en Waterstaat (2021). Besluit van 25 februari 2021 tot wijziging van het Besluit vrijstellingen stortverbod buiten inrichtingen

Furthermore, some sources indicate that WIPs may, in certain cases, sell bottom ash at **negative prices**, particularly when it has not been cleaned or processed, by paying processors to take it. These processors then invest in upgrading the material by removing metals.[136]

- **Increase gate fees:** The most likely outcome is that the additional costs will be passed on to those disposing the waste, resulting in higher gate fees. Currently, gate fees average EUR 90 per tonne of waste, excluding taxes. These may increase significantly if WIP costs rise by EUR 90–110 per tonne of waste. A detailed breakdown of these costs is provided in Section 5.2.

  These fees, in turn, may be passed along in various ways throughout the value chain, as will be further explained in the following sections discussing the key stakeholders (Chapter 5 further examines the potential impact of these measures on the import and export of waste). Gate fees are collected from municipal waste collectors, industrial waste generators, recyclers supplying residues, foreign waste providers, and other waste intermediaries. Rising gate fees could eventually lead to a shift in waste streams towards alternative treatment methods or foreign WIPs, simply because those options may become more cost-effective.

  At the same time, higher gate fees could incentivise improvements in waste collection and sorting, potentially resulting in lower volumes of waste being incinerated at WIPs. An increase in gate fees could lead to the following effects on the amount of waste incinerated:

  - **More waste that goes to other waste treatment sites**, such as recycling. This seems to be somewhat likely. Better sorting may occur, but since there is very limited market demand for recyclates due to cheap virgin material and recyclates from abroad, the waste will likeley still be incinerated. This is further elaborated in Section 4.1.2. Besides, recycling PMD will, on average, likely still cost more than incinerating waste abroad, and this gap will only increase with the fiscal measures as Dutch recyclers must also pay to incinerate residual waste (see Box 5-2 in Section 5.2.5). However, municipalities do receive compensation for collection, which makes better sorting financially attractive.
  - **More exported waste**: The higher CO_2 levy makes incineration in the Netherlands more expensive compared to the current situation, potentially making export to countries like Germany or Sweden more attractive. This is further elaborated in Section 5.3.1.
  - **Less imported waste**: The higher ASB and CO_2 levy raise incineration costs in the Netherlands, potentially making it more attractive to treat waste from countries like Germany, Belgium, France, Italy, and the UK elsewhere. This is further elaborated in Section 5.3.2.

  WIPs seek full capacity utilisation, which they achieve by setting gate fees accordingly. In a competitive market with spare capacity, the costs from the taxes may not be fully passed on to disposers in the short term. As a result, the incentive to choose other alternatives, such as recycling, could weaken. The effects of the tax therefore depend on regional processing capacity and the broader balance of supply and demand in the waste market.[137] However, as there appears to be limited scope to offset the tax burden through other measures, absorb the costs internally, or increase prices for other outputs, this is unlikely. Interviewees also noted that WIPs are expected to (fully) pass on these costs through higher gate fees. As indicated above under Section '2. Cost absorption', it could already be a challenge for WIPs to absorb the increasing CO_2 levy costs of certain waste streams under the base case.

  When **less waste is incinerated** in Dutch WIPs, it may result in the following impacts:

[136] Drift & TAUW (2024). Analyse prikkels richting duurzaamheid in secundaire bouwstoffenketens
[137] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting

- **Reduced heat and power generation:** Less waste incineration reduces power and heat output coming from Dutch WIPs. However, in 2022, WIPs supplied only 1.1% of the Dutch total energy consumption (electricity and heating), which is not a considerable amount. Though, to some extent, WIPs could also help replace heat production from natural gas.[138] Interviews also indicated that WIPs contribute to the gas transition and that district heating networks are dependent on heat from WIPs. In 2018, WIPs supplied only 1.5% of total national heating demand and accounted for 14.8% of total renewable heat production.[139]

  Furthermore, WIPs provide 20% of the heat demand for major district heating networks.[140] However, this demand from district heating is concentrated in certain regions. For example, in the Rotterdam area, two district heating suppliers relied on WIP heat for 52% (2018) and 80% (2019) of their supply. In 2019, WIPs also supplied 94% of district heating in Amsterdam West and North, 96% in Nijmegen, 89% in Dordrecht, and 98% in Arnhem and its surrounding region. These regions are particularly reliant on WIP heat, which could become problematic if less waste is incinerated in the future.[141] However, it is unclear to what extent any reduction in incineration would lead to these areas not being supplied with heat anymore, or that other heating sources could replace the heat from waste incineration. In addition, the data is somewhat outdated and current figures may differ. It is also unclear if there are binding delivery obligations in place that would prevent WIPs from reducing heat supply.

  The use of WIP heat could be more efficient. In 2018, only 24% of the potential for WIP heat use was utilized, mainly due to limited distribution infrastructure and the focus on supplying buildings, where heat demand is not constant year-round.[142] This suggests that there may still be capacity to compensate if less waste is incinerated. There are also opportunities for innovation and alternative solutions that could shift heat supply away from WIPs. For example, in Dordrecht, a significant share of heat is expected to come from sludge incinerators, reducing dependence on WIP heat. In the Alkmaar region, geothermal energy will supply the base load together with the biomass energy plant (BEC), with the WIP serving mainly as a backup source.[143]

- **Less CO_2 emissions:** Less waste incineration could reduce direct emissions from WIPs, which is further examined in Section 4.1.6.

- **Decrease of tax base:** Less waste incinerated at WIPs would also reduce the total tax base. This is further examined in Section 4.2.

4.1.2 Waste collectors

For waste collectors, several impacts are expected if WIPs raise their gate fees, which can be slightly different from municipalities to commercial waste collectors.

- **Improve sorting and reducing residual waste:** Waste collectors may collaborate to promote better sorting of both household and commercial waste. While interviews suggest that the ASB has only a limited direct effect on overall waste prevention, it can incentivise waste producers to separate reusable materials more effectively. Furthermore, by encouraging the separation of recyclable waste from residual waste, the waste tax can indirectly lead to higher recycling rates and lower costs for waste collectors. However, the strength of this effect depends on whether waste collectors are able to pass on the cost signals to waste producers.

[138] CE Delft (2021). Klimaatimpact van afvalverwerkroutes in Nederland.
[139] Royal Haskoning (2022). De rol van afvalenergiecentrales in Europa en Nederland
[140] Royal Haskoning (2022). De rol van afvalenergiecentrales in Europa en Nederland
[141] TNO (2020). Warmtemonitor 2019
[142] Royal Haskoning (2022). De rol van afvalenergiecentrales in Europa en Nederland
[143] TNO (2020). Warmtemonitor 2019

Commercial waste collectors can pass the ASB incentive directly on to businesses by, for example, requiring them to deliver pre-sorted waste. Since businesses usually pay per kilogram of waste, they are more exposed to cost changes than households. However, households also effectively pay per kilogram, collectively through municipal levies (or systems like DifTar). As a result, municipalities also have an incentive to take action and implement measures that reduce residual waste. Still, both literature and interviews confirm that companies tend to respond more strongly to financial incentives, making them more likely to take preventive action in response to higher waste treatment costs.[144] Municipalities can pass on the costs by increasing the waste collection charge, which will be further explained below.

- **Seek more cost-effective waste management contracts:** Another option for waste collectors is to seek more cost-effective waste management contracts with alternative, possibly foreign, WIPs or explore different waste treatment methods, such as recycling. This approach is more feasible for commercial waste collectors, as some interviewees noted that municipalities often have long-term contracts with (often public) WIPs, and political factors make it unlikely these agreements will be changed easily. However, other interviewees argued that over time, municipalities are also likely to prioritize cost efficiency, due to pressure from citizens, and may eventually consider cheaper alternatives.

Municipalities may implement several measures to further mitigate these higher costs:

- **Increase waste collection charge:** If municipalities are unable to reduce costs themselves, they will likely raise waste collection charges for households. As shown in the figure below, most municipalities already cover all waste management and collection costs through these waste collection charges. In interviews, it was noted that higher fees could particularly impact more(urban) residents who may struggle to afford them, requiring municipalities to extend compensation schemes[145] to cover them..

Table 4-1: Percentage of municipalities covering full waste management costs with waste collection charges

	Percentage of Municipalities (%)				Number of Municipalities
Coverage Percentage	2021	2022	2023	2024	2024
100%	79%	80%	78%	76%	260
95% - 100%	11%	10%	12%	12%	40
90% - 95%	5%	5%	6%	7%	25
80% - 90%	3%	3%	3%	4%	12
< 80%	2%	2%	1%	1%	5

Source: Ministerie van Infrastructuur en Waterstaat (2025). Afvalstoffenheffing 2024

[144] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.

[145] Rijksoverheid (n.d.). Wanneer kom ik in aanmerking voor kwijtschelding van gemeentelijke belastingen?

- **Promote household waste sorting or waste reduction:** To reduce the amount of waste sent to WIPs, municipalities aim to encourage better household waste sorting and overall waste reduction. They can do so through various measures, including the following:
    - **Promote household waste sorting through differentiated tariffs (DifTar):** Many municipalities apply a flat waste tax per household (or household type), meaning residents pay the same amount regardless of how much residual waste they generate. This removes any direct financial incentive for households to reduce waste. Interviewees also indicated that in municipalities with a flat waste tax, residents may expect an improvement in services when waste charges increase, as they often do not associate higher fees with the actual costs of waste collection.

      Currently, 60% of municipalities use a differentiated tariff system (DifTar), which links waste charges to the amount of waste produced, providing a clear price signal to encourage waste reduction.[146] One interviewee argued that increasing the waste tax would strengthen the economic case for DifTar. If the ASB rate is sufficiently high and the incentive is effectively passed on, more municipalities may adopt DifTar, directly encouraging waste reduction at the household level. There are significant differences between municipalities, partly because not all of them pass on the full costs of waste management to households. Additionally, differentiated pricing, such as DifTar, generally leads to lower average waste charges. These differences are further examined in Box 4-4.

      In the interviews, it was also suggested that implementation should occur at the national level, as DifTar systems may lead to waste being shifted to neighbouring municipalities, although this is considered unlikely given the effort required by citizens. Some also raised concerns that within DifTar systems, residents might try to 'game the system', for example, by adding residual waste to plastic waste to pay less or the dumping of waste. However, there is no clear evidence that such behaviour occurs on a large scale. Implementing DifTar can promote improved waste separation.

      On the other hand, increasing the waste tax in municipalities where DifTar is already implemented, maylead to frustration among residents who believe they are already doing their best but continue to face increasing costs.
    - **Promote reduction or better sorting of waste through campaigning:** In some more urbanized areas, implementing DifTar may be challenging. Interviewees also noted that campaigns focused on waste reduction or improved sorting can be effective complementary measures.

Box 4-4 Municipal differences in waste collection charges and volumes

Residents of Nijmegen pay the lowest average waste tax due to both the use of DifTar and a high cost coverage (22%).[147] Of the five municipalities with the lowest waste charges, four use a DiTtar system. The five municipalities with the **highest charges** do not use DifTar and base their fees on household size. While the highest fees are generally found in the **western part of the country**, there is no clear overall link between location and the level of waste charges. Moreover, in the five municipalities with the lowest waste charges, residual waste per person ranges from 5 to 121 kg. In the five with the highest charges, it ranges from 177 to 219 kg. [148] However, these are often **larger cities**, and interviewees have stated that implementing a DifTar system may be more complicated in these cases. Still, adaptations are possible, for example, by tailoring strategies for the city centre

[146] Ministerie van Infrastructuur en Waterstaat (2025). Afvalstoffenheffing 2024
[147] Ministerie van Infrastructuur en Waterstaat (2025). Afvalstoffenheffing 2024.
[148] Ministerie van Infrastructuur en Waterstaat (2025). Afvalstoffenheffing 2024.

and the suburbs. Besides, in areas where waste separation is already high, the behavioural impact of further incentives may be limited, but these regions would also be less affected by rising costs.

4.1.3 Waste generators

As noted in the previous chapter, the increased costs will likely be passed on to waste generators, although their responses to these higher charges may vary.

- **Households:** To cover the increasing costs for waste management, households are likely to face increasing costs and/or increasing incentives for waste separation at the source. While literature suggests that citizens tend to respond to changes in the prices they pay for waste management[149], several interviewees questioned this assumption. They noted that people are more likely to change their behaviour when they feel they are gaining something in return. Currently, however, better waste sorting may not appear rewarding to citizens, as they still face high costs regardless of their efforts., except when another system, such as DifTar, is implemented. For lower-income residents, rising waste charges may have a significant impact. However, as mentioned before, municipalities can influence the behaviour of households, for instance through public education and enforcement. Most importantly, they play a key role in selecting the system, ensuring it promotes both convenience and appropriate incentives.
- **Businesses/industry:** Waste collectors can directly transfer the waste incentive (aimed at reducing waste) to businesses, creating a preventive effect by, for example, requiring them to deliver pre-sorted waste. As mentioned in the previous section, this is possible because businesses usually pay per kilo of waste, unlike many households.[150] Literature indicates that businesses are generally more responsive to financial incentives, a point also confirmed by interviewees. It was noted that companies tend to react more strongly to cost changes than households.

4.1.4 Recycling industry

Assessing the expected impact of increasing gate fees at WIPs on the recycling industry is complex as it largely depends on specific waste streams. However, two primary effects on the business case of recyclers can be identified:

1. **Increased costs for incinerating recycling residues:** Due to the increasing gate fees, recyclers will face higher expenses for the incineration of recycling residues, which may affect their overall profitability.
2. **Greater willingness to pay for recycling:** As incineration becomes more costly due to increasing gate fees, waste collectors may seek more cost-effective alternatives, potentially increasing demand for recycling and strengthening the recyclers' business case. That being said, waste may be alternatively sent abroad if this is more cost effective than recycling domestically (See Box 5-2).

Increased costs for incinerating recycling residues

The following impacts can be expected if the incineration costs for recycling residues increase:

- **Further financial pressure on recycling:** In addition to the existing financial pressures on recyclers—mainly stemming from market competition with virgin materials—the introduction of additional taxes and the rising costs associated with incinerating recycling residues are straining the recyclers even further. For PMD for instance, 20% of the PMD recycled after sorting ends up as recycling residues for incineration. Under the fiscal

[149] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting.
[150] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting.

measures, the incineration costs for these recycling residue would increase the PMD recycling costs by about +9 to +21 EUR/t per tonne of recycled PMD by 2030 compared to the current situation.[151] However, some interviewees and studies[152] indicate that recycling residues for some plastic packaging waste can be as high as 50%, which correspond to increase the PMD recycling costs by +23 to +52 EUR/tonne of recycled PMD. To put this in perspective, the average cost of recycling PMD is currently 360 EUR/t.[153] In any case, if plastic recycling becomes more expensive due to higher cost of incinerating recycling residues, even marginally, this reduces the incentive for recycling, particularly given the strong competitive plastic recycling market and that alternatively incinerating waste elsewhere could be more cost effective.

These added costs compound existing issues, such as tight profit margins and complex logistics inherent to recycling operations. As a result, some recyclers may reduce the treatment of complex and contaminated waste streams, potentially lowering recycling rates for low-value and hard-to-recycle materials such as mixed plastics. However, with a supportive legislative framework, such as the existing EPR although deemed insufficient by the interviewed stakeholders, there could potentially be increased efforts to improve both pre- and post-collection sorting.[154] An increase in the CO_2 levy could lead to a shift away from incinerating materials with high fossil fuel content, such as plastics. Overall, recyclers may be incentivised to upgrade their technologies and improve waste separation processes to reduce the volume of non-recyclable residues, which could help mitigate the impact of rising incineration costs. Again, this however also depends on the existence of demand for the additionally produced recyclates. Furthermore, they might explore options to export their residues for incineration abroad if incinerating them in the Netherlands becomes more expensive. At the same time, recyclers may make greater efforts to reduce their residue. Currently, the amount of recycled material produced (and thus also what ends up as residue) is determined by what best fits the business model. Consequently, sending recyclable material to WIPs as residue may currently be cheaper than further processing these into recycled material, but this may change due to the tax increase.

- **Potential increase in waste exports for further processing**: Interviewees have highlighted that recycling is an international market, with both recyclable waste and recycled materials often traded across borders. This is particularly true for waste streams other than plastics, where specialised recycling facilities may not be locally available. In contrast, due to the high transport costs associated with plastics, plastic recycling facilities are increasingly being established within national borders. Plastic recyclers are also constrained by current EU waste shipment regulations, which restrict the export of recyclable plastic waste to non-OECD countries. Further analysis of such trade flows is provided in Section 5.3. Another concern raised by the interviewees is that, in addition to waste exports, the recycling industry itself may also relocate to other countries.

Greater willingness to pay for recycling

Conversely, higher waste incineration costs may improve the economic viability of recycling, increasing waste providers' willingness to invest in recycling options. The following impacts can be expected:

[151] This range is based on the comparison of the incineration costs in 2025 vs incineration costs in 2030 after fiscal measures with and without CCS uptake as calculated in Section 5.2.5, with the lower cost range corresponding to WIPs with CCS. The estimation assumes that 20% of the recycled PMD is incinerated.

[152] PubliekeZaken (2024). Belastingdruk kraakt Recyclers.

[153] NVRD (2024). Benchmark Huishoudelijke Afval.

[154] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting.

- **Recycling may become a more viable economic option:** Recycling could become a more economically attractive option if the costs of incineration were to rise. This is particularly relevant to that portion of waste currently incinerated in the Netherlands that would be suitable for other processing. Currently, in many cases, the cost of sorting and recycling exceeds that of incineration, making incineration the preferred financial choice. Increasing the gate fees for waste incineration via higher taxes on incineration could then benefit the competitiveness of recycling. In theory, the higher the ASB, the more economically viable recycling technologies become compared to the incineration of Dutch waste. This can enable a larger share of waste to be diverted from incineration. In addition, it could serve as a stimulus for innovation in sorting and recycling technologies.[155]

  A switch from incineration to recycling due to tax increases could potentially be expected for those waste streams for which the collection and recycling costs are currently similar to the costs of incineration, given the recycling technologies are already available and economically feasible. This would be the case for bulky waste and construction and demolition waste.[156] For certain waste streams like PMD, exporting to a waste processing facility abroad may remain more cost-effective than recycling domestically in the Netherlands (Section 5.3.1).

- **Limitations on demand-side and technological feasibility:** The main barriers appear to lie on the demand side of the value chain, as well as in the availability and economic feasibility of current technologies. The competitiveness of recyclate versus virgin materials depends on several factors, including the scale of gate fee increases and their effect on recyclate pricing, the type of waste, the quality of the recyclate, and buyers' willingness to pay a 'green premium'. In some markets, recyclate will continue to face strong competition. In this regard, it must be acknowledged that demand increase might require measures beyond cost incentives given that first attempts for cost competition are already ongoing, however remaining insufficient (i.e., EPR/Verpact as discussed in Section 2.2.4). For example, for the waste streams including paper/cupboard, textiles, and household biowaste, the collection and recycling is now already cheaper than incineration,[157] but still great shares get incinerated (>20%)[158]. This illustrates the relevance of market demand for recycled outputs as well as the aspects such as availability of the required technology, facilitating sorting and collection practices, and behavioural changes for enabling a more circular economy.

  For waste streams where recycling is already economically viable but not yet fully established, such as plastics, increases in the cost burden from the ASB and CO_2 levy would add further pressure on profit margins, as mentioned in the section above. Plastic recyclers have emphasised that they are already facing intense competition from virgin materials and cheaper recyclates imported from abroad. An additional cost increase, which cannot easily be passed on to customers, would further reduce the attractiveness of recycled plastics. In some biowaste streams, recycling demand is low because the output cannot be further used or processed economically. Additionally, for some waste streams, recycling facilities do not yet exist (e.g., for fluorescent powder). [159]

4.1.5 Landfill operators

The increase in ASB rates for landfilling with an exemption (ASB 4) will become greater than the ASB increase for WIPs. As a result, more incinerable waste that currently goes to exempted landfill may be diverted to incineration.

Since 2019, landfill costs with an exemption have generally exceeded incineration costs, effectively removing the economic incentive to landfill exempted waste. Landfill fees are based on space

[155] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.
[156] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.
[157] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.
[158] NVRD (2024). Benchmark Huishoudelijke Afval.
[159] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.

occupied rather than weight, and waste streams subject to temporary exemptions typically have a higher space requirement. This suggests that landfilling was likely more costly than incineration even prior to 2019.[160] If this is the case, it is unlikely that a larger ASB increase will further reduce the amount of landfill with exemptions, as the costs are currently already higher. However, this may also depend on the type of waste stream. Additionally, since incineration capacity expanded in 2008, combustible waste has no longer run at full capacity, and landfill ban exemptions for such waste have since been limited.[161]

For WIPs, high-quality bottom ash intended for further application (e.g., as construction material) may only be landfilled with a temporary exemption, granted in exceptional cases such as lack of market demand or emergencies. If landfill operators raise their gate fees in response to the increase in the ASB tax, WIPs would face higher costs for landfilling bottom ash with an exemption. The scale of this impact is unclear but can be expected to be marginal, as landfilling bottom ash with an exemption has not been common practice in recent years. Additionally, the data also includes cleaning residues, which are exempt from the landfill ASB.[162]

4.1.6 Environment

The measures may have the following effects on the environment:

- **GHG emissions:** The CO_2 impact of WIPs includes emissions from incineration of waste generated in the Netherlands. As the amount of incinerated waste decreases, CO_2 emissions from incineration also decline. At the same time, some of these emissions may shift to other industries or countries. However, the literature indicates that for most waste streams, recycling is generally more sustainable than waste incineration.[163] The topic of emissions shifting abroad will be addressed later in this subsection.

  Avoided fossil CO_2 emissions can also be accounted for due to the relatively green origin of the energy produced by WIPs, which is produced from 54% biogenic materials.[164] However, this is highly dependent on the type of waste stream. For example, more effective sorting of plastic waste for recycling could lead to further reductions in fossil CO_2 emissions. As a result of the decrease in waste, less energy is generated, and therefore less energy production is avoided (since energy produced in a WIP displaces energy that would otherwise have been generated by other means). The environmental impact of this avoided energy production is treated as an environmental benefit, which can offset some of the environmental gains from reduced waste incineration. However, this offset may become smaller in the future due to a shift in the energy mix (with more renewables and fewer fossil fuels expected by 2030).[165] In general, as the energy mix becomes greener, the relative environmental benefit of energy from WIPs diminishes, reinforcing the need for waste minimization and improved material recovery.[166]

  WIPs also have the potential to substantially lower their emissions through CCS, but the extent of future investment in this technology remains uncertain, as outlined in Section 4.1.1.

- **Other pollution:** While WIPs are primarily known for CO_2 emissions, they also release harmful pollutants into the air, water, and soil. These include nitrogen compounds, particulate matter, heavy metals such as mercury and lead, and hazardous substances like benzene. Although Dutch WIPs use advanced air and water purification systems in line with EU regulations, some pollutants still escape into the environment, contributing to health risks and environmental degradation. Particularly concerning are PFAS, which are not fully broken

[160] Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.
[161] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[162] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[163] CE Delft (2021). Klimaatimpact van afvalverwerkroutes in Nederland.
[164] Ministerie van Economische Zaken en Klimaat (2023). Staatscourant van het Koninkrijk der Nederlanden.
[165] TNO (2024). Een verkenning naar de verbranding van Nederlands afval en de milieuprestatie in 2030 en 2050.
[166] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.

down during incineration at standard operating temperatures and may be released via flue gases or end up in ash and wastewater.[167] A reduction in waste incineration may lead to lower emissions of these pollutants in the Netherlands. At the same time, as with CO_2 emissions, these emissions may shift to other industries and/or countries. However, it is uncertain to what extent this may be the case.

In regards to the bottom ashes, the literature indicates a shift in their application. Rather than increasing the processing of the ashes to a freely applicable quality, more unwashed bottom ash is being immobilised in, for example, concrete blocks and floors. There is a risk that, over time or through reuse, contaminants may still be released.[168] This topic will also be considered in the upcoming Circular Materials Plan (*NL: Circulair Materialenplan; CMP*)[169] and since the proposed fiscal measures could potentially improve the processing and cleaning of bottom ash, this problem may become less severe.

Even though landfilling has already decreased significantly over the past years, it still emits considerable amounts of GHGs, mainly methane produced by the decomposition of organic waste.[170] The increased ASB costs for landfilling could decrease the volume of waste landfilled and with that, the methane emissions from landfills. However, whether this will occur remains uncertain, as outlined in Section 4.1.5.

- **Risk of waste mixing, dumping and littering:** The interviewees suggested that raising the cost of incineration and landfill may lead to side effects such as waste mixing, illegal dumping, and littering. However, the literature notes that, although no quantitative data is available, the risk of dumping or littering to avoid their potentially increasing waste tax is minimal.[171] Certain measures can be taken or prepared in advance to prevent such behaviour as much as possible. Communication and enforcement can also help to mitigate the problem.

  Waste stream mixing, on the other hand, may be a more likely consequence, as it reduces costs for producers. Although waste processors are expected to monitor and prevent this, enforcement is difficult due to limited oversight, logistical challenges, and economic pressure to process waste quickly. The scale of the issue is uncertain due to a lack of data.[172]

- **Cross-border environmental impacts:** More Dutch waste being exported and less foreign waste being imported (see Section 5.1) would consequently lead to negative environmental impacts being shifted abroad. In addition, several interviewees raised the concern that exported waste may ultimately be treated using more polluting methods, especially in countries with lower environmental standards and less efficient waste treatment infrastructure. Several interviewees indicated that such shifts could realistically occur either directly or via a waterbed effect. An example of the waterbed effect is that if Dutch waste incineration commands a higher price, it may be exported to countries such as Germany and Sweden. As a result, the waste currently incinerated in those countries (such as UK or Italian waste in Sweden) may be displaced and could end up in landfill elsewhere, leading to a higher environmental impact. It is difficult to say how likely or to what extent these displacement effect may occur, but the increasing costs will at least increase the risks of such effects occurring.

  Furthermore, the higher costs due to fiscal measures can increase the risks of illegal behaviour as the "gains" (i.e., avoided costs) become higher. Indeed, interviewees highlighted that current European and national waste regulations contain loopholes that can be exploited by waste operators. For example, some interviewees indicated that the higher costs due to the fiscal measures might lead to recyclable materials being intentionally mixed with

167 Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
168 Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050.
169 CMP (2025). Afvalplan assen AVI's.
170 TNO (2022). Decarbonisation options for the Dutch waste incineration industry
171 IPR Normag (2021). Diftar als beleidsinstrument bij huishoudelijk afvalbeheer.
172 Ecorys & CE Delft (2024). Evaluatie afvalstoffenbelasting.

residual waste and exported to non-EU countries with weaker environmental controls. Illegal waste trade is a major concern, with estimates indicating that 15–30% of waste shipments are unlawful, contributing to environmental crime within the EU and abroad.[173]

Conversely, the current practice of importing foreign waste transfers environmental burdens to the Netherlands and diminishes incentives for waste reduction in the exporting countries.[174] With the fiscal measures increasing the costs of treating waste in the Netherlands, these exporting countries may be encouraged to reduce waste or recycle more instead. This is because disposing of waste they currently export to the Netherlands would become more costly, either due to increasing costs from the fiscal measures or alternative waste processing solutions that are more expensive than the current situation. As a result, the reduction in waste to incineration would result in a lower environmental impact. At the same time, stakeholders have noted that importing waste for recycling is also necessary to meet other sustainability objectives, such as reducing the use of virgin materials by 50% by 2030, which is an intermediate target of the Circular Economy 2050 programme.

4.1.7 Alternative waste treatment routes

In addition to waste being directed to WIPs or recyclers, the impacts on other waste treatment routes should also be considered. Stakeholders indicated that if taxes increase, waste companies may be more inclined to seek loopholes to avoid taxation, particularly in combination with the EU Waste Shipment Regulation (EVOA). Two potential treatment routes they could pursue instead of WIPs are:

- **Cement kilns:** Cement kilns can treat waste as refuse-derived fuel (RDF), produced from treated waste. Their capacity depends on how much waste can be co-processed during clinker production. Potentially, more waste could be directed to cement kilns instead of WIPs, as cement kilns are not subject to the ASB. Interviews confirm this, stating that the main barrier is the need for pre-treatment to meet strict quality standards and the need for infrastructure that is often lacking. Several factors limit the current use of cement kilns for waste treatment, despite their potential. More insights into cost and capacity aspects can be found in Section 5.1.3.
- **Mono-incinerators:** Due to ASB 3, it may become more attractive to divert the small volume of sewage sludge currently incinerated in WIPs to mono-incinerators. This could also result in more sludge being incinerated abroad, depending on domestic capacity. Literature indicates that mono-incineration capacity in the Netherlands is currently limited but the potential for exporting sewage sludge is very restricted.[175]

  Mono-incinerators are currently exempt from the ASB tax, which some interviewees see as creating unfair competition. A few interviewees even indicated that some facilites might convert into specialised WIPs if the exemption persists. Others cautioned that taxing mono-incinerators could raise costs for waste water management, an outcome widely opposed. As water quality improves, more sewage sludge is sent for incineration, potentially increasing costs for WIPs and leading to higher water board taxes for households and businesses.[176]

4.2 Impact on the tax base

This section provides a **reflection of the Ministry of Finance's (FIN's) tax base and the associated waste reduction** resulting from the fiscal measures as provided by the FIN in the internal document "*Bijlage 2. Technische analyses handelingsperspectief en maatregelpakket afvalbeprijzing*" (hereafter: FIN analysis). Since tax revenues are a multiplication of the tax rate with the tax base, and

[173] European Commission (2021). Questions and Answers on new EU rules on waste shipment
[174] Ministerie van Infrastructuur en Waterstaat (2025). Beleidsvisie afvalverbranding in 2030 en richting 2050
[175] Werkgroep slibstrategie (2021). Slibstrategiestudie: route naar 2050; STOWA (2025). Slibverwerking van de toekomst.
[176] Unie van waterschappen (2025). Belasting op zuiveringsslib slecht voor waterkwaliteit.

the tax rate is set by the government, the reflections in this section focus on **the estimations of the tax base for the ASB and CO_2 levy and the associated waste reduction**. Table 4-2 presents the FIN waste reduction estimates from that internal document, which include estimations of behavioural impacts on the import and domestic generation of waste to meet the additional revenue demand of €567 million.[177] The estimates do not include the potential behaviour impacts on the export of waste, which is to be informed by this study (Chapter 5). Furthermore, these waste reduction estimates are from May 2025 and FIN has continuously updated these estimations. This reflection therefore focusses on evaluating the **magnitude and direction** of the identified impacts in the budget estimations, as well as the underlying mechanisms related to the estimated waste reduction and tax base.

As the numbers for 2022 are similar as those for 2021, albeit slightly lower (see Section 2.1), the reflection is done using the 2022 numbers to be consistent with the rest of this report to present the latest available numbers.

Table 4-2: Estimations for the volume of waste subject to the ASB and CO_2 levy from the Dutch Ministry of Finance (May 2025) in the base case and after fiscal measures

Volume of waste [Mt-waste]	***2030 in base case***	**2030 reduction after fiscal measures vs 2030 base case**	**2035 reduction after fiscal measures vs 2030 base case**
Landfilled	*No change from 2021*	-0.1 Mt	-0.2 Mt
Incinerated in WIPs	*No change from 2021*	-1.1 Mt	-1.3 Mt

Note: the volume of waste and ASB tax base are different in the base case for waste incineration due to the in-out method under the ASB.

A reflection of the waste reduction and resulting tax base is presented in Sections 4.2.1 to 4.2.3. These reflections are based on insights from Chapter 2 and Section 4.1, and in the case of import flows, also Chapter 5. The reflection includes a discussion on how likely or plausible it is for the impact to realise and the associated uncertainties with it.

As indicated in Table 4-2, the base case of the FIN analysis assumes no reduction in waste generation or incineration from 2021. This aligns with the *Klimaat- en Energieverkenning 2024* (KEV2024) projections for 2025-2030.[178] However, the costs from the CO_2 levy already rises over time in the base case and it is unlikely that this cost can be fully absorbed by WIPs (see Section 4.1). Therefore, the assumption of no reduction in waste incineration in relation to the cost impact of the ASB and CO_2 levy in the base case is also considered, which leads to potential differences in the tax base in the base case. The impact of the changes in the base case on the magnitude of behavioural impacts are subsequently estimated using the same price elasticities as used in the FIN analysis (see Box 4-5); these are the most recent available price elasticities from literature and there were no reasons to deviate from these.

Box 4-5 Price elasticities for estimating behavioural impacts on waste incineration

To estimate the behavioural impacts on the volume of incinerated and landfilled waste, the FIN analysis uses **price elasticities** from the 2024 evaluation of the ASB.[179] Specifically, the 2024 ASB

[177] *I.e., for 2030, €645 million (ASB after measures) + €232 million (CO_2 levy after measures) – €301 million (ASB before measures) > €567 million. Note that the CO_2 levy revenues are not considered in the base case as these are not part of the general budget in the base case but made part of the general budget through the fiscal measure package (abolishing the budgetary rebate mechanism).*

[178] PBL (2024). Klimaat- en Energieverkenning 2024.
[179] Ecorys & CE Delft (2024). Evaluatie Afvalstoffenbelasting

evaluation uses an elasticity of -0.2 is used for households and -0.4 for businesses on the total waste collection and treatment costs before the ASB, with the estimated waste from households being 60% of the total volume and businesses 40%. From the FIN analysis, the costs for waste collection and incineration costs before the ASB has not been explicitly stated but a direct reference to the 2024 ASB evaluation is made. Therefore, in the reflection of this section, we have used for the costs for waste collection and incineration before the ASB 222 EUR/t-waste for households and 172 EUR/t-waste for businesses in 2025 Euros.[180]

The elasticities represent behaviour effects of households and businesses to separate more waste to allow for better recycling, and in this way reduce their costs resulting from higher incineration gate fees. This assumes that the WIPs will fully pass on the costs of the fiscal measures in their gate fees, which seems most likely based on the findings in Section 4.1.1.[181] The higher prices elasticities for businesses compared to households indicate that businesses are more responsive to price signals, which correspond to the findings from Section 4.1.3.

4.2.1 Landfill ASB tax base

Base case

The FIN analysis assumes that waste volumes remain unchanged in 2030 in the base case. In 2022, waste to landfill for disposal was 1.8 Mt.[182] However, landfilled asbestos and dredged material is not subject to the ASB. In 2022, landfilled asbestos waste was 0.2 Mt and dredged material 0.03 Mt,[183] which would bring the **ASB tax base to 1.6 Mt in 2022**.

However, this tax base does not take into account that the current volume of **waste that is landfilled with an exemption**, which was 0.3 Mt in 2022, may shift to (domestic) WIPs and recyclers. This is waste that is incinerable and/or recyclable but received a temporary exemption to be sent to landfill, which can be justified by a lack of capacity, disproportionate costs and/or technical reasons to recycle or incinerate this waste.[184] Thus, such shifts would likely occur if there is sufficient capacity available in WIPs or with recyclers. Numbers from 2022 show that there is in principle sufficient capacity in Dutch WIPs to take on the waste currently landfilled with an exemption (see Section 2.1.1) and waste landfilled with an exemption has already been steadily decreasing over 2020-2022 (see Section 2.1.2). Therefore, such shifts of waste from landfilled with an exemption to incineration or recycling has already been occurring. Such shift could be further accelerated towards 2030. Findings in Section 5.3.2 show that already in the base case, import of waste may decrease due to economic reasons. As waste imports for incineration constitutes 1.1 Mt in 2022, capacity constraints will not be a reason for the 0.3 Mt waste that is currently being landfilled with an exemption to continue to go to landfill. Investments in improved waste separation and treatment that are already taking place would further reduce the volume of waste that receive an exemption for landfilling based on disproportionate costs and technical reasons. The same rationale would apply to waste landfilled with an exemption that can be recycled but not incinerated (e.g., metals). Therefore, **it is likely that ASB tax base for landfilled waste may already decrease by up to 0.3 Mt in the base case** to no more waste landfilled with an exemption. This would result in a tax base of 1.3 Mt in 2030.

There may be a further reduction in waste going to landfilling in the Netherlands due to behavioural effects stemming from a **decrease in incinerated waste in the base case** (see Section 4.2.2). Of the

[180] In the 2024 ASB evaluation, the waste collection and incineration costs were 235 EUR for households and 190 EUR for businesses including ASB (with an ASB rate of 35.7 EUR) in 2023 Euros. These costs has been converted to 2025 Euros using the same indexation as the ASB, which was 39.7 EUR in 2025. To calculate the costs of waste collection and incineration before the ASB, the ASB has subsequently been subtracted.
[181] Other cost increases for WIPs
[182] We assume that the waste to landfill used as building materials is not subject to the ASB, which constitutes 0.3 Mt in 2022. This corresponds to the starting point in the FIN analysis.
[183] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[184] Ministerie van Infrastructuur en Waterstaat (2025). Leidraad ontheffing stortverbod - Toetsingskaders Circulair Materialenplan.

1.8 Mt of waste landfilled for disposal in 2022, 0.2 Mt was related to landfilling of residues from WIPs.[185] This means that around 3% of the total waste incinerated ends up as residues to landfill. Taking the estimated incinerated waste in Dutch WIPs in the base case (see Section 4.2.2), this would amount to up to 0.04 Mt less waste to landfill in the situation waste import for incineration fully drops away. Additionally, the likely increase in export of Dutch waste and decrease in sorting and recycling of waste in the Netherlands (see Section 5.3) would decrease the waste treatment residues further, including what goes to landfilling and with that the ASB tax base for landfilling. However, as these effects have not been quantified in the FIN analysis and thus also not in this study, they also have not been taken into account in the ASB tax base reflection.

Landfill ASB tax base – base case reflection

The ASB tax base for landfilled waste is estimated to be 1.3 Mt in the 2030 base case. The estimation in this reflection is based on a current ASB tax base of 1.6 Mt in 2022 and a reduction of waste landfilled with an exemption of 0.3 Mt in 2022. This is **lower than the FIN analysis**, which assumes no change in waste volumes compared to 2021. The tax base may be even lower in reality due to behavioural effects stemming from a decrease in incinerated and recycled waste in the Netherlands.

After fiscal measures

The FIN analysis estimates landfilled waste volumes to decrease by -0.1 Mt in 2030 and -0.2 Mt in 2035 compared to the 2030 base case. A breakdown of the impact of each measure was not provided in the FIN analysis. A reflection is therefore provided on the potential impact of each fiscal measure relevant to the ASB tax base for landfilled waste:

- **ASB 2** (Exemption for landfilling of WIP cleaning residue): in 2022, the volume of cleaning residues going to landfill was 0.1 Mt(i.e., about half of the WIP cleaning residue to landfill),[186] which would be fully exempted from the ASB with this measure. Towards 2030 and 2035, some decrease in cleaning residues to landfill can be expected due to the behavioural impacts resulting from the fiscal measures. These behavioural impacts relate to the increased costs of waste incineration, which could reduce the volume of incinerated waste and with that also cleaning residues (see Section 4.2.2). However, it was not possible to take the decrease in WIP residues to landfill due to such behaviour impacts into account in the 2030 base case. Therefore, the 2030 base case uses the 2022 landfilled waste as a basis for the tax base estimation and thus this measure is expected to **decrease the ASB tax base by 0.1 Mt,** the 2022 volume of WIP cleaning residues going to landfill. Other behavioural impacts that may affect the volume of exempted WIP cleaning residue are not anticipated (see Section 4.1.1).
- **ASB 4** (Increased rates for landfilling with an exemption): the volume for waste landfilled with an exemption was 0.3 Mt in 2022. This measure would make waste landfilling with an exemption economically less attractive. However, above is concluded that a shift of waste landfilled with an exemption is likely to already shift to recycling and incineration in the base case. **No impact** on the ASB tax base is therefore expected from this measure. Instead, this measure is expected to merely act as a backstop in case the increased costs due to the CO_2 levy measures could lead to unintended shifts of incinerable waste from Dutch WIPs to landfill. This could for example occur if imported waste can be charged a higher gate fee than domestic waste, leading to a capacity shortage in Dutch WIPs (albeit an unlikely situation the as the government can impose an import ceiling on waste in such situation and the economics in Section 5.3.2)
- **ASB rate increase**: the FIN analysis assumes fixed split of 60-40 between household and business waste to estimate the behavioural impacts from the ASB rate increase. However,

[185] 117 kt in 2022 based on RWS (2024). Afvalverwerking in Nederland, gegevens 2022.
[186] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.

household waste is not landfilled anymore since 2010. For waste that is being landfilled, these originate from businesses (see Section 2.1.2), although some waste may still indirectly originate from households. Nonetheless, given that the price elasticity of waste from businesses is double that of households (-0.4 instead of -0.2), the **reduction in ASB tax base for landfilled waste could be underestimated by up to 40%.** Assuming that the FIN analysis took into account the -0.1 Mt of ASB 2 in the tax base calculation, the behavioural effect of the generic ASB rate increase would be smaller than -0.1 Mt in 2030 and about -0.1 Mt in 2035. Thus, an underestimation in landfilled waste reduction of about 40% would lead to ASB tax base reduction of **up to -0.1 Mt in 2030 and -0.2 Mt in 2035**.

Similar as in the base case, there could be an even stronger reduction in waste to landfilling in the Netherlands as a result of the **behavioural effects from the reduction of waste incineration and sorting and recycling** due to decreasing import and increasing export of waste. However, given that the total amount of landfilled non-cleaning residues from WIPs and sorting residues is 0.3 Mt, unless there is a substantial drop in waste incineration and sorting, the impact on the tax base is likely to be limited. That being said, the fiscal measures do increase the probability of waste incineration and recycling in the Netherlands substantially decreasing (see Section 5.3).

Landfill ASB tax base – after fiscal measures reflection

The **total impact** of the fiscal measures in the FIN analysis of -0.1 Mt in 2030 and -0.2 Mt in 2035 was found to be **potentially underestimated** by -0.1 Mt in both years. This is mainly due to the assumed split in waste types in the application of the price elasticity. The reflection found that the reduction in the landfilled waste volume, and thus the ASB tax base for landfilled waste, could be more substantial with up to -0.2 Mt in 2030 and 0.3 Mt in 2035 compared to the base case. This results in a ASB tax base of 1.1 Mt in 2030 and 1.0 Mt in 2035 in this study. The tax base may be lower in reality due to behavioural effects stemming from a decrease in incinerated and recycled waste in the Netherlands. However, the impact on the landfill ASB tax base is likely to be limited and would reduce it at most by 0.3 Mt based on residues of waste incineration and sorting going to landfill in 2022.

4.2.2 Incineration ASB tax base

Base case

The FIN analysis assumes that waste volumes remain unchanged in 2030 in the base case. In 2022, the total incinerated waste in WIPs was 7.4 Mt, which resulted in 1.7 Mt of bottom ash and 0.2 Mt of other incineration residues (see Section 2.1.1). In addition, 0.04 Mt of CO_2 was captured in 2022 for supply to greenhouses,[187] which corresponds to 0.01 Mt reduction in tax base.[188] Assuming that all residues and captured CO_2 leaves the WIPs and is thus eligible for deduction under the in-out method, this results in **a total incineration ASB tax base of 5.5 Mt** in 2022. This corresponds to 26% of the 7.4 Mt waste incinerated in 2022 leaving the WIP and thus eligible for deduction under the in-out method.

Towards 2030, there are three other major effects have been identified that have not to be considered in the base case in the FIN analysis that assume unchanged waste volumes:[189]

- **Waste import for incineration**: in the FIN analysis, the potential decrease in import is acknowledged but not included in the base case. However, the findings in Section 5.2.6 show that in 2025, on average, transporting waste to the Netherlands for incineration is already more expensive than incinerating the waste in the analysed countries. This price differential

[187] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.

[188] Assuming that all carbon of the CO_2 comes from waste and oxygen from the air, resulting in 27% (=12/44) of the weight of CO_2 assumed to originate from waste and thus eligible for deduction under the in-out method.

[189] Other than the potential export of waste that is currently incinerated in the Netherlands, which is recognised as being absent in the FIN analysis and to be informed by this study.

is only expected the increase further as the CO_2 levy rate increases and DPRs decrease towards 2030. There is therefore a high probability that imported waste for incineration would already see a significant drop in the base case in 2030 (see Section 5.3.2). As a result, up to 1.1 Mt of the waste that is currently being imported into the Netherlands could be diverted to other countries for incineration. Assuming an average 26% of incineration residue that leave the WIP now, **the ASB tax base for incineration would be lower by -0.8 Mt** if there would be no more import of waste for incineration.

- **Application of CCU**: in the FIN analysis, no assumptions have been made on the potential application of CCU. However, as captured CO_2 is eligible for deduction under the in-out method, if the CCU projects that have been planned are realised, this would reduce the ASB tax base. WIPs have CCU projects planned with a capacity to capture at least 415 ktCO_2/year (see Section 2.2.3), which would **lower the ASB tax base for incineration by -0.1 Mt**. If more CCU projects would be realised, this would decrease the ASB tax rate in the base case further.
- **Behavioural impacts due to the CO_2 levy**: in the base case, the CO_2 levy rate increases and DPRs decrease towards 2030. As a result, the effective tax increase from 0 in the period before 2024 to 42 EUR/t-waste[190] in 2030. These cost are substantive enough that they could lead to behavioural impacts. Using the price elasticities and assumptions from the 2024 ASB evaluation, in line with the FIN analysis, this would lead to an estimated decrease of the -0.4 to -0.5 Mt in 2030 (from 6.3 to 7.7 Mt). The lower bound corresponds to the case of the 1.1 Mt of waste imports fully dropping away as mentioned above, and the higher bound without a decrease in imports but with a full shift of waste landfilled with an exemption to incineration. Assuming an average 26% of incineration residue leaving WIPs, that results in **-0.3 to -0.4 Mt in the ASB tax base for incineration**.

<u>Incineration ASB tax base – base case reflection</u>

Using the current ASB tax base of 5.5 Mt in 2022 as the starting point, which corresponds to 7.4 Mt incinerated waste, the following effects could occur towards 2030:

+ There could be an increase in the tax base of 0.2 Mt due to a shift of 0.3 Mt waste landfilled with an exemption to incineration.
- There is also a high likelihood that imports may drop by up to 1.1 Mt in the base case, which could see the tax base decreasing by 0.8 Mt.
- If planned CCU projects would become operational, this could decrease the tax base by 0.1 Mt (does not affect the volume of incinerated waste).
- Behavioural impacts due to the CO_2 levy cost increases in the base case can be expected, which could decrease incinerated waste by 0.4-0.5 Mt in 2030 after taking the three abovementioned factors into account, lowering the ASB tax base by 0.3-0.4 Mt.

The ASB tax base in the 2030 base case is therefore estimated to be **4.4-5.3 Mt**, corresponding to 5.9-7.2 Mt of incinerated waste. The lower range corresponds to imports for incineration fully dropping away (i.e., only domestic Dutch waste is incinerated).[191] The upper range represents a full shift of waste landfilled with an exemption to incineration without imports dropping away.[192] This is **lower than the FIN analysis**, which assumes no change in waste volumes compared to 2021.

After fiscal measures

The FIN analysis estimates that the fiscal measures would, in first instance, increase the ASB tax base for incinerated waste compared to the base case in 2030. At the same time, due to behavioural

[190] Based on an average emission factor of 1.01 tCO_2 per tonne of waste and a fossil fraction of 36%, and no application of CCS.

[191] The estimation of 5.9 Mt domestic waste for incineration is largely in line with the estimation of 6.0 Mt of domestic incinerable waste in the 2030 base case of TNO (2024). Een verkenning naar de verbranding van Nederlands afval en de milieuprestatie in 2030 en 2050.

[192] The estimation of 7.2 Mt waste for incineration in Dutch WIPs is largely in line with the estimation of 7.1 Mt of waste incineration in the 2030 base case of PBL (2024). Achtergronddocument bij de Klimaat- en Energieverkenning 2024.

responses from increased incineration costs due to the fiscal measures, FIN estimates the volume of incinerated waste would decrease by **-1.1 Mt for in 2030 and -1.3 Mt in 2035**. Since this reflection estimates the waste volumes in the base case to be different from volumes from the FIN analysis, this also leads to cascading effects in the estimation of the impact of the fiscal measures, on which a reflection is provided below.

In this study, the **gross increase** in the ASB tax base for incinerated waste is estimated as follows, driven by the following measures:

- **ASB 1** (Bottom ash ineligible for deduction under the in-out method): bottom ash constitutes 1.7 Mt in 2022, equivalent to 23% of the incinerated waste (the other 3% are incineration residues other than bottom ash). This measure would bring the bottom ash under the ASB tax base. In the 2030 base case, the shift of waste landfilled with an exemption to incineration would increase bottom ash by +0.1 Mt and a drop in import and behaviour impacts from the CO_2 levy decrease by bottom ash by -0.4 Mt. As a result, the increase in the incineration ASB tax rate would under this measure would be **+1.3 to +1.7 Mt** compared to the base case. The lower end corresponds to base case with 5.9 Mt of incinerated waste and higher end the 7.2 Mt base case. Towards 2030 and 2035, this measure also has a potential behavioural impact in reducing waste, because this measure effectively increases the incineration costs per tonne of waste. This is discussed further below as part of the overall behavioural response to increased incineration costs.
- **ASB 3** (Abolishing exemption of sewage sludge): in 2022, 920 kt of wet sewage sludge was incinerated, equivalent to 221 kt dry sewage sludge.[193] Of these, about 10% is incinerated in WIPs.[194] This means that under this measure, the ASB tax base would increase by about +**0.02 Mt**.[195] The FIN analysis assumes that there is **no behavioural impact** due to this fiscal measure that could lead to a decrease in the tax base, such as a shift of sewage sludge to mono-incinerators that do not fall under the ASB, either domestic or abroad. This corresponds to studies found on sewage sludge, which conclude that the mono-incineration capacity in the Netherlands is constraint (at least on the short term until new capacity has been built) and the potential for export of sewage sludge is very limited.[196] In the latter case, the main reason is that the Germany, where currently most sewage sludge is being exported to, is facing increasing stringent rules for sewage sludge processing and thus would face its own capacity constraints for processing sewage sludge.
- **ASB 4** (Increased rates for landfilling with an exemption): as discussed in Section 4.2.1 on the landfill ASB tax base, **no impact** on the ASB tax base is expected from this measure and any shifts in waste landfilled with an exemption is already expected in the base case.
- **ASB 5** (Captured CO_2 ineligible for deduction under the in-out method): the FIN analysis assumes that this measure will not affect the ASB tax base due to CCS not yet being applied. However, this measure does not only affect the tax base in the case of CCS application, but also CCU. In 2022, 44 kt of CO_2 was captured in 2022 for supply to greenhouses, which corresponds to 12 kt reduction in tax base (see *base case*). With at least another 415 ktCO_2/year of CCU capacity planned, deduction of captured CO_2 under the in-out method would be in about 0.1 Mt in the base case. Thus, this measure would subsequently increase the ASB tax rate by about +**0.1 Mt** compared to the base case. As the ASB tax savings with CCU would

[193] CBS (2025). Zuivering van stedelijk afvalwater; afzet zuiveringsslib, zuiveringstype.
[194] Unie van Waterschappen (2025). Vrijstelling zuiveringsslib binnen de afvalstoffenbelasting indicates that 21 kt was incinerated in 2023 in WIPs. Assuming that this was similar in 2022 and refers to dry tonnages, this would constitute 10% of the total sewage sludge to incineration.
[195] About 70% of sewage sludge is incinerated by mono-incinerators, which do not fall under the ASB. Another 20% of the sewage sludge goes other incinerators such as power plant, cement kilns and other incineration plants. It is assumes that these incineration plants are also not affected by this fiscal measure.
[196] Werkgroep slibstrategie (2021). Slibstrategiestudie: route naar 2050; STOWA (2025). Slibverwerking van de toekomst.

disappear through this measure, some interviewees indicated that this measure will cause WIPs to reevaluate their business case for CCU. However, this will not affect the estimated ASB tax base impact of this measures. If fewer CCU projects would be implemented, this would reduce the impact of this measure but also the deduction in the base case, resulting in a net zero impact on the tax base.

The **gross decrease** in the ASB tax base is fully driven by **behavioural responses** to the cost increases for incinerating waste, resulting in a decrease in incinerated waste volumes. The FIN analysis estimates these to be -1.1 Mt in 2030 and -1.3 Mt in 2035 compared to the 2030 base case. However, these estimates do not include the following:

- **Waste import for incineration fully dropping away:** if imports would not fully drop away in the base case, this could still happen in the situation after fiscal measures; the cost difference for incinerating foreign waste in the Netherlands with the other analysed EU countries would become even higher (see Section 5.2.6).
- **No uptake of CCS:** if there is no uptake in CCS, the effective CO_2 levy would be much higher leading to higher costs, and as a result, a stronger behaviour response in the form of a larger decrease in waste incinerated in the Netherlands.

To reflect on these elements, the total change in the effective tax rate compared to the 2030 is estimated per relevant measure, with the results shown in Table 4-3:

- **ASB 1** (Bottom ash ineligible for deduction under the in-out method) and **ASB 5** (Captured CO_2 ineligible for deduction under the in-out method): allowing the deduction of bottom ash under the in-out method in the base case effectively lowers the ASB tax rate. Specifically, the effective ASB tax rate is on average about 26% lower than the nominal rate, equivalent to the amount of incineration residues leaving the facility. The ASB tax rate of 39.71 EUR/t-waste would effectively be 29.57 EUR/t-waste in the base case. By making bottom ash ineligible for deduction, the effective ASB rate increases by 30% to 38.58 EUR/t-waste,[197] or an increase in the effective ASB rate of 9 EUR/t-waste. Similarly, ASB 5 also increases the effective ASB rate, but the impact is negligible due to the relative small volume of CO_2 captured in 2022.
  - In addition to the generic behaviour response estimated using the elasticities, the FIN analysis considers that **ASB 1** may lead to a stronger incentive to sort out metals before incineration. Metals accounted for 159 kt in bottom ash in 2022.[198] While there is a general consensus among the interviewees on the desire to sort out these metals, the responses from interviewees are mixed in the extent to which these metals in bottom ash can be sorted out before incineration in practice. Some of the metals can be sorted out through improved sorting facilities, but this would require additional investments. Other metals are considered by the interviewees as more challenging (e.g., metals in drink cartons). Given these uncertainties, the sorting of metals from bottom ash has been considered as part of the generic behaviour response instead of a separate effect.

- **ASB rate increase**: this measure further increases the tax rate on incinerated waste. In 2030, the FIN analysis assumes that the overall ASB tax rate would increase the cost of waste incineration to a nominal rate of 70 EUR/t-waste. In 2035, the overall ASB tax rate would increase by about +50 EUR/t-waste compared to the 2030 base case to a nominal rate of 90 EUR/t-waste in 2035.

[197] The remaining gap between the effective and nominal ASB rate relates to incineration residues other than bottom ash that will remain eligible for deduction under the in-out method.
[198] RWS (2024). Afvalverwerking in Nederland, gegevens 2022.

- **CO_2 levy 1 and 2** (CO_2 levy rate increase and DPRs decrease): this measure adds another costs to the incineration of waste, but the impact strongly depends on the uptake of CCS (see Section 4.2.3):[199]
    - If there is no uptake of CCS, the effective average levy rate (i.e., after taking into account DPRs) on incinerated waste increases from 42 EUR/t-waste in the 2030 base case to 81 EUR/t-waste in 2030 and to 107 EUR/t-waste in 2035.
    - If there would be a high uptake of CCS following the package of fiscal measures, the effective levy rate on incinerated waste would be much lower, with the average rate per tonne of waste increasing to 59 EUR/t-waste after measures and decreasing to 21 EUR/t-waste in 2035 compared to the 2030 base case. For the high uptake situation, the same assumption are used as the FIN analysis to allow for comparability of results.
- **CO_2 levy 3** (DPRs trading restriction on WIPs): the FIN analysis assumes that this measure does not lead to any impacts that may affect the ASB tax base. This seems credible as it is unlikely that there will be WIPs with a surplus of DPRs to sell in 2030 (see Section 4.2.3) and thus **no impact** is expected from this measure on the volume of incinerated waste.

Table 4-3: Estimated average tax costs per tonne of waste under the base case scenario and after fiscal measures (numbers are rounded)

Year	2030	2030		2035	
	Base case	High CCS uptake	No CCS uptake	High CCS uptake	No CCS uptake
Effective ASB rate after ASB 1 (EUR/t waste)	30	39 (+9)	39 (+9)	39 (+9)	39 (+9)
ASB rate increase (EUR/t waste)*	*40*	*70 (+30)*	*70 (+30)*	*90 (+50)*	*90 (+50)*
Effective CO_2 levy (EUR/t waste)	42	60 (+18)	81 (+39)	21 (-21)	107 (+65)
Total average ASB and CO_2 levy costs (EUR/t waste)**	**72**	**128 (+56)**	**150 (+78)**	**110 (+38)**	**196 (+124)**

** The ASB rate increase shown in the table is solely for the purpose of this study and do not include any potential impacts of waste exports on the tax base and resulting revenue under the ASB and CO_2 levy, which would subsequently affect the ASB rate increase necessary to achieve the additional €567 million revenue demand. The ASB rate increases are yet to be determined based on, amongst others, this study.*
***Total = Effective ASB rate after ASB 1 + ASB rate increase + Effective CO_2 levy; values in brackets show the change in the rate compared to the 2030 base case. Numbers may not add up due to rounding.*

It was not possible to trace back the tax increases that used for price elasticity calculations in the FIN analysis with the information provided. However, what is clear from the FIN analysis is that a higher uptake of CCS is assumed in 2035 than in 2030. As shown in Table 4-3, in the situation with a high CCS uptake, the total cost impact of the fiscal measures is higher in 2030 than in 2035. This would indicate a lower decrease in volume of waste incinerated in 2035 than in 2030 compared to the 2030 base case, while the FIN analysis in Table 4-2 showed a stronger decrease in 2035 compared to 2030.

Based on the same elasticities and assumptions under in the FIN analysis as discussed in Box 4-5, the change in incinerated waste (and in tax base as this is almost the same following ASB 1) is estimates as follows:

- **High CCS uptake:** the incinerated domestic waste is estimated to reduce by -19% in 2030 and -16% in 2035 compared to the base case. The total change in incinerated waste is then as follows, depending on the behavioural response of imported waste for incineration:

[199] Rates here have been converted from EUR/tCO_2 to EUR/t-waste with an emission factor of 1.01.

a. **If imports have already fully dropped away in the base case** (lower range base case): the change in incinerated waste is -1.1 in 2030 and -0.9 in 2035 against a base case of 5.9 Mt of incinerated waste, reflecting a decrease in domestic waste for incineration;
b. **If imports did not fully dropped away in the base case** (upper range base case) **but are fully dropping away after fiscal measures:** the change in incinerated waste is -2.3 Mt in 2030 and -2.1 Mt in 2035, of which -1.1 Mt relates to imports fully dropping away, against a base case of 7.2 Mt of incinerated waste;
c. **If imports did not fully dropped away in the base case** (upper range base case) **and are also not fully dropping away after fiscal measures**: a high CCS uptake could largely mitigate the CO_2 levy costs and dampen the cost differential increase between incinerating imported waste in the Netherlands or abroad (see Section 5.3.2). Thus, if imports have not yet fully dropped away in the base case, they may also not fully drop away in after fiscal measures in a situation with high CCS uptake. Based on the price elasticities, this would result in an estimated decrease of incinerated waste of -1.4 Mt in 2030 and -1.2 Mt in 2035, against a base case of 7.2 Mt of incinerated waste.

- **No CCS uptake:** the incinerated domestic waste is estimated to reduce by -22% in 2030 and -29% in 2035 compared to the base case. Depending on a full drop of imports is already considered in the base case, the decrease in total incinerated waste in the Netherlands is estimated to be -1.3 to -2.5 Mt in 2030 and -1.7 to -2.9 Mt in 2035. The lower range reflects the situation where imports have already fully dropped away in the base case, and thus the impact of the fiscal measures is less. The upper range corresponds to the import not having fully dropped away in the base case, but then fully decreasing to zero due to the fiscal measures. The latter is considered as very likely given the increase in the cost differential for incinerating foreign waste in the Netherland vs the country of origin (see Section 5.3.2).

Finally, waste from the Netherlands could be exported to be incinerated abroad as a result of the fiscal measures. However, since the ASB also applies to exported waste for incineration and disposal, **a shift in Dutch waste to exports would in principle have a limited effect on the ASB tax base** (see Section 5.3.1).

<u>Incineration ASB tax base – after fiscal measures reflection</u>

Using the ASB tax base of 4.4-5.3 Mt in 2030 base case as the starting point, which corresponds to 5.9-7.2 Mt of incinerated waste, the following effects could occur after fiscal measures that **increase the tax base** compared to the base case (increases are appliable to both 2030 and 2035 and are before considering behavioural impacts on the volume of incinerated waste):

+ The tax base would increase by +1.3 Mt (lower range base case of 5.9 Mt incinerated waste) to +1.7 Mt (upper range base case of 7.2 Mt incinerated waste) by making the deduction of bottom ash in the tax base ineligible in the in-out method.
+ The tax base would increase by +0.02 Mt by abolishing the sewage sludge exemption for WIPs.
+ The tax base could further increase by +0.1 Mt making captured CO_2 ineligible for deduction in the in-out method.

At the same, the fiscal measures could lead to the tax base associated with imported waste for incineration of 1.1 Mt fully drop away if this has not occurred yet in the base case. In combination with the behavioural effects from the increase in the effective tax rate per tonne of incinerated waste, this results in the following **decrease in the ASB tax base resulting from a decrease in incinerated waste volumes** under the different base cases as the starting point:[200]

[200] Note that the decrease in ASB tax base can deviate by 0.1 Mt from the decrease in incinerated waste as a result of 3% of the WIP residues not being bottom ash and thus still eligible for the in-out method. The ASB tax base for incineration is therefore determined by multiplying the volume of incinerated waste by 97%. Also, numbers may not add up due to rounding.

- For the lower range base case (incinerated waste is 5.9 Mt, with imported waste for incineration already fully dropping away in the base case):
  - High CCS uptake: -1.1 Mt in 2030 *(-1.1 Mt incinerated waste)* and -0.9 Mt in 2035 *(-0.9 Mt incinerated waste)* based on price elasticities
  - No CCS uptake: -1.3 Mt in 2030 *(-1.3 Mt incinerated waste)* and -1.6 Mt in 2035 *(-1.7 Mt incinerated waste)* based on price elasticities
- For the upper range base case (incinerated waste is 7.2 Mt, with imported waste for incineration not having dropped away in the base case):[201]
  - High CCS uptake, import fully dropping away: -1.1 Mt in 2030 *(-1.2 Mt incinerated waste)* and -1.0 Mt in 2035 *(-1.0 Mt incinerated waste)* based on price elasticities, and -1.1 Mt in 2030 and 2035 due to import fully dropping away *(-1.1 Mt incinerated waste),* resulting in a total decrease in the tax base of -2.2 Mt in 2030 and -2.0 in 2035 *(-2.3 Mt in 2030 and -2.1 Mt in 2035 of incinerated waste).*
  - High CCS uptake, import following price elasticities: -1.3 Mt in 2030 *(-1.4 Mt incinerated waste)* and -1.1 Mt in 2035 *(-1.2 Mt incinerated waste)* based on price elasticities.
  - No CCS uptake, import fully dropping away: -1.3 Mt in 2030 *(-1.3 Mt incinerated waste)* and -1.7 Mt in 2035 *(-1.8 Mt incinerated waste)* based on price elasticities, and -1.1 Mt in 2030 and 2035 due to import fully dropping away *(-1.1 Mt incinerated waste),* resulting in a total decrease in the tax base of -2.4 Mt in 2030 and -2.8 in 2035 *(-2.5 Mt in 2030 and -2.9 Mt in 2035 of incinerated waste).*

This results in the following net ASB tax base for incineration after fiscal measures:

- **Under high CCS uptake,** the ASB tax base is estimated to be **4.6–5.7 Mt in 2030** (4.8-5.9 Mt of incinerated waste) and **4.8–5.9 in 2035** (4.9-6.1 Mt of incinerated waste). This corresponds to a waste reduction is -2.3 – -1.1 Mt in 2030 and -2.1 – -0.9 Mt in 2035 compared to the 2030 base case.
- **Under no CCS uptake,** the ASB tax base is estimated to be **4.5–4.7 Mt in 2030** (4.6-4.8 Mt of incinerated waste) and **4.2–4.3 in 2035** (4.2-4.4 Mt of incinerated waste). This corresponds to a waste reduction of -2.5 – -1.3 Mt in 2030 and -2.9 – -1.7 Mt in 2035 compared to the 2030 base case.

The range is reflective of the extent to which waste that is currently landfilled with an exemption would shift to incineration in Dutch WIPs, and in the high CCS uptake situation, whether waste imports for incineration would fully drop away or that the behavioural impacts on imported waste would be similar as domestic waste. Hereby it should be noted that **the higher end of the waste reduction estimates are much more probable**: the CO_2 levy rate increase in the base case could already lead to imports fully dropping away and the fiscal measures will likely make the business case of CCS more uncertain. The estimated reductions in waste are therefore more likely to be closer to the situation with no CCS uptake in WIPs than a high uptake of CCS. Thus, the reduction in waste volumes for incineration resulting from the fiscal measures is likely greater than the -1.1 Mt in 2030 and -1.3 Mt in 2035 estimated in the FIN analysis.

4.2.3 Incineration CO_2 levy tax base

Base case

Since the estimates for the volume of incinerated waste in the base case to be different from the FIN analysis, this also leads to cascading effects on the CO_2 levy tax base:

- The total volume of incinerated waste in the base case is estimated to be 5.9–7.2 Mt. This is equivalent to **2.1–2.6 Mt fossil CO_2**;

[201] No estimates have been made for *No CCS uptake, import following price elasticities* as this is deemed as a very unlikely situation.

- It is assumed that the amount of DPRs' scale with volume of emissions.[202] The DPRs are subsequently determined by multiplying the fossil CO_2 emissions by the process emissions factor (0.91), national reduction factor (0.67 in 2030) and WIP correction factor (0.4 in 2030). This results in DPRs of **0.5–0.6 Mt**, equivalent to 24% of the fossil CO_2 emissions being covered by DPRs.

The net tax base for incinerated waste under the CO_2 levy results in **1.6–2.0 $MtCO_2$** in the 2030 base case. The base case assumes no CCS, which seems to be credible based on the findings related to the business case of CCS as discussed in Section 4.1.1.

Incineration CO_2 levy tax base – base case reflection

Using the estimated incinerated waste of 5.9-7.2 Mt in the base case as the starting point, the CO_2 levy tax base in the 2030 base case is estimated to be **1.6-2.0 Mt**. This is based on 2.1–2.6 Mt fossil CO_2 and 0.5–0.6 Mt of DPRs.

After fiscal measures

The FIN analysis estimates that the fiscal measures would decrease the CO_2 levy tax base for incinerated waste based on behaviour responses that are driven by the following measures:

- **ASB rate increase**: this measure increases the tax rate on incinerated waste as discussed in Section 4.2.2. The ASB rate increases by +30 EUR/t-waste in 2030 and by +50 EUR/t-waste in 2035 compared to the base case.
- **CO_2 levy 1 and 2** (CO_2 levy rate increase and DPRs decrease): this measure adds another costs to the incineration of waste, but the impact strongly depends on the uptake of CCS:[203]
  - If there is **no uptake of CCS**, the effective levy rate on incinerated waste increases from 41 EUR/t fossil CO_2 in the 2030 base case to 80 EUR/t fossil CO_2 in 2030 and to 106 EUR/ t fossil CO_2 in 2035. This takes into account that in 2030 24% of the fossil CO_2 emissions is covered by DPRs and 0% in 2035.[204] This translates to **81 EUR/t-waste in 2030** and to **107 EUR/t-waste in 2035** after fiscal measures.
  - If there is a **high uptake of CCS** following the package of fiscal measures, the effective tax on incinerated waste would be much lower:
    - For 2030, the FIN analysis assumes that CCS can reduce the levy tax base by 0.6 Mt, equal to 1.8 Mt of fossil and biogenic CO_2 from waste incineration captured and stored. The total of 1.8 Mt assumes that existing plans from WIPs are fully implemented by 2030. Existing plans show that WIPs plan to capture and store about 1.2–2.0 $MtCO_2$,[205] with the assumption in the FIN analysis falling within this range. The 0.6 Mt CCS is equivalent to 26% of the 2.5 Mt of fossil CO_2 in the base case captured and stored. However, this reflection estimates the incinerated waste in the base case, and with that the CO_2 emissions, to be different from the FIN analysis. As the volume of incinerated waste decreases, it is very unlikely that all the existing plans for CCS would go ahead by 2030, even in a high CCS uptake situation. It is

[202] The volume of DPRs for WIPs are based on historical emissions. If the actual emissions are 15% higher or lower than the historical emissions, then the volume of DPRs are adjusted to reflect the change in emissions. As the lower range 5.9 Mt of waste is a decrease of more than 15% compared to the 2022 volume of 7.4 Mt (and with that also the change in CO_2 emissions), DPRs would be adjusted. The upper range of 7.2 Mt does not represent a 15% change, but for comparability of results the DPRs are also assumed to be adjusted to the fossil CO_2 emissions associated with the 7.2 Mt of incinerated waste. If DPRs would not be adjusted based on actual emissions but based on historical emissions, DPRs would cover about 25-30% of the emissions in the 2030 base case.

[203] Rates here have been converted from EUR/tCO_2 to EUR/t-waste with an emission factor of 1.01.

[204] CO_2 levy 2 measure (reducing DPRs to zero by 2033) only changes the amount of DPRs to WIPs after 2030 and thus the share of emissions covered by DPRs in 2030 after measures is the same as the base case.

[205] Extracted from ABDTOPConsult (2024). Verkenning maatwerkafspraken afvalverbrandingsinstallaties. The 0.8 Mt range represents plans of WIPs to capture CO_2 without specifying if this is to be used (e.g., in greenhouse horticulture) or stored.

therefore assumed that in 2030, on average 26% of the fossil CO_2 emissions will be captured and stored. This results in an effective levy rate on incinerated waste of 59 EUR/t fossil CO_2 on average in 2030, equivalent to **60 EUR/t-waste in 2030**.

- For 2035, the FIN analysis assumes a full deployment of CCS in all WIPs, reducing CO_2 emissions by 80%. This assumption corresponds to literature, which estimates that up to 80-90% of the CO_2 emissions of a WIP can be captured, with the lower range closer to CCS under practical conditions.[206] This translates to an effective levy rate on incinerated waste of 21 EUR/t fossil CO_2 in 2035, equivalent to **21 EUR/t-waste in 2035**.

- **CO_2 levy 3** (DPRs trading restriction on WIPs): this measure can in theory lead to a change in the CO_2 levy tax base, mainly related to the base case. In the base case, WIPs with a shortage can purchase DPRs from other sectors under the CO_2 levy, lowering their levy taxy base. However, the national reduction factor applies to all installations under the levy and is decreasing every year. Under the base case it is therefore likely that there will be very few installations with a DPRs surplus that WIPs can purchase, and even then it is uncertain if these installations would be willing to sell them.[207] This means that the effective CO_2 levy tax base for WIPs in the base case will likely be equal to the fossil CO_2 emissions minus the DPRs that they would receive themselves. Restricting the DPRs trade to between WIPs would only reduce the available DPRs that WIP with a shortage could purchase and thus their ability to reduce their levy tax base. Thus, this measure is likely to have **no impact** on the CO_2 levy tax base, and with that also the effective CO_2 levy rate per tonne of waste.

Based on the estimated volume of incinerated waste from Section 4.2.2, the tax is estimates as follows:

- **High CCS uptake** for the three different situations similar as for the ASB tax base for incineration:
  a. **If imports have already fully dropped away in the base case** (base case lower range): the change in the levy tax base is -1.2 in 2030 and -1.8 in 2035 against a base case of 2.1 Mt of fossil CO_2;
  b. **If imports did not fully dropped away in the base case** (base case upper range) **but are fully dropping away after fiscal measures:** the change in the levy tax base is -1.6 Mt in 2030 and -2.3 Mt in 2035 against a base case of 2.6 Mt of fossil CO_2;
  c. **If imports did not fully dropped away in the base case** (base case upper range) **and are also not fully dropping away after fiscal measures**: the change in the levy tax base is -1.4 Mt in 2030 and -2.2 Mt in 2035 against a base case of 2.6 Mt of fossil CO_2;
- **No CCS uptake:** Depending on a full drop of imports is already considered in the base case, the decrease in levy tax base is estimated to be -0.9 to -1.3 Mt in 2030 and -0.6 to -1.1 Mt in 2035 compared to the base case. The lower range reflects the situation where imports have already fully dropped away in the base case, and thus the impact of the fiscal measures is less. The upper range corresponds to the import not having fully dropped away in the base case, but then fully decreasing to zero due to the fiscal measures.

In addition, waste from the Netherlands could be exported to be incinerated abroad as a result of the fiscal measures. This **shift in Dutch waste to exports would result in a further decrease in the CO_2 levy tax base**.

[206] De Leeuw, M. and Koelemeijer, R. (2022). Decarbonisation options for the Dutch waste incineration industry; Bisinella, V. et al. (2021). Environmental assessment of carbon capture and storage (CCS) as a post-treatment technology in waste incineration; https://www.pbl.nl/uploads/default/downloads/pbl-2022-decarbonisation-options-for-the-dutch-waste-incineration-industry-4916.pdf IEA (2020). CCS on Waste to Energy.
[207] Trinomics (2024). Onderzoek flexibiliteitsopties CO2 heffing industrie.

<u>Incineration CO_2 levy tax base – after fiscal measures reflection</u>

The differences in the waste volumes and reduction in waste for incineration lead to differences with the FIN analysis. Using the CO_2 levy tax base of 2.1–2.6 Mt in 2030 base case as the starting point, which corresponds to 5.9-7.2 Mt of incinerated waste, the following effects could occur after fiscal measures:

- The cost increase of waste incineration due to the increase of the ASB rate and effective CO_2 levy could decrease the tax base by -0.8 to -1.3 Mt in 2030 and -0.3 to -0.8 Mt in 2035 in case of high CCS uptake, and -0.9 to -1.3 Mt in 2030 and -0.6 to -1.1 Mt in 2035 in case of no CCS uptake (see Section 4.2.2 for the volumes of incinerated waste corresponding to each situation).
  - The decrease between the tax base in 2030 and 2035 in the high CCS uptake situation is because of the capture and storage rate of fossil CO_2 emissions from WIPs from 26% to 80%, leading a lower waste incineration cost and thus to a weaker behaviour response in 2035 compared to 2030.
  - The increase in the tax base in 2030 and 2035 in the no CCS uptake situation is because of the fossil CO_2 emissions from WIPs covered by DPRs decreasing from 24% to 0%, leading a higher waste incineration cost and thus to a stronger behaviour response in 2035 compared to 2030.
- In the high CCS uptake situation, CCS further decreases the tax base by -0.3 to -0.4 Mt in 2030 and -1.4 to -1.8 Mt in 2035.

This results in the following CO_2 levy tax base for incineration after fiscal measures:

- **Under high CCS uptake,** the CO_2 levy tax base in the 2030 is estimated to be **1.0–1.2 Mt in 2030** and **0.4 Mt in 2035**.
- **Under no CCS uptake,** the CO_2 levy tax base in the 2030 is estimated to be **1.3 Mt in 2030** and **1.5–1.6 Mt in 2035**.

Similar as under the ASB tax base, the range is reflective of the extent to which waste that is currently landfilled with an exemption would shift to incineration in Dutch WIPs, and in the high CCS uptake situation, whether waste imports for incineration would fully drop away or that the behavioural impacts on imported waste would be similar as domestic waste. In some cases, there is no range shown as the range of the estimated values are behind the decimal shown.

5 Deep-dive on the potential impacts of the fiscal measures on waste trade flows

The objective of this chapter is to quantify the financial implications and the potential of cross-border trade in combustible waste, with a specific focus on how the proposed fiscal measures (as described in Chapter 3) may influence future import and export scenarios. This includes analysing treatment costs across key destinations and origin countries to identify where Dutch waste exports may be financially preferable, and where imports into the Netherlands may decline. The analysis focuses on waste shipment categories aligned with the Waste Shipment Regulation (Regulation (EC) No 1013/2006)[208] and the Waste Framework Directive (Directive 2008/98/EC)[209], specifically distinguishing between recovery (R) and disposal (D) codes. In line with the objective to assess incineration and recycling routes, the following codes have been considered:

- *Waste incineration*
  - D10 – Incineration on land (i.e., incineration without energy recovery);
  - R1 – Use as fuel (i.e., energy recovery), including incineration and co-incineration (e.g. in cement kilns).
- *Recycling of waste*
  - R3 – Recycling/reclamation of organic substances;
  - R4 – Recycling/reclamation of metals;
  - R5 – Recycling/reclamation of inorganic substances.

Five countries were selected for further investigation, which is explained in the Box 5-1 below.

Box 5-1 Selection of EU countries to analyse

The selection was based on a preliminary review of Eurostat's waste shipment statistics, identifying the most relevant trading partners of the Netherlands. These are **Germany, Belgium, France, Sweden** and **Poland**. This group reflects countries with significant waste flows to/from the Netherlands and/or those discussed with FIN as being of specific interest.

Among EU Member States, Belgium and Germany are by far the largest exporters of waste to the Netherlands, with Italy following in third place. Italy was also considered for inclusion, given its current role as an exporter of waste for incineration to the Netherlands (approx. 0.3 Mt in 2022). However, its exclusion is based on two key factors: (i) under the new Dutch fiscal regime, Italy may redirect its exports elsewhere, reducing the relevance of our cross-border cost analysis; and (ii) Italy is expected to commission a new domestic waste incineration plant in 2026, potentially reducing its reliance on foreign treatment capacity. Due to these reasons, and given France's relatively large waste trade volume (import and export), France was selected for further analysis in this chapter instead. Although the United Kingdom is also another high-exporting waste trade partner, it is not included in the selection as it is not an EU Member State.

Poland and Sweden are also analysed. While these countries have relatively lower traded volumes with the Netherlands, they have been selected for further analysis in this chapter following stakeholder input highlighting their potential strategic or policy relevance.

[208] European Commission. (2025). Waste Shipment Regulation
[209] European Commission. (2024). Waste Framework Directive

The remainder of this chapter is structured as follows:

- **Section 5.1** presents the known import/export flows, treatment capacity and cement kiln capacity;
- **Section 5.2** benchmarks waste treatment costs, including gate fees, transport costs, carbon pricing mechanisms, and relevant taxes and levies;
- **Section 5.3** identifies the potential impact of fiscal measures on waste trade flows based on a triangulation of the import/export flows, capacities and costs.

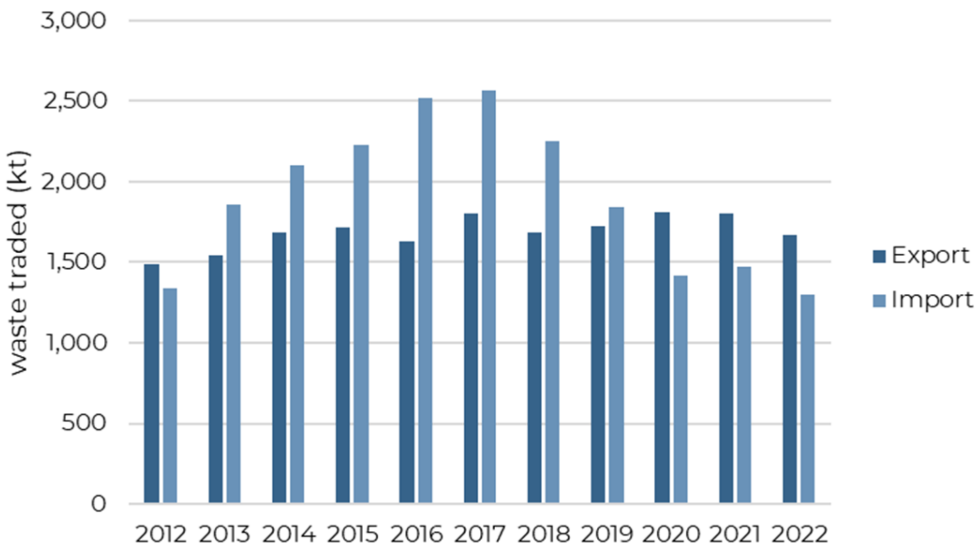
Annex B provides further methodological detail, including definitions, data sources, and assumptions used for estimating capacity, treatment costs, carbon pricing, and transport costs.

5.1 Waste flows and treatment capacity of the Netherlands' key waste trade partners

5.1.1 Import and export waste flows for incineration with the Netherlands

The Netherlands is a **net exporter of waste for incineration**, though historically it has been a net importer. Figure 5-1 illustrates the trade volumes of incineration waste imported to and exported from the Netherlands over the 2012–2022 period; classified under recovery code R1 and disposal code D10. The graphic shows that waste exports remained relatively stable throughout the decade, fluctuating between 1.5 and 1.8 Mt annually. In contrast, imports peaked in 2017 at over 2.5 Mt before experiencing a sharp decline. This decline corresponds with policy changes in 2019, when the ASB began to apply to imported waste, and further, the tax rate increased from €13/t to €32/t.

Figure 5-1: Trade of waste for incineration (D10+R1) to and from the Netherlands 2012-2022 (kt)

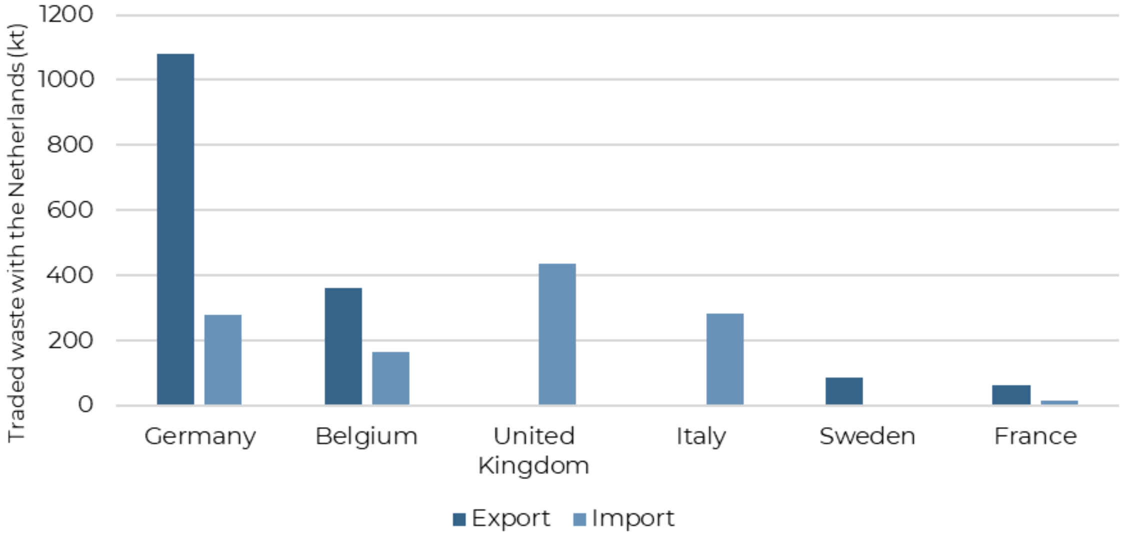


Source: Eurostat (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations.

Figure 5-2 further illustrates the trade volumes of waste between the Netherlands and its main waste trading partners in 2022. The chart highlights asymmetries in several of these trades. Most notably, the Netherlands exported significantly more waste to Germany than it received, with exports exceeding 1 Mt compared to less than 0.3 Mt of imports. A similar trend is observed with Belgium, where Dutch exports are nearly double the import volume. These suggest that the Netherlands is a net exporter of waste to its neighbouring countries, particularly for treatment in Germany and

Belgium, where large incineration capacity is available (see Section 5.1.2). Conversely, the United Kingdom and Italy are net exporters to the Netherlands. Waste exchanges, with Sweden and France are relatively limited in volume, but with the Netherlands generally exporting more than it receives. Of the selected countries for analysis in this chapter, Poland is not shown as currently there is no import from and limited export to Poland. These trade flows are further detailed in the sections below.

Figure 5-2: Trade of waste for incineration (D10+R1) of top trade partners with the Netherlands in 2022 (kt)



Source: Eurostat (2025). [Transboundary shipments of notified waste by partner, hazardousness and waste management operations](#).

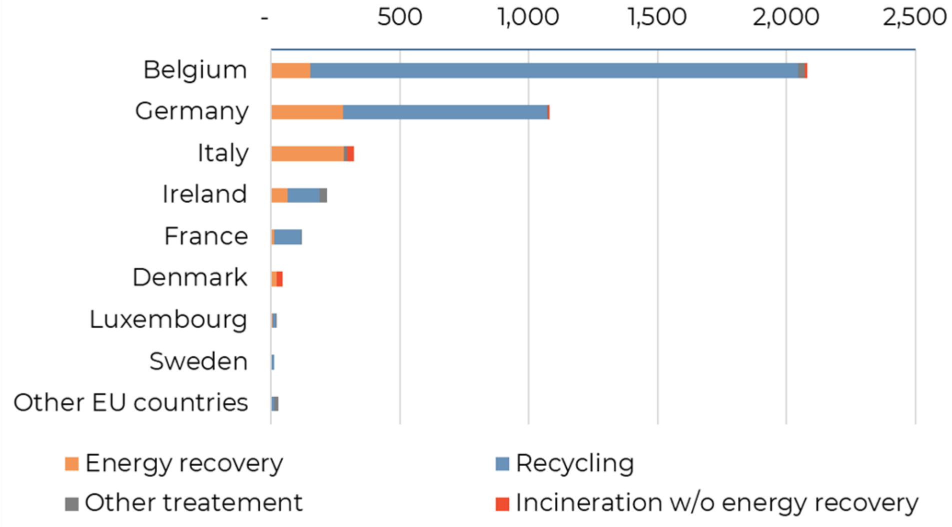
Imports of waste

According to Eurostat, 10 Mt of waste has been shipped to the Netherlands in 2022 from both EU and non-EU countries.[210] Of this, only 4.6 Mt of waste was officially recorded with details on the country of origin and type of treatment.[211] At the same time, CBS reports that 26 Mt of waste was imported into the Netherlands in 2022.[212] These significant discrepancies likely stem from differences in the definitions, scope and reporting methodologies: Eurostat databases are based on formal procedural recordings of shipments, where waste shipments are required by law to be reported. Therefore, Eurostat may underreport non-hazardous waste which is suitable for recycling or energy recovery. The CBS data is based on various statistical sources, with the intention to show all waste flows. However, the CBS data does not distinguish where this imported waste comes from or how it is treated. The CBS data may also include re-exports of waste, where waste shipments are transited through the Netherlands, but treated in another country. For these reasons, the trade analysis at hand mainly depends on the Eurostat data.

About 1.1 Mt of waste was imported and processed by Dutch waste incineration plants, according to Rijkswaterstaat.[213] This is relatively in line with the amount of imported waste reported by Eurostat for incineration, i.e. 1.3 Mt (classified under D10 and R1).[214] Therefore, we assume that the Eurostat data provides a fairly accurate picture of imports of waste for incineration. Most waste imports for incineration to the Netherlands are from Belgium, Germany and Italy.

[210] Eurostat. (2024). Trade in waste by type of material and partner
[211] Eurostat. (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations
[212] CBS. (2024). Afvalbalans, afvalsoort naar sector; nationale rekeningen
[213] Rijkswaterstaat (2024). Afvalverwerking in Nederland, gegevens 2022.
[214] Eurostat. (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations

Figure 5-3: EU waste imported to the Netherlands in 2022, per country of origin by treatment type (kt)



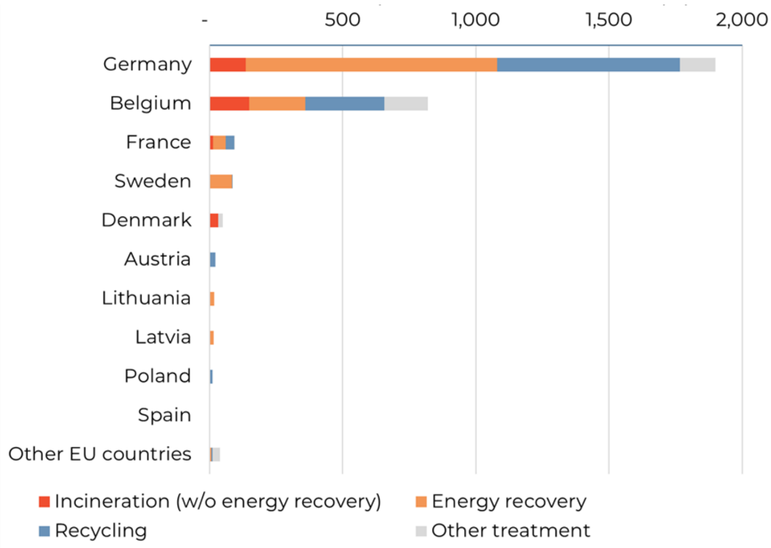
Source: Eurostat (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations. Recycling data is likely underreported as this data only includes waste streams which are required by regulation to be reported.

Exports of waste

According to Eurostat, 13 Mt of waste has been exported from the Netherlands in 2022,[215] of which only 3.1 Mt of waste was officially recorded with details on destination and type of treatment; [216] approximately 1.3 Mt was incinerated with energy recovery (R1), 339 kt was incinerated without energy recovery (D10). As with the import data, CBS reports higher export volumes, 18 Mt in 2022, which likely includes re-exports.[217] Notably, the vast majority of waste exports were directed to Germany and Belgium. In addition, approximately 0.2 Mt of the exported waste for incineration originated from municipal waste streams.

[215] Eurostat. (2024). Trade in waste by type of material and partner
[216] Eurostat. (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations
[217] CBS. (2024). Afvalbalans, afvalsoort naar sector; nationale rekeningen

Figure 5-4: EU waste exported from the Netherlands in 2022, per country destination by treatment type (kt)



Source: Eurostat (2025). Transboundary shipments of notified waste by partner, hazardousness and waste management operations.

5.1.2 Installed and available incineration capacity

Estimates of waste incineration capacity across the selected Member States are based primarily on Eurostat data, which reflect the maximum permitted annual throughput of WIP. In practice, actual incineration may exceed permitted capacity, as found in France, where lower-calorific waste allows for greater volumes to be processed with the same energy and emissions footprint. As shown in Figure 5-5, the highest levels of free treatment and cement kiln capacity (including for all waste types) are observed in:

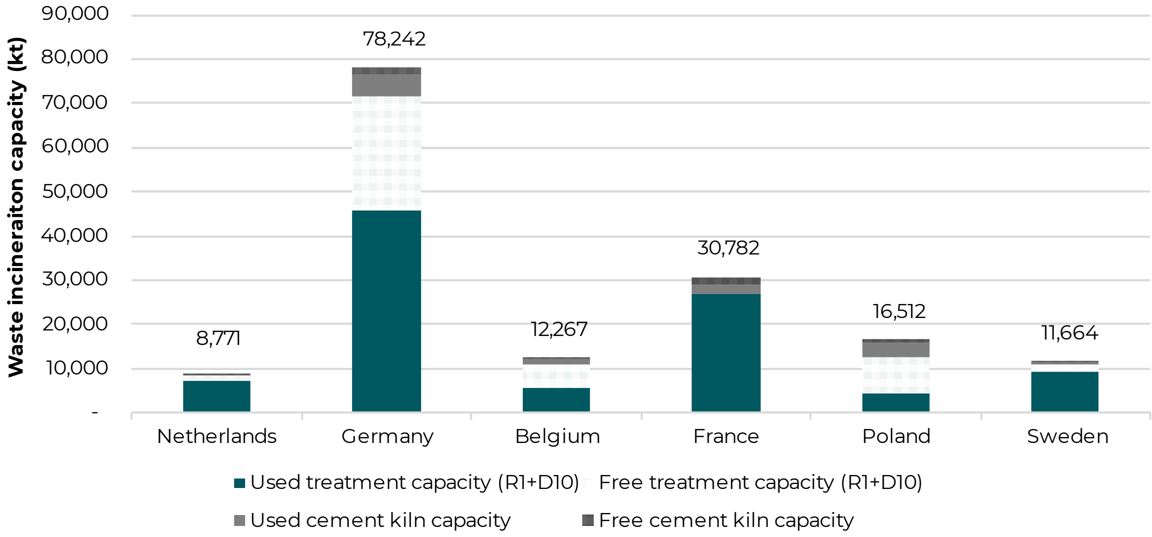
- Germany (~27.4 Mt/year)
- Poland (~9.2 Mt/year)
- Belgium (~5.5 Mt/year)
- Sweden (~2 Mt/year)
- France (~1.9 Mt/year)

The significant export volumes from the Netherlands to countries such as Germany and Belgium can be directly linked to the availability of (co-)incineration capacity in these Member States. As shown in Figure 5-5, Germany stands out with the highest combined free incineration and cement kiln capacity (around 27 Mt), which could make it a strategic outlet for Dutch waste exports. Eurostat data also indicates considerable free capacity (around 5.5 Mt) in Belgium. While Poland has a notable level of free capacity (approximately 9.2 Mt), current export volumes from the Netherlands to Poland remain relatively low compared to the other considered Member States due to an import ban imposed by Poland for waste other than for recycling. Specifically, Poland bans the import of mixed municipal waste and waste from the treatment of municipal waste, unless it is separately collected waste intended for recycling.[218] In contrast, countries like France and Sweden show more limited surplus capacity, which may partially explain the smaller export flows to these destinations despite their physical proximity. However, despite Eurostat reporting the Netherlands operating beyond its

[218] Polish government (2025). Act of 29 June 2007 on the international shipment of waste, article 11b.

permitted incineration capacity, recent national data confirms the availability of nearly 0.9 Mt of free capacity in 2022. This indicates some flexibility to accommodate future increases in domestic waste.[219]

Figure 5-5: Comparison of waste incineration capacities in 2022 for the Netherlands and selected countries (kt)



Source: Eurostat (2025). Number and capacity of recovery and disposal facilities by NUTS 2 region [env_wasfac__custom_17204679].; Rijkswaterstaat (2024). Afvalverwerking in Nederland, gegevens 2022.

Europe has experienced steady growth in waste incineration capacity over the past decade. From 2010 to 2022, EU-wide capacity expanded by approximately 4.6 Mt per year, with the total capacity reaching around 199 Mt in 2022.[220] This expansion has created substantial spare capacity in several Member States. By 2020, the EU-wide spare capacity was estimated at around 60 Mt, stimulating continued cross-border flows.[221] Looking ahead, the EU's incineration landscape is expected to follow mixed trajectories. Market forecasts suggest that Europe's waste incineration sector will continue expanding, with projected growth from €20.8 billion in 2025 to nearly €31 billion by 2033. Investment interest is especially concentrated in countries such as Italy, Spain, Poland, and the UK, where new WIPs are still being constructed.[222,223]

Conversely, several countries are re-evaluating their dependency on incineration:

- In **Belgium**, the National Energy and Climate Plan (NECP) recognises the need to reduce capacity by 25% by 2030. A significant portion of the current capacity, around 1.5 Mt or 65% of capacity in Flanders, is subject to plant/operating permits expiring between 2030–2033; which could mean phasing out older facilities. [224] The NECP plan indicates that when these permits are due, authorisations post-2030 will only be granted if capacity is truly needed and if the facility fits a 2050 climate-neutral vision.[225] Hence, in terms of quantitative outlook, it is likely that Belgium's incineration capacity (currently estimated on the order of ~12.2 Mt) could shrink to around 9.2 Mt by 2030; a 25% drop in line with the national energy and climate plan (NECP) goal.
- A 2020 study by NABU (*Naturschutzbund Deutschland*) projected that if **Germany** fully implements existing waste legislation (e.g. the EU's Circular Economy Package and German

[219] Rijkswaterstaat (2024). Afvalverwerking in Nederland, gegevens 2022.
[220] Eurostat. (2025). Number and capacity of recovery and disposal facilities by NUTS 2 region
[221] Zero Waste Europe. (2023). Enough is enough: The case for a moratorium on incineration
[222] Market Report Analytics. (2024). Europe Waste-to-Energy Market Market Size and Trends 2025-2033: Comprehensive Outlook.
[223] Gardiner, B. (2021). Inside the EU's waste-to-energy battle
[224] Zero Waste Europe. (2023). Enough is enough: The case for a moratorium on incineration
[225] Belgian Integrated National Energy and Climate Plan 2021-2030: Section A: National Plan (Context, objectives, policies and measures).

regulations such as the Packaging Act, the Commercial Waste Ordinance, the Circular Economy Act and the Waste Prevention Programme), waste incineration demand could decline by 20-33%, avoiding the need for new incinerators. Similar to Belgium, a large share of Germany's existing incinerators will require retrofits or permitting renewals by 2030. However, there are currently no significant political or regulatory signals suggesting a reduction in the country's incineration rate or facilities.[226,227]

- In **France**, no major expansion of incineration capacity is currently foreseen. The 2016 Government Decree on Waste Management Plans sets targets to reduce incineration capacity by 25% by 2020 and by 50% by 2025/2026.[228] While concrete data on implementation or capacity projections beyond 2026 are limited, this decree indicates a policy-driven downward trend.
- No major expansion of incineration capacity is currently foreseen in **Sweden** either, but it, continues to operate with surplus capacity and remains a key importer of waste for incineration. Incineration is highly integrated into Sweden's district heating systems, making it a dominant waste treatment route and creating a potential lock-in to the existing capacity.[229]
- **Poland**'s situation contrasts with the above countries, whereby it calls for increasing thermal treatment capacity, as laid out in the National Waste Management Plan 2028.[230,231]

In sum, the potential decline in incineration capacity for the Netherlands' main waste trade partners may reduce the future availability of incineration/treatment options for Dutch waste exports. While Germany and Sweden appears to maintain its current capacity and Poland to increase its capacity, other countries like Belgium and France have signalled ambitions to scale back incineration facilities and rates. However, in the former case, the justification for further incineration is increasingly challenged by its carbon intensity, regardless of whether energy is recovered as heat or electricity, waste incineration remains a significant source of greenhouse gas emissions, which could become a key reason for future policy-driven reductions. [232,233] At the same time, increasing taxes and treatment costs for waste incineration within the Netherlands are expected to reduce the country's role as a destination for foreign waste imports, which in turn may lower the availability of capacity for Dutch exports, as countries that previously relied on the Netherlands to incinerate may now need to retain and treat more of it domestically. This is further elaborated in Section 5.2.6.

5.1.3 Cement kiln capacity

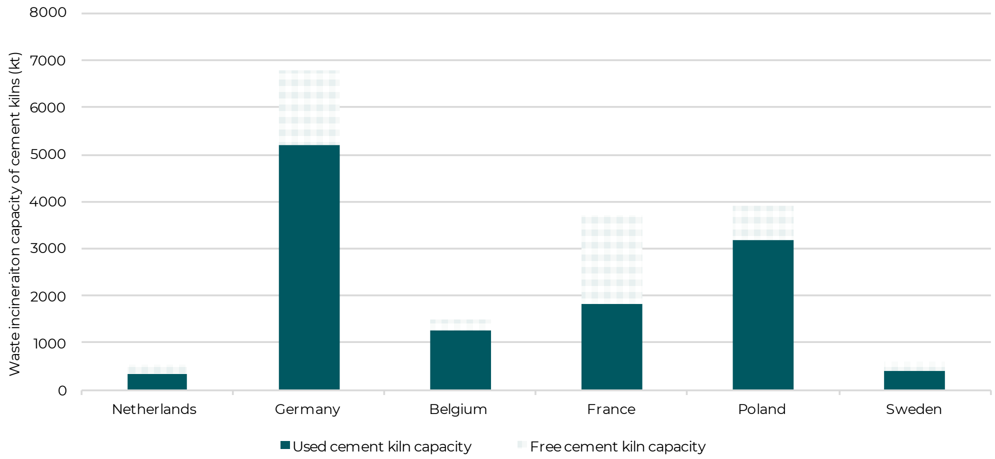
In addition to traditional WIPs, cement kilns offer another route for treating waste in the form of refuse-derived fuel which refers to a fuel produced by treating, e.g., municipal solid waste, commercial and industrial waste, and other. Their capacity is measured by the amount of waste that can be co-processed during clinker production. Currently in the EU, the share of traditional fuels replaced by waste, known as the fuel substitution rate, varies between 0.4 (for France) and 0.75 (for Belgium) across the selected Member States; a detailed breakdown of the substitution rates by country is provided in Annex B.2. Additionally, for this analysis, a theoretical substitution rate of 0.9 was applied to all countries to estimate the maximum potential (i.e., free) capacity. This reflects a plausible scenario for the mid- to long-term (2040-2050), as the cement sector is expected to scale up its use

[226] Naturschutzbund Deutschland (NABU) (2020). The future of waste incineration in a modern circular economy
[227] EEA. (2025). Waste management country profile; Germany
[228] Décret n° 2016-811 du 17 juin 2016
[229] Stockholm Environment Institute. (2017). Swedish heat energy system – new tensions and lock-ins after a successful transition: Policy Brief.
[230] Resolution No. 96 of the Council of Ministers of 12 June 2023 on the National Waste Management Plan 2028. M.P. 2023, item 702. Available here
[231] Czaplicka-Kotas A. (2025). Climate for CE: the Role of Circularity in the Polish NECP
[232] Zero Waste Europe. (2023). Enough is enough: The case for a moratorium on incineration
[233] European Public Service Union (EPSU). (2023). Waste management in Europe

of alternative fuels in line with net-zero goals.[234] The full methodology used for cement kiln capacity calculation is provided in the Annex B.2.

Figure 5-6 presents a closer look at the available cement kiln capacity for waste co-incineration (also shown in Figure 5-5). Germany stands out with the highest capacity, currently using over 5 Mt of waste as fuel, based on a substitution rate of 0.7, and with nearly 1.6 Mt of additional free capacity under the 0.9 substitution scenario. France and Poland also exhibit substantial capacity, each exceeding 3.5 Mt in total. Notably, France shows a greater share of unused capacity (1.9 Mt) compared to Poland (0.71 Mt) due to a lower current substitution rate (0.44 vs. 0.6). In contrast, the Netherlands, Belgium, and Sweden have limited kiln capacity, which largely reflects their lower national clinker production volumes, even though their substitution rates are relatively similar to France and Poland. Overall, while cement kilns represent a smaller share of the total available waste treatment infrastructure, their free capacity could still offer an additional outlet for waste exports.

Figure 5-6: Comparison of cement kiln capacities in 2022 for the Netherlands and selected countries (kt)



Based on data on Cement kiln production based on USGS. (2023). Cement Statistics and Information; Substitution rates from literature for Germany, France, Sweden, Belgium, and Poland with future projection of substitution rates from CEMBUREAU. (2020). Cementing the European Green Deal

This calculation was cross validated with existing literature, which uses slightly lower substitution rates and was based on earlier data.[235] However, even when adjusting current numbers to match the older substitution rates and clinker production, the estimates of this study remain slightly higher. This discrepancy is likely due to differences in underlying assumptions. Notably, we assume a thermal energy demand of 3.6 GJ per tonne of clinker[236] and a lower heating value (LHV) of 18 GJ/t for the waste fuel.[237].In practice, LHVs can vary depending on the waste composition, and thermal demand may also differ by aspects such as kiln technology, operational conditions, and fuel mix – all of which may explain discrepancies with earlier literature estimates.

It is important to interpret these figures as indicative upper-bound estimates, given the methodological limitations but also practical constraints. First, the analysis does not account for variations in waste composition or technical differences across kilns, which may affect their actual capacity to accept waste-derived fuels. Second, the substitution rates applied assume full technical feasibility and do not reflect regulatory, economic, or logistical constraints that may restrict real-world uptake.

[234] CEMBUREAU. *(2020).* *Cementing the European Green Deal*
[235] ECOFYS. (2016). Market opportunities for use of alternative fuels in cement plants across the EU
[236] European Cement Research Academy (ECRA). (2017). Evaluation of the energy performance of cement kilns in the context of co-processing
[237] Násner, A. M. L., et al. (2017). Refuse Derived Fuel (RDF) production and gasification in a pilot plant integrated with an Otto cycle ICE through Aspen plus modelling: Thermodynamic and economic viability.

Insights from stakeholder interviews reinforce the point of restricted real-world uptake. The main barrier to scaling up the use of cement kilns lies in the need for pre-treatment: waste must be processed to meet specific quality standards, both in terms of calorific value and contaminant levels, before it can be used as a fuel in cement production. This pre-treatment requires additional infrastructure capacity and economic viability which is, however, not always available, especially when dealing with mixed or highly contaminated waste streams. This is in line with findings from a ACM study,[238] which stated that cement kilns cannot be considered a direct substitute for incineration capacity: they operate in different waste markets, and where limited overlap exists (e.g. for contaminated waste), treatment at cement kilns tends to be more expensive due to additional transport and pre-treatment costs. As such, cement kilns are generally unable to process the same broad range of waste streams as WIPs, further limiting their applicability. [239]

Additionally, through interviews, some cement kiln operators remain hesitant to rely heavily on waste-derived fuels, citing concerns about supply security and consistency compared to conventional fuels. If the overall volume of waste available for incineration decreases, it also restricts the availability of waste for fuels. These factors, namely the lack of sufficient capacity and economic availability as well as the hesitations regarding the dependency on waste-derived fuels, collectively limit the scale at which waste is currently diverted to cement kilns, despite their theoretical potential and available capacity.

5.1.4 Installed and available recycling capacity

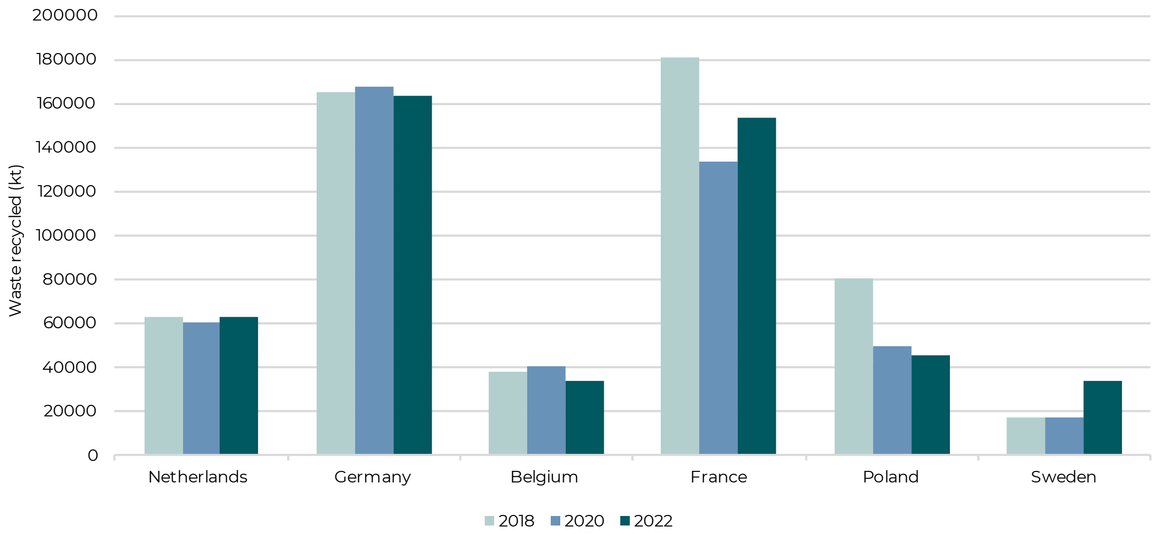
Reliable data on the total waste recycling capacity in EU Member States are limited. Most Eurostat and national data sources report the number of recycling treatment facilities and the amount of waste recycled, but not the total installed/available recycling capacity. Therefore, it is not possible to directly quantify or compare available recycling capacity across countries.

As a proxy, the actual amount of waste recycled in the selected countries was compared. Figure 5-7: below illustrates the volumes of waste recycled in the selected countries from 2018 to 2022.[240] Germany and France consistently process the largest quantities of waste for recycling, and their volumes have remained relatively stable in recent years; similar to the Netherlands. Sweden shows modest increases, whereas Belgium and Poland have seen minor declines. Therefore, France and Germany, which have higher and more stable recycling activity, could represent potential countries where higher volumes of recyclable waste could be shipped to.

[238] Autoriteit Consument & Markt (ACM). (2022). Verbod van concentratie Harbour B.V. en AEB Holding N.V.

[240] R2–R11, excluding backfilling. Both domestic and imported waste for recycling

Figure 5-7: Comparison of recycled waste quantities in 2018-2022 for the Netherlands and selected countries (kt)



Source: Eurostat (2025). Waste Generation and Treatment.
Note: A significant portion of recycled waste quantities (~20-75%) is categorised as construction/mineral waste.

5.2 Cost benchmarking

The various components of the cost of waste incineration in the Netherlands, Germany, Belgium, France, Poland and Sweden are compared in this section, including:

- **Gate fees**, in terms of the average fee WIPs charge to accept waste. For this component, we exclude waste taxes and carbon pricing (assuming these are fully passed on) so that we can compare taxes separately;
- **Transportation costs** for the transport of waste from the waste management facility to the WIP;
- **Waste taxes**, which are taxes that are directly imposed on waste incineration; and
- **Carbon pricing** in terms of the carbon pricing schemes which waste incineration is within scope.

Considering all these price components together, a comparison is made of the total estimated costs to determine whether it would be attractive to send waste to the Dutch AVIs or abroad.

5.2.1 Gate fees

Table 5-1 shows the estimated gate fee (excluding waste taxes/carbon pricing) for waste incineration in the selected countries. Those vary from 50 EUR/t of waste in Sweden to 100 EUR/t of waste in Germany. Gate fees estimates described here do not include the costs of waste taxes or carbon pricing, where these values are shown separately in Sections 5.2.3 and 5.2.4.

Table 5-1: Gate fee estimates[241] (excluding waste taxes/carbon pricing) for waste incineration in the selected countries

Country	Average gate fees with taxes included	Average gate fees with taxes excluded	Source
	EUR/t waste	EUR/t waste	
The Netherlands	120 (110-130)	80 (70-90)	Based on data from NVRD report (2020), adjusted for inflation
Germany	115 (75-160)	100 (55-140)	Based on data from EIB report (2023), adjusted for inflation
Belgium	100	85	Based on data from OVAM report (2023), adjusted for inflation
France	115	95	Based on data from ZeroWasteFrance (2025)
Poland	85 (80-95)	85 (80-95)	Based on study from G. Lohe (2023), adjusted for inflation
Sweden	70 (50-90)	50 (35-70)	Based on study by T. Broberg et al. (2022): SEK 360-660 /t in 2019 for municipal waste

For the average gate fees excluding taxes, the waste tax and carbon price from the same year that the gate fees are retrieved are removed and then the fee is adjusted for inflation. For the gate fees with taxes included, the current waste tax and/or carbon price are added to this estimated gate fee excluding taxes. See Section 5.2.3 for the waste tax rates and Section 5.2.4 for carbon prices for the most recent estimates.
The values in brackets represent the ranges based on what is available in literature.

When excluding waste taxes and carbon pricing, gate fees generally tend to be lower in Sweden (~50 EUR/t) than in the Netherlands (~80 EUR/t). In the other countries, gate fees are slightly higher (85-100 EUR/t). There are several factors which determine what gate fees an incineration facility will charge, such as:

- **Capital investment** (e.g. investment costs for upgrading/replacement of infrastructure);
- **Operating costs** (e.g. labour, maintenance, etc.): for instance, labour costs are generally low in Poland and high in the Netherlands, Sweden, Germany, Belgium and France.[242]
- **Revenues from energy recovery and bottom ash products, which can offset costs**: This is particularly the case in Sweden, where district heating systems generate significant revenues, where the gate fee can be as low as 0 EUR/t in the winter months; and
- **Market demand** (e.g., limited WIP capacity and oversupply of waste, landfill restrictions): greater supply of waste that exceeds the regional or national capacity can raise gate fees.

5.2.2 Transportation costs

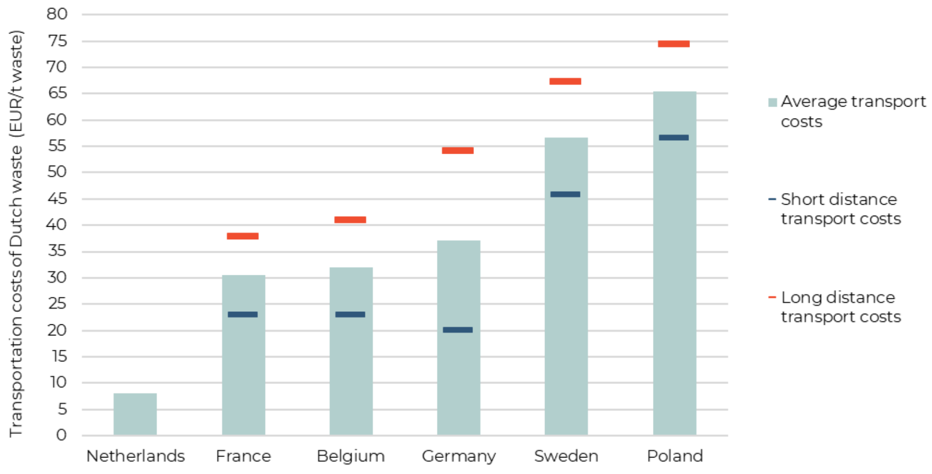
Transportation cost average estimates for Dutch waste to other countries varies depending on the distance and mode of transport (Figure 5-8). The distance estimates are used to calculate minimum, maximum ranges (i.e., short and long distance transport cost between waste management facilities and WIPs, see Annex B.3.2) and average cost reflecting the likelihood that exported waste is distributed across several facilities rather than sent to a single site. Costs are then

[241] Most gate fee estimates are based on values for municipal waste, where gate fees may differ for other types of waste such as commercial waste and waste which is more heavily contaminated.
[242] The average labour cost per person employed in 2022 in the waste treatment sector (NACE E3821) was 15 kEUR in Poland, 42 kEUR in Germany and Sweden, 44 kEUR in France and Belgium and 61 kEUR in the Netherlands.

derived by applying average per-kilometre-per-tonne rates based on the assumed transport mode for each route.[243]

Transportation of waste within the Netherlands would be about 8 EUR/t of waste, which is assumed to be via road transport due to short distances. Similarly, transport of waste to Belgium is assumed to rely on road transport, averaging about 20 EUR/t of waste. Transport of waste to Germany, France and Poland is assumed to mainly rely on rail transport, as this is the most efficient for long distances, leading to a range of average costs from 30 EUR/t to France/Belgium to over 65 EUR/t to Polish facilities. Sweden, despite being further away, benefits from sea transport, which is more cost-effective and would cost about 55 EUR/t of waste shipped.

Figure 5-8: Comparison of transportation costs of Dutch waste within the Netherlands and to other EU countries (EUR/t waste)



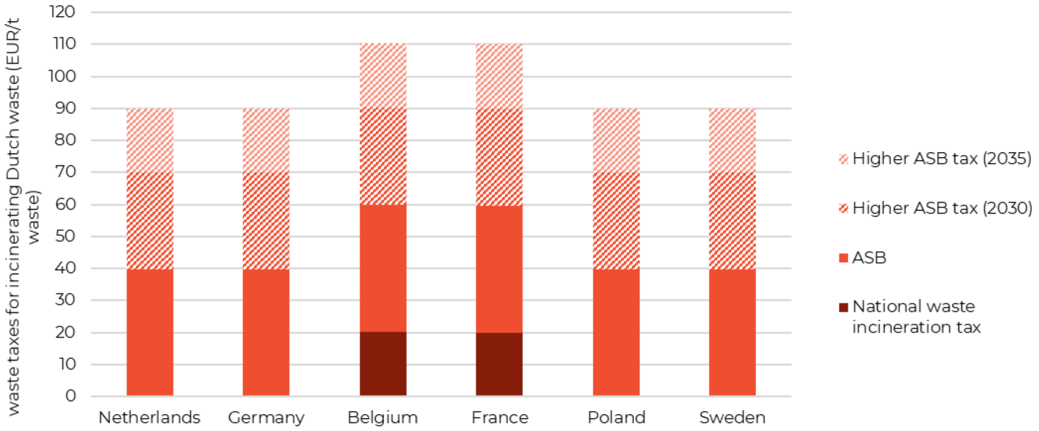
Source: based on mapping data from CEWEP and transport cost data from EIB. See Annex B.3 for how transport costs are calculated. Note that there is no range for the Netherlands due to the assumed short distances by road transport.

5.2.3 Waste taxes

The ASB tax would apply to all Dutch waste incinerated in WIPs (except for in cement kilns), whether it be within the Netherlands or abroad, where in some cases additional waste taxes apply in Belgium and France (Figure 5-9). In 2025, the ASB rate is ~40 EUR/t of waste and increase to 70 EUR/t of waste by 2030 and to 90 EUR/t by 2035. For France and Belgium, an additional national waste tax would be applied. In France, the tax ranges from 15-25 EUR/t of waste depending on the efficiency and pollution levels.[244] In Belgium, the tax rate varies between regions and also within regions, where based on the ranges, we assume an average rate of 20 EUR/t of waste. It has been noted by stakeholders that Belgium's waste tax is set so that it stays below the Dutch tax rate. Additionally, there is a refund for the waste tax for part of the cost (e.g., incineration of recycling residue). In Germany, Poland and Sweden, there is no waste tax currently applied to incinerated municipal waste.

[243] The transport cost estimates per km per ton of waste are based on estimates from an EIB study (2024). Namely, road transport costs 0.10 EUR/km/t, rail transport costs 0.05/km/t and via sea costs 0.02/km/t. It is assumed that short transport of waste is via road (within the Netherlands and Belgium), moderate to long transport is via rail (Germany, France and Poland) and waste transported to Sweden is via sea. In addition, the cost of baling waste for shipment is 13 EUR/t.
[244] French government (2025). Taxe générale sur les activités polluantes (TGAP).

Figure 5-9: Comparison of waste taxes which would apply to Dutch waste within the Netherlands or exported to selected countries in 2030 and 2035 (EUR/t waste)



Source: The ASB rates were provided by the Ministry of Finance. The Belgian rates were from these sources for Flanders and Wallonia, and the French rates were retrieved from here.

5.2.4 Carbon pricing

The Netherlands, Germany and Sweden all apply a carbon price on incinerated waste. The current and expected rates are listed in Table 5-2:

- In the **Netherlands**, fossil CO_2 emissions from waste incineration are within the scope of the CO_2 levy. The current levy rate is 88 EUR/tCO_2e, with the current trajectory of the levy going to 152 EUR/tCO_2e in 2030 in the base case, and 295 EUR/tCO_2e after the fiscal measures. Currently, Dutch WIPs receive dispensation rights that reduce the effective CO_2 levy rate that they have to pay, though this is planned to be phased out. Currently, almost all carbon emissions from waste incineration are covered by dispensation rights. By 2030, only a quarter of emissions will be covered, and by 2035, almost all (if not all) emissions will not be covered.
- **Germany** has a national Emissions Trading System (nETS), where the current price is about 55 EUR/tCO_2e[245], where waste incineration is included in the scope.[246] It is not yet known whether Germany will opt in to including waste incineration in the EU ETS by 2030 or 2035, therefore, we use a range between the current nETS price and the forecasted EU ETS price[247].
- **Sweden** has opted in to include waste incineration in the scope of the EU ETS, where the current price is 83 EUR/tCO_2e.[248] According to the KEV2024, by 2030, the EU ETS price will increase to 108 EUR/tCO_2e and 141 EUR/tCO_2e by 2035. Free allowances for waste incinerators in Sweden are expected to phase out to 20-45% in 2025-2030.[249]
- The other countries analysed in this study (**Poland, Belgium and France**) currently do not have a (direct) carbon pricing scheme in place for waste incineration.

Table 5-2: Nominal carbon prices in 2025 and 2030 in the Netherlands, Germany and Sweden for waste incineration plants (EUR/tCO_2e)

Year		Netherlands	Germany	Sweden
2025	Base	88	55	83
2030	Base	152	55-108	108
	After fiscal measures	295	55-108	108

[245] Umwelt Bundesamt (2025). Understanding nEHS.
[246] Tax Foundation Europe (2025). Carbon Taxes in Europe, 2025.; OECD (2024). Pricing Greenhouse Gas Emissions 2024: Gearing Up to Bring Emissions Down.
[247] KEV 2024
[248] KEV2024
[249] Swedish Environmental Protection Agency (2021). Avfallsförbränning i EU ETS.

2035	Base	152	55-141	141
	After fiscal measures	295	55-141	141

Source: based on current and future estimates of carbon prices from various sources, including inputs from the Ministry of Finance, KEV 2024; for Germany: OECD (2024); and for Sweden: Swedish Environmental Protection Agency (2021).

The effective carbon price (in terms of cost per tonne of waste) in the Netherlands will largely depend on whether the waste incineration sectors decides to invest in CCS, where high investment will lead to a relatively lower CO_2 price per tonne of waste compared to Germany and Sweden by 2035 (Figure 5-10). When converting the carbon price to the rate per tonne of waste (referred to as the *effective carbon price*), there are several factors to consider such as the emissions intensity to incinerate 1 tonne of waste (which can vary for instance if CCS is used to reduce emissions),[250] and the fossil component of the CO_2 emissions[251] and dispensation rights/free allowances administered to waste incineration facilities (which decrease the effective carbon price).

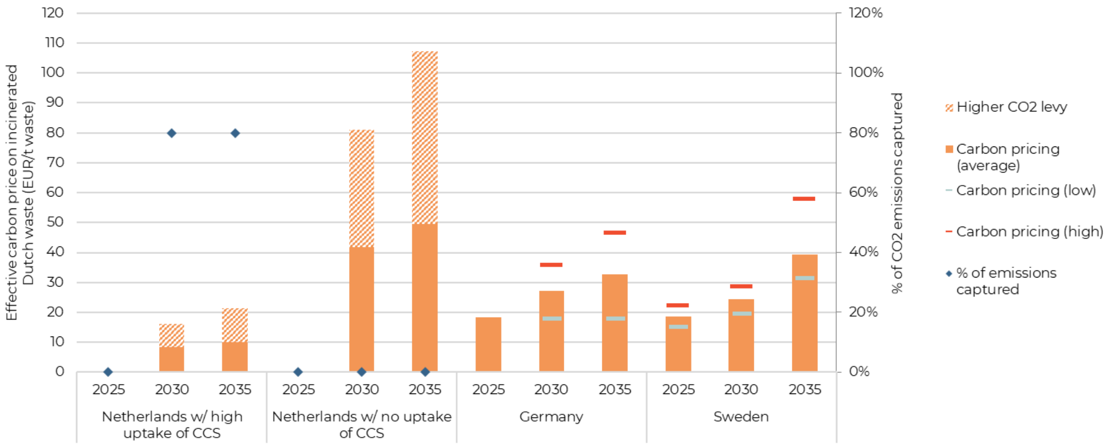
In 2025, dispensation rights still apply for WIPs in the Netherlands, therefore the effective carbon price is very low (1.7 EUR/t waste). In Germany, the national ETS only applies to fossil emissions and do not receive free allowances,[252] resulting in an effective carbon price is just under 20 EUR/t waste. In Sweden, WIPs receive free allowances (30-70%), which leads to an effective carbon price between ~5-15 EUR/t waste.

In 2030, the phasing out of dispensation rights and increasing carbon price in the Netherlands, without the new measures, could raise the effective carbon price significantly to up to 40 EUR/t waste if there is no uptake of CCS (with the increased CO_2 levy rate).[253] With the new fiscal measures, the effective carbon price could go up to 80 EUR/t of waste. With dispensation rights phasing out, there will be a stronger incentive for decarbonisation of waste incineration (e.g., invest in CCS), which, in combination with financial support from the SDE++ subsidy[254], this could lead to a lower emissions intensity per tonne of waste and thus a lower effective carbon price. To take these counteracting factors into account, a range is provided for the forecasted effective carbon price in the Netherlands in 2030 (with and without uptake of CCS) in Figure 5-10. In Germany, the carbon price would be 20-35 EUR/t waste. For Sweden, as it is expected that free allowances will be phasing out, the effective carbon price increases to 20-30 EUR/t waste. Additionally, stakeholders have noted that Germany and Sweden have been investing in CCS at a faster rate than the Netherlands. If this trend continues, this could lead to an even greater difference in effective carbon price between the Netherlands and these two countries as the emissions intensity of waste incineration would decline in Germany and Sweden.

By 2035, the effective carbon price in the Netherlands for waste incineration will greatly depend on whether CCS is adopted. With a high uptake of CCS, roughly 80% of carbon emissions would be captured, leading to a significantly lower CCS price (~21 EUR/t waste). On the other hand, without the use of CCS, the emissions intensity of waste incineration remains high, leading to an effective carbon price of ~107 EUR/t waste. Without the increased CO_2 levy rate (base case), the effective carbon price would be lower (10 and 50 EUR/t waste, with and without CCS respectively). In Germany, the carbon price would be slightly higher than in 2030 (20-45 EUR/t waste). For Sweden, the assumption is made that free allowances will be completely phased out by 2035, therefore the effective carbon price increases to 30-60 EUR/t waste.

[250] The use of carbon capture and storage would decrease the emissions intensity of waste incineration, in terms of the carbon emissions from waste incineration, which are estimated for calculating carbon costs for the CO_2 levy.
[251] It is assumed about one third of carbon emissions are fossil, the remaining is biogenic.
[252] Same as the EU ETS and the Dutch CO2 levy
[253] In the base case (without the increased CO_2 levy rate), the carbon price would be nearly half, 30-40 EUR/t waste.
[254] See Box 4-1.

Figure 5-10: Comparison of carbon taxes on waste incineration in 2025, 2030 and 2035 (EUR/t waste)



Source: based on current and future estimates of carbon prices from various sources, including inputs from the Ministry of Finance, KEV 2024; for Germany: OECD (2024); and for Sweden: Swedish Environmental Protection Agency (2021).

5.2.5 Cost comparison of incineration of Dutch waste domestically and in selected countries

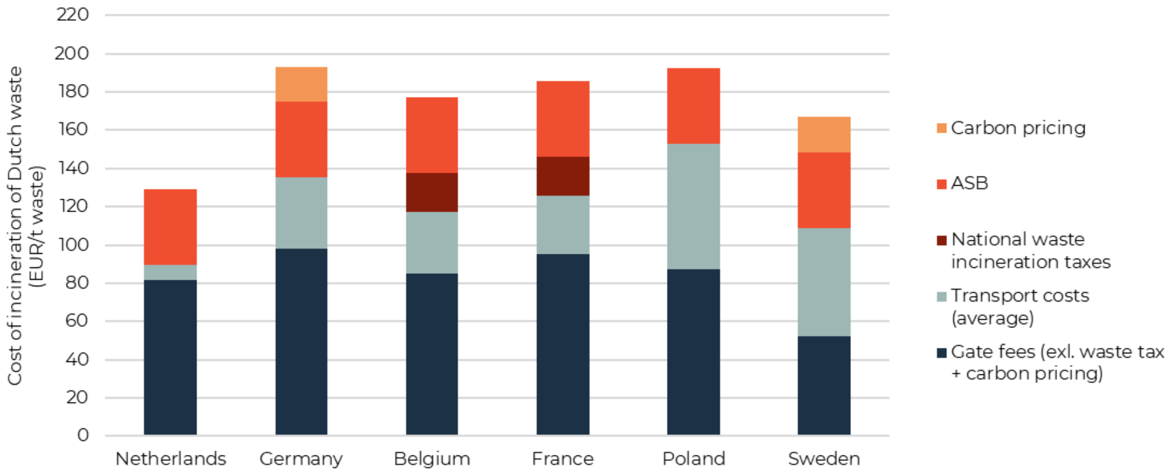
With the cost estimates above, a **comparison of the cost for Dutch waste to be incinerated domestically and abroad in the selected countries is made for 2025, 2030 and 2035**. This comparison sheds light on whether the fiscal measures would lead to Dutch waste being exported. Additionally, for 2030 and 2035, the **impact of the uptake of CCS on costs are considered**. Namely, there are two scenarios: Dutch WIPs with CCS and without CCS. In the case of WIPs with CCS, it is assumed that 80% of carbon is captured.

The **costs should be interpreted as benchmarks**, as the cost comparison is based on average values, where in some cases, the cost of incineration, either abroad or domestically, may be higher or lower than presented here. This can be for many reasons, such as: shorter/longer transport distances can lead to lower/higher costs; gate fees can fluctuate based on the supply/demand of waste (e.g., if there is a high demand for waste (for heat/power), then the cost can be lower; if there is a high supply of waste, then the cost could be higher).

Current costs for incineration of Dutch waste in 2025

At the moment, **it is, on average, most cost effective for Dutch waste managers to send their waste to Dutch WIPs**. This can be seen in Figure 5-11. Additional transportation costs to other countries is a main factor driving the cost of exporting waste (+20-60 EUR/t of waste) and the fact the ASB applies to all waste, exported or domestically incinerated. Further, Dutch WIPs currently benefit from dispensation rights which cover almost all emissions, making the effective carbon price zero. The other cost elements, i.e. waste taxes and gate fees, also play a factor in the cost variations.

Figure 5-11: Comparison of total average cost* of Dutch waste incineration in 2025 (EUR/t waste)



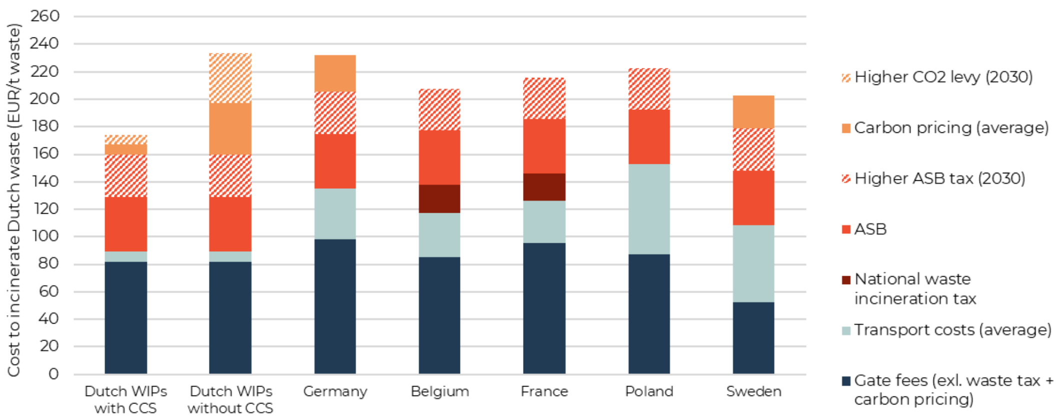
**The total cost does not include the collection cost for waste, which would be the same for all Dutch waste, whether it be incinerated domestically or abroad.*

Cost estimates are based on the estimates derived in Sections 5.2.1 to 5.2.4.

Estimated costs for incineration of Dutch waste in 2030

In 2030, with the **new fiscal measures, it may become more economically attractive for Dutch waste to be sent to WIPs abroad depending on the uptake of CCS**. The current trajectory of the CO_2 levy will lead to an increase cost of domestic incineration to ~10-40 EUR/t, depending on the uptake of CCS. On top of this, the new fiscal measures increase the cost of incinerating domestically by +40-70 EUR/t and +30 EUR/t for waste sent abroad. The high increase in cost for domestic incineration is mainly due the combination of the reduction in dispensation right and increase in CO_2 price (152 EUR/tCO_2 in the base scenario to 295 EUR/tCO_2). While domestic incineration would remain cost effective at WIPs with CCS, it is not expected that there will be a significant uptake of CCS by 2030 (see Section 4.1.1). Therefore, in most cases, where Dutch WIPs do not invest in CCS, the business case for exporting waste becomes more attractive in terms of costs.

Figure 5-12: Comparison of total average cost* of Dutch waste incineration in 2030 (EUR/t waste)

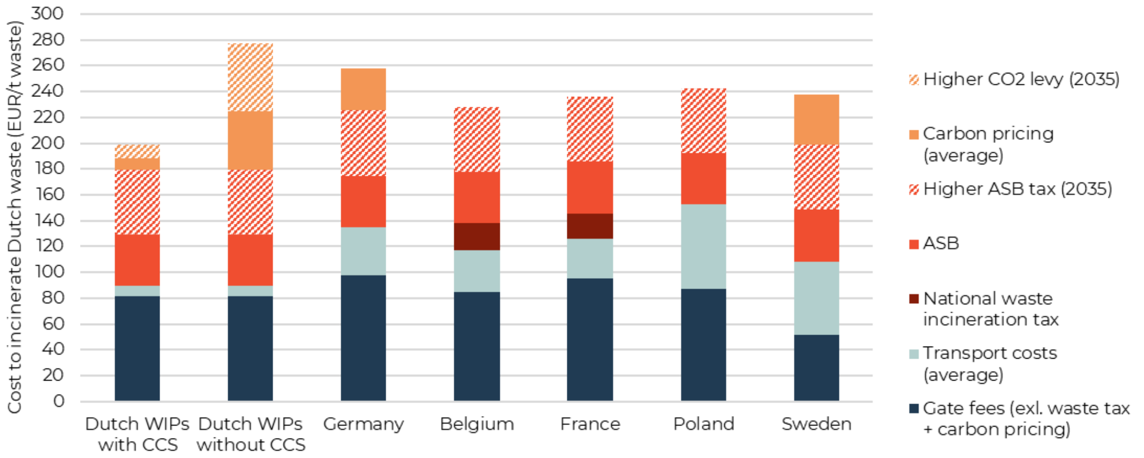


**The total cost does not include the collection cost for waste, which would be the same for all Dutch waste, whether it be incinerated domestically or abroad.*
For the scenario of Dutch WIPs with CCS, it is assumed that the CAPEX and OPEX of CCS are covered by the SDE++ subsidy.
Cost estimates are based on the estimates derived in Sections 5.2.1 to 5.2.4.

Estimated costs for incineration of Dutch waste in 2035

Whether the fiscal measures make it economically attractive to send waste abroad to be incinerated in 2035 strongly hinges on the extent Dutch WIPs will invest in CCS. Depending on the uptake of CCS, in the base scenario, the CO_2 levy costs could either decrease to 10 EUR/t waste (with high CCS uptake) or increase to 50 EUR/t waste. On top of this, the new fiscal measures would increase the cost of waste incineration domestically by +60-110 EUR/t waste[255] and by +50EUR/t for exporting waste abroad for incineration. If Dutch WIPs heavily invest in CCS by 2035[256], then the effective carbon price per tonne of waste is much lower as the emissions intensity of waste incineration drops. In this case, incinerating waste domestically would remain the most economically attractive.[257] On the other hand, if there is limited uptake of CCS and a higher CO_2 levy rate, the emissions intensity of waste incineration remains high and, therefore, the cost of incineration of waste within the Netherlands becomes more expensive than sending waste abroad for incineration.

Figure 5-13: Comparison of total average cost* of Dutch waste incineration in 2035 (EUR/t waste)



**The total cost does not include the collection cost for waste, which would be the same for all Dutch waste, whether it be incinerated domestically or* abroad.
For the scenario of Dutch WIPs with CCS, it is assumed that the CAPEX and OPEX of CCS are covered by the SDE++ subsidy.
Cost estimates are based on the estimates derived in Sections 5.2.1 to 5.2.4.

Another impact to consider is to what extent does the measure make it more attractive for Dutch waste to be recycled rather than incinerated, whether that be waste burned domestically or abroad. In this way, the new fiscal measure could improve the business case for recycling in the Netherlands. This is further explored in Box 5-2.

Box 5-2: Potential for fiscal measures to incentivise recycling of Dutch waste rather than shipment to other countries for incineration

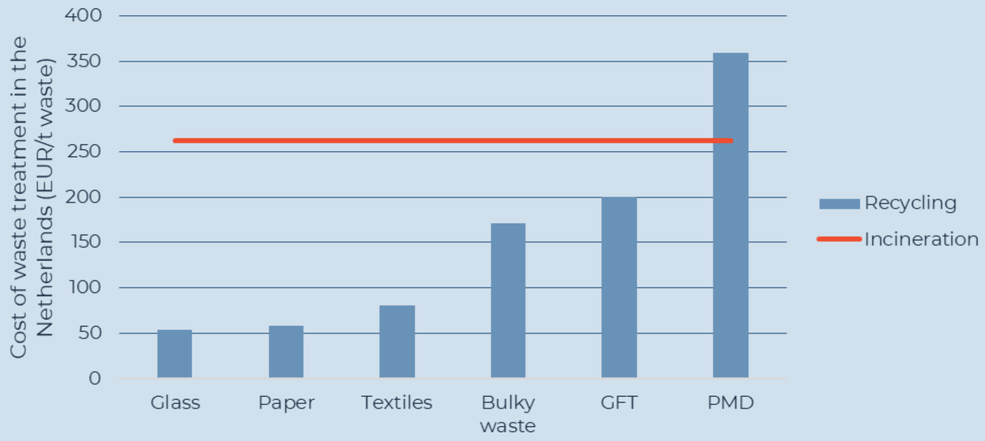
Figure 5-14 below compares the current estimated cost for recycling different types of waste in the Netherlands with the cost for incineration domestically and sending the waste to be incinerated in the selected countries. For most waste types, it is cheaper, on average, to send recyclable waste to recycling facilities in the Netherlands than incinerate this waste. Given the

[255] depending on the uptake of CCS
[256] It is estimated that by 2035 that with high uptake of CCS by Dutch WIPs, about 80% of fossil emissions will be captured.
[257] If Dutch WIPS invest in CCS, this would decrease the effective carbon price, but at the same time, the cost of investment would need to be recuperated, which could lead to an increase in gate fees. To what level the gate fees would increase depends on several factors, such as whether SDE++ is able to compensate for the investment costs of CCS. In that case, the increase in gate fees would be limited.

cost effectiveness of recycling, for paper, bulky waste and glass, already 80% of this waste is already separated for recycling. However, this is not the case for plastic, metal and carton (PMD) packaging.

About 60% of PMD waste undergoes separation, out of which 80% is recycled.[258] This means that 50% of the total PMD waste ends up being incinerated. Some streams do not undergo the separation step for recycling because the total costs are more expensive, particularly for streams that contain more mixed waste/contamination. Because the recycling of PMD tends to be more expensive than incineration and PMD has a relatively lower separation rate, the analysis of the impact of the measures on a shift to recycling in the Netherlands is focused on PMD. There was about 185 kt of PMD waste from the Netherlands recycled in 2023.[259]

Figure 5-14: Comparison of current costs for recycling and incineration in the Netherlands in 2025



Source: these cost are based on cost estimates for incineration described in this section as well as cost estimates for recycling and collection of waste for incineration reported by NVRD.

The new fiscal measures are not expected to significantly change the business case for recycling of PMD. Currently, as shown in the figure above, the cost of recycling PMD is about +105 EUR/t more expensive than incineration. In 2030, incinerating waste in the Netherlands will be +50-110 EUR/t more expensive than it is now, +10-40 EUR/t in the base case (from the CO_2 levy) and an additional +40-70 EUR/t from the new fiscal measures, depending on the uptake of CCS. While in the case where there is no uptake of CCS, incineration of waste in 2030 may be more expensive than recycling of PMD now, it is not expected that more PMD waste would be sent to recyclers. While the increase in cost of incineration could theoretically make it more attractive for waste to be better sorted for recycling, it would be more cost effective to alternatively send waste to WIPs abroad. Additionally, the increase in the CO_2 levy in the base case and the new fiscal measures will also indirectly increase the cost of recycling of PMD, as recycling companies also have incineration costs for residues. For PMD, 20% of separated waste ends up being incinerated.

Similarly, it is expected that in 2035, incinerating PMD waste, whether domestically or abroad, will remain more cost effective than recycling PMD. In 2035, incinerating waste in the Netherlands will be +70-160 EUR/t more expensive than in 2025, depending on the uptake of CCS. However, sending waste abroad will remain more cost effective than recycling PMD domestically.

This being said, if the cost of sending waste to WIPs abroad will also become less cost effective, e.g., if WIPs would be included in the EU ETS, then new fiscal measures could have a positive impact on the business case for PMD, as sending waste to WIPs abroad would become a less attractive alternative.

[258] About 20% of separated PMD is ultimately incinerated in the Netherlands. This can be due to several factors such as contamination of waste streams and residual waste form processing (e.g. labels on packaging). (NVRD, 2024)
[259] Based on waste data from CBS (374 kt) and percentage of PMD waste incinerated from NVRD (51%).

5.2.6 Cost comparison of incineration of waste from other countries in the Netherlands

A comparison of the cost for waste from other countries to be incinerated domestically or in the Netherlands is made for 2025, 2030 and 2035. The comparison includes:

- **Cost of incinerating waste domestically**, including gate fees, domestic transport costs, national waste incineration taxes and carbon pricing;
- **Cost of incinerating waste in the Netherlands**, including gate fees, transport costs to the Netherlands, national waste incineration taxes (which apply to exports), the existing ASB and CO_2 levy fees as well as the additional costs from the fiscal measures (ASB and CO_2 levy). For the 2030 and 2035 results, there are four situations which are considered – the combination of whether or not the new fiscal measures are adopted and whether or not there is high uptake of CCS.

This comparison informs on whether the fiscal measures would lead to waste, which is currently imported into the Netherlands, to be incinerated domestically.

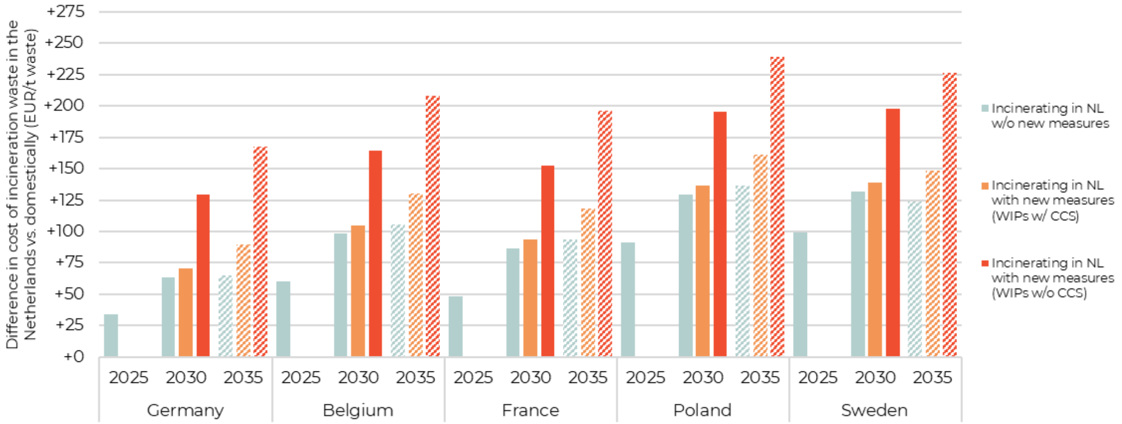
Estimated costs for incineration of imported waste in 2025, 2030 and 2035

It is not cost effective, on average, to send waste from the analysed countries to the Netherlands. In 2025, the average cost of importing waste to the Netherlands from the analysed countries is +35-100 EUR/t more expensive than incinerating waste domestically. This is primarily due to the ASB (40 EUR/t), difference in gate fees and the additional transportation cost to ship waste to the Netherlands. This is supported by the trends in imported waste in the Netherlands, which has seen a decline in recent years. Particularly, there is limited/no waste imported from Sweden and Poland. For this reason, the potential impact of these measures on import costs for these countries are not further discussed. The Netherlands does have significant import of waste from Belgium and Germany, where the average price difference in 2025 between shipping waste to the Netherlands and domestic incineration is about +60 EUR/t and +35 EUR/t, respectively. However, it can be more attractive to send waste to the Netherlands despite the higher average cost, considering better cost effectiveness for specific waste types, long-term contracts (with lower costs than current prices), and facilities near the border that would have significantly lower transport costs.

In 2030, this development is even more noticeable, where **the additional new fiscal measures may lead to a cost difference of over +130 EUR/t waste** in the selected countries, when there is no uptake of CCS. Without the new fiscal measures, the cost difference is also expected to be increase: It will be +60 EUR/t more expensive to ship waste to the Netherlands than incinerate domestically in Germany (compared to +35 EUR/t in 2025) and over +85-100 EUR/t in France and Belgium(compared to +50-60 EUR/t in 2025) due to the increase of the CO_2 levy. With the measures this increase is even more drastic. Depending on the uptake of CCS, the incineration in the Netherlands could be 70-130 EUR/t more expensive than incinerating domestically in Germany. Likewise, for Belgium, incineration in the Netherlands would be around +105-165 EUR/t more expensive.

By 2035, with no uptake of CCS, the cost differential is significantly high, and the potential uptake of CCS could reduce the cost differential between domestic incineration and shipping waste to the Netherlands, (Figure 5-15). With a high uptake of CCS, incineration in the Netherlands would still be +90 EUR/t more expensive than domestic incineration in Germany. This is primarily caused by the increase in the ASB. In France and Belgium, it would be +120-130 EUR/t more expensive. However, if there is no uptake of CCS, then the cost of incinerating waste would be more than +165 EUR/t more expensive than domestic incineration in Germany, France and Belgium.

Figure 5-15: Average cost difference of incineration waste of imported waste from selected countries in the Netherlands and domestically in 2025, 2030 and 2035 (EUR/t waste)



For the scenario of Dutch WIPs with CCS, it is assumed that the CAPEX and OPEX of CCS are covered by the SDE++ subsidy. Cost estimates are based on the estimates derived in Sections 5.2.1 to 5.2.4.

Another impact to consider is to what extent does the measure make it: i) more cost effective for imported waste for recycling to be sent to be treated elsewhere and/or ii) make it more attractive for imported waste for incineration to be recycled in the Netherlands. This potential impact is explored in Box 5-3.

Box 5-3: Potential for fiscal measures to incentivise imported waste for incineration to be recycled

Shift of imported waste for recycling to treatment elsewhere?

A potential impact is that the new fiscal measures make it economically unattractive to send waste to the Netherlands to be recycled. As mentioned, the new fiscal measures, as well as the increase in the CO_2 levy in the base case, will indirectly increase the cost of recycling in the Netherlands due to the incineration of recycling residues (also for exported residues due to the ASB). This is particularly the case for plastic waste, where about 20% of separated waste ends up being incinerated[260]. Other recycling waste, such as paper, organic waste and glass, tend to have lower share of recycling residues (<10%).[261] About 1 Mt of recyclable plastic is imported into the Netherlands (in 2022).[262]

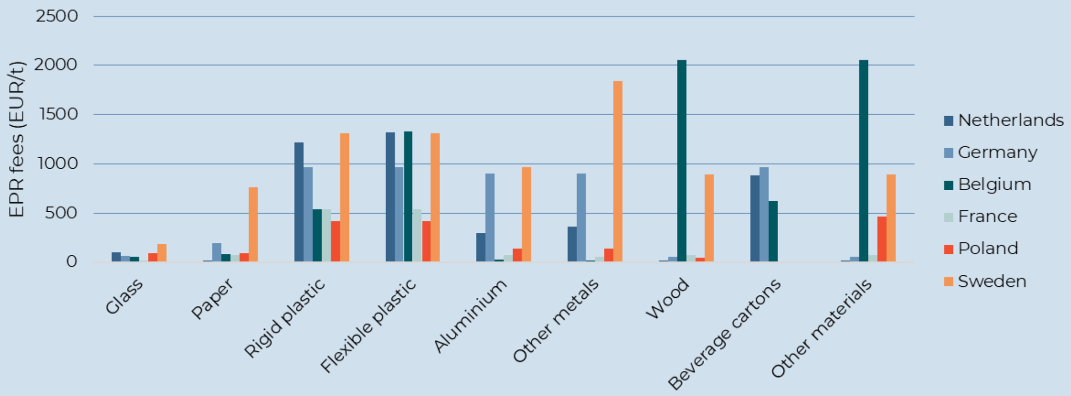
Imported plastics are often traded under long-term contracts, which would mean that recyclers may not be able to pass on the additional costs from the measures and thus further shrink profit margins. The Dutch recycling industry is already under economic pressure due to high production costs and international competition.[263] Because of strong competition with virgin fossil plastics and low demand for recyclate, recyclers would not be able to alternatively pass on the cost in the price of recyclate. This indicates that the measures would not only reduce imports (which are not under contract), but also worsen the business case for recycling in the Netherlands. This is also a concern raised by stakeholders that sorting and recycling infrastructure will be relocated abroad.

Further, a comparison of EPR fees in the Netherlands vs. the selected countries indicates that the cost of recycling plastic in the Netherlands tends to be higher than in other European countries (Figure 5-16). EPR fees can be used as an indicator of the cost of recycling, however it is not a 1:1 comparison. EPR fees are also based on other factors, such as eco-modulation of fees, the scope

[260] NVRD (2024). Benchmark Huishoudelijke Afval.
[261] NVRD (2024). Benchmark Huishoudelijke Afval.
[262] KPMG (2023). Plastic feedstock for recycling in the Netherlands.
[263] Troostwijk (2025). Surge in bankruptcy auctions hits Dutch plastic recycling sector.

of the fees, etc. That being said, the higher EPR fees for plastic packaging in the Netherlands signals that recycling costs are likely higher than in other countries, on average. Whereas, the EPR fees for aluminium tend to be lower. Therefore, the new fiscal measures may further worsen the business case for recycling of plastic in the Netherlands.

Figure 5-16 Comparison of EPR fees (EUR/t)



Sources: Most EPR fees are from PRO-E's Europe Costs Overview 2025, as well as Recycling Dual for Germany, Citeopro for France, and Expra for Poland. EPR fees for beverage cartons are not available for France, Poland and Sweden

Shift from importing waste for incineration to recycling in the Netherlands?

A potential shift in waste is that waste which is originally imported into the Netherlands for incineration is still imported to the Netherlands, but to be recycled instead. However, this case is considered very unlikely. This is mainly because costs for recycling will also increase due to the incineration of recycling residues (see Section 4.1.4), albeit to a lesser extent than incineration).

Further, the trade of waste for plastic recycling within the EU is mostly due to specialisation of processing methods.[264] Therefore, the plastic waste, which is shipped to the Netherlands for incineration is not necessarily the same type of plastic waste which is suitable for recycling (e.g. unsorted, not of high quality, not a specific type of plastic). Therefore, very limited impact is expected on the shift of imported waste from incineration to recycling.

5.3 Potential impact of the fiscal measures on waste trade flows

Based on the existing waste flows and available capacity (Section 5.1) and the cost benchmarking (Section 5.2), an overall assessment of the potential impact of the fiscal measures on:

- Export of waste from the Netherlands; and
- Import of waste to the Netherlands.

5.3.1 Potential impact on exports of waste from the Netherlands

Overall, the new fiscal measures create a potential risk for Dutch waste that is currently incinerated or recycled in the Netherlands to be shipped abroad for incineration. This is namely because:

- The **higher CO_2 levy rate increases the cost of incineration in the Netherlands** such that it could become more attractive to ship waste to countries like Germany and Sweden;

[264] KPMG (2023). Plastic feedstock for recycling in the Netherlands.

- The **cost of recycling PMD will likely remain higher than the cost of incinerating waste abroad**. This is namely due to the fact that Dutch recycling facilities will also accrue costs from having to incinerate residual waste from recycling processes.

This being said, there are non-economic factors which can limit the shift of Dutch waste abroad, such as long-term contracts, local regulations, location of waste management facilities and the uptake of CCS.

Potential shift of incineration in the Netherlands to abroad

The new fiscal measures would make, on average, exporting waste cheaper than domestic incineration, indicating that **there may be greater export of waste for incineration, particularly to Germany and Sweden**. In terms of a potential change in exports, the additional cost of the higher CO_2 levy rate is the main factor as the ASB is applied to domestic incineration and exports waste for incineration.[265] By 2030, the combination of the higher CO_2 levy rate and less dispensation rights would make incineration in the Netherlands more expensive than shipping waste abroad, regardless of whether low or high uptake of CCS is expected. By 2035, however, if there is high uptake of CCS (i.e., 80% carbon capture), the price of waste incineration in the Netherlands (200 EUR/t) could be cheaper than incinerating abroad as the carbon cost would drop considerably. On the other hand, if there is low uptake CCS, then the price of domestic waste incineration would be considerably higher (>280 EUR/t waste). In reality, the average cost of domestic incineration by 2035, will be between 200-280 EUR/t waste, as CCS may not be deployed by all Dutch WIPs, and even with high uptake of CCS, some of the investment costs may be passed on in the gate fees. Taking into consideration these costs and the existing free capacity in other countries, there is a possibility that there are greater waste exports, particularly to Germany and Sweden. To put the comparison in perspective, in 2022, 6.3 Mt of waste for incineration was generated in the Netherlands, of which 1.3 Mt was exported:

- **Germany:** There is currently about 1 Mt of Dutch waste shipped to Germany for incineration and there is about 26 Mt of free incineration capacity in Germany. In 2030, the average cost of shipping waste to Germany for incineration would be about 210 EUR/t, and ~260 EUR/t by 2030, taking into account the increased ASB rate for exports as well as the increase in the nETS costs for German WIPs. This would make shipping waste to Germany more cost effective (unless there is a high uptake of CCS). Therefore, **there is a potential increase in exports of waste to Germany, especially given the proximity to the Netherlands and the significant available capacity**.
- **Sweden:** There is currently about 85 kt of Dutch waste shipped to Sweden for incineration and about 1.8 Mt of free incineration capacity. In 2030, the average cost of shipping waste to Sweden for incineration would be about 190 EUR/t, and almost 240 EUR/t by 2030, taking into account the increased ASB rate for exports as well as the increase in the ETS costs for Swedish WIPs. This would make shipping waste to Sweden more cost effective (unless there is a high uptake of CCS). Therefore, **there is a potential increase in exports of waste to Sweden, though capped to the available capacity** (1.8 Mt).
- **France:** About 61 kt of waste is sent from the Netherlands to France annually, though there is currently very limited/no free capacity at French WIPs. Therefore, **it is not expected that the measures would lead to additional waste sent to France for incineration**.
- **Belgium:** 360 kt of waste from the Netherlands is shipped to Belgium for incineration per year. However, **given the limited available capacity, it is not expected that a significant amount of additional waste would be sent to Belgium**. Additionally, there are restrictions on incinerating certain types of waste in Belgium[266] which would limit the shift of waste to Belgium.

[265] With the exception of incineration at cement kilns

[266] ACM (2023). Verbod van concentratie Harbour B.V. en AEB Holding N.V.

- **Poland:** Due to strict regulations on imports of mixed municipal waste and waste from treatment of mixed municipal waste, **limited to no Dutch waste is expected to be exported to Poland**. Currently, there is indeed no Dutch waste exported to Poland. Furthermore, of the waste currently incinerated in Dutch WIPs, 41% is mixed municipal waste that falls under the ban and 40% is residues from waste processing (partially) from treating mixed municipal waste. Thus, the far majority of the waste currently incinerated in the Netherlands may fall under this import ban.

Additionally, it is also considered if Dutch waste could be exported not only WIPs abroad, but also to cement kilns in other countries. However, the capacity of these cement kilns is fairly limited compared to foreign WIP capacity.

Despite these estimated price differentials and the available incineration capacity in other countries, there may be some factors which would limit and/or delay the additional shipment of waste outside the Netherlands:

- **Long-term contracts** between Dutch WIPs and municipalities/private waste collectors, which would make it difficult for waste collectors to shift waste flows to foreign WIPs. These contracts often lock in gate fees and service terms for several years. Therefore, even if the fiscal measures increase the cost of incineration for WIPs in the Netherlands, facilities under long-term contracts may continue to send waste to Dutch WIPs, at least until the contracts expire. Thereafter, depending on when contracts expire, there could be a sudden increase in exports. However, these contracts can also include clauses, which allow for gate fee changes, particularly including clauses relating to allowing renegotiations if there are significant tax changes.
- Some contracts with municipalities may **restrict the sending of waste abroad.** However, this would only be possible for directly awarded contracts and not publicly tendered ones due to EU procurement rules. Stakeholders mentioned however, this only can be limited through insourcing (*NL:* '*inbesteding*'), which only accounts for 1 Mt,[267] which is about 16% of the Dutch waste incinerated in the Netherlands.
- **Location of the waste management facilities** may restrict the export of waste where the transportation costs would be relatively higher, for instance in the west of the Netherlands.
- Besides the additional transportation costs, the shipment of waste also comes with additional **logistical and operation complexities**. For instance, necessary cross-border logistics and documentation, risk of delays or rejection of waste at foreign WIPs and potential risk of regulations changing in foreign countries (e.g., Germany includes WIPs in the EU ETS, which will increase the cost of shipping waste to Germany). Due to these additional complexities and uncertainties, this may make Dutch waste management facilities hesitant to ship waste abroad.
- If there is **high uptake of CCS** by Dutch WIPs, they can reduce their carbon emissions and potentially avoid/reduce carbon costs, thus leading to a more minimal impact on costs for Dutch WIPs. This depends on the speed of CCS deployment and level of government subsidies (therefore avoiding passing on investment cost into the gate fees). To that end, the extent to which CCS will be significantly applied in WIPs was found to be highly uncertain due to uncertainties regarding the business case of CCS, particularly due to volume risks, and when the necessary CCS infrastructure will be in place (see Box 4-1). Full CCS deployment by 2030 is therefore unlikely, while carbon costs will already be significant enough to make the export of Dutch waste financially attractive. Even if the CCS infrastructure and capacity is increased later, the waste volumes may not fully recover as some incineration may have already been closed down due to the earlier waste reductions.

[267] Rijkswaterstaat (2025). Overzicht hoeveelheid fijn huishoudelijk restafval - per gemeente.

Potential shift of recycling in the Netherlands to abroad

Currently, the cost of recycling PMD is higher than the cost of incineration. Nonetheless, some PMD is still being recycled in the Netherlands as noted in Box 5-2. Due to the additional costs from the fiscal measures on incinerating residual waste from their recycling processes, Dutch recycling facilities will most likely raise their gate fees. As a result, **it may become more cost effective for Dutch waste management facilities to ship some of the waste that is currently being recycled in the Netherlands abroad**, particularly PMD with a high recycling residue. By 2030, the CO_2 levy costs for incinerating recycling residue in the Netherlands after fiscal measures could be as high as +37 EUR/t of recycled PMD and +49 EUR/t by 2035 compared to the current situation.[268] This would be high enough to exceed the average transportation costs to France, Belgium and Germany (see Section 5.2.2). This being said, if other policy measures would make incineration abroad more expensive, such as the inclusion of WIPs in the EU ETS,[269] the business case for recycling PMD in the Netherlands may improve as shipping waste to be incinerated elsewhere in the EU may no longer be as cost effective as recycling domestically due to increase in foreign gate fees from EU ETS costs.

5.3.2 Potential impact on imports of waste to the Netherlands

Overall, the **new fiscal measures may lead to imported waste that is currently incinerated in the Netherlands to be treated elsewhere.** Even without the new fiscal measures, the CO_2 levy rate is expected to increase over the next coming years, where this increase in the carbon price alone could be high enough to trigger a shift in imports. With the new fiscal measures, the **higher ASB and CO_2 levy rate further increase the cost of incineration in the Netherlands** such that it could become more attractive to treat waste elsewhere, particularly for imported waste from Germany, Belgium, France, Italy and UK.

Additionally, there is potential that the new fiscal measures also impact the **import of waste for recycling**, which could have a negative impact on the business case for recycling. This is because the new fiscal measures also indirectly increase cost for recyclers, as they also incinerate recycling residues. Namely, this is a concern for plastic recycling, where there is a relatively high share of recycling residues incinerated and the existing economic pressure on the sector due to high production costs and international competition. As discussed in Section 4.1.4, the costs for incinerating recycling residue is estimated to increase by +9 to +52 EUR/tonne of recycled waste in 2030 as a result of the fiscal measures as defined in this study.[270] To put this in perspective, the average cost of recycling PMD is currently 360 EUR/t.[271] Given the current market situation for the plastic recycling industry, even a marginal cost increase could have a significant impact on their competitive position.

This being said, similar to exports, there are non-economic factors which can minimise the shift of imported waste to other countries, such as long-term contracts, capacity constraints and the uptake of CCS.

Potential shift of imported waste for incineration to other countries

There will **likely be a decrease in imports of waste for incineration to the Netherlands with or without the new fiscal measures** given that the cost of incinerating waste in the Netherlands will increase by 2030 and up to 2035. In 2030, the existing plans to increase the ASB and CO_2 levy rates will lead to a greater price gap between waste incineration in the Netherlands vs. domestically in the selected countries (as described in Section 5.2.6). The fiscal measures would increase this price gap.

[268] Under a 50% recycling residue incinerated in a Dutch WIP without CCS uptake compared to waste incineration costs in 2025.

[269] If WIPs would be included in the EU ETS, this would in principle not affect the carbon costs of Dutch WIPs as the Dutch CO_2 levy rate would be corrected with the EU ETS price; the total CO_2 price faced by Dutch WIPs would remain unchanged.

[270] The lower estimate corresponds to 20% recycling residue with the residue incinerated in a Dutch WIP with CCS. The upper estimate correspond to 50% recycling residue incinerated in a Dutch WIP without CCS.

[271] NVRD (2024). Benchmark Huishoudelijke Afval.

Similarly, this is the case in 2035, though the price differential is either slightly higher or lower depending on the uptake of CCS at Dutch WIPs, which would decrease the CO_2 costs for Dutch incineration. The risk of decrease in imports will notably be the case for the following countries analysed:

- **Germany:** 285 kt of waste from Germany is imported to the Netherlands for incineration annually. As incinerating waste in the Netherlands becomes more expensive, it is likely that more incinerated domestically instead of in the Netherlands as there is currently free WIP capacity in Germany.
- **Belgium:** 163 kt of waste from Belgium is imported to the Netherlands for incineration annually. Similar to Germany, as the cost of incineration in the Netherlands increases over time, it is more likely that there will be less imports of Belgian waste. However, given the capacity constraints in Belgium, it is possible that Belgian waste management facilities will export their waste to other countries which are cheaper instead of to the Netherlands.
- **France:** 13 kt of waste from France is imported to the Netherlands for incineration annually. It is likely that waste imported from France will decrease and alternatively be sent to other countries, as France currently faces incineration capacity constraints.

There is no waste imported to the Netherlands from Poland or Sweden, therefore no impact is expected from the fiscal measures in these cases.

While other importing countries, such as **Italy** and the **UK** are not within the scope of this study, the possibility of a decline in imported waste from these countries should be mentioned, as the estimated price differentials between the analysed countries is significant, where sending waste to other countries, such as Germany (where there is spare incineration capacity) may become more economically attractive to these countries.

However, there are some factors that could minimise the impact of the measures on imports of waste:

- Similar to exports, if foreign waste management facilities have **long-term contracts** with Dutch WIPs, this can lead to a **delayed price response** to the cost increases caused by the fiscal measures, as they are shielded from immediate price fluctuations.
- Also similar to exports, if there is **high uptake of CCS** by Dutch WIPs, they can reduce their carbon emissions and potentially avoid/reduce carbon costs, thus leading to a lower impact on costs for Dutch WIPs depending on the whether subsidies sufficiently cover the cost of CCS.
- If neighbouring countries have **limited capacity** (e.g., Belgium, UK and France), then foreign waste management facilities may continue to rely on Dutch facilities despite the higher costs. At the same time, depending on the cost of transport, they may decide to alternatively ship waste to other countries with lower gate fees, such as Germany.

Nevertheless, as seen historically, waste imports to the Netherlands for incineration tend to fluctuate, unlike exports which remain fairly stable (as illustrated in Figure 5-1). This signals that **waste imports are likely more sensitive to price changes than exports**.

Potential shift of imported recycled waste to other countries

The new fiscal measures could make it less economically attractive for imported waste to be recycled, particularly for plastic. The fiscal measures on waste incineration indirectly impact the cost of recycling, as recycling residues are incinerated. With around 1 Mt of recyclable plastic imported to the Netherlands in 2022, long-term contracts may prevent recyclers from passing on these added costs, further reducing profit margins. The Dutch recycling industry already faces high production costs and international competition, and the low demand for recycled plastic limits the ability to offset costs through pricing. Additionally, EPR fees for plastics are higher in the Netherlands compared to other European countries, signalling generally higher recycling costs. Overall, the measures could reduce plastic imports and worsen the economic viability of recycling of waste from other countries in the Netherlands.

5.4 Other considerations

There are other factors which could impact trade flows:

- **Waterbed effect**: The new fiscal measures can also lead to a waterbed effect which can displace waste in other countries. For instance, if more Dutch waste is redirected to Belgium, where capacity is already constraint, this may lead to higher costs for incineration in Belgium, which could shift waste from Belgium or imported waste to Belgium to other countries for landfilling. At the same time, the increase in costs for incineration could also lead to lower waste generation in Belgium through the behavioural effects as described in Section 4.1. Further research specific to those other countries would be needed to more concretely understand the likelihood of such behavioural effects occurring.
- **Waste incineration within scope of the EU ETS**: Waste incinerators could be required to participate in the EU ETS. Currently, WIPs already have to monitor their emissions under the EU ETS. The European Commission has been mandated to propose whether to bring WIPs under the ETS, with a decision expected in 2026 with a view to their inclusion from 2028.[272] If the EU ETS inclusion of WIPs would go ahead, this would increase the carbon costs to levels to 108 EUR/tCO_2e by 2030. This would reduce the cost differential of exporting Dutch waste the Belgium and France as this would be on top of the existing costs, but not change the picture for Germany or Sweden as Swedish WIPs are already in the EU ETS and it is likely that the German WIPs would leave the national ETS to join the EU ETS. Nonetheless, Dutch WIPs would still face the higher costs for their CO_2 emissions compared to WIPs abroad as the CO_2 levy rate is expected to be above the EU ETS price; the CO_2 levy works as a top-up of the ETS price up to the CO_2 levy rate. This impact would be stronger in the situation where there is no uptake of CCS.
- **Illegal behaviour due to costs**: While in theory, all exported waste for incineration should fall within scope of the ASB, stakeholders have warned that there can be loopholes in the law, such as underreporting of the share of waste to be incinerated/landfilled. A lack of enforcement could lead to more waste being exported. Notably, the European Commission reports that 15-30% of EU waste shipments might be illegal.[273] Increasing the cost differential between domestic waste treatment and export options can thus incentivise illegal shipments if exporting waste is significantly cheaper and penalties for underreporting are low.

[272] Article 30(7) of the EU ETS Directive.

[273] European Commission (2021). Questions and Answers on new EU rules on waste shipments.

6 Conclusions

Based on the behavioural impact assessment (Chapter 4) and the deep-dive on the fiscal measures' impact on waste trade flows (Chapter 5), several interconnected impacts were identified. The expected overall impacts on the different key stakeholders are summarised in Section 6.1. Section 6.2 presents in brief the results of the assessment of the potential impact on the waste trade flows. Section 6.3 concludes with a reflection on the estimated fiscal impact of the fiscal measures as projected by FIN.

6.1 Overall impact on the behaviour of Dutch actors

The behavioural impact assessment has shown that the **increase in gate fees of Dutch WIPs is the most likely consequence of the proposed fiscal measures** (see Table 6-1). This is mainly because the magnitude of the fiscal measures is found to be too high to be absorbed by the WIPs, and the possibilities to reduce the tax base and increase prices of further outputs are limited. The increase of the gate fees of WIPs would in turn affect the entire waste incineration ecosystem.

Table 6-1: Overview of behavioural responses expected from WIPs to reduce costs from the fiscal measures, including the likelihood or feasibility of their occurrence

Behavioural response	Examples of specific actions	Likelihood / Feasibility
Cost absorption	Absorb costs internally	WIPs generally have limited margins for absorbing costs
Reduction of the tax base	Optimise incineration performance	Some WIPs could potentially improve incineration efficiency by a small margin
	Improve the bottom ash cleaning process	Some WIPs could potentially improve cleaning processes by a small margin
	Invest in CCS	Could reduce the impact of the CO_2 levy, but the investment climate makes this very uncertain
	Improve (post-)sorting practices	Expected to be implemented by multiple WIPs to the extent (economically) feasible
Cost pass-through	Increase price for heat	Difficult, as district heating is highly regulated
	Increase price for electricity	Difficult, as electricity prices are determined by the market
	Increase price for captured CO_2 (CCU)	Difficult, as prices are determined by the price of natural gas
	Increase price for residual streams	Difficult, as market demand and environmental policies impose limitations
	Increase gate fees	Primary means to cover the cost increase

Colour-coding: Unlikely – Partly – Likely

The main impacts per stakeholder can be summarised as follows:

- **Waste incineration plants**: the proposed fiscal measures would mainly intensify the impacts already expected in the base case. With CO_2 levy costs rising in the base case, WIPs are likely to increase their gate fees to (largely) offset these costs, affecting other stakeholders within the value chain. This would further promote more waste reduction and better waste sorting. At the same time, higher gate fees would reduce the competitiveness of Dutch WIPs compared to foreign ones, which could lead to increased exports and reduced imports of waste, as discussed in Section 6.2.

Specifically, the following two potential behavioural responses of WIPs have been investigated in more detail, from which the following can be concluded:

- **CCS**: the current business case for CCS in Dutch WIPs is already highly uncertain. At the moment, the (expected) costs under the CO_2 levy are not high enough to incentivise CCS investments on its own and the business case for CCS depends strongly on the subsidy from the SDE++. However, there are various uncertain factors associated with the SDE++, and as a result it may not sufficiently cover the CCS costs for a positive business case. These uncertain factors include the availability and predictability of waste input streams, the stability of national legislation, increasing investment and operational costs and the long-term financial risks involved. By increasing the CO_2 levy costs as foreseen under the fiscal measures, the incentive to invest in CCS could, in theory, be improved; WIPs that do not implement CCS would face even higher CO_2 levy costs compared to WIPs with CCS. At the same time, the fiscal measures – and particularly the ASB measures – could exacerbate some of the current uncertainties related to waste input streams (i.e., volume risks) and financial risks. Conversely, the fiscal measures could make the business case for CCS more uncertain. The extent to which the fiscal measures affect the business case for CCS can be different for different WIPs. This depends, amongst others, on the exposure of a WIP to volume risks, its position in the waste market and access to CCS infrastructure. Investments in CCS are thus more likely to take place in WIPs with closer proximity to CCS facilities, such as the large-scale CCS infrastructure project Aramis (in the Port of Rotterdam), as they would have lower CO_2 transportation costs. However, even if WIPs would have the confidence to invest in CCS, the continuous delays with project like Aramis make it is uncertain if these CCS projects can be realised on time to sufficiently offset the rising CO_2 levy costs for a positive business case.
- **CCU**: Dutch WIPs have plans to expand CCU projects and some even indicated that their business case for capturing CO_2 relies on CCU and does not take into account CCS. One of the reasons is that they can charge CO_2-offtakers for both the fossil and biogenic CO_2, while under the CO_2 levy only the capture and storage of fossil CO_2 can be monetised. However, the fiscal measures could reduce investments in CCU (and CCS) due to the increased volume risks. In addition, the fiscal measure of making captured CO_2 ineligible under the in-out method could result in some business case having to be re-evaluated, with the impact is estimated to be around 10% of the sales price of CO_2.

- **Recyclers**: there are two main impacts of the fiscal measures on the business case of recycling in the Netherlands:
    - First, the **willingness to pay for recycling** could increase given that waste incineration would become more expensive. This may increase overall recycling rates. However, an increase in the actual uptake of recycling, especially beyond the base case, is not guaranteed because the choice of the waste management approach also depends on other factors, especially the availability of technology and the demand for recyclates. An increase in demand might require measures beyond cost incentives given that first attempts for cost competition are already ongoing, however remaining insufficient (i.e., EPR/Verpact).
    - Second, recyclers would face **more expensive incineration costs for recycling residues** as a result of the fiscal measures on waste incineration. This would apply to both domestic and imported waste. While this could incentivise investments into innovation, it is more likely that, especially in the short term, the business case is further weakened. The costs for incinerating recycling residue is estimated to increase by +9 to +52 EUR/tonne of recycled waste in 2030 as a result of the fiscal

measures as defined in this study. To put this in perspective, the average cost of recycling PMD is currently 360 EUR/t.

Overall, it can be expected that recyclers may lift their gate fees to capitalise on the increased willingness to pay but also to cover the higher incineration costs for recycling residues. However, without changes of other factors like the demand for recyclates, the extent to which recyclers in the Netherlands can increase their gate fees is limited. Increasing gate fees, and hence more expensive recycling in the Netherlands, would make it more likely that more of the waste currently recycled in the Netherlands would be sent to countries like Germany where it is cheaper to recycle or incinerate. This mainly applies to current imports to the Netherlands which would be redirected to cheaper countries, but may also lead to Dutch waste being increasingly exported to be treated abroad instead of being recycled in the Netherlands. This is particularly the case for PMD with a high recycling residue, as the increase in the CO_2 levy costs for incinerating recycling residue in the Netherlands could be higher than the cost of transporting recyclable Dutch waste to France, Belgium and Germany for further treatment. As a result, the fiscal measures may actually put additional cost pressure on Dutch recyclers and worsen their business case.

- **Landfilling operators**: the impact of the fiscal measures on landfilling is expected to be low. The landfill ban remains in place and waste can only be landfilled if there is no other option available. One of the behavioural responses to the ASB rate increase could be a reduction in the amount of waste suitable for incineration or recycling but that is being landfilled with an exemption.
- **Municipalities**: in light of national programmes like the *Circular Dutch Economy by 2050*, municipalities aim for a general reduction in waste generation and improved sorting efforts. If the costs for waste management increase due to the costs of the fiscal measures being passed on in gate fees for waste incineration and recycling, the municipalities would in first instance pass these on to the tax payers via the waste collection tax. At the same time, municipalities may accelerate their efforts to reduce more waste and improve collection and sorting practices to minimise the cost increases.
- **Waste generators**: waste generators, i.e. businesses and households, would face higher fees for waste management due to the costs of the fiscal measures being passed on in gate fees. The cost increase might incentivise businesses to improve their sorting practices and reduce the overall waste production to reduce costs. For households, expected behavioural changes directly due to the increasing waste collection tax are limited. Complementing measures and initiatives such as changing taxation systems (like a switch to DifTar) and awareness campaigns would be needed to incentivise waste reduction and better sorting among households.
- **Users of energy production (power and heat)**: if less waste is incinerated, there is also a reduced power and heat output. While WIPs only supply 1.1% of the Dutch total energy consumption (electricity and heating), some regions are particularly reliant on heat from WIPs. To avoid a gap in energy provision to the regions reliant on WIP heat, investments would be needed to incentivise innovation or to explore alternatives, such as geothermal heat or heat from sludge incineration.
- **Environment**: reduced waste incineration would result in lower direct emissions of CO_2 and other pollutants to soil, water and air. At the same time, some behavioural responses to higher waste incineration costs may lead to increasing environmental pollution due to an increased risk of waste mixing, dumping, and littering, though no evidence has been found in literature that these effects would occur on a large scale. Moreover, if the waste is not treated in the Netherlands but abroad, it could reduce the environmental impact domestically but shift them abroad instead. This would lead to resources being lost and could lead to comparatively more CO_2 and other pollutants being emitted abroad (e.g., if the waste goes to landfills or to less efficient WIPs).

At the same time, global emissions could also decrease. This could be triggered because the disposal costs in the countries currently exporting waste to the Netherlands would increase, either due to increasing costs in the Netherlands or falling back on alternative solutions that are more expensive than the current situation. This may encourage exporting countries to reduce waste or recycle more, and in turn lowers the environmental impact.

6.2 Potential influence on waste trade flows with key waste trade partners

The assessment of the potential influence of the fiscal measures on waste trade flows has illustrated that the increase in costs for Dutch WIPs brought upon by the new fiscal measures could lead to **greater exports of Dutch waste** to facilities outside the Netherlands and **less imports of waste** to the Netherlands:

- **Export of waste**: for the export of waste for incineration, the determining factor is the CO_2 levy, which mainly affects WIPs with limited CCS potential. In this case, the new fiscal measures could lead to a potential shift of Dutch waste to Germany – and Sweden to a limited extent – which have free waste incineration capacity. Waste exports to Belgium, France and Poland is deemed less likely due to capacity constraints, and in the case of Belgium and Poland, also legal restrictions on the imports of certain types of waste.

  It is also considered if the new fiscal measures could lead to more recycling of waste in the Netherlands instead of being exported for incineration abroad. However, the fiscal measures are not sufficiently high enough to make recycling in the Netherlands, particularly of PMD, more economically attractive than incineration domestically or abroad. As noted in Section 6.1, the increase in the CO_2 levy could even lead to PMD with high recycling residues that currently being recycled in the Netherlands shifting abroad for recycling or incineration.

  At the same time, there are some factors which could delay/minimise the impact of the fiscal measures on increasing export of waste. Particularly, long-term contracts could keep gate fees temporarily lower, certain contracts with municipalities could restrict the shipment of waste abroad, and waste management facilities further away from country borders can be deterred from exporting due to transportation costs. Furthermore, if WIPs would implement CCS, they could limit their cost increase from the CO_2 levy to such an extent that their gate fees can remain competitive with foreign WIPs. However, as the extent to which CCS will be significantly applied in WIPs is highly uncertain due to uncertainties regarding the CCS business case, particularly due to volume risks and the low predictability when the necessary CCS infrastructure will be in place. Full CCS deployment by 2030 is therefore unlikely, while carbon costs will already be significant enough to make the export of Dutch waste financially attractive. Even if the CCS infrastructure and capacity is increased later, the waste volumes may not fully recover as Dutch WIPs may have already closed down some incineration lines due to the previous waste reductions.

- **Import of waste**: for the import of waste for incineration, the current trajectory of the CO_2 levy (in terms of higher levy rate and reduction in DPRs) already makes the import of waste to the Netherlands less economically attractive. On top of this, the higher ASB and CO_2 levy rate would make incineration in the Netherlands even more expensive compared to incineration in the analysed countries themselves. This could lead to a significant decrease in imports of waste to Dutch WIPs or imports even fully dropping away, whether it be from a shift to WIPs abroad or a reduction in waste generation in the exporting country due to higher disposal costs. Additionally, the new fiscal measures could have a negative impact on the business case for recycling in the Netherlands since recyclers are indirectly impacted by the measures (due to incineration of recycling residues). At the same time, there are non-economic factors which could delay the shift in imports similar to exports, such as long-term contracts, capacity constraints and the uptake of CCS in Dutch WIPs.

In general, the current contracts of Dutch WIPs might influence how quickly the WIPs will be affected from the reductions in the tax base. For example, if a WIP has a long-term contract with a municipality or a waste collector, its waste input streams might be secured for a certain amount of time. At the time of contract renewal, the waste providers might opt for the cheaper option, i.e. exporting the waste. Additionally, WIPs located in the east of the Netherlands may be more exposed to an accelerated reduction in waste due to an increase in exports and decrease in imports due to their proximity to German WIPs. Finally, the market position of a WIP in the waste market and proximity to CCS infrastructure can also determine to what extent the fiscal measures may reduce their waste input. How the fiscal measures will affect the WIPs can therefore vary significantly.

There are also other considerations which could impact the extent at which the new fiscal measures would impact waste trade. Particularly, there could be an increase in illegal behaviour due to increasing costs (e.g., underreporting). There is also the risk of the waterbed effect, where a shift of waste to other countries has a ripple effect in shifting waste from other countries to landfilling. Further, if it is decided that waste incineration becomes within scope of the EU ETS, this could create a more even-playing field for Dutch WIPs considering that a carbon price would apply to all WIPs within the EU.

6.3 Estimated impacts on the tax base of the fiscal measures

Taking into account the behavioural impacts discussed above, this study concludes that the differences in the tax base estimates primarily relate to differences in waste volumes for incineration, with **the reduction in waste volumes for incineration due to the proposed fiscal measures likely being underestimated** by the Dutch Ministry of Finance in their projections of May 2025. A summary is provided in Table 6-2.

Table 6-2 Comparison of the estimated waste volumes in the 2030 base case and reduction in waste volumes in the FIN analysis and this study compared to the 2030 base case

Waste volume in the Netherlands*	*Estimate by*	*Total volume treated in 2030 (base case)*	2030 reduction after fiscal measures vs 2030 base case	2035 reduction after fiscal measures vs 2030 base case
Landfilled waste	*FIN analysis*	*No change from 2021*	-0.1 Mt	-0.2 Mt
	This study	***1.3 Mt***	**-0.2 Mt** (Δ = -0.1)	**-0.3 Mt** (Δ = -0.1)
Incinerated in WIPs	*FIN analysis*	*No change from 2021*	-1.1 Mt	-1.3 Mt
	This study	***5.9 – 7.2 Mt***	**-2.5 – -1.1 Mt** (Δ = -1.4 – 0)	**-2.9 – -0.9 Mt** (Δ = -1.6 – +0.4)

** Does not include potential impact of export. Δ shows the difference with the estimates of this study with the FIN analysis, with a negative value representing a higher waste reduction than the FIN analysis and a positive value a lower reduction than the FIN analysis.*

The **reduction in landfilled waste** is estimated to be largely similar as the FIN analysis, main difference being a stronger behaviour response to the fiscal measures affecting landfilling.

Greater differences can be observed in the reduction of **waste incinerated in WIPs**, with the main difference between this study and the FIN analysis being the extent to which waste imports may drop away. Already in the **base case**, a decrease in waste incineration can be expected. This is mainly due to the realistic possibility that the Netherlands becomes less competitive for waste imports. The increasing CO_2 levy and the decreasing DPRs as currently planned can already trigger behavioural change to reduced incineration. Particularly, as Dutch WIPs become increasingly less competitive to incinerate foreign waste, there is a possibility that imports of waste for incineration may fully drop away. The lower range base case (5.9 Mt of incinerated waste in 2030) assumes that imports for incineration would drop away fully (i.e., only domestic Dutch waste is incinerated). The upper range base case assumes a full shift of waste landfilled with an exemption to incineration and without imports dropping away. The upper range expects that 7.2 Mt of waste would be incinerated in 2030.

The decrease in waste for incineration even in the base case would be **further accelerated by the fiscal measures** as they might further trigger waste reduction measures and improving waste sorting practices. Additionally, the increasing costs for Dutch WIPs would fasten the decrease in imports, if these imports did not yet fully drop away in the base case. Dutch WIPs could reduce a part of the cost impact of the fiscal measures through CCS to remain largely cost competitive with foreign WIPs. Thus, the extent to which waste for incineration would be reduced due to the fiscal measures mainly depends on whether imports already fully dropped away in the base case and the uptake of CCS (with the latter being however highly uncertain):

- The higher end of waste reduction for incineration (-2.5 Mt in 2030 and -2.9 Mt in 2035) corresponds to the situation of no CCS uptake in Dutch WIPs and the 2030 base case with 7.2 Mt as the starting point. Out of this, -1.1 Mt can be attributed to the imports fully dropping away. The rest relates to behavioural impacts on domestic waste estimated based on price elasticities.
- The lower end of waste reduction (-1.1 in 2030 and -0.9 in 2035) corresponds to a situation with a high CCS uptake and the 2030 base case with 5.9 Mt as the starting point. For 2030, the estimated reduction in waste due to the fiscal measures in this study largely correspond to the FIN analysis that also assumes a high CCS uptake. For 2035, the reduction in waste under a high CCS uptake is less strong than in the FIN analysis as CO_2 levy costs are largely mitigated by CCS in 2035. As a result, the increase in ASB and CO_2 levy costs are actually lower in 2035 compared to 2030. Combined with a lower volume of waste in the base case, this results in a weaker behavioural impact regarding waste reduction compared to the FIN analysis.

Hereby it should be noted that **the higher end of the reduction in waste as more probable** in this study: as concluded in Section 6.1, the business case for CCS in WIPs is already highly uncertain and the fiscal measures are expected to likely make the business case of CCS even more uncertain. The estimated reductions in waste are therefore more likely to be closer to the situation with no CCS uptake in WIPs than a high uptake of CCS.

In addition, waste from the Netherlands could be exported to be incinerated abroad as a result of the fiscal measures, which is not yet included in the estimates in Table 6-2. This could lead to an even higher reduction in waste for incineration in the Netherlands.

Thus, the reduction in waste volumes for incineration resulting from the fiscal measures is likely greater than what was estimated in the FIN analysis. Consequently, the tax base for the ASB on incineration may be smaller than estimated by FIN. Therefore, **the generic increase in the ASB tax rate used in this study would need to be higher**; otherwise, it may not meet the €567 million revenue target. However, further increasing the ASB tax rate could intensify the impacts identified as associated with the package of fiscal measures. This may cause a greater reduction in waste, which could again result in the increased ASB tax rate being insufficient to achieve the €567 million revenue demand.

Annex A Stakeholders consulted

The following stakeholders have been interviewed for this study:

- Vereniging afvalbedrijven
- HVC
- PreZero
- NRK Recycling
- Attero
- CEWEP
- Zero Waste Europe
- NVRD
- Urgenda

Additionally, a stakeholder sounding board session was held on 28 July 2025 on the preliminary results of this study. This sounding board session include some of the stakeholders mentioned above as well as additional stakeholders from the Dutch waste ecosystem.

Annex B Detailed methodological notes

B.1 Bottom ash from incineration

Table 6-2: Overview of bottom ashes from incineration

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Raw bottom ash from incineration (kt)	1.903	1.928	1.945	1.924	1.868	1.908	1.907	1.855	1.880	1.895	1.899	1.678
Ferro metals (kt)	124	111	116	107	115	107	103	126	132	130	119	113
Non-ferro metals (kt)	37	25	27	27	32	31	29	34	32	47	37	46
Processed bottom ash production (kt)	1.753	1.696	1.724	1.675	1.679	1.641	1.350	1.758	1.517	1.700	1.632	1.611
Bottom ash landfilled (incl. support layer) (kt)	-	167	-		4	-	2	42	40	84	58	67
Beneficial use (incl. support layer) (kt)	1.555	1.754	2.032	1.311	1.036	1.209	1.383	1.969	1.517	1.701	1.632	1.612
Total waste incinerated (kt)	7.207	7.480	7.549	7.601	7.565	7.796	7.627	7.478	7.386	7.572	7.504	7.392
Percentage of bottom ash generated from total waste incinerated	26%	26%	26%	25%	25%	24%	25%	25%	25%	25%	25%	23%

Source: Rijkswaterstaat. Afvalverwerking in Nederland, gegevens 2011-2022

B.2 Methodology for calculating cement kiln capacity

The estimation of cement kiln capacity suitable for waste co-incineration is based on national clinker production data and assumptions on the energy requirements for clinker production, as well as the substitution rate of conventional fossil fuels with waste-derived fuels. The following steps were used:

1. **Clinker production volume**. For each country, the most recent available data on total annual clinker production (in tonnes/year) was sourced from industry reports.[274]
2. **Energy demand per tonne of clinker.** An average thermal energy demand of 3.6 GJ per tonne of clinker was assumed.[275] This value reflects the typical energy consumption in cement kilns.
3. **Calorific value of waste-derived fuel**. A lower heating value (LHV) of 16-18 MJ/kg was assumed for waste-derived fuel.[276] This is an indicative energy content for mixed commercial and municipal RDF streams used in cement kilns, as reported by CEWEP and peer-reviewed articles.
4. **Current and theoretical substitution rates.** Based on national data and literature, the current substitution rate – the share of energy demand met using waste-derived fuels- ranges between 0.4 and 0.75 in 2022, depending on the country.

[274] *USGS. (2023). Cement Statistics and Information*

[275] European Cement Research Academy (ECRA). (2017). Evaluation of the energy performance of cement kilns in the context of co-processing

[276] Násner, A. M. L., et al. (2017). Refuse Derived Fuel (RDF) production and gasification in a pilot plant integrated with an Otto cycle ICE through Aspen plus modelling: Thermodynamic and economic viability.

a. For Germany (0.69),[277] France (0.44),[278] and Sweden (0.6),[279] 2022 substitution rates were sourced directly from the literature. However, for Belgium (0.53) and Poland (0.52), the most recent available data was from 2017.[280] To approximate their current substitution rates, the 2017 figures were adjusted based on the relative increase in the EU average substitution rate – from 0.41 in 2017 to 0.58 in 2022.[281] This method yielded adjusted rates of 0.75 for Belgium and 0.74 for Poland. For the Netherlands, a substitution rate of 0.58 (i.e., EU average) was applied due to lack of information in the literature.

b. To estimate used cement kiln capacity, we multiply clinker production by the energy demand (in GJ/t), apply the country-specific current substitution rate, and convert the resulting energy input into tonnes using the assumed LHV (see formula below).

c. To estimate free cement kiln capacity, we repeat this process using a maximum theoretical substitution rate of 0.9 across all countries.[282]

5. **Conversion formula.** The total waste-derived fuel capacity for each country was calculated as follows:

$$Waste\ capacity\ (t) = Clinker\ production\ (t) \times 3.6\ GJ/t \times Substitution\ rate\ \div 18\ GJ/t$$

[277] Verein Deutscher Zementwerke (VDZ). (2021). Umweltdaten der deutschen Zementindustrie
[278] Ministeres Ecologie Energie Territories. (2023). Feuille de route de décarbonation de la filière Ciment
[279] Fossilfritt Sverige. (2023). Färdplan för konkurrens-kraft och nettonollutsläpp cementbranschen
[280] ECOFYS. (2017). Status and prospects of co-processing of waste in EU cement plants
[281] CEMBUREAU. (2020). Cementing the European Green Deal
[282] CEMBUREAU. (2020). Cementing the European Green Deal

B.3 Methodology for calculating travel costs

B.3.1 Transport modes and costs

The transport costs for shipping waste from one country to another is based on three factors:

- The **cost per tonne per km of travel** depending on the mode of transport:
    - 0.10 EUR/km/t for road transport[283]
    - 0.05 EUR/km/t for rail transport[284]
    - 0.02 EUR/km/t for sea transport[285] + 1.9 EUR/t for model shift costs (roll-on/roll-off charges)[286]
- The **cost of baling waste per tonne** for international shipment: ~13 EUR/t[287]
- The **transport distance** between the two countries (See B.3.2)

B.3.2 Transport distances

The potential travel distances used to calculate the minimum and maximum transport costs are based on the possible nearest and furthest WIP facilities located in the selected countries, which is outlined in Table 6-3. The calculation is thus based on two points:

- **Nearest/farthest location in the Netherlands**: this is based on a selection of the highest waste generating municipalities based on CBS data: Amsterdam, Rotterdam, The Hague, Utrecht and Eindhoven.
- **Nearest/farthest location in the trading countries**: this is based on CEWEP's map of WIPs across Europe. The chosen location is based on not only distance, but also the size of the WIP capacity. For France, for instance, Paris is used for the farthest distance, as this is where a large portion of the WIPs are located and it would not be expected that Dutch waste would be sent beyond this point. For Sweden, the distance includes water/ferry transport, with additional land transport estimated as the distance from major entry ports to the nearest and furthest WIPs.

All distances measurements are via Google Maps routing.

Table 6-3: Estimated minimum and maximum transport distances from the Netherlands to WIP facilities in selected countries

Country	Nearest location in NL	Nearest WIP	Farthest location in NL	Furthest WIP	Transport mode	Min travel distance (land)	Max travel distance (land)	Travel distance (water)
Belgium	Eindhoven	Beveren	Amsterdam	Thumaide	Road	100	280	n/a
France	Eindhoven	Halluin	Amsterdam	Calce	Rail	200	500	n/a
Germany	Utrecht	Laar	Amsterdam	Munich	Rail	140	825	n/a
Poland	Utrecht	Poznan	Amsterdam	Krakow	Rail	870	1230	n/a
Sweden	Amsterdam	Malmo	Eindhoven	Kiruna	Sea+Road	10	225	1500
Netherlands	Amsterdam	Amsterdam	Amsterdam	Twence	Road	10	150	n/a

[283] EIB (2024). Managing refuse-derived and solid recovered fuels: Best practice options for EU countries.

[284] EIB (2024). Managing refuse-derived and solid recovered fuels: Best practice options for EU countries.

[285] EIB (2024). Managing refuse-derived and solid recovered fuels: Best practice options for EU countries.

[286] PwC & Panteia (2013). Research for TRAN Committee – Modal Shift in European transport: a way forward. 1.40 EUR/t for roll-on/roll-off charges, adjusted for inflation.

[287] EIB (2024). Managing refuse-derived and solid recovered fuels: Best practice options for EU countries.

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