Council of the European Union

Brussels, 8 April 2022
(OR. en)

Interinstitutional File: 2022/0104(COD)

8064/22
ADD 7

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COMER 41
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COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	6 April 2022
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2022) 111 final
Subject:	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT REPORT Accompanying the documents Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste and Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on reporting of environmental data from industrial installations and establishing an Industrial Emissions Portal

Delegations will find attached document SWD(2022) 111 final part 5/5.

Encl.: SWD(2022) 111 final part 5/5

EUROPEAN
COMMISSION

Strasbourg, 5.4.2022
SWD(2022) 111 final

PART 5/5

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the documents

Proposal for a
DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
amending

Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste

and

Proposal for a
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
on reporting of environmental data from industrial installations and establishing an Industrial Emissions Portal

{COM(2022) 156 final} - {SEC(2022) 169 final} - {SWD(2022) 110 final} -
{SWD(2022) 112 final}

Annex 9: Impacts of retained measures - E-PRTR Regulation

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Overview

This annex contains the impacts of each measure across specific impact categories structured by overall problem area.

All key economic, environmental, and social impacts of the policy measures across the core stakeholders – public authorities (including Member State competent authorities, the EEA and European Commission), industry (large and smaller businesses) and citizens and workers – have been identified, mapped, and screened. A rapid assessment of the expected absolute and relative magnitude of the impacts and their likelihood was carried out in line with Tool 19 of the Better Regulation Toolbox[1]. When selecting the most relevant and significant impacts, we have taken into consideration the following criteria:

- The **relevance** of the impact within the intervention logic developed for the evaluation: this assesses whether the impact is relevant to assess the direct contribution of the measures to the objectives for amending the E-PRTR Regulation.
- The expected absolute **magnitude** of the expected impacts.
- The relative size of expected **impacts for specific stakeholders:** this considers whether any of the impacts will be particularly relevant and significant for specific stakeholder groups, even if the impact overall may be small. In particular, this considers whether impacts will be concentrated on specific Member States or industry and whether it will add to the existing regulatory burden for any specific stakeholder group. Given the characteristics of the sectors involved in reporting to the E-PRTR, impacts on SMEs are not expected to be significant. However this will be further investigated and may be particularly relevant in the context of inclusion of any additional sectors e.g. cattle farms.
- The **importance for Commission's horizontal objectives and policies**: this considers whether the impact is relevant to determine any trade-offs between the objectives for amending the E-PRTR Regulation and other EU objectives and policies.

The outcome of this step is the final list of impacts that have been examined, indicating whether they are likely to be positive or negative (using the following signs: ++, +, o, -, --) and which stakeholder groups they are most likely to affect. The result of this screening is that the ten economic, environmental, and social impact categories were selected for in-depth impact assessment.

[1] European Commission. TOOL #19 Identification-screening of impacts (europa.eu)

Table A9-1: Significant impacts for in-depth assessment and those that have been screened out

Impact category	Significance	Impact on key stakeholder groups	Justification for inclusion / exclusion
Economic impacts included			
Administrative burdens on businesses	--	Industrial operators	The E-PRTR and any potential revisions have cost implications for industrial operators related to the monitoring and reporting of environmental data. They may increase for existing operators if new pollutants/parameters and/or lower reporting thresholds are adopted. However, there may also be some benefits with more advanced digital technologies and/or top-down reporting for the livestock / aquaculture sector. In addition, many of the E-PRTR administrative data (e.g. name, location) are already collected under IED reporting.
Operation / conduct of SMEs	- / O	SMEs are not a significant part of the affected sectors.	The impact is not expected to be significant as the E-PRTR activity and reporting thresholds typically exclude smaller operations. This was also confirmed as part of the IED evaluation (recognising that there is significant alignment on activities between the two instruments). However, as some of the measures may consider revising or removing reporting thresholds as well as including new activities (e.g. cattle) this impact has been retained in the assessment where relevant for specific options.
Public authorities: Change in costs to authorities for administrative, compliance and enforcement activities	-	Member State competent authorities (at local, regional and/or national levels depending on PRTR responsibilities).	Changes to the scope and focus of the E-PRTR will have impacts for Member State authorities in terms of data collection, verification, management, reporting and enforcement activities.
Public authorities: Change in costs to the Commission / EEA	-	European Commission / EEA	Changes to the scope and focus of the E-PRTR will have impacts for the EEA primarily in terms of data collection, reviews, management and website activities.
Environmental impacts included			
The climate	+	No specific group is impacted	One of the policy measures assessed considers the refinement of reporting of GHG releases to the E-PRTR. Furthermore, the potential for reporting on resource use (e.g. energy) has also been assessed. Whilst such options will not directly affect emissions of GHG and energy use, indirectly they provide an incentive to improve performance as the data will be publicly available enabling

Impact category	Significance	Impact on key stakeholder groups	Justification for inclusion / exclusion
			benchmarking across sectors / Member States.
Efficient use of resources	+	No specific group is impacted	Some of the policy measures assessed include improvements for reporting on waste data and potential for reporting on resource use. Whilst such options will not directly affect resource use, indirectly they provide an incentive to improve performance as the data will be publicly available enabling benchmarking across sectors / Member States.
Quality of natural resources / fighting pollution (water, soil, air etc.)	++	No specific group is impacted	Whilst the E-PRTR in its current form, as well as with any of the potential revisions to be assessed, does not directly cause industrial facilities to reduce pollution, indirectly it provides an incentive to improve performance as the data is / will be publicly available enabling benchmarking across sectors / Member States.
Reducing and managing waste	+	No specific group is impacted	One of the measures for assessment includes improvements for reporting on waste data. Whilst such options will not directly affect resource use, indirectly they provide an incentive to improve performance as the data will be publicly available enabling benchmarking across sectors / Member States.
Social impacts included			
Reduced health impacts due to lower pollutant emissions	+	Public	Improved public data on plant performance should provide incentive to reduce emissions and improve compliance with existing permitting requirements.
Governance, participation and good administration: Improved public access to information	++	Public	The fundamental objective of the E-PRTR is to make available to the public data on the environmental performance of industrial facilities across the EU. Any potential revisions would only improve the quality and quantity of data available.
Impacts excluded			
International environmental impacts	O	No specific group is impacted	Whilst the E-PRTR and any potential measures for assessment do not require direct reductions in releases, indirectly the data can provide an incentive for facilities to improve performance. This is true within the EU but may also provide an incentive for operators outside of the EU as they can see how European plants perform and what level of environmental protection is possible. However, the impacts on operators outside of the EU are expected to be minimal.
Functioning of the internal market and competition	O	Industrial operators	Whilst the E-PRTR and any potential revisions in scope and focus would have cost implications for industrial operators, these are expected to be minimal relative to overall operating costs and

Impact category	Significance	Impact on key stakeholder groups	Justification for inclusion / exclusion
			would therefore have very limited, if any, impacts on overall competition.
Macroeconomic environment	O	Industrial operators primarily	Whilst the E-PRTR and any potential revisions in scope and focus would have cost implications for industrial operators, these are expected to be minimal relative to overall operating costs and would therefore have very limited, if any, impacts on employment and overall profitability.
Innovation and research	+	Industrial operators, Member State authorities, monitoring equipment suppliers, EEA	Potential improvements in reporting modalities could help drive innovation in the collection, management and reporting of environmental data under the E-PRTR. However, such impacts are unlikely to be significant. Potential efficiency gains have been considered under administrative burdens.
Technological development / digital economy	+	Industrial operators, Member State authorities, monitoring equipment suppliers, EEA	Potential improvements in reporting modalities could help drive innovation in the collection, management and reporting of environmental data under the E-PRTR. However, such impacts are unlikely to be significant. Potential efficiency gains have been considered under administrative burdens.
Operating costs and conduct of business	-	Industrial operators	The E-PRTR Regulation and any potential revisions have cost implications for industrial operators related to the monitoring and reporting of environmental data. These have been shown to be low relative to overall operating costs. They have been assessed under administrative burdens hence why this specific impact is excluded.

Across each of these specific categories, a range of costs and benefits have been considered and, where possible, quantified. For E-PRTR, the most important impacts relate to administrative costs and the benefits associated with access to information (including improvements in the data being reported, greater coverage of activities, pollutants and other parameters). These have been considered relative to the baseline.

The following sections outline the analysis structured by policy option and measures within each problem area. The table below summarises how the E-PRTR policy measures correlate to the E-PRTR problem areas and overall measures.

Table A9-2: Mapping of policy options, E-PRTR problem areas and E-PRTR policy measures

Policy option	E-PRTR problem areas	E-PRTR policy measures [#measure ID]
Baseline	**1a: Current activity thresholds and definitions**	Provide guidance on aggregating 1(c) thermal power stations to align with IED aggregation rules [#12b] = **SWD Baseline**
	4b - Time lag and data flows in reporting	Incrementally improve the EEA reporting system [#51] = **SWD Baseline**
	4c - Inconsistent and incorrect reporting	Promote the use of sector-specific release factors for some activities [#53] = **SWD Baseline**
		Provide guidance on methodology for calculating releases, especially indirect releases to water [#56] = **SWD Baseline**
		Add completeness checks for the reporting of which methodology is used [#59] = **SWD Baseline**
		Add a description field for accidental releases [#60] = **SWD Baseline**
		Develop guidance on how to report M/C/E for multiple release sources [#61] = **SWD Baseline**
		Add an indication of whether the facility is registered under the EMAS Regulation [#62] = **SWD Baseline**
	5 - Access to EPRTR information	Improve promotion of availability of the E-PRTR [#65] = **SWD Baseline**
		Enhance website design and content, better links to national PRTRs [#66] = **SWD Baseline**
		Provide more guidance on how to access and use the data [#67] = **SWD Baseline**
		Case studies/fact sheets on E-PRTR uses [#68] = **SWD Baseline**
	6 - Releases from diffuse sources and releases from products	Deliver Article 8 requirements by cross-referencing to other existing data sources on diffuse releases [#69 & 71] = **SWD Baseline**
PO1 Effectiveness	**1a: Current activity thresholds and definitions**	Clarify that activity 3(b) covers upstream oil and gas facilities [#16] = **SWD E-PRTR#6**
		Reword 5(d) landfills activity description to include flaring of vent gas [#11] = **SWD E-PRTR#8**
	2a: Existing pollutants and thresholds	Reduce reporting thresholds for some existing pollutants to better meet the aim of 90% capture [#33a-x / n=24] = **SWD E-PRTR#1**
		Establish a 'sunset list' to remove pollutants that are no longer of concern [#32] = **SWD E-PRTR#5**
	4a: Reporting modalities	Add an option for top-down reporting for activity 7 (livestock production and aquaculture) [#46] = **SWD E-PRTR#9**
	4c: Inconsistent and incorrect reporting	Introduce sub-facility reporting [#45] = **SWD E-PRTR#2**
		Add active operator confirmation that releases are below the reporting threshold [#52] = **SWD E-PRTR#3**
		Mandate the M/C/E hierarchy [#58] = **SWD E-PRTR#4**
PO2 Innovation	**N/A**	No measures retained
PO3 Circular	**2b: Additional**	Establish a mechanism for dynamic updating to include

Policy option	E-PRTR problem areas	E-PRTR policy measures [#measure ID]
Economy, Resource Efficiency and Safer Chemicals	**pollutants**	additional pollutants of immediate interest [#36] and future interest (sunrise list) [#37] = **SWD E-PRTR#10**
	3: Information to track progress towards the circular economy and decarbonisation of industry	Require the reporting of energy use [#38] = **SWD E-PRTR#11**
		Require the reporting of water use [#39] = **SWD E-PRTR#12**
		Require the reporting of raw material use [#40] = **SWD E-PRTR#13**
		Reporting waste composition of waste transfers [#41] = **SWD E-PRTR#14**
		Improve tracking of waste transfers [#42] = **SWD E-PRTR#15**
		Improve tracking of waste water transfers [#43] = **SWD E-PRTR#16**
	6 - Releases from diffuse sources and releases from products	Reporting releases from products [#70] = **SWD E-PRTR#17**
PO4 Decarbonisation	**3: Information to track progress towards the circular economy and decarbonisation of industry**	Disaggregation of some currently reported GHGs (e.g. HFCs, PFCs) [#44a] = **SWD E-PRTR#18**
		Require GHG releases to be also reported as CO_2 equivalent [#44b] = **SWD E-PRTR#19**
PO5 Industrial scope	**1a: Current activity thresholds and definitions**	Revise capacity thresholds for 7(a) IRPP [#1] = **SWD E-PRTR#21**
		Revise capacity threshold for 5(d) landfills [#3] = **SWD E-PRTR#27**
		Revise capacity threshold for 2(c)(ii) smitheries [#5 – sub-options consider no calorific power threshold or a calorific power threshold of 5 MW] = **SWD E-PRTR#26**
		Revised thresholds for specific sub-sectors of activity 4 chemical industry [#6] = **SWD E-PRTR#28**
		Revise capacity threshold of 5(g) independently operated industrial waste water treatment plants to align with the IED activity description [#8] = **SWD E-PRTR#28**
		Include sub-categories for 1(b) installations for gasification and liquefaction to include coal and "other fuels" to better align with the IED sub-categories [#9] = **SWD E-PRTR#28**
		Include product sub-categories for 3(c) cement production [#10] = **SWD E-PRTR#28**
		Align activity description for 1(c) thermal power stations with IED aggregation rules [#12a] = **SWD E-PRTR#28**
		Reword 8(b) production of food and beverage products activity description to include feed products to align with the IED activity description [#72] = **SWD E-PRTR#28**
		Revise capacity thresholds for 1(c) combustion plants [2 – sub-options consider thresholds of (a) 20-50 MWth and (b) 5-50 MWth] = **SWD E-PRTR#29 and #30**
		Revise capacity thresholds for 5(f) UWWTPs [#13 – sub-options consider thresholds of 2,000, 5,000, 10,000, 20,000 and 50,000 p.e.] = **SWD E-PRTR#29 and #30**

Policy option	E-PRTR problem areas	E-PRTR policy measures [#measure ID]
	1b: Missing activities and sub-activities	Expand activity scope of mining and quarrying activities (3(a) &3(b)) to align with potential IED revision [#14] = **SWD E-PRTR#28**
		Add cattle farming [#15] = **SWD E-PRTR#20**
		Include battery production, disposal and recovery [#18] = **SWD E-PRTR#22**
		Include an additional sub-sector for cold rolling & wire drawing [#20] = **SWD E-PRTR#24**
		Inclusion of an additional 9(a) sub-sector for textile finishing [#21] = **SWD E-PRTR#25**
		Include an additional 9(d) sub-activity for ship yards / dismantling [#23] = **SWD E-PRTR#28**
		Add MgO production in kilns with a threshold of 50 t/day to 3(c) so as to align with IED activity 3.1(c) [#27] = **SWD E-PRTR#28**
		Include capture of CO_2 streams for geological storage with no threshold so as to align with IED activity 6.9 [#28] = **SWD E-PRTR#28**
		Add additional sub-categories and improved descriptions for 5(a) & 5(b) waste treatments to align with the IED activity descriptions and ensure reporters know that disposal includes incineration/co-incineration. Additionally, include recovery in the activity definition [#29] = **SWD E-PRTR#28**
		Add an additional hazardous waste sub-category for temporary storage so as to align with IED activity 5.6 temporary storage of hazardous waste [#30] = **SWD E-PRTR#28**
		Establish a dynamic mechanism to identify and include emerging activities of concern ('sunrise list' for activities) [#31] = **SWD E-PRTR#31**

Common economic impact assumptions

The main economic impacts related to policy measures for the revision of the E-PRTR Regulation relate to administrative burden i.e. data collection, reporting and Quality Assurance (plus EEA data management and website maintenance).

The EU Standard Cost Model applies to administrative costs such as reporting costs. It estimates costs of a given reporting provision as:

Administrative cost = Σ P x Q

where P (for Price) = Tariff x Time;

and where Q (for Quantity) = Number of businesses x Frequency

In relation to the reporting under the E-PRTR, the costs elements are:

- Tariff=hour salary for relevant staff

- Time=hours to perform the reporting activity
- Number of business=number of facilities that have to report
- Frequency: once per year expect for measures/options including more frequent reporting

We have assessed the reporting activities and, at the generic level, they comprise one-off costs. The one-off costs relate to adapting the data collection, calculation and reporting systems, training, instruction and similar activities that are needed to enable the annual reporting. For one-off costs, the frequency is one, otherwise the costs are estimated similar to the recurrent reporting costs.

Below we describe the assumptions and data used for the assessment. These are presented in this section to avoid repetition for each of the individual measures in later sections.

Table A9-3: General assumptions for economic impacts

Element	Value	Reference
Salary rate	40 EUR/hour[2]	Rate for professional, Eurostat data
Discount rate	4%	Better Regulation Guidelines
Lifetime of one-off activities	10 years (unless specified for a particular activity)	Expert assumption – used for annualising one-off costs.

For annualisation of one-off costs, the technical or economic lifetime of the investment typically provides the guiding value. For changes to data collection and reporting requirements, there is no simple lifetime to use as a basis for the annualisation. Changes to reporting systems will last for as long as the system is applied. If a company changes its IT system used for the reporting, it is unlikely that the costs will be significantly affected by the number of pollutants or parameters that are being reported. This would suggest that a long "life time" should be applied. On the other hand, staff turnover could mean that one-off costs should be repeated within a shorter time period. The assumption of ten years is a medium-term lifetime and intended to balance the different factors.

The specific administrative costs include the following elements:

- Business: Reporting by facilities
- Member State CAs: Data checking and QA
- EEA
  Data checking
  Publishing new data or revising webpages by EEA

The data and approach for each stakeholder type is presented below.

[2] 40 EUR/h salary rate is applied in this Annex only. For the sake of aligning the calculations of admin burden with the one-in-one-out calculator and with assumptions behind the IED burden calculations, a 29 EUR/h rate is applied in Annexes 3, 10, the main body of the SWD and its executive summary. Therefore totals provided in this annex are not matching those presented in Annexes 3, 10, the SWD and the summary.

Reporting costs for business

The changes to the reporting costs for facilities depend on the specific measure. There are the following generic types of changes:

- A facility comes under scope of the E-PRTR for the first time and has to start reporting.
- Existing facilities have to report additional pollutants.
- Existing facilities have to report new parameters.

For each of the situations, the unit costs of reporting for a facility has been estimated.

New facilities have to report

The time required for reporting for a facility that is under the E-PRTR is estimated based on the time required for the current scope of the Regulation. Review of the results from the evaluation points to around 22 hours per operator (facility) per year. Findings from the targeted stakeholder survey (TSS) suggests resource use that is slightly higher than this estimate.

There are specific data from the Netherlands that have estimated the total costs for all operators at €12m per year. As the Netherlands have about 3,400 facilities, the average annual costs per facility is in the order of €3,500. This is somewhat higher and corresponds on average to about 70 hours per facility per year.

We assume that the average for an EU facility is somewhere between the 22 and 70 hours referenced above. Hence, we apply 50 hours as representing a medium complexity facility, where complexity for a reporting facility is determined at a sector level considering factors such as likely number of activities and processes per facility, number of plants / installations, number of stacks, number of pollutants to be reported per environmental media and number of waste / waste water transfers. We have assumed that low level of complexity requires half the resources as the medium level, while high complexity is double the hours used for medium complexity reporting. The estimated hours per facility is therefore:

- Low complexity reporting: 0.5*50 hours = 25 hours
- Medium complexity reporting: 50 hours
- High complexity reporting: 2* 50 hours = 100 hours

There is limited evidence on the start-up costs for new facilities/activities. We assume that the start-up costs (one-off costs) are 3 times the annual costs.

Based on these assumptions we estimate the follow unit costs for a new facility being brought into the scope of the E-PRTR. These unit costs are applied to assess changes in activity thresholds and adding new activities, both leading to new facilities having to report.

Table A9-4: Unit costs for new facilities in €

Level of complexity	One-off costs in €	Recurrent costs in € per year	Total annual costs in €
Low	3,000	990	1,360
Medium	5,900	1,980	2,710
High	11,900	3,950	5,420

The unit costs are used to estimate the reporting costs which are administrative costs. Given that the reporting is beyond what is "normal" business operation, the administrative costs can be categorised as an administrative burden. The terms reporting costs, administrative costs and administrative burden are used to express the economic impact on business and all express the same costs.

Existing facilities have to report new pollutant/pollutant threshold changes

The above unit costs are applied to new facilities coming into scope. For additional pollutants, the reporting costs will also increase for the existing facilities that might have to report an additional pollutant. There are two categories:

- Existing activity and existing pollutant where the reporting threshold is changed
- Existing activity where a new pollutant has to be reported

When changing reporting thresholds for existing pollutants, we assume only a very marginal increase in the annual reporting costs. Existing facilities have to check whether they emit above or below the threshold so they should have the data already: the additional cost is in adding one more data point to the annual report. Hence, we assume that there are no one-off costs but only the annual burden of reporting the existing pollutant(s). We assume that this requires one additional hour of work per year.

In case of a new pollutant, the assumptions are different as the facility operator will not already be assessing releases of that pollutant for the E-PRTR. In total, there are about 100,000 data points on individual releases and transfers being reported annually[3] which means that each facility on average reports only two values. Operators will have to consider additional pollutants to those currently reported to verify whether these are below the reporting thresholds. For the majority of pollutants, this verification may be a one-off exercise and may not have to be repeated every year. Only when a facility reports for the first time, the operator may have to consider most or all pollutants. Only if the activity changes significantly (either in nature or volume), the operator may have to reconsider a longer list of pollutants. We assume that, on average, facility operators consider 10 pollutants every year for reporting. This is based on a review of the Spanish PRTR which has no reporting thresholds. Facilities report, on average, on 5 air and 5 water pollutants, so 10 in total.

It means that the annual reporting cost per pollutant is about 5 hours (50 hours in total and 10 pollutants). The pollutants that are being considered for inclusion are typically related to other legislation. It is therefore likely that facilities already monitor or calculate these

[3] Extracts from the E-PRTR database. Sum of pollution releases, pollution transfers and waste transfers.

emissions. However, it is assumed that some changes to existing data collection, calculation and reporting systems may be required initially upfront to enable annual reporting. Evidence on how much time is required for these upfront changes is very limited. It is assumed, based on expert judgement, that these one-off changes equate to 3 times the annual recurrent time and costs for reporting.

Table A9-5: **Costs for new pollutants or new thresholds for existing pollutants**

Type of change	One-off		Recurrent	
	Hours	Costs in €	Hours	Costs in € per year
Existing pollutant with new threshold	0	0	1	40
New pollutant	15	600	5	200

Cost for new parameters – water use, energy, raw materials etc. – and changes to reporting of GHGs and at activity level

The last type of change relevant for industry include the reporting of other parameters. They include use of energy, water and raw materials, as well as a set of minor changes to the reporting of waste releases and transfers and reporting at activity level.

The costs of reporting these parameters have been assessed relative to the costs of reporting pollutants covered by the current scope. Energy and water use are assumed to be similar to the current pollutants and therefore, the additional reporting costs will be equivalent to including a new pollutant. For other raw materials, their reporting is assumed to be more complex. There are multiple raw materials, potentially used across multiple processes and activities so collecting data on their use and reporting it is assumed to be more onerous than the other parameters.

The table below presents the assumptions used for the assessment.

Table A9-6: **Costs for new parameters, changes to reporting of GHGs and reporting at activity level**

Parameter	Scaling factor (relative to new pollutant estimates)	Justification
Energy use	1	Assumed to be equivalent to having to report a new pollutant - all data should already be collated and easy to report
Water use	1	
Other raw materials	5	Will vary in complexity significantly between and within different sectors depending on number of factors e.g. products, processes etc.
Waste composition	0.5	Already reporting on waste transfer - this would just add waste composition information which should be readily available.
Waste transfer tracking improvements	0.5	Already reporting on waste transfer - this would just add where transfer goes.

Parameter	Scaling factor (relative to new pollutant estimates)	Justification
Pollutant transfer (waste water) tracking improvement	0.5	Already reporting on waste transfer - this would just add where transfer goes.
Reporting GHGs like HFCs and PFCs as specific pollutants instead of as a group.	0.25	Already being reported – this would just require some additional time for reporting the data at a more disaggregated level.
Reporting GHGs like HFCs and PFCs in mass of CO_2e.	0.25	Already being reported – this would just require some additional time for reporting the data in different units.
Reporting releases/transfers and other applicable fields on an activity basis instead of aggregation to the facility level.	2	Already likely to be calculated / measured at this level but adding more complexity in terms of reporting.

Data management by Member State CAs:

The cost drivers for changes in the costs for Member State CAs are also:

- Changes in the number of reporting facilities.
- Changes to the number of pollutants being reported.

Costs incurred due to changes in the number of reporting facilities

Data from the TSS covers estimates from 12 Member States. They provide a basis for assessing the average costs. Though not all Member States are represented, the data cover both small and large Member States as well as the regions.

Based on these data, the average number of working days per facility has been calculated as 0.4 working days per installation (equivalent to about 2.8 hours per installation).[4] The resource use for CAs can be estimated using similar assumptions to those used for operators: low level of complexity implies half the number of hours than for the average facility and high level of complexity means twice the resource use. For one-off costs, it is assumed that these are three times the annual costs. These unit costs are applied to estimate the CA burden when new facilities within an existing activity start E-PRTR reporting e.g. if the activity threshold is reduced.

Table A9-7: Unit costs for CAs when new facilities within an existing activity are reporting

Level of complexity	One-off costs in €	Recurrent costs in € per year	Total annual costs in €
Low	170	60	80
Medium	330	110	150
High	660	220	300

Where a new activity is to be added – for example cattle farming – the one-off costs for CAs are expected to be higher than for an existing activity as more changes will be required to

[4] Derived applying the average number of working hours in EU of 36.2 hours per week.

existing data flows and to set up the relevant QA tools etc. Here it is assumed that the one-off costs are two times higher (Table A9-8).

Table A9-8: **Unit costs for CAs for a new activity adding new facilities**

Level of complexity	One-off costs in €	Recurrent costs in € per year	Total annual costs in €
Low	330	60	100
Medium	660	110	190
High	1,320	220	380

The change of reporting thresholds for pollutants implies that more facilities may have to report emissions and therefore additional time would be needed by CAs to check data. The inclusion of new pollutants to Annex II implies that there may be one-off costs for CAs to establish how they will check reported data for new pollutants as well as recurring annual costs for checking new pollutants.

Specific cost estimates are derived in the following way: based on the average costs for CAs per facility and upscaling to the total number of around 50,000 facilities, the total CA costs for the 27 Member States can be estimated at €5.5m per year. Currently 91 pollutants and around 100,000 data points are reported, resulting in annual costs of €60,000 per pollutant and of €55 per data point.

For the inclusion of new pollutants, the costs for CAs will depend how many facilities are likely to report emissions of the added pollutants. Also, if in one revision several new pollutants are added, the costs will not be proportional to the number of new pollutants. It is assumed that the costs of adding new pollutants will be €6,000 per pollutant per year[5]. Furthermore, for adding a new pollutant, it is assumed that there will be a one-off cost which is estimated as three times the annual costs.

Table A9-9: Unit costs for CAs for existing pollutant with new threshold and new pollutant

	One-off costs		Recurrent costs	
	Unit	Costs in €	Unit	Costs in € per year
Existing pollutant with new threshold	No one-off costs	0	Cost per facility reporting	55
New pollutant	Cost per pollutant	18,000	Cost per pollutant	6,000

Data management by EEA

The activities that the EEA performs in relation to the E-PRTR includes:

- Managing the IT systems
- Developing and maintaining the reporting tools
- QA/QC of the data reported by Member States
- Support to Member States

[5] This assumption will be subject to further validation.

- Use of data and publication.

The estimates of resources and costs are presented in the table below.[6]

Table A9-10: Unit costs for CAs for a new activity adding new facilities

Activity	Resource use in FTE	Costs in €
IT	1	100,000
Reporting tools	0.2	18,750
QA/QC	0.9	93,750
Support to MS	0.4	37,500
Use of data and publication	1.0	100,000
Total	**3.5**	**350,000**

While managing the IT systems is not affected by any of the considered measures, the other activities might be affected. The costs are defined for the same type of changes assessed for the industries and Member State CAs.

Given that the EEA does not check data from individual installations, we assume that adding facilities will not increase the EEA costs. Only if new pollutants / activities are added, will there be minor costs for adapting the database, etc. This cost is estimated at around €2,800. It is based on the costs for IT, reporting tools, support to MS and use of data.

It is assumed that the inclusion of new activities, new pollutants and new parameters may require some one-off costs. These are estimated in the following way: the resource used for all the activities are added excluding only the costs of the QA/QC process, as this is automated. The total costs of the other activities are €256,250 per year. There are 91 pollutants being reported and it is assumed that the costs of adding a new activity, pollutant or parameter will require costs in the order of €256,250 divided by 91. The assumptions for the EEA are presented in Table.

Table A9-11: Unit costs EEA

Type of change	One-off costs in €
More facilities reporting	No additional costs
Changing activity thresholds	No additional costs
Changing thresholds for pollutants	No additional costs
Adding new activity	2,816
Adding new pollutants	2,816
Adding new parameters	2,816

[6] The assessment of the EEA costs will be updated based on detailed information and data recently provided by the EEA. Data presented in the table and for individual measures in this annex are only preliminary estimates.

2 PO1: Effectiveness, information access and simplification

1.1 E-PRTR problem area 1a: Current activity thresholds and definitions

The definitions of some activities require clarification to improve reporting.

Clarify that activity 3b covers upstream oil and gas facilities [#16] = = SWD E-PRTR#6

Description of the measure

This measure would entail the addition of upstream oil and gas industries to the Annex I activity list. Whilst guidance provided by the Commission in 2011 stated that extraction of crude oil and natural gas fell under the activity of '*underground mining and related operations'* this measure would create an explicit activity definition for this activity. It would also align with the potential expansion in scope of the IED.

Economic impacts

Three specific categories of economic impacts were selected for an in-depth assessment of the policy measures for the revision of the E-PRTR Regulation. These include impacts on administrative burdens on businesses, operation / conduct of SMEs and public authorities (broken down into impacts for authorities for administrative, compliance and enforcement activities and for the European Commission / EEA). Overall, this measure is likely to have **weakly negative economic impacts** as it primarily relates to a clarification of the existing scope of the Regulation. No impacts for SMEs are expected as a result of this measure.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative**.

Around 1,300 additional facilities may be captured by this measure and required to report to the E-PRTR. This is expected to be the maximum potential number affected as some of these facilities are likely to fall below the existing reporting thresholds although exactly how many this may affect is unclear. The number of additional facilities was calculated using the number of oil and gas fields within Germany and extrapolating to the EU27 using European production of primary energy statistics[7]. While Member States have previously been advised to report facilities extracting oil under activity 3(a), analysis of the data reported to the E-PRTR shows only 121 facilities have done so (these have been removed from the extrapolated figure).

[7] EU27 production data: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Energy_production,_2008_and_2018.png DE oil/gas exploration fields in 2018:https://www.lbeg.niedersachsen.de/download/144280/Erdoel_und_Erdgas_in_der_Bundesrepublik_Deutschland_2018.pdf

Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the total additional one-off costs are expected to be around €7.8m and recurrent costs of €2.6m per year leading to **total annualised costs of around €3.6m per year** for operators.

Public authorities

Overall impacts on public authorities are expected to be **weakly negative**. This includes additional time for QA for both Member State public authorities and the EEA although this is expected to be limited as some facilities already report.

Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.3, the total additional one-off costs for **public authorities** are expected to be around €0.44m and recurrent costs of €0.15m per year leading to **total annualised costs of around €0.2m per year**.

Impacts for the **EEA** are expected to be **minimal** considering that some facilities already report data so minimal changes would be required to the data and QA flows or website.

Environmental impacts

Four specific categories of environmental impacts were selected for an in-depth assessment of the policy measures for the revision of the E-PRTR Regulation. These include impacts on the climate, efficient use of resources, quality of natural resources / fighting pollution and reducing and managing waste. Overall, this measure is likely to have **weakly positive environmental impacts** as, whilst it primarily relates to a clarification of the existing scope of the Regulation, a large number of additional facilities are expected to report.

Increasing the number of facilities reporting will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). This would primarily impact on emissions of air and water pollutants and potentially GHGs. Limited or no impacts would be expected for resource use or waste. Additional emissions of up to 100kt of NOx and 50kt of NMVOCs could potentially be captured within E-PRTR based on a rough approximation of emissions per facility[8].

Social impacts

Two specific categories of social impacts were selected for an in-depth assessment of the policy measures for the revision of the E-PRTR Regulation. These include reduced health impacts due to lower pollutant emissions and governance, participation and good administration (as a result of improved public access to information). Overall, this measure is likely to have **weakly positive social impacts** as, whilst it primarily relates to a clarification

[8] Emissions per facility based on information provided in the IED Impact Assessment

of the existing scope of the Regulation, a large number of additional facilities are expected to report.

As discussed above, increasing the number of facilities reporting could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making.

Reword 5(d) landfills activity description to include flaring of vent gas [#11] = SWD E-PRTR#8

Description of the measure

Include flaring of vent gas in the description to ensure reporters understand this should be included.

Economic impacts

Overall, this measure is likely to have **no or limited economic impacts**. Although it will lead to a greater number of facilities (estimated to be 742) having to report emissions data for the air pollutants where the reporting thresholds could be reduced, the additional costs are limited. Facilities of this activity should already be reporting to the E-PRTR, therefore only existing facilities would have to report additional releases. The number of facilities affected has been determined to be the current number of facilities reporting releases/transfers and activity 5(d) (either as main or other activity). However, it is uncertain how many may already be reporting flaring of vent gas within their estimates or may be below the relevant reporting thresholds. Therefore, this number is expected to be the maximum likely number affected (and associated impacts discussed below). No impacts for SMEs are foreseen with this measure as all facilities that may be impacted are likely to be already reporting to E-PRTR and the existing reporting and activity thresholds should ensure that SMEs are not captured.

<u>Administrative burdens on businesses</u>

Overall impacts on administrative burdens for businesses are expected to be **limited**. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, recurrent costs are estimated at around €0.15m per year and there are no one-off costs (as it existing facilities). Costs are relatively limited as all facilities that would have to report additional data should already be reporting to E-PRTR.

<u>Public authorities</u>

Overall impacts on **public authorities and the EEA** are expected to be **limited**. The additional costs for the CAs are estimated at €56,000 as there may be a very slight increase in QA time for Member State public authorities. No additional costs are expected for the EEA.

Environmental impacts

Overall this measure is likely to have **limited or weakly positive environmental impacts** as it will increase the coverage of reported emissions data for the activity (air pollutants and greenhouse gases). Refining the activity definition should improve the level and overall completeness of data on releases available within the E-PRTR for landfills, potentially helping to improve environmental performance of the sector as it enables better comparison of performance across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). Limited or no impacts would be expected for resource use or waste.

Social impacts

Overall this measure is likely to have **limited or weakly positive social impacts** as emissions coverage for the activity will be expanded. As discussed above, improving data coverage for the activity could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available for the activity improves public access to information potentially enabling greater participation in environmental decision-making.

1.2 E-PRTR problem area 2a: Existing pollutants and thresholds

The Annex II pollutant list is out of date. Reporting thresholds require adjusting for existing pollutants or groups of pollutants to improve the capture of industrial releases as some reporting thresholds do not guarantee capture of 90% of releases from industrial facilities.

Reduce reporting thresholds for some existing pollutants to better meet the aim of 90% capture [#33a-x / n=24] = SWD E-PRTR#1

Description of the measure

11 pollutants to air and 14 to water were identified (presented below in Table), in the E-PRTR implementation review report[9], as having a threshold too high to capture 90% of releases. The threshold for these pollutants can be lowered to achieve this.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts** as it will lead to a greater number of facilities having to report emissions data for the air and water pollutants where the reporting thresholds could be reduced. The pollutants where thresholds could be reduced and the likely number of facilities that could be impacted (i.e. required to report) is presented below in Table . These estimates are based primarily on the analysis undertaken as part of the E-PRTR implementation review report.

[9] https://circabc.europa.eu/w/browse/b4eacd6d-4425-479a-a225-77306de6b060

Table A9-12: Pollutants where thresholds could be reduced and number of facilities that could be affected

#	Pollutant	Description	# facilities impacted
34a	As and compounds	As and compounds releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 12 kg to achieve this.	63
34b	Cu and compounds	Cu and compounds releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 38 kg to achieve this.	121
34c	F and inorganic compounds	F and inorganic compounds releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 3942 kg to achieve this.	13
34d	NMVOC	NMVOC releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 49590 kg to achieve this.	564
34e	NH_3	NH3 releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 447 kg to achieve this.	11138
34f	Cd and compounds	Cd and compounds releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 7 kg to achieve this.	20
34g	PM_{10}	PM10 releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 17309 kg to achieve this.	330
34h	1,1,2,2-tetrachloroethane	1,1,2,2-tetrachloroethane releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 1 kg to achieve this.	265
34i	Cr and compounds	Cr and compounds releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 57 kg to achieve this.	18
34j	DEHP	DEHP releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 4 kg to achieve this.	31
34k	Vinyl Chloride	Vinyl Chloride releases to air was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 1289 kg to achieve this.	40
34l	Total Phosphorous	Total Phosphorous releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 2042 kg to achieve this.	1566
34m	Pb and compounds	Pb and compounds releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 11 kg to achieve this.	329
34n	TOC	TOC releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 41381 kg to achieve this.	1085
34o	Cu and compounds	Cu and compounds releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 48 kg to achieve this.	50

#	Pollutant	Description	# facilities impacted
34p	Total Nitrogen	Total Nitrogen releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 26233 kg to achieve this.	764
34q	Zn and compounds	Zn and compounds releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 86 kg to achieve this.	818
34r	HCH	HCH releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.7 kg to achieve this.	4
34s	Aldrin	Aldrin releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.9 kg to achieve this.	3
34t	Anthracene	Anthracene releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.4 kg to achieve this.	67
34u	Chlorpyrifos	Chlorpyrifos releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.1 kg to achieve this.	40
34v	Diuron	Diuron releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.004 kg to achieve this.	990
34w	Isoproturon	Isoproturon releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 0.1 kg to achieve this.	87
34x	Trichloroethylene	Trichloroethylene releases to water was identified as having a threshold that did not cover 90% of emissions (using Weibull analysis). The threshold for these pollutants can be lowered to 5 kg to achieve this.	18
34	**ALL**	**Total number of facilities that would have to report an additional pollutant**	**18,424**

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative**. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the total recurrent costs are expected to be around €0.7m per year. Costs are relatively limited as all facilities that would have to report with changes in reporting thresholds should already be measuring or calculating emissions of these pollutants to determine if they are above or below the existing reporting thresholds.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**. A reduction in reporting thresholds for these pollutants could result in some smaller facilities having to report although the existing activity thresholds should ensure that it is minimal.

Public authorities

Overall impacts on public authorities are expected to be between **strongly or weakly negative**. This includes additional time for QA for Member State public authorities.

Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.3, the total recurrent costs are expected to be around €1m per year for Member State public authorities. Costs are moderate as no new activities would be reporting and the pollutants are all already captured within the data flows and tools but the additional data being reported will increase costs.

Impacts for the **EEA** are expected to be **minimal** considering that these pollutants are already captured under E-PRTR so no (or limited) changes would be required to the data and QA flows or website. The only difference would be a larger volume of data to process and QA although the tools for this are automated.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it will increase the coverage of reported emissions data for a number of air and water pollutants. Reducing the reporting thresholds so that more facilities report will improve the level of data on emissions available within the E-PRTR for the specific pollutants described above (90% capture), potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). Limited or no impacts would be expected for climate (GHG emissions), resource use or waste.

Social impacts

Overall this measure is likely to have **weakly positive social impacts** as a large number of additional facilities are expected to report and emissions coverage for a number of air and water pollutants will be expanded. As discussed above, increasing the number of facilities reporting and improving data coverage for some pollutants could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available for specific pollutants improves public access to information potentially enabling greater participation in environmental decision-making.

Establish a 'Sunset list' to remove pollutants that are no longer of concern [#32] = SWD E-PRTR#5

Description of the measure

Creating a more dynamic mechanism to identify a list of pollutants for future removal due to them being longer relevant ("sunset list"). No pollutants were suggested for removal in the E-PRTR implementation review report. However, 24 substances included in the pollutant list are no longer permitted to be used in Europe and therefore could potentially be removed in the future.

Economic impacts

Overall this measure is likely to have **limited or weakly positive economic impacts** as it will remove pollutants that are no longer relevant potentially simplifying to a limited extent the review and reporting processes for operators and Member State authorities. No impacts on SMEs are expected with this measure.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **limited or weakly positive**. If the removal of these pollutants leads to a small time saving (maximum of 0.5 hours per facility) for operators each year (i.e. due to not having to consider if they are relevant for the facility) then savings of around €1m per year could be realised. In practice, it is unlikely to be this high as operators know which pollutants are relevant for their facility and therefore will not need to check each year.

Public authorities

Overall impacts on public authorities are expected to be very **limited**. This includes some potential time savings for Member State public authorities and some costs for the EEA and/or European Commission for reviewing / maintaining the sunset list.

For **Member State public authorities** the savings are likely to be very limited, perhaps a maximum of 1 hour per year per authority through not having to consider these pollutants (equating to a reduction of around €1,000 per year overall).

Impacts for the **EEA and/or European Commission** are expected to be **minimal** related to the time and costs to review, maintain and implement the sunset list with some potential limited savings through not having to include the pollutants in their data flows. Overall net time impacts are estimated to be around 5 additional man-days of effort equating to only around €2,250 per year (assuming one FTE has a cost of €100,000[10]).

Environmental impacts

Overall, this measure is likely to have **no environmental impacts** as it only involves the removal of pollutants and no change to the overall level of data reported.

Social impacts

Overall, this measure is likely to have **no social impacts** as it only involves the removal of pollutants and no change to the overall level of data reported.

[10] Taken from the E-PRTR Evaluation.

1.3 E-PRTR problem area 4a: Reporting modalities

For some categories of activity, in particular farming, reporting releases can be a significant burden on reporters due to the number of facilities and difficulties in quantifying releases accurately. Estimates using a top-down approach for some diffuse industrial sectors (where there is a large number of smaller operators such as in farming) may reduce the reporting burden and improve data quality.

Option for top-down reporting for activity 7 (livestock production and aquaculture) [#46] = SWD E-PRTR#9

Description of the measure

Allowing a top-down calculation approach for activity 7 (livestock production and aquaculture) should help to reduce administrative burdens for operators, some of which may be SMEs. This could be implemented using four methods (some of which could be combined):

- Member States reporting for the sector at a national level (mindful of the overlaps with LRTAP inventories)
- Competent Authorities using a top-down approach and reporting an average release (per head or per LSU) for every facility.
- Operators and Competent Authorities reporting livestock numbers / aquaculture capacity only (via the *productionVolume* field) and emission calculations being done by the EEA. NB - this would require a change to data ownership rules since the legal responsibility to report is with MS competent authorities (and ultimately operators). Any EEA calculations would still require MS verification, thus reducing the scope for savings in administrative burden.
- Operators reporting livestock numbers / aquaculture capacity to Competent Authorities and emission calculations being completed by the Competent Authorities. This is probably the most feasible method as livestock numbers are already reported for other purposes. However, different LRTAP emission factors are used by different countries.

Economic impacts

Overall, this measure is likely to have **strongly positive economic impacts** as it will significantly reduce the reporting burden on facilities in some sectors. There are currently 16,882 facilities captured under activity 7 (i.e. IRPP and aquaculture) based on the latest available E-PRTR data for each MS.

<u>Administrative burdens on businesses</u>

Overall impacts on administrative burdens for businesses are expected to be **strongly positive**. In order to estimate the potential impacts of the measure it was necessary to first estimate the current burden associated with reporting to the E-PRTR before then estimating

the costs associated with a top-down approach. Based on the estimated number of facilities impacted (16,882) and the cost assumptions described in Section 1.2, the current annualised costs are estimated to be around €22.8m per year. Assuming that operators would still need to report some limited information each year (e.g. on activity levels to enable a top-down calculation) then these costs would fall to around €3.4m per year, a saving of around €19.5m (overall reduction of 85%). A similar saving (%) would be anticipated if top-down reporting were to be applied to other activities, e.g. if cattle were to be included within E-PRTR. In addition, many of the E-PRTR administrative data (e.g. name, location) are already collected under IED reporting.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **weakly positive**. Whilst the activity and reporting thresholds help to ensure that most SMEs are not captured under the E-PRTR Regulation or required to report, some may still be captured within activity 7 and would benefit from a top-down reporting approach.

Public authorities

Overall impacts on public authorities are expected to be **limited**. There would be some additional burden to undertake the top-down estimation but also savings through not having to QA release data for individual facilities. Overall these would be likely to cancel each other out with no net increase or decrease in burden.

Environmental impacts

Overall, this measure is likely to have **limited or no environmental impacts** as it only impacts on the calculation and reporting mechanism rather than the overall level of data reported.

Social impacts

Overall, this measure is likely to have **no social impacts** as it only impacts on the calculation and reporting mechanism rather than the overall level of data reported.

1.4 E-PRTR problem area 4c: Inconsistent and incorrect reporting

There are inconsistencies and potential issues with the reported E-PRTR data resulting in poor accuracy, incomplete and in-transparent data, including:

- Inconsistent pollutant reporting and quantification methods used by facilities in the same sector.
- A lack of clarity on whether data is absent due to incomplete reporting or non-applicability or below threshold for a particular facility.
- Poor administrative information on location, methodology used and tagging of release or transfer.

Sub-facility reporting [#45] = SWD E-PRTR#2

Description of the measure

This measure would entail reporting releases/transfers on an activity basis instead of aggregating to the facility level. The benefits of reporting at this level would be greater granularity of data enabling better matching to individual activities, e.g. for assessing impacts of different BAT conclusions for specific sectors.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts** as the measure would entail some additional effort by operators and Member State competent authorities to report and check data at this granularity. However, these are expected to be limited as it is likely releases are already measured, calculated or estimated at this level. No impacts on operation / conduct of SMEs are anticipated as existing activity and reporting thresholds would still apply.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative.** Only facilities reporting waste transfers, pollutant transfers and pollutant releases (latest year) that also have at least one additional activity to the main activity are likely to be impacted by this measure. Based on the estimated number of facilities impacted (1,025) and the cost assumptions described in Section 1.2, the additional recurrent costs are estimated to be around €81,000 per year.

Public authorities

Overall impacts on public authorities are expected to be **weakly negative** as some additional QA would be required due to an increase in the level of data being reported. Based on the estimated number of facilities impacted (1,025) and the cost assumptions described in Section 1.2, the additional recurrent costs are estimated to be around €114,000 per year.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it will increase the granularity of reported data for a number of facilities. This enables better matching of data to individual activities e.g. for assessing impacts of different BAT conclusions for specific sectors. This could potentially help to improve environmental performance of some activities as it enables better comparison of performance of activities across the EU (including relative to BAT conclusions) as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall this measure is likely to have **weakly positive social impacts.** As discussed above, increasing the granularity of data for some facilities could potentially help to improve environmental performance of some sectors which would have positive impacts for health. Furthermore, increasing the granularity of data available improves public access to information potentially enabling greater participation in environmental decision-making.

Add active operator confirmation that releases are below the reporting threshold [#52] = SWD E-PRTR#3

Description of the measure

Require affirmation that expected pollutants for a sector are below the reporting threshold or not present at all and avoid the ambiguity of missing values. This would improve the overall clarity and quality of the data within the register.

Economic impacts

Overall, this measure is likely to have **limited or weakly negative economic impacts** as the measure would entail some additional effort by operators to report. However, these are expected to be limited as operators should already be checking if their releases of pollutants are above or below the reporting thresholds.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative.** As described above, operators should already be checking if they are above or below reporting thresholds for each pollutant thus the only additional burden would be to specify this within their annual reporting.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **limited**. Some SMEs may be required to confirm that releases are below the reporting threshold although how many this may affect is uncertain (the existing activity thresholds typically exclude the majority of SMEs within individual sectors.

Public authorities

No impacts on public authorities are expected.

Environmental impacts

Overall, this measure is likely to have **limited environmental impacts** as it will increase the overall clarity and quality of data available. This enables better use of the data for e.g. assessment of performance of different facilities and/or sectors. This could potentially help to

improve environmental performance of some activities as it enables better comparison of performance of activities across the EU (including relative to BAT conclusions) as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall, this measure is likely to have **limited social impacts.** As discussed above, increasing the granularity of data for some facilities could potentially help to improve environmental performance of some sectors which would have positive impacts for health. Furthermore, increasing the granularity of data available improves public access to information potentially enabling greater participation in environmental decision-making.

Mandate the M/C/E hierarchy [#58] = SWD E-PRTR#4

Description of the measure

Mandate the MCE hierarchy for reporting releases, e.g. releases should be measured where possible and calculation should take precedent over estimation.

Economic impacts

Overall, this measure is likely to have **limited or weakly negative economic impacts** as the measure would entail some additional effort for those operators that may not already be measuring or calculating their releases for reporting to E-PRTR. However, the overall impacts of the measure are highly uncertain. No impacts on the operation / conduct of SMEs are anticipated.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative.** As described above, it would only impact on those operators that may not already be measuring or calculating their releases. It is uncertain how many facilities this may impact.

Public authorities

No impacts on public authorities are expected.

Environmental impacts

Overall, this measure is likely to have **limited environmental impacts** as it will increase the overall quality of data available. This enables better use of the data for e.g. assessment of performance of different facilities and/or sectors. This could potentially help to improve environmental performance of some activities as it enables better comparison of performance of activities across the EU (including relative to BAT conclusions) as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall, this measure is likely to have **limited social impacts.** As discussed above, increasing the quality of data for some facilities could potentially help to improve environmental performance of some sectors which would have positive impacts for health. Furthermore, increasing the granularity of data available improves public access to information potentially enabling greater participation in environmental decision-making.

3 PO2: Innovation

All measures of relevance to PO2 Innovation were screened out.

4 PO3: Circular Economy, Resource Efficiency and Safer Chemicals

1.1 E-PRTR problem area 2b: Additional pollutants

Recent analysis of science and emerging environmental and health issues (including media specific policies and legislation) have identified new pollutants of concern emitted by industrial activities that are not in the E-PRTR Annex II list. It is important that industry reports on these pollutants and the pollutants are assigned appropriate reporting thresholds.

Establish a mechanism for dynamic updating to include additional pollutants of immediate interest [#36] and future interest (sunrise list [#37]) = SWD E-PRTR#10

Description of the measure

This measure would entail the inclusion of a more dynamic mechanism to identify and include emerging pollutants of concern ("sunrise list") within the Regulation e.g. enabling the Commission to identify and include new pollutants in the future via delegated acts. This could include pollutants that have the potential to become important for environmental issues in Europe. This would be similar to the WFD watch-list process. An additional 48 pollutants of immediate interest have already been identified as part of the E-PRTR analysis report and suggested by the Water Framework Directive as priority (hazardous) substances.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts** as it will lead to a greater number of facilities having to report emissions data for the air and water pollutants that would be added now or in the future. The pollutants which could be added now and the likely number of facilities that could be impacted (i.e. required to report) is presented below in Table. These estimates are based on a range of sources, as described in the description field for each case.

Table A9-13: Pollutants which could be added to Annex II pollutant list now and number of facilities that could be affected

#	Pollutant	Description	# facilities impacted
36a	2-Ethoxyethanol / ethylene glycol monoethyl ether	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	3
36b	Acetaldehyde	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR	369

#	Pollutant	Description	# facilities impacted
		only sectors within scope of the E-PRTR, were included in the analysis.	
36c	Aclonifen	This pollutant is a herbicide and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36d	Acrolein	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	75
36e	Acrylamide	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	11
36f	Acrylic acid and its water-soluble salts	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	44
36g	Acrylonitrile	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	23
36h	Antimony and compounds (as Sb)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	73
36i	Beryllium and compounds (as Be)	Analysis of the NRW PRTR shows releases of beryllium are mainly from sectors 5(b) and 2(e). The number of facilities that would be reporting releases of beryllium has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	355
36j	Bifenox	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36k	Bisphenol-A	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	69
36l	Carbamazepine	This is a pharmaceutical and therefore the most likely potential source is UWWTP. The number of facilities reporting this pollutant was therefore determined to be UWWTP reporting releases and transfers. Only the UWWTP reporting releases/transfers have been included as it was assumed only those reporting other releases would also reported releases of this.	892

#	Pollutant	Description	# facilities impacted
36m	Black carbon (BC)	The sectors identified as most important to black carbon emissions were determined to be: 1(a)-(f), 2(a)-(e), 3(g), 5(b), 6(a), 9(d). The number of facilities that would be reporting releases of black carbon has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	2,410
36n	Carbon disulphide	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	129
36o	Chromium (VI) compounds (as Cr)	Analysis of the BREFs identified the following sectors as most applicable to emissions of chromium (VI): 2(e), 5(a), 3(e), 3(f), 6(c), 9(c), 5(g), 9(a), 2(c)(i), 2(c)(iii), 2(f), 3(g), 2(f), 4(b). The number of facilities that would be reporting releases of Cr(VI) has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	1,248
36p	Cobalt and compounds (as Co)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	124
36q	Cybutryne	The sectors identified as most applicable to this pollutant were determined to be: 4(d) & 9(e). The number of facilities that would be reporting releases of Cr(VI) has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors. Source: https://chemicalwatch.com/65602/un-agency-considering-international-ban-on-antifouling-cybutryne	28
36r	Cypermethrin	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36s	Dichlorvos	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36t	Dicofol	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36v	Formaldehyde (formalin)	Analysis of the NRW PRTR identified the sectors most applicable to formaldehyde releases as: 1(c), 3(e), 3(f), 4(a)(ii), 6(b). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the	1,652

#	Pollutant	Description	# facilities impacted
		current reporting flow from these sectors.	
36w	Glyphosate	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36x	Hexabromocyclododecane (HBCDD)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	1
36y	Hydrogen sulphide	Analysis of the NRW PRTR shows the sectors most applicable to releases of H2S are: 1(d), 3(f), 2(e). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	239
36z	Macrolide antibiotics (azithromycin, clarithroymycin, erythromycin)	These are pharmaceuticals and therefore the most likely potential source is UWWTP. The number of facilities reporting this pollutant was therefore determined to be UWWTP reporting releases and transfers. Only the UWWTP reporting releases/transfers have been included as it was assumed only those reporting other releases would also reported releases of this.	892
36aa	Manganese and compounds (as Mn)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	892
36ac	n-Hexane	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	480
36ad	Neonicotinoids (Imidacloprid, Thiacloprid, Thiamethoxam, Acetamiprid, Clothianidin)	These pollutants are active substances in plant health products and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36af	Nicosulfuron (herbicide)	This pollutant is an active substance in plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20

#	Pollutant	Description	# facilities impacted
36ag	Per- and Polyfluoroalkyl Substances (PFAS) all PFAS as a group, or	The only sector found to be applicable for this pollutant is activity 9(a) due to its inclusion in the textile (TXT) BREF. The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from this sector.	68
36ah	Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds	The only sector found to be applicable for this pollutant is activity 9(a) due to its inclusion in the textile (TXT) BREF. The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from this sector.	68
36ai	Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF)	The only sector found to be applicable for this pollutant is activity 9(a) due to its inclusion in the textile (TXT) BREF. The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from this sector.	68
36aj	Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds	The only sector found to be applicable for this pollutant is activity 9(a) due to its inclusion in the textile (TXT) BREF. The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from this sector.	68
36ak	PM2.5	It was assumed that facilities reporting PM10 would also report PM2.5 and therefore the number of facilities reporting PM10 was used as a proxy for the number of facilities anticipated to report PM2.5.	338
36al	Polychlorinated naphthalenes	The sectors identified as applicable for releases of this pollutant are: 1(c), 5(b), 2(a), 2(b), 2(e), 4(a). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	1,609
36am	Pyrethroids (Bifenthrin, Deltamethrin, Esfenvalerate, Permethrin)	This pollutant is a plant health product and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36an	Quinoxyfen	This pollutant is an active substance in plant health products and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included	20

#	Pollutant	Description	# facilities impacted
		as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	
36ao	Selenium and compounds (as Se)	Analysis of BREFs identified the sectors most relevant for this pollutant as: 3(e), 3(f) and 3(g). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	298
36aq	Silver (biocide)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	62
36ar	Sulfamethoxazole	This is a pharmaceutical and therefore the most likely potential source is UWWTP. The number of facilities reporting this pollutant was therefore determined to be UWWTP reporting releases and transfers. Only the UWWTP reporting releases/transfers have been included as it was assumed only those reporting other releases would also report releases of this.	892
36as	Sulphates	1(c), 3(e), 5(a), 5(b), 5(c), 4(b)(iv), 4(b)(v) identified as the relevant sectors from BREFs. This is the number of facilities reporting emissions to the current reporting flow from these sectors.	2,138
36at	Terbutryn	This pollutant is an active substance in plant health products and therefore it was assumed only facilities under activity 4(d) could potentially release this pollutant. The number of facilities reporting these releases was therefore determined using facilities currently reporting releases/transfers. Only those reporting releases/transfers were included as it was assumed if they weren't reporting any other releases/transfers it was unlikely to be reporting releases/transfers of this pollutant.	20
36au	Thallium and compounds (as Tl)	Numbers of additional facilities and existing facilities reporting additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	12
36av	Tin and tin compounds (as Sn)	Analysis of BREFs identified the sectors most relevant for this pollutant as sectors: 3(e), 3(f), 2(c)(i), 2(c)(iii), 2(f), 3(g). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	599
36ax	Total suspended solids (TSS)	Analysis of BREFs identified the sectors most applicable to this pollutant as: 1(c), 1(a), 3(e), 4(a), 5(a), 5(b), 5(c), 6(a), 6(b), 6(c), 6(a), 6(b), 6(c), 8(a), 9(c), 5(g), 2(c)(i), 2(c)(iii), 2(f), 8(b)(i), 2(c)(ii), 2(d), 2(e)(ii), 4(b)(iv), 4(b)(v). The number of facilities that would be reporting releases of this pollutant has therefore been calculated to be the number of facilities reporting releases to the current reporting flow from these sectors.	3,419
36ay	Triclosan	This is a biocide used in consumer products and therefore the most likely potential source is UWWTP. The number of facilities reporting this pollutant was therefore determined to be UWWTP reporting releases and transfers. Only the UWWTP reporting releases/transfers have been included as it was assumed only those reporting other releases would also reported releases of this.	892
36az	Vanadium	Numbers of additional facilities and existing facilities reporting	285

#	Pollutant	Description	# facilities impacted
	and compounds (as V)	additional releases was determined using TRI data and extrapolated to EU27. While the TRI data includes additional sectors to the E-PRTR only sectors within scope of the E-PRTR, were included in the analysis.	
36aaa	17-beta-Estradiol (E2); 17-alpha-Ethinylestradiol (EE2); Estrone (E1)	These substances are in consumer products and therefore the most likely potential source is UWWTP. The number of facilities reporting this pollutant was therefore determined to be UWWTP reporting releases and transfers. Only the UWWTP reporting releases/transfers have been included as it was assumed only those reporting other releases would also reported releases of this.	892
36	**ALL**	**Total number of facilities that would have to report one or more new pollutant (Note 1)**	**21,937**
Note 1: In reality, the total number of facilities that would be impacted by the inclusion of the pollutants listed in the table would be far less as some facilities and sectors would be impacted more than others i.e. have to report more than one additional pollutant. However, the likely changes in burden would be similar overall as costs have been estimated based on unit costs/burden per additional pollutant that a facility has to report.			

In addition to additional data collection and reporting for operators, there would also be time required for the European Commission and/or EEA to maintain the sunrise list and identify pollutants of emerging concern.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative**. Operators will have to check whether their facilities are likely to release any of the pollutants and, If so, measure, calculate and/or estimate releases to see whether they are above or below the reporting thresholds (to be specified). If they are above the threshold then the data would need to be reported. Some initial time would be required to set up the appropriate data capture, calculation and reporting mechanisms up front. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the one-off costs are estimated to be €13.2m and recurrent costs are expected to be around €4.4m per year. Total annualised costs are €6.0m per year. Additional costs would be incurred by operators in the future if the sunrise list were to lead to the inclusion of additional pollutants.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**. The existing activity thresholds already help to exclude smaller facilities where there may be SMEs. Appropriate reporting thresholds would also need to be established for any new pollutants to ensure that smaller facilities (potentially including SMEs) would not be required to report.

Public authorities

Overall impacts on **public authorities** are expected to be **weakly negative**. This includes additional time for QA for both Member State public authorities and the EEA as well as some

initial upfront time to amend the existing data flow and QA systems to incorporate new pollutants.

Based on the estimated number of facilities impacted by the new pollutants to be included and the cost assumptions described in Section 1.3, the one-off costs are expected to be around €0.9m and total recurrent costs around €0.3m per year for **Member State public authorities**. Total annualised costs are around €04m per year.

Impacts for the **EEA** are expected to be **limited** and primarily relate to some initial upfront time to update the data and QA flows and website to accommodate the new pollutants. These costs are estimated to be around €135,000 (annualised costs of around €17,000 per year). The EEA and/or European Commission would also incur some additional costs for maintaining the sunrise list and identifying and reviewing potential emerging pollutants. This is assumed to cost around €15,000 per year (assuming consultants are used to assess specific pollutants) with a further 30 person days every 5 years to develop and agree a proposal for new pollutant(s) (equating to annualised costs of around €2,600 per year).

Environmental impacts

Overall this measure is likely to have **weakly positive environmental impacts** as it will increase the coverage of air and water pollutants that are reported to the E-PRTR. It will also ensure that the E-PRTR pollutant list can be updated as and when emerging pollutants are identified helping to support the objectives of wider environmental policies such as IED, WFD, UWWTD etc.

Increasing the pollutant coverage will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). Limited or no impacts would be expected for resource use or waste.

Economic costs for operators would partly be offset by synergies and avoided costs related to monitoring efforts for surface water pollutants under EU water legislation and reduced need for reporting the same data under various instruments, as well as promotion of digital solutions. Significant benefits would also accrue via better aligning the E-PRTR with up-to-date information needs, thus better supporting associated policies such as the EU water legislation.

Social impacts

Overall this measure is likely to have **weakly positive social impacts** as a large number of additional facilities are expected to report on these new pollutants and emissions coverage within E-PRTR will be expanded. As discussed above, increasing the number of pollutants reported could potentially help to improve environmental performance of those sectors impacted which would have positive impacts for health. Furthermore, including new

pollutants improves public access to information potentially enabling greater participation in environmental decision-making.

1.2 E-PRTR problem area 3: Information to track progress towards the circular economy and decarbonisation of industry

The European Green Deal commits the Commission to revise EU measures to address industrial pollution to make them more consistent with climate, energy and circular economy policies. This will contribute towards the zero-pollution agenda. The Green Deal commits, inter alia:

- Adopting an action plan towards a zero-pollution ambition.
- Revising EU measures to address pollution from large industrial plants, including both the IED and the E-PRTR.
- The E-PRTR, in combination with related legislation such as the IED, has untapped potential for contributing to the EU's circular economy objectives by providing transparency on industrial performance:

- There is a benefit in the reporting of additional data on resource consumption, e.g. use of energy, water, raw materials. This also has linkages with options under consideration in the IED revision, e.g. mandatory application of BAT-AEPLs related to resource consumption.
- There is also no transparency around the transfer of pollutants in the data reported to the E-PRTR. The E-PRTR needs proper tracking of pollutants in transfers and their storage, export or final release (particularly waste and waste water).

Additionally, the European Union has committed to reach net GHG emissions of 55% of 1990 levels by 2030. The E-PRTR offers a mechanism to efficiently track progress with the reduction of GHG emissions from a range of GHG intensive activities. Coherence between E-PRTR and EU-ETS reporting is needed to provide stakeholders with sufficiently transparent information for decision-making. Although the verified emissions under EU ETS are publicly available, any underlying background information on activity levels is not. Such information forms part of the confidential verification reports and is not available for public scrutiny. With suitable provisions, the E-PRTR could provide relevant background data for benchmarking and assessing industrial environmental performance within and across sectors.

Require the reporting of energy use [#38] = SWD E-PRTR#11

Description of the measure

This measure would require operators to report energy use of their facilities. This would allow the assessment of energy efficiency and benchmarking of facilities across the EU (within a sector), particularly when combined with production volume data which will soon be required under E-PRTR. A reporting threshold could be developed to exclude smaller facilities from having to report.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** The number of facilities that would be required to report this additional data has been assumed to be the number of facilities reporting releases or transfers in the latest year, which is 28,268.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **weakly negative**. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the total one-off costs are expected to be around €17m and the recurrent costs are expected to be around €5.6m per year, giving overall annualised costs of around €7.7m. Costs are relatively limited as all facilities are likely to have this information readily available.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**. All facilities, including SMEs, are likely to have this information readily available and the existing reporting and activity thresholds help to exclude most SMEs from reporting.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**. Whilst there may be a very slight increase in QA time for both Member State public authorities and the EEA, it is expected to be very limited and less than €10,000 per year in total (annualised costs).

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable benchmarking of the environmental performance of different industrial activities and facilities, more precisely allowing the assessment of energy efficiency. It may facilitate authorities in assessing progress against Sustainable Development Goals, EU Green Deal and circular economy goals and in identifying activities for further action. It may also improve corporate accountability on environmental management and ultimately result in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

Require the reporting of water use [#39] = SWD E-PRTR#12

Description of the measure

Require the reporting of water use to allow for better assessment of the impacts of industry on the environment beyond pollution. This would allow the assessment of water use efficiency and benchmarking of facilities across the EU (within a sector), particularly when combined with production volume data which will soon be required under E-PRTR. A reporting threshold could be developed to exclude smaller facilities from having to report.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** The number of facilities that would be required to report this additional data has been assumed to be the number of facilities reporting releases or transfers in the latest year, which is 28,268.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **weakly negative**. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the total one-off costs are expected to be around €17m and the recurrent costs are expected to be around €5.6m per year, giving overall annualised costs of around €7.7m. Costs are relatively limited as all facilities are likely to have this information readily available.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**. All facilities, including SMEs, are likely to have this information readily available and the existing activity thresholds help to exclude most SMEs from reporting.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**. Whilst there may be a very slight increase in QA time for both Member State public authorities and the EEA, it is expected to be very limited and less than €10,000 per year in total (annualised costs).

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable benchmarking of the environmental performance of different industrial activities and facilities, more precisely allowing the assessment of water consumption. It may facilitate authorities in assessing the progress against Sustainable Development Goals, EU Green Deal and circular economy goals and in identifying activities for further action. It may also improve corporate accountability on environmental management and ultimately result in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

Require the reporting of raw material use [#40] = SWD E-PRTR#13

Description of the measure

Require the reporting of raw material use to be better able to assess energy and carbon efficiencies. This would allow the assessment of resource efficiency and benchmarking of facilities across the EU (within a sector), particularly when combined with production volume data which will soon be required under E-PRTR. A reporting threshold could be developed to exclude smaller facilities from having to report.

Economic impacts

Overall, this measure is likely to have **strongly negative economic impacts.** The number of facilities that would be required to report this additional data has been assumed to be the number of facilities reporting releases or transfers in the latest year, which is 28,268.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **strongly negative**. Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the total one-off costs are expected to be around €84.8m and the recurrent costs are expected to be around €28.3m per year, giving overall annualised costs of around €38.7m. Costs are higher than collecting and reporting for other contextual information as the gathering of data about raw material use will depend on a number of factors such as types of products and processes, presence of multiple installations, etc. The complexity will vary significantly between and within sectors.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **limited**, as the complexity (in terms of types of products and processes, installations, etc.) of the facilities that may have to report is likely to be lower than for large companies. Furthermore, the existing activity thresholds help to exclude most SMEs from reporting.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**[11]. Whilst there may be a slight increase in QA time for both Member State public authorities and the EEA, it is expected to be limited, although higher than for other contextual information. The estimated one-off costs for competent authorities are in the order of €0.09m and the recurrent costs are expected to be around €0.03m, giving overall annualised costs of around €0.04m. Costs for the EEA are expected to be limited.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable benchmarking of the environmental performance of different industrial activities and facilities. It may facilitate authorities in assessing the progress against Sustainable Development Goals, EU Green Deal and circular economy goals and in identifying activities for further action. It may also improve corporate accountability on environmental management and ultimately result in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

Reporting waste composition of waste transfers [#41] = SWD E-PRTR#14

Description of the measure

Require reporting of the composition of waste transfers using the Waste Framework Directive waste codes (EWC waste code).

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** It is expected that around 21,455 facilities will be impacted by this measure, i.e. all facilities in the industrial reporting database currently reporting waste transfers.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **limited.** Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the recurrent costs are expected to be around €0.4m per year.

[11] This assessment is uncertain and will be further validated. It is likely that there could be higher costs for Member State CAs in checking the reported data.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **limited**.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**. Whilst there may be a slight increase in QA time for both Member State public authorities and the EEA, it is expected to be limited. The estimated recurrent costs are expected to be around €0.6m. Costs for the EEA are expected to be very limited.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable a better understanding of waste flows. It may facilitate authorities in assessing the progress against Sustainable Development Goals, EU Green Deal and circular economy goals. It may also improve corporate accountability on environmental management and waste management more in general, ultimately resulting in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

Improve tracking of waste transfers [#42] = SWD E-PRTR#15

Description of the measure

Require the reporting of waste receivers for all waste transfers, not just transboundary hazardous waste transfers.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** It is expected that around 21,398 facilities will be impacted by this measure, i.e. all facilities in the industrial reporting database currently reporting non-transboundary transfers.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **weakly negative.** Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the recurrent costs are expected to be around €0.4m per year.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **limited**.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**. Whilst there may be a slight increase in QA time for both Member State public authorities and the EEA, it is expected to be limited. The estimated recurrent costs are expected to be around €0.6m. Costs for the EEA are expected to be very limited.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable a better understanding of waste flows. It may facilitate authorities in assessing the progress against Sustainable Development Goals, EU Green Deal and circular economy goals. It may also improve corporate accountability on environmental management and waste management more in general, ultimately resulting in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

Improve tracking of waste water transfers [#43] = SWD E-PRTR#16

Description of the measure

Require the reporting of the receivers of waste water transfers (as currently done for transboundary hazardous waste transfers).

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** It is expected that around 1,496 facilities will be impacted by this measure, i.e. all facilities in the industrial reporting database currently reporting waste water transfers.

Administrative burdens on businesses

Overall impacts on administrative burdens on businesses are expected to be **weakly negative.** Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.2, the recurrent costs are expected to be negligible (around €0.03m per year) as operators should have this information available already.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**.

Public authorities

Overall impacts on **public authorities and the EEA** are expected to be **limited**. Whilst there may be a slight increase in QA time for both Member State public authorities and the EEA, it is expected to be very limited. The estimated recurrent costs for both public authorities and the EEA are expected to be negligible.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may enable a better understanding of waste water flows and reduce potential double-counting. It may facilitate authorities in assessing the progress against Sustainable Development Goals, EU Green Deal and circular economy goals. It may also improve corporate accountability on environmental management and waste management more in general, ultimately resulting in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

1.3 E-PRTR problem area 6: Releases from diffuse sources and releases from products

Many new and emerging products contain pollutants that are released once these products have left the factory and are then used or disposed of. The Aarhus Convention also includes that releases from diffuse sources such as transport and residential combustion should be incorporated.

Reporting releases from products [#70] = SWD E-PRTR#17

Description of the measure

Make use of other reporting streams, such as for the NECD and WISE, and/or carry out a specific Commission study for the calculation of releases from products during consumer use, as advocated in Article 5(9) of the Aarhus Convention. This exercise could be required every few years.

Economic impacts

Overall, this measure is likely to have **no or limited impacts.** The burden falls on the Commission and/or EEA, who would have to calculate releases using available data or outsource the calculations to an external contractor.

Administrative burdens on businesses

The measure would not have any impact on businesses.

Operation / conduct of SMEs

No impacts on SMEs.

Public authorities

Overall impacts on **the Commission** are expected to be **limited**. Costs have not been assessed but would mainly derive from the Commission initiating a dedicated study to quantify product releases.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it may complement environmental footprint information relating to industrial activities' outputs (products). It may facilitate authorities in assessing the progress against EU Green Deal and circular economy goals. It may also improve corporate accountability on environmental management and waste management, ultimately resulting in an improvement in environmental performance.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as it will improve transparency and access to environmental information enabling effective public participation in environmental decision-making. As the measure could lead to an improvement in the environmental performance of facilities and of the industrial activities overall, it may also have positive impacts for health.

5 PO4: Decarbonisation

5.1 E-PRTR problem area 3: Information to track progress towards the circular economy and decarbonisation of industry

Currently, operators have to report releases of HFCs and PFCs as groups but reporting releases of individual compounds of these groups would provide better information, as the global warming potential varies greatly between compounds. The quality and completeness of information could also be improved by requiring GHG releases to be also reported as CO_2 equivalent.

Disaggregation of some currently reported GHGs (e.g. HFCs, PFCs) [#44a] = SWD E-PRTR#18

Description of the measure

This measure would require the reporting of GHGs like HFCs and PFCs as specific, individual pollutants instead of as a group.

Economic impacts

Overall, this measure is likely to have **limited economic impacts** as it would only result in a slight increase in the level of information that would be required to be reported which should be available to operators already. No impacts for SMEs are expected as a result of this measure.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **limited**. This measure has been assumed to only impact facilities currently reporting HFCs and PFCs. Based on the estimated number of facilities impacted (326) and the cost assumptions described in Section 1.2, the additional recurrent costs are expected to be around €3,200 per year for operators. This is based on the assumption that the data is already available to operators so just requires a small amount of additional time to report the data disaggregated.

Public authorities

Overall impacts on public authorities are expected to be **limited**. This includes some very limited additional time for QA for both Member State public authorities and the EEA although this is expected to be minimal as the data is already reported but at an aggregated level.

Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.3, the total additional recurrent costs for **public authorities** are expected to be around €4,500 per year.

Impacts for the **EEA** are expected to be **minimal** considering that the data is already reported but at a more aggregated level so minimal changes would be required to the data and QA flows or website.

Environmental impacts

Overall, this measure is likely to have **limited environmental impacts** as it only provides similar data but in a more disaggregated format. Reporting GHG data disaggregated by pollutant should indirectly support better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). However, such a change would only affect a small number of facilities so the additional data provided would be limited.

Social impacts

Overall this measure is likely to have **limited social impacts** for the same reasons as discussed above under environmental impacts.

Require GHG releases to be also reported as CO_2 equivalent [#44b] = SWD E-PRTR#19

Description of the measure

This measure would require the reporting of GHGs like HFCs and PFCs in mass of CO_2e.

Economic impacts

Overall, this measure is likely to have **limited economic impacts** as it would only result in a slight increase in the steps that operators would have to take to be able to report data to the E-PRTR i.e. after measuring, calculating or estimating GHG releases, operators would have to estimate CO_2e using relevant factors before reporting. No impacts for SMEs are expected as a result of this measure.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **limited**. This measure has been assumed to only impact facilities currently reporting HFCs and PFCs and to a limited extent. Based on the estimated number of facilities impacted (326) and the cost assumptions described in Section 1.2, the additional recurrent costs are expected to be around €3,200 per year for operators. This is based on the assumption that the data is already available to operators so just requires a small amount of additional time to apply CO_2e factors.

Public authorities

Overall impacts on public authorities are expected to be **limited**. This includes some very limited additional time for QA for both Member State public authorities and the EEA

although this is expected to be minimal as the data is already reported but at an aggregated level.

Based on the estimated number of facilities impacted and the cost assumptions described in Section 1.3, the total additional recurrent costs for **public authorities** are expected to be around €4,500 per year.

Impacts for the **EEA** are expected to be **minimal** considering that the data is already reported but in different units so minimal changes would be required to the data and QA flows or website.

Environmental impacts

Overall, this measure is likely to have **limited environmental impacts** as it only provides similar data but in a different, more comparable format. Reporting GHG data in CO_2e should indirectly support better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). However, such a change would only affect a small number of facilities so the additional data provided would be limited.

Social impacts

Overall this measure is likely to have **limited social impacts** for the same reasons as discussed above under environmental impacts.

6 PO5: Industrial scope

1.1 E-PRTR problem area 1a: Current activity thresholds and definitions

There is a lack of completeness in the reporting under identified activities in the E-PRTR. The E-PRTR is not capturing the targeted percentage (90%) of releases from industrial activities currently defined in the reporting requirements. The original aim of the E-PRTR was to capture 90% of industrial releases for each pollutant. In addition, the definitions and thresholds of some activities are inconsistent with the IED and other legislation such as the MCPD and UWWTD. Industrial activities operating in Europe have evolved since the E-PRTR came into force and therefore the thresholds for the activity list in Annex I needs to be reviewed and updated to ensure 90% data capture today. The reporting thresholds do not guarantee capture of 90% of releases and transfers from industrial facilities.

Revise capacity thresholds for 7(a) IRPP [#1 – sub-options consider thresholds of 50, 100, 125, 150, 300 and 450 LSU] = SWD E-PRTR#21

Description of the measure

Reduce activity thresholds of poultry and pig farming in order to capture a higher proportion of pollutant releases from this activity. A revision in the activity threshold for this activity under the IED is also under consideration so it will be important to maintain coherence. The thresholds being assessed in detail are 150, 300 and 450 LSU (livestock units). As the current E-PRTR reporting thresholds for individual pollutants mean that there is no reporting under 300 LSU, it can be safely presumed that there would be no E-PRTR reporting for the sub-150 LSU options (i.e. 50, 100 and 125).

It is important to note that thresholds in LSU could result in mixed livestock farms also being within scope of the E-PRTR if the thresholds applied to pig and poultry farms rather than individually.

Economic impacts

Overall, this measure is likely to have **negative economic impacts** as it means that more facilities will have to report. The total economic impacts have been estimated to comprise additional costs of between €11m and €20m per year.

Administrative burdens on businesses

The overall impact on the administrative burdens on businesses is assessed as **negative**.

The administrative costs for business are presented in the table. It is builds on the unit costs presented in Section 1.2. The administrative costs are calculated as the unit costs times the estimated number facilities that will have to report.

It can be seen that for the lowest thresholds – 50 LSU – none of the facilities between 50 and 300 LSU is assessed to have emissions above the pollution thresholds. Hence, they will not have to report any data. If pollution thresholds are lowered so that all facilities above the activity thresholds will have to report, the reporting costs could be significantly higher.

Table A9-14: Administrative costs for business from revised capacity thresholds for IRPP in €m

Alternative capacity thresholds for IRRP	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting *	One off costs*	Recurrent costs *	Total annual costs*
Threshold >450 LSU	8,647	100%	8,647	25.6	8.5	11.7
Threshold >300 LSU	19,007	80%	15,206	45.0	15.0	20.6
Threshold >150 LSU	40,064	38%	15,206	45.0	15.0	20.6

* The values for options below 150 LSU (i.e. 50, 100, and 125 LSU) are considered equivalent to the values for >300 LSU

It should be noted that measure #46 on the use of top-down reporting would reduce the administrative burden significantly (by around 85% or more depending on the mechanism applied).

Operation / conduct of SMEs

The impact on the operation/conduct of SMEs is assessed as **weakly negative**. The majority of facilities in the IRPP sector are SMEs and probably a large share of those that could come within scope under a revised lower activity threshold will be small or micro-companies. With the current thresholds for pollutants, relatively few of the smallest farms would have to report. The reporting costs per facility is moderate so the operation of the farms is unlikely to be significantly affected. However, some negative impacts can still be expected. It should be noted that measure 46 on the use of top-down reporting would reduce the effects on the operation of the SMEs significantly.

Public authorities

Overall, the impacts on public authorities are **weakly negative**. For public authorities the economic impacts include the additional costs related to managing the data reported from the facilities. With lowered activity thresholds for IRRP, there would be more facilities reported as presented above. The additional costs for CAs have been estimated using the unit costs per facility times the number of reporting facilities; see Section 1.2 for details on the approach and assumptions. The administrative costs are estimated to the be in order of €1m to €2m per year.

Table A9-15: Administrative costs for CAs from revised capacity thresholds for IRPP in €m

Alternative capacity thresholds for IRRP	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
Threshold >450 LSU	8,647	100%	8,647	2.9	1.0	1.3
Threshold >300 LSU	19,007	80%	15,206	5.0	1.7	2.3
Threshold >150 LSU	40,064	38%	15,206	5.0	1.7	2.3

No impacts for the **EEA** are expected as the checking of data is fully automated and therefore independent of the number of facilities reporting for an existing activity.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts.** Increasing the number of facilities reporting will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall this measure is likely to have **weakly positive social impacts.** As discussed above, increasing the number of facilities reporting could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making.

Revise capacity threshold for 5(d) landfills [#3] = SWD E-PRTR#27

Description of the measure

Increase the coverage of landfill sites by decreasing the activity threshold to less than 10 tonnes per day. This policy measure is being considered as part of the IED revision and therefore in order to ensure coherence between reporting the threshold(s) to be considered will be consistent.

Economic impacts

Overall, this measure is likely to have **no or limited negative economic impacts** as it is not expected to increase the number of reporting facilities with any significant number. No impacts for SMEs are expected as a result of this measure.

Administrative burdens on businesses

The number of additional facilities that might have to report has not been possible to quantify at this stage. It is expected to be very limited and therefore leading to limited additional administrative costs.

The impact on the administrative burden is assessed as **no or limited** impact.

Operation / conduct of SMEs

The affected number of SMEs have not been assessed. Given that impact on the administrative cost is estimated to be very limited, we assess that there will be **no or limited impacts** on the conduct of SMEs.

Public authorities

The impact on public authorities is assessed to be **no or limited impact**. Given that only a few additional facilities could be reporting, the additional costs of checking data and preparing the data submission will be very low.

Environmental impacts

The environmental impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis.

Social impacts

The social impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis.

Revise capacity threshold for 2(c)(ii) smitheries [#5 – sub-options consider no calorific power threshold or a calorific power threshold of 5 MW] = SWD E-PRTR#26

Description of the measure

Reduce the activity threshold for activity 2(c)(ii) to 20 kj and with either no calorific power threshold or where the calorific power exceeds 5MW. The current threshold is 50 kj per hammer, where the calorific power exceeds 20 MW. This measure will help to cover a larger proportion of the sector's emissions, especially to air. This measure is being considered by the IED Impact Assessment and is therefore considered under for consistency.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** It is expected to increase the number of reporting facilities with around 700 facilities (assuming no capacity threshold) although it is unclear how many would be required to report with current pollutant reporting thresholds. This is potentially a large increase compared to the current number of

smitheries reporting. Some of the additional facilities might be SMEs and therefore, there is a risk of negative impacts on the SMEs.

Administrative burdens on businesses

Overall, the impact on administrative costs is **weakly negative**. The impact on administrative burden is estimated using the approach and assumptions presented in Section 1.2 and summarised in the table below.

Table A9-16: Administrative costs for business from revised capacity thresholds for smitheries in €M

	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
Revise capacity threshold for 2(c)(ii) smitheries	733	100%	733	4.3	1.4	2.0

Operation / conduct of SMEs

Overall, the impacts on the operation/conduct of SMEs are assessed as **weakly negative**. Some of the facilities that could come under scope with the changed activity threshold would be SMEs. They will face additional administrative costs although a number of these may be operating below the pollutant reporting thresholds so may not be required to report. The level of the administrative burden from reporting is moderate. Though the facilities will experience additional costs of the order estimated above, these costs are not expected to affect the operation or conduct of the SMEs in the industry.

Public authorities

Overall, this measure is assessed to have **no or limited impacts** on public authorities. The additional costs for CAs have been estimated using the unit costs per facility times the number of reporting facilities; see Section 1.2 for details on the approach and assumptions. The administrative costs are estimated at only €0.1m per year.

Table A9-17: Administrative costs for CAs from revised capacity thresholds for smitheries in €M

	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
Revise capacity threshold for 2(c)(ii) smitheries	733	100%	733	0.2	0.1	0.1

No impacts for the **EEA** are expected as the checking of data is fully automated and therefore independent of the number of facilities reporting for an existing activity.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts.** Increasing the number of facilities reporting will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). Given that, currently, only few smitheries are above the activity threshold, the change will significantly improve the coverage of the reporting from the sector.

Social impacts

Overall this measure is likely to have **weakly positive social impacts.** As discussed above, increasing the number of facilities reporting could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making.

Various other capacity threshold/definitions changes with limited impacts

Description of the measure

There are a number of additional measures which are about changing various activity definitions and/or thresholds but which are not expected to have any significant impacts; they are listed below. The overall purpose of these changes is to increase the alignment with the IED.

Table A9-18: List of measures with revised capacity thresholds and definitions

	#	Name	Description	# of facilities impacted
Align with potential revised IED scope	6	Revise thresholds for specific sub-sectors of activity 4 chemical industry	Addition of thresholds for some sub-sectors of the chemical industry. For example, pharmaceutical production to exclude the very small-scale facilities.	0
Align with current potent IED scope	8	Revise capacity threshold for activity 5(g)	Remove the 10,000 m3/day capacity threshold for activity 5(g) independently operated industrial waste water treatment plants to align with the IED activity description	421[12]
	9	Include sub-categories for 1(b) installations for gasification and liquefaction	Add sub-categories to include coal and "other fuels" to better align with the IED subcategories.	0

[12] Of the 421 impacted facilities, it is estimated that 90 are new facilities, while the 331 are existing facilities that may have to report water pollutants.

	#	Name	Description	# of facilities impacted
	10	Include product sub-categories for 3(c) cement production	Re assign the sub categories for cement production to be product categorised as done in the IED, e.g. production of cement in rotary kilns and other kilns, production of lime in kilns etc. This may cause some time-series consistency issues for historical data.	0
	12a	Align activity description for 1(c) with aggregation rules of IED (legislative option)	The IED contains aggregation rules for the definition of LCPs (E-PRTR activity 1(c)). The E-PRTR activity description would be updated to explicitly include the same rules for aggregation.	0
	72	Reword 8(b) production of food and beverage products activity description to include feed products [#72]	Update the 8(b) activity description to include feed production in order to align with the activity description under the IED	0
	Total			**421**

Economic impacts

Overall, these measures are likely to have **no or limited economic impacts.** They are only expected to increase the number of reporting facilities marginally.

Administrative burdens on businesses

The impact on the administrative burdens is assessed as **weakly negative**. Given that in most cases, the measures do not lead to any new facilities having to report, the administrative costs are limited. Only of the measures will potentially lead to an additional 90 new facilities having to report. This measure also impacts about 331 existing facilities that will have to report a few more pollutants. The total administrative costs are estimated at around €0.3m per year.

Operation / conduct of SMEs

Overall, the measures are assessed to have **no or limited impacts** on the operation of SMEs. Given the very limited additional administrative costs, the measures will not impact SMEs. Firstly, few SMEs are expected to be affected by the measures and secondly, where there could be SMEs affected, the additional costs are very limited.

Public authorities

Overall, the measures will have **no or limited** impacts on public authorities. The additional costs for public authorities will be very limited. As there are only few additional facilities that may have to report and that the checking of the data in relation to the revised definitions is also only requiring few additional resources. The additional costs for CAs are estimated at around €13,000 per year.

Environmental impacts

The environmental impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis. The changes to definitions etc. will also only very marginally change the quality of the reported data but will ensure coherence with the IED.

Social impacts

The social impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis.

Revise capacity thresholds for 1(c) combustion plants [#2 – sub-options consider thresholds of (a) 20-50MWth and (b) 5-50MWth] = SWD E-PRTR#29 and #30

Description of the measure

This measure considers a revision of the capacity thresholds for combustion plants:

- Measure 2a: Include combustion plants between 20 MW and 50 MW
- Measure 2b: Include combustion plants between 5 MW and 50 MW

This should include the aggregation rules of the MCPD (aggregate if waste gases go through a common stack or the competent authority judges them to). A further measure to include full alignment with the MCPD (i.e. 1-50MWth plants) was screened out due to the significant number of plants in the 1-5MWth category and potential impacts on SMEs.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts.** Changes to the capacity threshold for combustion plants could potentially increase the number of reporting facilities quite significantly. However, with the current reporting thresholds for pollutants, not all facilities passing the capacity threshold will actually have to report. The number of MCPs that will have to report is uncertain as the plants often have low emissions. There are a large number of back-up plants and/or plants which only run for a small number of hours each year.

The total economic impacts covering the costs for business and public authorities comprise between €1,8m and €3m as total annual costs.

<u>Administrative burdens on businesses</u>

This measure is assessed to have a **weakly negative impact** on the administrative burden for business. The administrative costs for business are presented in the table below. It builds on

the unit costs presented in the Section 1.2 and is calculated as the unit costs multiplied by the estimated number of facilities that will have to report[13].

Table A9-19: Administrative costs for business from revised capacity thresholds for combustion in €M

Alternative capacity thresholds for combustion	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
20-50MWth	4,946	25%	1,236	3.7	1.2	1.7
5-50MWth	21,590	10%	2,159	6.4	2.1	2.9

The administrative costs depend on the number of facilities that will have to report. Assessing the emissions from different sized plants has shown that only a small percentage of the MCPs above the revised thresholds will have to report. The estimated administrative costs are therefore only in the order of €2m to €3m per year. Should some of the relevant pollutant thresholds be lowered then the number of facilities would increase, and the administrative costs would increase proportionally.

Operation / conduct of SMEs

Though some of the MCPs considered for inclusion could be small, they are typically owned and managed by larger entities. Therefore, few of the operators will be SMEs and the impact on the operation of SMEs can be assessed as **limited**.

Public authorities

The impacts on public authorities can therefore be assessed as **weakly negative.** The additional costs for CAs have been estimated using the unit costs per facility multiplied by the number of reporting facilities; see Section 1.2 for details on the approach and assumptions. The administrative costs for CAs are estimated at €0.1m and €0.16m.

Table A9-20: Administrative costs for CAs from revised capacity thresholds for combustion in €M

Alternative capacity thresholds for combustion	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
20-50MWth	4,946	25%	1,236	0.2	0.07	0.09
5-50MWth	21,590	10%	2,159	0.4	0.1	0.16

No impacts for the **EEA** are expected as the checking of data is fully automated and therefore independent of the number of facilities reporting for an existing activity.

[13] https://ec.europa.eu/environment/air/clean_air/index.htm

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts.** Increasing the number of facilities reporting will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall, this measure is likely to have **weakly positive social impacts.** As discussed above, increasing the number of facilities reporting could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making.

Revise capacity thresholds for 5(f) UWWTPs [#13 – sub-options consider thresholds of 2,000, 5,000, 10,000, 20,000 and 50,000 p.e.] = SWD E-PRTR#29 and #30

Description of the measure

The measure includes a change of the capacity thresholds for urban wastewater treatment plants. Currently, the threshold is set at 100,000 p.e. and the measure includes five alternative thresholds:

- Change capacity thresholds for UWWTP from 100,000 p.e. to 50,000 p.e.
- Change capacity thresholds for UWWTP from 100,000 p.e. to 20,000 p.e.
- Change capacity thresholds for UWWTP from 100,000 p.e. to 10,000 p.e.
- Change capacity thresholds for UWWTP from 100,000 p.e. to 5,000 p.e.
- Change capacity thresholds for UWWTP from 100,000 p.e. to 2,000 p.e.

Changing the threshold will increase the coverage of emissions from UWWTPs and bring the E-PRTR closer to the definitions of the UWWTD. The UWWTD currently defines treatment standards and emission limit values for UWWTPs above 2,000 p.e.

Economic impacts

Overall, this measure is likely to have **weakly negative economic impacts,** the scale of these would depend on the threshold selected**.** Changes to the capacity threshold for UWWTPs would increase the number of reporting facilities. However, with the current reporting thresholds for pollutants, not all facilities passing the capacity threshold will have to report.

The total economic impacts covering the costs for business and public authorities comprise between €1.8 m and €5.8m as total annual costs.

<u>Administrative burdens on businesses</u>

Overall, this measure is likely to have **weakly negative impacts** on the administrative burdens. The administrative costs for business are presented in the table. It is builds on the unit costs presented in the Section 1.2. The administrative costs are calculated as the unit costs multiplied by the estimated number facilities that will have to report[14].

With the current reporting thresholds for pollutants, it is unlikely that all facilities will have to report. A rough assessment has been done focused on the reporting of nitrogen and phosphorus. The share that is likely to have to report has been assessed for the different size ranges.

Table A9-21: Estimated share of facilities having to report

Size band for UWWTPs	# of facilities	Share that is estimated to have to report	Resulting number of facilities
2000-5000	10,210	0%	0
5000-10000	5,543	10%	554
10000-20000	3,591	20%	718
20,000-50,000	3,043	50%	1,522
50,000-100,000	1,234	100%	1,234

Based on the estimated number of facilities reporting the number of facilities for each alternative threshold definition can be estimated. Results and the costs assessment are presented in the table below.

Table A9-22: Administrative costs for business from revised capacity thresholds for UWWTPs in €M

Alternative capacity thresholds for UWWTP	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
Change capacity thresholds for UWWTP from 100,000 p.e. to 50,000 p.e.	1,234	100%	1,234	3.7	1.2	1.7
Change capacity thresholds for UWWTP from 100,000 p.e. to 20,000 p.e.	4,277	64%	2,756	8.2	2.7	3.7
Change capacity thresholds for UWWTP from 100,000 p.e. to 10,000 p.e.	7,868	44%	3,474	10.3	3.4	4.7
Change capacity thresholds for UWWTP from 100,000 p.e. to 5,000 p.e.	13,411	30%	4,028	11.9	4.0	5.4
Change capacity thresholds for UWWTP from 100,000	23,621	17%	4,028	11.9	4.0	5.4

[14] Number of facilities estimated based on the Waterbase-UWWTD https://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive-7

Alternative capacity thresholds for UWWTP	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
p.e. to 2,000 p.e.						

Operation / conduct of SMEs

Though some of the UWWTPs considered for inclusion could be small, they are typically owned and managed by larger entities. Most UWWTPs are municipal so they are publicly owned and if there are private operations, it is typically large companies. Therefore, it is assessed that there will be **no or limited impact** on the operation of SMEs.

Public authorities

Overall, the impacts on public authorities can therefore be assessed as **weakly negative**. The additional costs for CAs have been estimated using the unit costs per facility multiplied by the number of reporting facilities; see Section 1.2 for details on the approach and assumptions.

The measure will potentially add a large number of additional facilities although not all are likely to have to report based on the current pollutant reporting thresholds. The administrative costs for CAs are estimated at between €0.1m and €0.3m.

Table A9-23: Administrative costs for CAs from revised capacity thresholds for UWWTPs in €m

Alternative capacity thresholds for UWWTP	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting	One off costs	Recurrent costs	Total annual costs
Change capacity thresholds for UWWTP from 100,000 p.e. to 50,000 p.e.	1,234	100%	1,234	0.2	0.1	0.1
Change capacity thresholds for UWWTP from 100,000 p.e. to 20,000 p.e.	4,277	64%	2,756	0.5	0.2	0.2
Change capacity thresholds for UWWTP from 100,000 p.e. to 10,000 p.e.	7,868	44%	3,474	0.6	0.2	0.3
Change capacity thresholds for UWWTP from 100,000 p.e. to 5,000 p.e.	13,411	30%	4,028	0.7	0.2	0.3
Change capacity thresholds for UWWTP from 100,000 p.e. to 2,000 p.e.	23,621	17%	4,028	0.7	0.2	0.3

No impacts for the **EEA** are expected as the checking of data is fully automated and therefore independent of the number of facilities reporting.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts.** Increasing the number of facilities reporting will improve the level of data on water releases available within the E-PRTR, potentially helping to improve environmental performance of the sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information). It would also improve alignment with the UWWTD.

Social impacts

Overall, this measure is likely to have **positive social impacts.** As discussed above, increasing the number of facilities reporting could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making.

1.2 E-PRTR problem area 1b: Missing activities and sub-activities

The original aim of the E-PRTR was to capture 90% of industrial releases for each pollutant. Industry in Europe has changed since the E-PRTR came into force in 2006 with new activities becoming more widespread. Therefore, the activity list in Annex I needs to be updated. Missing activities mean that the E-PRTR does not provide a complete picture of releases and transfers and cannot be used as a tool to fully understand impacts and ensure coherent environmental policy. Furthermore, the IED is being revised so it will be important to maintain coherence with any future scope.

Include cattle rearing farms [#15 – sub-options consider thresholds of 50, 100, 125, 150, 300 and 450 LSU] = SWD E-PRTR#20

Description of the measure

There is no activity covering cattle and it is proposed to include an additional activity in Annex I of the E-PRTR covering these farms. This measure has been proposed for inclusion within the IED and therefore in order to ensure coherence between reporting the exact threshold(s) and activity definition to be considered will be informed by that process. There are alternative activity thresholds being considered. They all relate to the number of livestock units (LSU).

In line with the IED revision, the following thresholds were assessed: 50, 100, 125, 150 LSU, 300 LSU and 450 LSU. As the current E-PRTR reporting thresholds for individual pollutants mean that there would be no reporting under 300 LSU, it can be safely presumed that there would be no E-PRTR reporting for the sub-150 LSU options (i.e. 50, 100 and 125).

Economic impacts

Overall, the economic impacts are **negative**. The measure will increase the number of reporting facilities and potentially with a large number. The annual costs have been estimated to be in the order of €11 – 23m, primarily for operators but also MS CAs. This based on the estimated number of additional facilities would be required to report which is estimated to vary between around 9,000 up to 18,000 facilities.

Administrative burdens on businesses

Overall, the impacts on the administrative burden for business are **negative**. The administrative costs for business are presented in the table below. It builds on the unit costs presented in Section 1.2. The administrative costs are calculated as the unit costs multiplied by the estimated number of facilities that will have to report[15].

Table A9-24: Administrative costs for business from alternative capacity thresholds for cattle in €m

Alternative capacity thresholds for cattle	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting*	One off costs*	Recurrent costs*	Total annual costs*
Threshold >450 LSU	8,523	100%	8,523	25.2	8.4	11.5
Threshold >300 LSU	26,624	66%	17,574	52.1	17.4	23.8
Threshold >150 LSU	120,727	15%	17,574	52.1	17.4	23.8

* The values for options below 150 LSU (i.e. 50, 100, and 125 LSU) are considered equivalent to the values for >300 LSU

The alternative thresholds could potentially lead to a significant number of additional facilities being captured. However, an assessment of likely emissions from farms of different sizes has shown that no or few facilities below 300 LSU are expected to have to report under current NH_3 and CH_4 reporting thresholds, and only around 66% above 300 LSU (based on a worst case assessment of likely emissions i.e. using the highest emission factors to estimate farm level emissions).

It should be noted that if NH_3 and/or CH_4 reporting thresholds are reduced, then the total number of facilities could increase. As a result the administrative costs would increase proportionally with the number of facilities.

In contrast, if measure #46 on the use of top-down reporting were to be applied to cattle then this would reduce the administrative burden significantly (by around 85% or more depending on the mechanism applied).

[15] Data on number of facilities are based on Ricardo (2021) *Updating of available information for undertaking the assessment of impacts for a possible modification of the IED with regard to aspects of intensive agriculture*

Operation / conduct of SMEs

Overall, the impact on the operation/conduct of SMEs is assessed as **weakly negative**. The majority of facilities in the cattle sector are SMEs and probably a large share of those that could come within scope would be small or micro-companies. With the current thresholds for pollutants, relative few of the smallest farms would have to report. The reporting costs per facility is moderate so the operation of the farms is unlikely to be significantly affected. Still some negative impacts can be expected.

It should be noted that measure 46 on the use of top-down reporting would reduce the effects on the operation of the SMEs significantly.

Public authorities

The impacts on public authorities are assessed as **strongly negative**. For public authorities the economic impacts include the additional costs related to managing the data reported from the facilities. With adding cattle farms to the scope of the E-PRTR, there would be significantly more facilities reported as presented above. The additional costs for CAs have been estimated using the unit costs per facility multiplied by the number of reporting facilities; see Section 1.2 for details on the approach and assumptions.

The administrative costs are estimated to be in order of €1m to €2m per year.

Table A9-25: Administrative costs for CAs from alternative capacity thresholds for cattle in €m

Alternative capacity thresholds for cattle	No of additional facilities above activity threshold	Share that will report	Additional number of facilities reporting*	One off costs *	Recurrent costs *	Total annual costs*
Threshold >450 LSU	8,523	100%	8,523	2.8	0.5	0.8
Threshold >300 LSU	26,624	66%	17,574	5.8	1.0	1.7
Threshold >150 LSU	120,727	15%	17,574	5.8	1.0	1.7

* The values for options below 150 LSU (i.e. 50, 100, and 125 LSU) are considered equivalent to the values for >300 LSU

The impact on the **EEA** is estimated to be relatively **limited**[16]. The additional annual costs are estimated at less than 1,000 EUR. This includes costs associated with adding a new activity to the database and reporting tools. As QA/QC of data is automated, the additional facilities and additional data being reported should not add to the costs.

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts.** Including cattle and increasing the number of facilities reporting will improve the level of data on

[16] EEA costs associated with some measures are under revision in collaboration with the EEA and may be revised.

emissions available within the E-PRTR, potentially helping to improve environmental performance of the cattle sector as it enables better comparison of performance of the sector across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

It should be noted that with the current pollutant thresholds, only a proportion of emissions from the cattle sector will be reported.

Social impacts

Overall, this measure is likely to have **weakly positive social impacts.** As discussed above, the inclusion of the cattle sector in E-PRTR could potentially help to improve environmental performance of the sector which would have positive impacts for health. Furthermore, increasing the level of data available on performance of the sector improves public access to information potentially enabling greater participation in environmental decision-making. Similar to the case for the environmental impacts, adding reporting from only the largest cattle farms means that not all the emissions are covered by the reporting.

Various other measures with limited impacts

Description of the measures

There are several additional measures to change various definitions and adding activities in order to achieve better alignment and coherence with the IED – both in its current version and the changes proposed for a revised IED. They are listed below and they are not expected to have any significant impacts on costs and benefits.

Table A9-26: List of measures with revised capacity thresholds and definitions

Category	#	Measure	Description	# of facilities impacted
Align with potential revised IED scope	14	Expand activity scope of mining and quarrying activities (3(a) &3(b))	The IED revision is looking to include these activities and considering how to also bring into line with matching the scope of Directive 2006/21/EC and/or the MWEI BREF. This measure will ensure the E-PRTR activities are in line with any adjustments made.	0
	18	Include battery production, disposal and recovery	Include battery production, disposal and recovery in activity list. This measure is being considered as part of the IED revision and therefore in order to ensure coherence between reporting the exact threshold(s) and activity definition to be considered will be informed by that process.	70
	20	Include an additional sub-sector for cold rolling & wire drawing	Include an additional sub-sector for cold rolling, with a capacity threshold of 10 t/h, and wire drawing, with a capacity threshold of 2 t/h, under activity 2. This measure is being considered as part of the IED revision.	53

Category	#	Measure	Description	# of facilities impacted
	21	Inclusion of an additional sub-sector for textile finishing	Inclusion of textile finishing in the activity list under activity 9 (Other activities). Rename the current activity 9(a) to activity 9(a)(i) - Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles (a current activity) and include an additional sub activity of 9(a)(ii) Textile finishing with the same threshold as the current 9(a) activity. This measure is being considered as part of the IED revision.	76
	23	Include an additional sub-activity for ship yards / dismantling	Include an additional sub-activity under 9 - Other activities for ship yards / dismantling. Currently only building of and painting or removal of paint from ships is included in the activity list (9(e)). This measure is being considered as part of the IED revision.	6
Align with current IED scope	27	Include MgO production	Include MgO production in kilns with a threshold of 50 t/day to align with IED activity 3.1(c).	25
	28	Include CO_2 capture	Include capture of CO_2 streams for geological storage with no threshold to align with IED activity 6.9.	9
	29	Additional sub-categories and improved descriptions for 5(a) & 5(b)	Align these categories with the IED activity descriptions to ensure reporters know that disposal includes incineration/co-incineration (sub categories to match IED activities 5.1 and 5.2(b). Additionally, include recovery in the activity definition.	0
	30	Additional hazardous waste sub-category for temporary storage	IED activity 5.6 - temporary storage of hazardous waste is not included in the E-PRTR activities list and should be considered for inclusion.	9
	All			**248**

Economic impacts

Overall, these measures are likely to have **no or limited economic impacts.** They are only expected to increase the number of reporting facilities marginally.

Administrative burdens on businesses

Overall, the measures are assessed to have **no or limited** impacts on administrative burdens. Given that in most cases, the measures only lead to a small number of new facilities having to report, the administrative costs are limited. Only the measures which potentially could lead to an additional 70-80 new facilities having to report would increase reporting costs. Still the reporting costs are very limited. The total administrative costs for **all** the measures are estimated at around €0.7m per year.

Operation / conduct of SMEs

Overall, the measures are assessed to have **no or limited impacts** on the operation of SMEs. Given the very limited additional administrative costs, the measures will not impact the operation of SMEs. Firstly, few SMEs are expected to be affected by the measures and secondly, where there could be SMEs affected, the additional costs are very limited.

Public authorities

Overall, the measures will have **no or limited impacts** on public authorities. The additional costs for public authorities will be very limited and they are estimated at €37,000 per year. As there are only a limited number of additional facilities that may have to report and the checking of the data in relation to the revised definitions is also only requiring few additional resources.

Environmental impacts

The environmental impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis. The changes to definitions of included activities will also only very marginally change the quality of the reported data but will ensure coherence with the IED.

Social impacts

The social impacts are assessed to be **no or limited impacts**. Given that only a few additional facilities could be reporting, the additional data will not change the coverage of the emissions and therefore not improve the decisions basis.

Establish a dynamic mechanism to identify and include emerging activities of concern ('sunrise list' for activities) [#31] = SWD E-PRTR#31

Description of the measure

This measure would entail the inclusion of a more dynamic mechanism to identify and include emerging activities of concern ("sunrise list") within the Regulation e.g. enabling the Commission to identify and include new activities in the future via delegated acts.

Economic impacts

Overall this measure is likely to have **weakly negative economic impacts** as it will lead to a greater number of activities being captured under E-PRTR in the future and more facilities having to report release and transfer data. Some additional activities for inclusion and existing activities with revised thresholds and/or definitions have already been identified and included under other measures (with associated assessment of impacts). It is unknown what further activities may be included in the future and thus it is not possible to assess the impacts that may be incurred.

In addition to additional data collection and reporting for operators, there would also be time required for the European Commission and/or EEA to maintain the sunrise list and identify activities of emerging concern.

Administrative burdens on businesses

Overall impacts on administrative burdens for businesses are expected to be **weakly negative** for any new activities included in the future although the scale of such impacts are unclear at this stage. Operators in any new activities will have to measure, calculate and/or estimate releases to see whether they are above or below the reporting thresholds. If they are above the threshold then the data would need to be reported. Some initial time would also be required to set up the appropriate data capture, calculation and reporting mechanisms up front.

Operation / conduct of SMEs

Overall impacts on SMEs are expected to be **very limited**. Appropriate activity thresholds would need to be established for any new activities to ensure that smaller facilities (potentially including SMEs) would not be required to report.

Public authorities

Overall impacts on **public authorities** are expected to be **weakly negative**. This includes additional time for QA of data for any new activities for both Member State public authorities and the EEA as well as some initial upfront time to amend the existing data flow and QA systems to incorporate new activities.

The EEA and/or European Commission would incur some additional costs for maintaining the sunrise list and identifying and reviewing potential emerging activities. This is assumed to cost around €15,000 per year (assuming consultants are used to assess specific activities) with a further 30 person days every 5 years to develop and agree a proposal for new activity(ies) (equating to annualised costs of around €2,600 per year).

Environmental impacts

Overall, this measure is likely to have **weakly positive environmental impacts** as it will increase the coverage of activities that are reporting to the E-PRTR. It will ensure that the E-PRTR activity list can be updated as and when emerging activities are identified helping to support the objectives of wider environmental policies such as IED, WFD, UWWTD etc.

Increasing the activity coverage will improve the level of data on emissions available within the E-PRTR, potentially helping to improve environmental performance of those activities being included as it enables better comparison of performance across the EU as well as greater engagement of citizens in environmental decision-making (as a result of access to information).

Social impacts

Overall, this measure is likely to have **weakly positive social impacts** as the emissions coverage within E-PRTR will be expanded. As discussed above, increasing the number of activities and facilities reporting could potentially help to improve environmental performance of those activities included which would have positive impacts for health. Furthermore, including new activities improves public access to information potentially enabling greater participation in environmental decision-making.

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INTRODUCTION

Through a series of boxes and tables, this annex summarises key information underpinning section 6 of the SWD i.e. assessment of the impacts of the options. It brings together the information presented in fuller detail in Annexes 8 and 9 i.e. the detailed impact assessment of each individual measure included in the policy options assessment.

The boxes and tables in this annex cover the following:

1. Impacts of individual measures that dominate in the impact assessment of options
2. Comparison of impacts of alternative measures contained in certain sub-options
3. Summary information on impacts of options PO5-a to PO5-i
4. Administrative costs breakdown per measure, for each option.

1. Information supporting the assessment of Option PO1

Boxes 1 and 2 provide a summary of the impacts of measures IED#5 and E-PRTR#2 that dominate the assessment of policy option PO1.

Box 1: Summary of the impacts of measure IED#5

Although all policy measures will have relevant contributions as noted, measure IED#5 presents a particularly significant opportunity to enhance the environmental benefits from the IED's implementation, and overall makes a significant contribution to the policy option total impacts. This measure would specify that when setting ELVs, the starting point is the lower end of the BAT-AEL range, unless the operator demonstrates to the satisfaction of the competent authority that applying BAT as described in BAT Conclusions only allows meeting a higher level within the BAT-AEL range.

The measure would seek to encourage a tightening of the ELVs in permit conditions for installations across the EU employing a relatively harmonised approach. It is not foreseen as a means to make lower BAT-AELs mandatory. Competent Authorities will be able to make decisions on a case-by-case basis, continuing to account for local environmental conditions and the technical characteristics of the installation, i.e., allowing for the possibility to set ELVs higher in the BAT-AEL range. The emphasis however is to begin the considerations at the lower end of the BAT-AEL range. For the assessment of this measure, an assumption has been needed as to the proportion of installations that would be affected by this measure. Considering its non-mandatory nature, it is not appropriate to assume that all installations currently with ELVs set at upper BAT-AELs would be affected by the measure. We assumed that around 5% of 'new permits' (of 500 per annum) and 10% of existing permits (of 52 000) could be 'affected' by this measure in the process of setting up a permit and or reconsidering/updating a permit. This has been informed from the evidence below.

For example, a 2019 study by Eunomia, *An Assessment of IED Permitting Stringency*, examines the emission limit values for 117 permits for European cement installations and 24 electric arc furnaces (Eunomia, 2019). The results from both these sectors in aggregate indicate that most ELVs are set in line with the upper BAT-AEL (80%), while a minority are above the upper BAT-AEL (12%, e.g. have derogations) or were set at the lower BAT-AEL (9%). This indicates that most cement works and electric arc furnaces (82%) would need to change or upgrade their practices to comply with the lower BAT-AEL. Overall, this report would suggest that there is a significant opportunity to further environmental protection by setting ELVs closer to the lower end of the BAT-AEL ranges.

Pre-final information from an ongoing contract on "Assessment of BAT conclusions implementation in IED Permits"[17], which builds on the experience of previous pilot projects and focusses on four IED sectors (glass, pulp and paper, non-ferrous metals and wood based panels) ,confirms that **75-85%** of ELVs in permits are based on the upper level of BAT-AEL range (or above). The distribution differs in case of sectors and pollutants.

The extent to which this may happen and, therefore, result in the reduction of pollutant emissions is highly uncertain. It is expected that this measure may lead to significant and additional substantive compliance costs for businesses that would reduce pollutant emissions to air especially, as well as water and soil in a significant way, when compared to the baseline.

For example, a detailed study of the possible impacts of BAT conclusions was carried out for selected

[17] Terms of reference available at: Circabc (europa.eu)

plants under scope of the LCP BAT Conclusions (Ricardo, 2018). This found that, for the largest plants (>300 MW_{th}) firing solid fuels, there was an appreciable increase in the expected compliance costs to comply with lower BAT-AELs for SO_2, NO_X, dust and Hg compared to when the upper BAT-AEL was met (Ricardo, 2017). The estimates from that study suggested total annualised substantive compliance costs of €0.6bn/year for meeting upper BAT-AELs, rising 10 times to €5.7bn/year for meeting lower BAT-AELs (two thirds of this higher cost was estimated to be due to fitting high efficiency SO_2 reduction measures). The monetised benefits in that study were estimated to outweigh the costs – and that this conclusion held true at the lower BAT-AEL level as well as upper BAT-AEL: €3.4bn/year for upper BAT-AELs, rising to €14.2bn/year for lower BAT-AELs.

These estimates are not representative of the likely impact across all sectors. Nevertheless, they highlight the potential order of magnitude of the potential requirements associated with tightening of ELVs towards the lower end of BAT-AEL ranges. To clarify, in this example, existing LCPs would have needed to comply with lower BAT-AELs, as well as the fact that for this sector (LCPs) minimum standards already had to have been met (IED Annex V ELVs) prior to achieving BATC compliance (and this existing compliance was accounted for in the estimation of costs), which leads to increases in estimated compliance costs.

To inform the potential scale of emission reductions that could occur when applying this measure, analysis of the Commission's BAT-AEL tool (European Commission, 2020) listing all BAT-AELs from BATC was carried out. This used, for an illustrative pollutant of NOx emissions, the average % of potential reduction from the upper to the lower end of BAT-AEL ranges across CLM, GLS, LCP, PP and REF BATC, together with the assumed proportion of installations that would be affected by the measure (assumed to be 10%), the NOx emissions by sector, and the average EU NOx damage cost to generate, at a high level, the possible illustrative NOx benefit for these five sectors from this measure. These illustrative NOx benefits were estimated to be between €0.9bn and €2.8bn per year. The total benefits of this measure would sum the impacts across all environmental issues, which would be expected to be tens of €billions per year overall.

The economic impacts can also be illustrated using a similar example. Let there be around 10% of the installations affected by this measure IED#5 so that each of these installations may require to invest at least €0.5 million additional or earlier than in the baseline. This would mean that capital costs could be around €2 850 million over the 20-year period or an equivalent annual cost of around €210 million per year. When summed with the administrative burden on operators and public authorities, the costs would be at least €225 million per year (central estimate), which are significantly lower than the potential benefits for this one pollutant (NOx) illustration.

Box 2: Summary of the impacts of measure E-PRTR#2

Whilst E-PRTR reporting is at the level of 'facility', the IED sets regulatory controls at sub-facility level i.e. for 'installations'. Since there may be several IED installations in an E-PRTR facility, this restricts the extent to which E-PRTR data can support the IED. This measure would entail reporting releases/transfers on an installation basis rather than aggregating to the facility level. The benefits of reporting at this level would be greater data granularity thus enabling better matching to individual activities.

A major implication of this measure would be a significant increase in the number of reports that will need to be submitted – increasing from circa 34,000 facilities at present, to circa 210 000 installations when considering the current, and proposed, IED scope. However, this translates in little increase of burden for operators as currently that data is already collected by the operator and has to be

aggregated per facility for reporting under to the E-PRTR.

Changes in administrative burden on businesses and public authorities have been estimated to the extent that is possible and are summarised in the Table A10-1. Positive estimates refer to additional costs and negative estimates refer to potential savings.

Table A10-1: Administrative burden from PO1

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
PO1-a – More effective legislation		
IED#1	0.6	0.4
IED#2	0.2	0.09
IED#3	0.6	0.4
IED#4	None/Limited	None/Limited
IED#5 – ("out" in Alternative 1, "in" in Alternative 2)	8	7
PO1-b Implementation and enforcement		
IED#6	None/Limited	0.2
IED#7 [18]	4	5
IED#8	None/Limited	0.05
IED#9	0.6	0.4
PO1-c Rights of the public		
IED#10	None/Limited	None/Limited
IED#11	None/Limited	Baseline obligations
IED#12	None/Limited	2
IED#13	None/Limited	0.2
E-PRTR#1	0.5	0.7
E-PRTR#2 – ("out" in Alternative 1, "in" in Alternative 2)	0.06	0.08
E-PRTR#3	-	-
E-PRTR#4	-	-
PO1-d Simplification		
IED#14	None/Limited	None/Limited
IED#15	-0.6	-0.5
IED#16	-0.1	-0.3
E-PRTR#5	-0.7	-
E-PRTR#6	1.9	0.13
E-PRTR#8	0 M€	-
E-PRTR#9	-12.5	-
Sub-total IED measures (alternative 1, without IED#5)	4.3	7.94
Sub-total IED measures (alternative 2, incl. IED#5))	12.3	14.94
Sub-total E-PRTR measures (Alternative 1, without #2)	(-10.314)	0.882
Sub-total E-PRTR measures (Alternative 1, incl. E-PRTR#2)	(-10.255)	0.962

[18] A report for the European Commission into common rules for assessing compliance is underway and may feed into this assessment.

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
Total - all PO1 measures (Alternatives 1)	**-6.014**	**8.372**
Total - all PO1 measures (Alternatives 2)	**2.045**	**15.902**

2. Information supporting the assessment of Option PO2

Box 3 compares the two measures contained in PO2-b.

Box 3: Comparison of the two measures contained in PO2-b

PO2-b puts forward alternative measures for improving the flexibility of the BREF process in an attempt to keep up with the latest technological advances, whilst maintaining the robustness and standards of the existing processes.

These alternatives include (IED#19) establishing shorter, up to 5-year BREF cycles focussed on defining stricter BAT-AELs based on recent innovations or (IED#20) establishing the INnovation Centre for Industrial Transformation & Emissions (INCITE) to monitor the Technology Readiness Level (TRL) and environmental performance (BAT-AEPLs) of emerging and breakthrough techniques, which would also recommend a BREF review and/or update of the BAT conclusions when identified as pertinent (IED#20).

At this stage, it is envisaged that measures would target new installations and/or major refurbishments or retrofits but would not trigger a permit reconsideration and update for all existing installations, unless recent transformative techniques have been made available that would be applicable to all existing installations. More frequent BREF reviews and/or BAT conclusion updates would likely affect a minority of installations at least in the shorter term, until innovation leads to the availability of transformative techniques.

The ambition of these measures is similar, and both would address issues surrounding the lack of frequency of the BREF review process and/or updates of BAT conclusions, which affect the ability to keep up with exogenous technological progress. That said, the key advantages and disadvantages of these measures vary, as shown below.

Policy measure	Advantages	Disadvantages
IED#19 Shorter BREF cycles	-Certainty within the adjusted framework could help businesses adapt and plan their investments accordingly (for new plants or major retrofits only). -More frequent updates of best environmental performance standards (BAT-AEPLs) are	-Managing a strictly more frequent BREF process complementary to the baseline, without a strategic understanding or identification of opportunities driven by technological progress, could increase inefficiencies. -The rigidity of the process would be retained, also

	performed systematically.	contributing to inefficiencies (e.g., spending resources on a BREF review of there were not many novel techniques nor lower performance levels available) and/or missed opportunities.
IED#20 INCITE	-Potential to be an efficient tool to identify opportunities linked to technological progress across sectors and respond flexibly, e.g., the triggering of a BREF review and/or proposing updates to BAT conclusions only happens once opportunities are identified.	-Could introduce some regulatory uncertainty (i.e., unclear timing of reviews and updates of BAT conclusions, etc.), which could affect business investment negatively. -Efficiency might depends upon the ability of INCITE (resources will be limited requiring priorities) to monitor a wide range of complex sectors and their technologies.

Experts from Ricardo and other stakeholders were also consulted. Their expert opinion is that could be a more effective and efficient approach to address some of the shortcomings identified in the IED evaluation in relation to the BREF process, especially when compared to introducing new and systematic (rigid) homogenous shorter BREF cycles.

Stakeholders attending focus groups indicated that INCITE (IED#20) could become an effective and efficient platform for triggering BREF reviews, once novel techniques or better performance levels have been identified for key environmental issues. Stakeholders attending a workshop stated that measure IED#19 (shorter BREF cycles) is likely to be technically challenging and difficult to implement in practice, if the principles and rigour of current BREF process are maintained.

Box 4 compares the two measures contained in PO2-c.

Box 4: Comparison of the two measures contained in PO2-c

PO2-c includes alternative measures that would seek to facilitate sectoral transformation in line with longer term EU objectives, by allowing operators to retain focus on contributing to the EU's long-term objectives even if these may mean that they cannot keep up with the implementation of BAT conclusions in the shorter term.

These alternatives include amending requirements to allow operators to have more time to implement BAT conclusions where deep transformation of industrial sectors is required (IED#21) *versus* establishing a Transformation Plan and either a permit review obligation by 2030 that focusses on the capacity of the installations to operate in accordance with the EU's general zero-pollution, circular economy and climate objectives; including a requirement for installations to

produce Transformation Plans or integrating the Transformation Plan in the EMS (IED#22).

All measures would encourage IED operators to align their investments with longer term, transformation needs. However, their approach and, thus, their key advantages and disadvantages are likely to vary.

Policy measure	Advantages	Disadvantages
IED#21 'Derogation' from implementing BAT conclusions due to a requirement for deep transformation	-Focussed on sectors that require 'deep transformation' -Could have limited administrative burden since similar to existing (familiar) derogation process. - Tool to promote deeper transformation with benefits for operator (and no significant additional costs/ investments).	-Lack of ability to build a holistic understanding and monitoring of transformation efforts by IED operators. -Some of the transformation and decarbonisation pathways may not be win/win options for every environmental aspect.
IED#22 Permit review obligation & preparation of Transformation Plan Alternative: Transformation Plans integrated in the EMS	-All IED operators would be encouraged to reflect on their transformation needs and demonstrate how their plans may or may not align with BAT conclusions and general EU objectives -Integrated into the permitting process and degree of sophistication could be adjusted to the sector and/or plant size (same as EMS do now in BREFs). The alternative solution offers the same advantages as above at lower costs.	-Could be inefficient, especially where there are sectors that may require limited transformation or have already undergone significant transformation. -Could be burdensome for public authorities to manage rapidly; therefore causing delays. This can be mitigated by ntegratong Plans in EMS.

Experts from Ricardo and other stakeholders were also consulted. Their expert opinion is that the permit review obligation requiring Transformation Plans (IED#22) is likely to gain more traction, and improve the collective understanding of industry's transformation needs and overall preparedness for industry sectors to accelerate implementation, to increase transparency and provide confidence that specific actions will be taken forward. The alternative (EMS integration) which offers the same advantages looks even more promising given that it's delivered at much lower costs.

During the focus groups held, some industry stakeholders were supportive of measure IED#21, while Member State representatives noted that a clearer EU process and/or guidelines would be needed to implement these derogations. Stakeholders attending a second workshop, especially Member States' representatives, were supportive of measure IED#22, whilst some (e.g., DE)

raised concerns on the timings of the permit review obligation, considering that the Transformation Plans should ideally be required for implementation before 2030.

Additional administrative have been estimated to the extent that is possible and are summarised in Table A10-2 below.

Table A10-2: Administrative burden from PO2-a, PO2-b, and PO2-c

Policy options	Additional administrative burden on businesses, annual average over 20 years (M€2020 p.a.)	Additional administrative burden on public authorities, annual average over 20 years (M€2020 p.a.)
PO2-a		
IED#17	0.4	0.2
IED#18	0.6	0.3
PO2-b		
IED#19	**3**	**5**
IED#20	**3**	**4**
PO2-c		
IED#21	**0.6**	**0.3**
IED#22	**50**	**50**
IED#22 (alternative)	**20**	**0**
Total IED measures[19] #21	**7.6**	**9.8**
Total IED measures[20] #22	**57**	**59.5**
Total IED measures[21] #22 (alternative)	**27**	**9.5**

3. Information supporting the assessment of Option PO3

Box 5 compares the two measures contained in PO3-a.

Box 5: Comparison of the two measures contained in PO3-a

PO3-a (Better setting of BAT-AEPLs) includes alternative measures that would improve the determination of BAT-AEPLs and their implementation, by updating their status through legislation.

These alternatives include introducing explicit options for Technical Working Groups (TWG) to set: i) either binding resource efficiency and circular economy BAT-AEPLs or indicative performance levels (IED#23), ***or*** *ii)* also include an explicit option to set benchmark levels associated with BAT, for which the inclusion in the Environmental Management System is

[19] option IED#21 and #22 are exclusive
[20] option IED#21 and #22 are exclusive
[21] option IED#21 and #22 are exclusive

obligatory (IED#24).

Both measures would bring the status of BAT-AEPLs in line with that of BAT-AELs. Similar to emission KEIs covered by BREFs, there would be a possibility to set indicative resource efficiency and circular economy levels, e.g., when there is large variability in the data due to important differences in products manufactured, or when one KEI is much more important than another (like in the case for NO_x and CO emissions in many processes). This would be a decision of the TWG on an individual KEI basis. Under measure IED#23, existing BAT-AEPLs would not become binding in the same manner as BAT-AELs. Under measure IED#24, existing BAT-AEPLs would become benchmarks for inclusion in the EMS. Only a new or review of a BREF and its BAT conclusions would render the BAT-AEPL binding in line with BAT-AELs, where applicable.

The introduction of benchmark levels (IED #24) would create an opportunity to improve implementation of past BAT-AEPLs derived under the IED, or possibly even under the IPPCD. They can, retroactively, be assigned the status of benchmark levels, meaning that operators would be obliged to address them in the EMS. Any review of a BREF and its BAT conclusions would consider and update the benchmark levels or convert them into binding BAT-AEPLs if this is deemed preferable by the TWG.

Experts from Ricardo and other stakeholders were also consulted. Their expert opinion is that **benchmark levels would provide a more ambitious yet practical option for TWG** (measure IED#24), which could likely result in a more efficient and practical approach when compared to the "all or nothing", that is, "binding", option put forward by measure IED#23.

The scale of the benefits, however, would depend on the uptake of the binding BAT-AEPL and/or the benchmark-setting options when compared to the baseline. Evidence suggests that having a more pragmatic option for TWG (IED#24) is likely to have more impact in practice, since it is not expected that binding BAT-AEPLs would be preferred or possible in most cases.

Additional administrative costs are summarised in Table A10-3 below.

Table A10-3: Administrative burdens for PO3-a to PO3-g

Policy options	Additional administrative burden on businesses, annual average over 20 years (M€2020 p.a.)	Additional administrative burden on public authorities, annual average over 20 years (M€2020 p.a.)
PO3-a		
IED#23	7	6
IED#24	16	12
PO3-b		
IED#25	46	23
PO3-c		
IED#26	None/ Limited	None/Limited

Policy options	Additional administrative burden on businesses, annual average over 20 years (M€2020 p.a.)	Additional administrative burden on public authorities, annual average over 20 years (M€2020 p.a.)
PO3-d		
E-PRTR#10	3.9	0.3
PO3-e		
E-PRTR#11	5.0	-
E-PRTR#12	5.0	-
E-PRTR#13	25.0	0.03
PO3-f		
E-PRTR#14	0.3	0.4
E-PRTR#15	0.3	0.4
E-PRTR#16	0.02	0.03
PO3-g		
E-PRTR#17	-	-
Sub-total IED measures #23	53	29
Sub-total IED measures #24	62	35
Sub-total E-PRTR measures	39.55	1.201
Total - all PO3 measures	**92.50** **101.5**	**30.2** **36.2**

4. Information supporting the assessment of Option PO4

Box 6 compares the three measures contained in PO4-b.

Box 6: Comparison of the three measures contained in PO4-b

PO4-b includes alternative measures that would review or allow the BREF and IED permitting processes to consider and set emission limit values for GHG for IED installations, even where these emissions are addressed under the EU ETS framework.

The legislation that transposes the IED in the majority of Member States (21 out of 27) does not include emission or concentration limits for GHG. This option would, therefore, review and/or change this. The alternatives considered have similar ambitions, albeit the proposed timing and approach is very different. Whereas one alternative (IED#28) suggests that a formal review of the IED and ETS interface is carried out, another (IED#29) would introduce a 'sunset date' beyond which this exemption is no longer applicable or delete this exemption (Article 9(1)) immediately (IED#30).

Available evidence regarding the **PO4-b-IED/ETS interface** measures that delete Article 9(1) later (IED#29) or immediately (IED#30**)** suggest that these measures will also lead to an increase in CAPEX and OPEX for IED operators, who would be required to increase decarbonisation and energy efficiency efforts. This, however, could lead to more carbon allowances becoming available for trading in the ETS, which could impact the carbon

price and affect incentives for emissions reductions in other ETS sectors. The scale of impact will depend on whether are measures are taken to address potential impacts on the carbon price, e.g. through the Market Stability Reserve, the timing of measures, derogations allowed, speed of technological advancement, technology cost curves, and energy efficiency gains achieved. Subsequent to the initial investment, operators' life cycle costs would diminish. Given the evidence available and significant uncertainties, it has not been possible to quantify these impacts.

Introducing a review of the interface between the IED and the ETS (IED#28) or a sunset (IED#29) clause into Article 9(1), or deleting Article 9(1) (IED#30) could have a wide range of impacts, depending on the selected alternative. Immediate deletion would likely result in GHG emission reductions at the specific installations, depending on the stringency of GHG emission limits derived under IED. This may also have other positive environmental impacts, such as on air quality and resource use, as decarbonisation techniques may have also positive impacts on overall depollution, and hence environmental protection. This, however, could lead to more carbon allowances becoming available for trading in the ETS, which could impact the carbon price and affect incentives for emissions reductions in other ETS sectors. The scale of impact will depend on whether measures are taken to address potential impacts on the carbon price, e.g. through the Market Stability Reserve, the timing of measures, derogations allowed, speed of technological advancement, technology cost curves, and energy efficiency gains achieved. Introducing a review (IED#28) or sunset (IED#29) clause into Article 9(1) may delay potential impacts.

Additional administrative costs are summarised in Table A10-4 below.

Table A10-4: Administrative burden from PO4-a and PO4-b

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
PO4-a		
IED#27	**29**	**21**
PO4-b		
IED#28	None/Limited	None/Limited
IED#29	15	11
IED#30	56	40
PO4-c		
E-PRTR#18	0.002	0.003
PO4-d		
E-PRTR#19	0.002	0.003
sub-total IED measures	100	76
sub-total E-PRTR measures	0.004	0.006

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
Total - all PO4 measures	**100**	**76**

5. Information supporting the assessment of Option PO5

Box 7 provides a detailed summary of the impacts of measures included in PO5-a, that dominate the assessment of policy option PO5. An overview of the main parameters, such as number of farms, animals, emissions, costs and benefits, for the various LSU thresholds considered for cattle, pigs and poultry farms (50-150 LSU) is provided in Box 8.

Box 7: Summary of the impacts of the three measures included in PO5-a

PO5-a includes three policy measures on cattle-farming and IRPP: expanding the current IRPP scope, bringing cattle farms within the scope and applying a tailored permitting/registration system.

Analysis carried out suggests that including cattle-farming at a threshold between 50-150 LSU or more and expanding the capacity thresholds for IRPP to a threshold level between 50-150 LSU or more could introduce **~161 000-517 000 farms across the EU under the IED's regulatory framework (84 000-330 000 cattle farms and 77 000-187 000 additional IRPP farms).** This would mean a significant increase in the number of sites regulated by the IED, covering in total as a result of the scope increase (i.e. including the farms already covered) however only less than the 10-40% larger farms, out of the c.1.5 million of cattle, pigs and poultry farms with more than 10 LSU existing in the EU.

	Pigs farms	Poultry farms	Cattle farms	Total
Total farms in EU incl. subsistence (< 10 LSU)	1 955 640	3 972 880	1 927 650	7 856 170
Total farms in EU > 10 LSU	275 210	318 610	869 400	1 463 220
Farms currently covered by IED	11 100	12 000	0	23 100
Farms newly brought into IED scope	77 000-187 000		84 000-330 000	161 000-517 000

Administrative burden on businesses and public authorities

As a result of these measures, farm operators would need to further engage with applying for permits and implementing BAT based requirement, as defined in a Commission implementing act and, if already regulated, addressing permit reconsideration and updates.

Under full IED permitting, **additional administrative costs for businesses is estimated at €182 million per year** for cattle, pigs and poultry **farms of 50 LSU** or more, and at **€596 million per year** for **farms at 150 LSU** or more over 20 years from adoption of these policies. **Public authorities would face a similar annual burden**.

Sectoral expansion	Administrative burden on businesses (per year on average)	Administrative burden on public authorities (per year on average)
Cattle farming (50-150 LSU or more)	€102-401 million	€102-401 million

Rearing of pigs (50-150 LSU or more)	€39-95 million	€39-95 million
Rearing of poultry (50-150 LSU or more)	€41-100 million	€41-100 million
Total	**€182-596 million**	**€18222-596 million**

Source: Ricardo analysis

The introduction of a more **tailored regulatory framework** seeks to minimise the impact on the already established Member State permitting systems. This framework would define the minimum BAT-based requirements that Member States could implement within their national permitting systems and, therefore, mitigate the additional administrative and compliance burden. The tailored framework could also be employed for the existing IED IRPP installations at the discretion of Member States.

The possible reduction of impacts on administrative burden could be achieved by:

1. Reducing IED requirements specific to the livestock sector.
2. Aligning with existing permitting systems.

Firstly, reducing overall requirements (pillar 1) may include:

- Removal of the need for baseline reports under Article 22.
- Reduction in the frequency of inspections to, e.g., every 5 years as a default, or being triggered by complaints or compliance.
- Stepwise BAT requirements that are dependent on farm-size (rather than one farm size threshold), thereby reducing BAT requirements for smaller farms.
- Inclusion of minimum ELVs in a Commission implementing decision.

This is expected to yield a reduction in administrative burden by up to **20%,** while still achieving a significant environmental gain.

Secondly, aligning with the existing permitting systems (pillar 2) could achieve between **5% – 40% additional** reductions in burden when compared to a full permitting scenario. This can be achieved by the Member States that already deploy environmental permits or apply general binding rules that mean that non-IRPP farms have to apply BAT or comply with certain ELVs, in practice.

The table below explores the possible cumulative reduction in administrative burden associated with tailored approach when compared to the full-permitting baseline scenario.

Base reduction in tailored approach from Pillar 1: Reduction in requirements	**First additional reduction based on existing permitting system**	**Second additional reduction based on existing permitting system with full implementation of BAT**	**Cumulative level of reduction in administrative burdens achieved for different baseline situations.**
20% for all operators and permitting	0% (no evidence of a permitting system. Registration systems are not considered	N/A	**20%**

authorities	valid)		
	5% (evidence of a permitting system but no evidence of BAT)	N/A	**25%**
	20% (evidence of a permitting system with some level of BAT, but with confirmation from the MS that BAT requirements are more limited than likely required under the IL BREF)	20% (evidence of a permitting system with full implementation of BAT)	**40% - 60%**

Source: Ricardo analysis based on engagement with stakeholders

Therefore, the cumulative **reduction in administrative burden associated with the tailored approach could range from 20% - 60%,** when compared to a full permitting baseline and depending on the Member States' status quo.

A consultation was carried out to gather additional evidence and confirm which of these possibilities would be most appropriate for each Member State. From this, we estimate that the measure could reduce the **overall administrative burden for these sectors by 30%-40% across the EU**. The largest efficiencies would appear for Member States with strict existing environmental requirements.

PO5-a would, therefore, have a **resulting administrative burden on businesses between €110-394 million per year**, depending on the specific threshold between 50-150 LSU, if the tailored approach to regulating farms was taken forward. **Public authorities would likely face a similar annual burden.**

Sectoral expansion	Administrative burden on businesses (per year on average)	Administrative burden on public authorities (per year on average)
Cattle farming (50-150 LSU or more)	€63-281 million	€63-281 million
Rearing of pigs (50-150 LSU or more)	€23-55 million	€23-55 million
Rearing of poultry (50-150 LSU or more)	€24-58 million	€24-58 million
Total (50-150 LSU or more)	**€110-394 million**	**€110-394 million**

Source: Ricardo analysis

In addition, further administrative savings could be introduced if the tailored framework were adopted by Member States for the existing IRPP installations (~20 500).

Operating costs and conduct of business (substantive compliance costs)

PO5-a would also require farm operators to adjust and/or implement new techniques to target the reduction of their environmental impacts as identified through a Commission implementing act based

on BAT. The stringency of the BAT requirements cannot be defined with precision at this stage. These would target in particular two key environmental issues for the sector: emissions to air of ammonia, NH3, and methane, CH4. **Substantial compliance costs to introduce abatement techniques for these pollutants only could reach an annual €265-813 million across the EU, depending on the specific threshold between 50-150 LSU**. This is a central estimate based on existing practices of emission reduction in Member States who already apply reduction technologies. The BAT based Commission implementing act may however require a higher share of highly effective technologies to achieve stricter ELVs.

Sectoral expansion	Substantive Compliance Costs for Abatement of NH_3 and CH_4 emissions (per year on average)
Cattle farming (50-150 LSU or more)	Around €112-441 million
Rearing of pigs (50-150 LSU or more)	Around €91-222 million
Rearing of poultry (50-150 LSU or more)	Around €62-150 million
Total (50-150 LSU or more)	**Around €265-813 million**

Source: Ricardo analysis based on the GAINS model

Environmental benefits

The environmental benefits associated with these measures could be significant. For example, the introduction of cattle and the expansion of IRPP coverage within the IED could result in significant reductions in the emissions to air of NH_3 and CH_4. As illustration of the relevance of the widened scope, a large part of emissions of ammonia from livestock farms under the IED legal framework:

Proportion (%) of ammonia emissions of the sector regulated under the existing and the widened IED scope					
	Pigs farms	Poultry farms	IRPP total	Cattle farms	IRPP and cattle total
Existing IED scope	39.4%	42.0%	40.4%	0.0%	17.6%
Widened IED scope (50-150 LSU)	82-86%	86-97%	84-97%	41-81%	70-92%

Furthermore, by expanding the scope to include cattle farms as well as smaller pigs and poultry farms, the fraction of methane emissions from livestock that is regulated by the IED as such increases from around 3% to 43-80% (c. 2,650-4,900 kt CH_4 per year) . This includes emissions from enteric fermentation and manure management, representing c. 82% and 18% of the EU livestock methane emissions in 2018, respectively. There is therefore a high potential for the IED to contribute to methane emission reductions, as technologically feasible mitigation practices do exist.

NH3 and CH4 emission reductions benefits are valued at around €5 450-9 240 million per year, depending on the specific threshold between 50-150 LSU. This is a central estimate based on existing practices of emission reduction in Member States who already apply reduction technologies. The BAT based Commission implementing act may however require stricter ELVs and hence result larger emission reductions.

Sectoral expansion	Monetised benefits of NH_3 abatement (per year on average)	Monetised benefits of CH_4 abatement (per year on average)
Cattle farming (50-150 LSU or more)	Around €2 100-3 980 million	Around €1 299-2 653 million
Rearing of pigs (50-150 LSU or more)	Around €524-690 million	Around €551-719 million
Rearing of poultry (50-150 LSU or more)	Around €974-1 195 million	-
Total (50-150 LSU or more)	**Around €3 598-5 865 million**	**Around €1 850-3 372 million**

Source: Ricardo analysis based on the GAINS model

Reductions in other air pollutants, as well as emissions to soil and water, both directly (e.g., PM) and indirectly (e.g., PM, ozone) would lead to further benefits which have not been quantified for this report.

Box 8: Main parameters for each LSU threshold (50-150 LSU) considered in PO5-a

The values below present the number of farms, animals as well as the reduction of CH_4 and NH_3 emissions corresponding to a specific threshold in the range of 50-150 LSU. The percentage of farms and animals per LSU threshold are relative to the total number of non-subsistence farms in the EU-27 per livestock category. Furthermore, costs (administrative and compliance), monetised benefits and the resulting benefit-cost ratio is presented for each LSU threshold considered.

The emissions of CH_4 and NH_3 covered by each LSU threshold are directly in proportion of the number of animals covered by that LSU threshold. In the case of CH_4 emission reduction from cattle farms, the assessment has assumed a technique (nutrition based) can be applied that reduces emissions from enteric fermentation by up to 10%, which is currently an accepted value and which is in line with academic research on various feed modifications. However, it is acknowledged that this is a conservative estimate as some scientific publications report significantly higher emission reduction potential (c. 36-50%). Detailed assessment of specific feeding techniques is required to validate such potential. This would take place as part of the preparation of the BAT requirements for these activities.

	Farms		Animal heads		CH_4 reduction	NH_3 reduction
	Number	%	Number (x1000)	%	kt	kt
CATTLE						
> 50 LSU	330,346	39%	64,008	81%	359	115
> 100 LSU	162,736	19%	48,986	62%	275	88
> 125 LSU	123,437	14%	40,899	52%	229	74
> 150 LSU	84,000	10%	32,811	41%	184	59
PIGS*						
> 50 LSU	102,120	37%	98,947	94%	159	39
> 100 LSU	69,660	25%	93,288	89%	150	37
> 125 LSU	59,080	21%	88,681	85%	143	35
> 150 LSU	48,500	18%	84,073	80%	135	33
POULTRY*						
> 50 LSU	107,770	32%	1,198,810	98%		71
> 100 LSU	71,700	21%	1,153,920	95%		68
> 125 LSU	61,700	18%	1,105,910	91%		65
> 150 LSU	51,700	15%	1,057,900	87%		63

* total values for pigs and poultry, i.e. including the values for the existing IRPP farms under the IED.

	Admin costs for business €m/year	Admin costs for business - TA €m/year	Admin costs for public authorities €m/year	Admin costs for public authorities - TA €m/year	Compliance costs for business €m/year	Benefits €m/year	BCR
CATTLE							
> 50 LSU	401	249 - 281	401	249 - 281	441	6,633	6.9
> 100 LSU	198	123 - 139	198	123 - 139	217	5,076	10.8
> 125 LSU	150	93 - 105	150	93 - 105	165	4,238	11.9
> 150 LSU	102	63 - 70	102	63 - 70	112	3,399	14.0
PIGS							
> 50 LSU	94.6	55.1	94.6	55.1	222	1,409	4.3
> 100 LSU	60.9	35.4	60.9	35.4	143	1,282	6.0
> 125 LSU	49.9	29	49.9	29	117	1,179	6.7
> 150 LSU	38.9	22.6	38.9	22.6	91	1,075	7.9
POULTRY							
> 50 LSU	99.6	57.9	99.6	57.9	150	1,195	4.5
> 100 LSU	62.1	36.1	62.1	36.1	93	1,125	6.8
> 125 LSU	51.6	30.1	51.6	30.1	78	1,050	7.6
> 150 LSU	41.3	24	41.3	24	62	974	8.9

TA: Tailored Approach; BCR: benefit-cost ratio

Table A10-5 provides a detailed summary of the assessment of impacts of the measures that dominate the impact assessment of options PO5 a to f. These are the measures that concern IED scope expansion for which full detail is available in Annex 8. Measures concerning E-PRTR scope expansion have limited impacts in the form of administrative burden, which are provided in Table A10-6.

Table A10-5: Synthesis of impacts of IED scope expansion measures included in PO5 a to f

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
PO5-a	Expand the current sectoral coverage of the **rearing of animals:** cattle farming (**IED#31**), expand IRPP (**IED#32**) AND a tailored permitting process for the rearing of animals (**IED#33**)	▪ Agriculture emissions of 463Mt CO2e represent 13% of the total EU-27 GHG emissions. **The activities regulated under this option currently represent about 21% of the 463Mt CO2eq of GHG (mainly methane) emitted each year by the agricultural sector.** ▪ Livestock farming contributes to the presence of surplus nitrogen in European aquatic environments while also being a principal emitter of ammonia, leading to considerable environmental damage, such as eutrophication. ▪ EU27 total NH_3 emissions were 3.6 Mt in 2018, of which 2.4 Mt/year were from livestock. **The NH_3 emissions from pigs represent approximately 45% of NH_3 emissions relative to the scope of the IED, and the corresponding value for poultry is 28%.** ▪ **The activities regulated under this option currently represent about 37% of total EU ammonia emissions to air.** ▪ The processes and emissions patterns from the cattle sector (and widened scope for IRPP) are relatively simple in comparison with other IED activities. Agro-industrial activities may not require the full extent of the IED regime as laid out in 2010/75/EU. Therefore, for such activities a specific tailored approach (TA) is considered.	<u>Include cattle farming (IED#31 and #33)</u> ▪ This covers approximately 84 000-330 000 cattle farms (>50-150 LSU). ▪ The total EU27 compliance costs for bringing cattle farms larger than 50-150 LSU (equivalent to 69-207 animal places or heads) into the IED are estimated to be € 112-441 m/ year for applying abatement measures tackling NH_3 and CH_4 emissions. ▪ The associated administrative costs are estimated to be € 102-401 m/year leading to a total cost of € 214-842 m/year. The adoption of a TA for implementing cattle farming in the IED could represent a cost reduction of c. 30%. ▪ The costs are smaller than the monetised benefits of **NH_3 and CH_4** emissions reductions which are estimated to be c. € 3 400-6 600m/year. **The benefit-cost ratio is approximately between 7-14.** ▪ It is assumed that the majority of the cattle farms will be SMEs, particularly sizes 50 to 300 LSU. ▪ With a threshold within the range of 50-150 LSU, approximately 185-360 kt of CH_4 and 60-115 kt of NH_3 could be mitigated per year. These reductions in CH_4 emissions would contribute to the EU Methane Strategy. ▪ The fraction of methane emissions from cattle that is regulated by the IED as such would increase from

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
			0% to around 80%. <u>Amend the capacity thresholds of IRPP (IED#32 and #33)</u> ▪ This covers an additional 77 000-187 000 pigs and poultry farms under the IED (c. 37 400-91 000 pigs and 39 700-95 800 poultry farms). ▪ The total EU27 compliance costs for reducing the IED thresholds to a threshold within the range of 50-150 LSU for pigs (170-500 production pigs, 65-195 sows) and poultry (~2 400-7 200 animals) are estimated to be € 91-222 m/year and € 62-150 m/year, respectively, for applying abatement techniques tackling NH_3 and CH_4 emissions. ▪ The associated administrative costs are estimated to be € 39-95 m/year for pigs and € 41-100 m/year for poultry, leading to a total cost of € 130-317 m/year for pigs and € 103-250 m/year for poultry. ▪ The costs are smaller than the monetised benefits of NH_3 and CH_4 emissions reductions which are estimated to be € 1 075-1 409 m/year for pigs and € 974-1 195 m/year for poultry. **The adoption of a TA for IRPP in the IED could see the permitting costs drop by c. 30%, per year.** ▪ **The benefit-cost ratio is approximately 4-8 for pigs and 5-9 for poultry** (depending on the specific threshold within 50-150 LSU)**.** ▪ With a threshold within the range of 50-150 LSU, approx. 77-101 kt of CH_4 could be mitigated per year (pigs), as well as approx. 19-25 kt and 37-45 kt of NH_3 emissions per year for pigs and poultry respectively. <u>Introduce a tailored regulatory framework (TA)</u> ▪ The TA, even when not combined with the scope extensions, could be beneficial and lead to similar

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
			environmental performance with lower administrative burden. A TA would lead to a reduced administrative cost for businesses (farms) as compared to implementing full IED chapter II requirements. The amount this would be reduced will depend on which requirements are placed on installations in the TA. ▪ **It is expected that the TA via its Pillar 1 (reducing requirements) could reduce cost up to 20%. If Member State competent authorities chose to implement a TA for those already regulated, then costs for existing IRPP operators would be lowered for these farms in the EU27 by around € 20 m/year.** ▪ Farm operators that are SMEs would stand to benefit from the reductions in administrative burden. ▪ No detrimental environmental impacts are expected to be induced by the briefer TA, which will reduce administrative burden, but not compromise on pollution control.
PO5-b	Extend the current sectoral coverage to also include **battery production** within the scope of the IED **IED#34**	▪ The main environmental pressures from the sector are energy consumption, use of hazardous substances, water pollution and waste management, use of raw materials / circularity of the materials used and re-manufacturing of products. ▪ **Europe could see its share of global battery production increase from a 7% in 2020 up to 31% by 2030.** ▪ The EU's climate-neutral target includes an objective of at least 30 million zero-emission cars on the road by 2030, and the ambition of European companies meeting more than 90% of the demand for batteries. ▪ Re. total energy storage capacity, sector growth is primarily attributable to the electrification of transport (accounts for most of the	▪ The Commission has identified batteries as a value chain of strategic importance and has proposed an industry-led approach. ▪ The scope of the EU battery directive has recently been extended to cover sustainability and safety requirements targeting among others the restrictions of hazardous substances. Sustainability of batteries and their re-purposing is regulated by the (new draft – in co-legislation) Batteries Regulation ▪ More than half of the companies active in this field are SMEs thus there may be a considerate impact from the policy option on smaller companies. ▪ Apart from the pollution of air and

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
		battery demand in 2030). ▪ **The total production capacity in the EU ranges between 69.5 and 143.5 GWh. Plans have been revealed to build more than 20 large-scale battery factories in the EU in the coming years, with an expected production capacity of 600 GWh.** ▪ Inclusion of battery manufacturing and disposal and recovery would ensure that all types of facilities included in the life cycle of batteries are covered by the requirements. As such, it can contribute to the consistent framework and provide for more sustainable growth of the industry. ▪ Much of the batteries value chain is already covered by IED (non-ferrous metals and processing, chemicals, production of chemicals, waste treatment). ▪ **The rapidly changing scale of battery production, disposal and recovery is a key driver in determining whether this sector should be regulated under the IED or not.**	water, the IED (through BAT conclusions for the sector) could be effective in addressing energy consumption, use of resources, chemicals and in accident prevention (e.g. through an EMS). ▪ The number of production installations is expected to be c. 20-25 sites by 2030 and c. 45-95 by 2040 (central estimate used in the assessment is 25 installations).
	Extend the current sectoral coverage to also include **forging presses, cold rolling** with capacity exceeding 10 t/h, and **wire drawing** with capacity exceeding 2 t/h within the scope of the IED **IED#36**	▪ The environmental pressures from forging relate to energy use, noise, emissions to air, GHG emissions, and resource consumption.	▪ The measure would expand the existing scope and cover likely more than 250-400 installations (combined forging, cold rolling and wiredrawing installations). ▪ The IED could be effective in regulating the pollution typically arising from these activities.
	Extend the current sectoral coverage to also include **textile finishing activities** with	▪ Finishing processes are considered one of the most pollutant aspects of textiles. The main environmental issues relate to the amount of polluted water discharged and the chemical load it carries, including	▪ The measure would expand the existing scope to include the activity of 50-100 installations that may also have finishing activities. ▪ Textile manufacturing is a diverse industry dominated primarily by

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
	the existing capacity thresholds in IED activity 6.2 (pre-treatment or dyeing of textile fibres or textiles) **IED#37**	organic compounds. Moreover, the textile finishing sector consumes high rates of energy, water and chemicals. Other relevant issues to consider in this sector are those related to air emissions, solid wastes and odours, which can be of significant nuisance in certain treatments. ▪ The textile finishing industry market share in EU textile production was around 10% between 2011-2017. In 2018 the finishing of textiles industry accounted for 8% of the EU total textile manufacture. ▪ This is a gap-filling extension of scope as it would include textile finishing activities alongside textile production activities already covered under IED activity 6.2 (pre-treatment or dyeing of textile fibres or textiles).	SMEs. Manufacturers are typically small and highly specialised businesses ▪ The textile finishing industry in the EU is currently led by four countries (Italy, Germany, Spain and Portugal), which together account for almost 72% of the market share for the entire EU.
	Extend the current sectoral coverage to also include **smitheries** of 20 kilojoule per hammer with no threshold for the calorific power or reduce the capacity threshold for the calorific value to > 5 MW in activity 2.3(b) **IED#38**	▪ Environmental pressures from smitheries relate to emissions to air (dust, NOx, SO_2), noise, vibrations, and consumption of energy. ▪ The measure will encompass a larger proportion of the sector's emissions and impacts, particularly for releases to air.	▪ The number of smitheries with hammers that would be included in the scope is highly uncertain, with a possible range of 400-500 smitheries.
PO5-c	**Landfills:** Adoption of BAT conclusions for activity 5.4 landfills (**IED#39**) AND Revise the capacity threshold in Annex I for activity 5.4	▪ The key environmental issues from landfills relate to releases to water/soil and to air (GHG and air pollutants). ▪ Landfills remain an important source of GHG emissions: with **emissions of GHGs, equating to 1.6 – 2.4%, relative to the baseline scope of the IED.** ▪ **Landfills are also associated with associated with releases to water (leachate) of several heavy metals, including cadmium, zinc and**	<u>Adoption of BAT conclusions (IED#39)</u> ▪ **Currently, the existing requirements of the Landfill Directive are not shown to be out of date and may still represent state-of-the-art, however, adoption of BATC would lead to improvement in existing standards and <u>continuous improvement</u> moving forward.** ▪ **The measure would contribute to climate neutrality as the BATC**

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
	landfills (**IED#40**)	**chromium. These releases, relative to the baseline scope of the IED, can be sizeable, e.g. 4.7 – 9% of cadmium releases.** ▪ **No BATC exist for landfills, considered under activity 5.4**. This is owing to the coverage of this activity under Council Directive 1999/31/EC, the Landfill Directive. Currently the Landfill Directive provisions are deemed to constitute BAT (Art 1(2) of Directive 1999/31). ▪ **An updated BREF and BATC for landfill would allow the consideration of techniques that are nowadays more prevalently used in the sector, such as methane capture.**	**would cover management of landfill gas**. However, the impact of the measure is uncertain and dependent upon the eventual BREF. ▪ NB Repeal of Article 1(2) of 1999 Landfill Directive is necessary to enable Landfill BREF/ BAT conclusions, and update of reference from IPPC to revised IED. <u>Revising the capacity threshold (IED#40)</u> ▪ There were around 2 950 landfill sites in the EU-27 in 2018 (hazardous waste and non-hazardous waste). However, very limited data could be found regarding the distribution of landfills by capacity size, which limits the ability to assess impacts of this measure. The number of landfills with a capacity below the current threshold is expected to be very limited. ▪ Because the additional sites under the extended scope would be smaller landfills, there is the potential for this measure to disproportionately impact SMEs. Furthermore, given larger landfill operators already fall under the scope of the IED, any additional costs will only fall on smaller operators. ▪ Assuming no BATC are implemented alongside the threshold change, smaller operators that come into scope are only required to comply with wider monitoring and reporting requirements which have no significant direct impact.
PO5-d	Include **non energy minerals extraction activities** (E-PRTR Annex I activities 3a and 3b) and	▪ **Minerals extraction activities are considered as potentially highly polluting activities not within the scope of the IED.** ▪ The sector is responsible for **environmental impacts, particularly in terms of air**	▪ **The sector has a high share of SMEs** (over 90% of enterprises or 40% of all employees are classified as, or working within an SME). The measure, therefore, will impact upon SMEs within the sector. ▪ Among **the key environmental**

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
	extractive waste within the scope of the IED **IED#41**	**emissions, water pollution, waste and emissions to soil and groundwater, notably with regard to heavy metals.** ▪ **The demand for critical minerals and industrial minerals by other growing sectors will continue to place demands on specific mining installations** (although some of this would be outside of the EU, the EU wishes to be far more self-sufficient re. Critical Raw Materials in the future).	**issues, the strongest impacts across all mineral categories relate to structural and physical stability, emissions to soil and groundwater, and the discharge of suspended particles and metals in surface water**. Different extracted materials have different impacts on the water quality and the quantity used. ▪ Emissions to air during extractive practices relate to dust and particles, which are easily dispersed by wind. Such emissions differ substantially based on the techniques used and the composition of the ore, even within subsectors. ▪ **Minerals extraction activities may lead to substantial emissions of PM10 equivalent to around 4.4% of total industrial emissions covered by the IED (E-PRTR data).** ▪ Extractive waste resulting from mining activities is regulated by a dedicated directive, (Extractive Waste Directive 2006/21/EC) and a BREF on management of extractive wastes is already available. ▪ Potential benefits are likely to outweigh costs, especially for the extraction and treatment of metallic and industrial minerals. ▪ For quarrying, i.e. extraction of aggregates, given the fewer environmental issues and higher number of sites, benefits are not expected to outweigh costs. ▪ **It is concluded to focus the scope of the measure on only extraction and treatment of metallic and industrial minerals. It is estimated that this would include c. 800-900 "minerals extraction" installations to be regulated under the IED.**
PO5-e	Include **Aquaculture** in	▪ **The demand for seafood is expected to increase; European**	▪ In 2018 there were about 15 000 aquaculture companies in the EU,

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
	the IED scope **IED#42**	**aquaculture can help to meet that demand.** ▪ **There is a driver for a more sustainable and competitive EU aquaculture sector (aquaculture was identified to contribute to the EGD objective).** ▪ **Environmental impacts** from the sector **mainly relate to water pollution (N and P), waste generation and use of resources.** ▪ Aquaculture contributes to nutrient build-ups in the case of open water aquaculture (cages), which can lead to **eutrophication and/or nitrification** from non-consumed feed, faeces, dead fish. ▪ Depending on feed material, **pharmaceutical products, growth promoters, antibiotics, and anti-algae biocides can leach into the surrounding aquatic environment**, impacting other species, causing **localised pollution and leading to anti-microbial resistance.** ▪ **The measure could facilitate a level playing field in the EU** in terms of preventing and controlling environmental pollution.	employing 69 000 people and producing 1.2 million tonnes of produce. ▪ There are between 55 and 250 aquaculture installations which produce >1000t a year. ▪ Approx. 90% of aquaculture enterprises in the EU employ fewer than 10 people. ▪ Members States with the highest levels of production are Spain, France, Italy and Greece. ▪ Aquaculture may not contribute significantly to the emissions of pollutants regulated by the IED, apart from nutrient emissions to water. ▪ Further evidence on the environmental, social and economic impacts of the sector at EU level is currently being compiled, e.g. as part of the implementation of the Strategic Guidelines for a more sustainable and competitive EU aquaculture (COM/2021/236 final).
PO5-f	Include **Upstream oil and gas** in the IED scope **IED#43**	▪ Environmental impacts from hydrocarbon operations may include impacts to air, climate, water (surface and subsurface), noise, soil and subsurface geology and biodiversity. There is potential for the modification and/or destruction of species habitat, and the disturbance and displacement of flora and fauna. ▪ **Flaring, venting and fugitive emissions are widely recognised as a source of GHGs and air pollution. Methane** is a **primary constituent of produced gas.** ▪ Furthermore, handling and storage of chemicals is required for a variety of operations. ▪ Conventional offshore oil and gas extraction is contracting as a sector, although potential for unconventional gas to expand.	▪ There are around 1 000-2 000 installations (offshore and onshore) in the EU. ▪ The Member States with most offshore installations in the EU27 include Germany, Denmark, Ireland, Netherlands, and Spain. ▪ **Upstream oil and gas installations appear to contribute around 0.75% of NOx totals in the IED and 1.75% of NMVOC totals. The measure is likely to have a positive impact on air quality** ▪ **Upstream oil and gas industries are covered by a "hydrocarbons" BAT Guidance Document thus best available techniques have already been identified (2019). NB This is solely "guidance", not mandatory for operators.**

Option N°	Policy measure	Key impacts of the activities	Summary of evidence
		▪ **Baseline scenario projections suggest that, compared to 2020 levels, EU production of oil will be 10% lower in 2030 and accelerating to 40% decrease in 2040. For natural gas, the EU production is expected to drop by 20% by 2025 compared to 2020 levels, and then remain at this level to 2040** (source: PRIMES).	▪ Other legislation and guidelines applicable to the sector include the Offshore Safety Directive and work of the EU Offshore Authorities Group (OAG), the Seveso III Directive, and work under international conventions such as the Oslo and Paris (OSPAR) and Barcelona Conventions. These groups operate independently from the EU albeit that the EU and its Member States are generally members of such groups. ▪ The inclusion of upstream oil and gas activities within the scope of the IED, and thus making **binding recommendations for BAT and BAT-AELs for the sector through a BAT Conclusions document** would be expected **to target methane releases as a key environmental issue of the sector.** In this way, the measure would be expected to contribute to the EU Methane Strategy. ▪ **Legislation specifically targeting methane emissions from the energy sector is expected in the fourth quarter of 2021**.

Additional administrative have been estimated to the extent that is possible and are summarised in Table A10-6 below.

Table A10-6: Administrative burden from PO5-a to PO5-i

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
PO5-a		
IED#31 (+E-PRTR#20)	102-401 15.5	102-401 1
IED#32 (+E-PRTR#21)	80-194 13.4	80-194 1.5
IED#33	- 63-232	- 63-232
PO5-b		
IED#34 (+E-PRTR#22)	0.6 0.1	0.8 0.007

Policy options	Additional administrative burden on businesses, M€2020 annual average over 20 years	Additional administrative burden on public authorities, M€2020 annual average over 20 years
IED#36 (+E-PRTR#24)	6 0.6	4 0.03
IED#37 (+E-PRTR#25)	1 0.1	1 0.007
IED#38 (+E-PRTR#26)	7 1.8	5 0.07
PO5-c		
IED#39	0	0
IED#40 (+E-PRTR#27)	Not available	Not available
PO5-d		
IED#41	12	8
PO5-e		
IED#42	2	2
PO5-f		
IED#43	23	15
PO5-g		
E-PRTR#28	0.3	0.01
PO5-h		
E-PRTR#29	5.5	0.30
E-PRTR#30	3.5	0.19
PO5-i		
IED#44 (+E-PRTR#31)	N/A	N/A
sub-total IED measures	170.6-414.6	154.8-398.8
sub-total E-PRTR measures (with #29)	37.3	2.9
sub-total E-PRTR measures (with #30)	35.3	2.8
Total - all PO5 measures	**207.9-451.9€ (E-PRTR#29) 205.9-449.9 M€ (E-PRTR#30)**	**157.7-401.7 M€ (E-PRTR#29) 157.6-401.6 M€ (E-PRTR#30)**

Annex 11: Sector transformation case studies

Three case studies have been undertaken to illustrate how the expected industrial transformation would impact pollutant emissions, GHG emission and use of resources, and how this could affect the relevance of the IED and E-PRTR legal framework and coherence and synergies with related legislation. These concern the following sectors:

1. **Cement production**: a sector where both CCS/CCU and circular economy are expected to be important for the sector's transformation;

2. **Iron and steel**: a sector considered particularly advanced in terms of development of transformation technologies;

3. **Downstream oil and gas (refining):** a sector that will have to transform not only in process or ways of using energy but also in terms of moving to renewable feedstock materials.

The detailed case studies are included in the report from Ricardo supporting this impact assessment. This annex provides a summary table and an overview table describing the potential decarbonisation and transformation pathways and the related GHG and pollutant emission impacts, the maturity of their development and the related challenges BREF development and permitting under the IED.

Table A11-1: Key findings from the industrial transformation case studies

Transformation pathways across sectors	Cement	Iron and steel	O&G Refineries	Challenges from the IED perspective
1.Carbon Capture and Utilisation / Storage	• CCU/S with TRL 3-8, pilot projects and investments ongoing, expect only a few full-scale operations before 2030 • High GHG impact, could reach up to 95% abatement albeit uncertain • Unclear impacts on other KEI	• Two options (top gas recycling and/or STEPWISE) with TRL 4-8 • Medium-High GHG impact, could reach 65%-75% abatement albeit uncertain • Mixed impacts on air pollution, positive and negative respectively	• CCU/S with TRL 3-9, with some investments at commercial stage already, evidence suggests first-of-a-kind in 2021, and 13 plants in EU in 2030 • High GHG impact, could reach up to 95% abatement albeit uncertain • Unclear impacts on other KEI	• Need decision on whether to base BAT on the application of CCU/S. This might have significant implications for operator investment plans • CCU/S covers techniques applicable to multiple sectors and is an IED activity. BREF updates and/or a new BREF may be required to define BAT. A concern would be to ensure that CO2 'leaks' are avoided
2. Alternative energy sources	• Three options (electrification, hydrogen and biomass) with TRL 3-9, highest for biomass • Medium-high GHG impact, up to 100% abatement from final energy consumed • Likely positive impacts on reducing pollution; use of hydrogen could have negative impacts via NOx emissions	• Two options (electrification and biocoal) with TRL 5-9, highest for electrification • Medium-high GHG impact, 30%-100% abatement from final energy consumed • Varied and usually positive effects on pollution, including general reduction of emissions to air, water and soil	• Challenging for high temperature heat until hydrogen is available/affordable. To electrify (low temp) heat some options already TRL 9 • High GHG impact, could reach up to 100% abatement from final energy consumed • Overall positive impact on other KEI compared to the use of conventional energy sources	• The use of alternative energy sources cuts across multiple sectors and, in some cases, IED may have limited levers to influence transformation • For some energy sources, such as biomass and hydrogen, impact on pollutant emissions could be positive or negative (e.g. NOx emissions for the hydrogen case). BAT-AELs can be a driver or a barrier for increased substitution of energy sources • Some techniques would require expanding/ updating existing sectoral BREFs (e.g. biocoal)
3. Alternative feedstocks	• Two options (raw material substitution in clinker and clinker substitution), with TRL 4-9 depending on the substitute • Low-high GHG impact, could reach up to 95% abatement albeit uncertain • Uncertain, potentially positive impacts on air pollution (e.g. when fly ash or blast furnace slag are used in the process)	• Option to use hydrogen as a reducing agent instead of coal/coke. The process also utilises hydrogen as an alternative energy source. • High potential to reduce GHG emissions by approximately 70%. • Medium positive impact on reducing pollution to air, soil and water.	• Biocrude could become an option with TRL 3-7. Hydro-treated vegetable oils TRL 9 started in 2021 and 10 plants in 2030. Other options for later in decade • High GHG impact, with 65%-85% lower CO2e emissions compared to petroleum • Potentially negative impacts e.g. increases in NOx and NH3, potential increases in O3 and acidification	• In some cases, feedstock use depends on the availability and other regulations outside of the IED's framework • Further, impact on pollutant emissions of alternative feedstocks can be positive or negative. BAT-AELs can thus be a driver or barrier for the use of these alternatives • Activity definitions, e.g. for 'Mineral oil refinery', may need updating to cover a wider pool of feedstocks
4. New processes	• Two options (Vertical roller mills and roller presses; High efficiency separators), with high TRL 8-9, and and Fluidised bed kiln with TRL 4 • Low-Medium GHG impact, could reach reduction of 1.1-6.8 kg CO2/t cement, or 3% reduction • Positive impact on air emissions due to improved energy efficiency and reduction of NOx emissions	• Five options (smelting reduction - COREX, FINEX, Hisarna-, Advanced Mineral Recovery Technology, and iron ore electrolysis process) with TRL 2-9 • Low-high GHG impact, 10%-30% abatement for the first four options and greater potential for electrolysis • Low-high positive impacts in reducing emissions to air, lower water consumption and waste generation	• Various options including power-to-liquid to manufacture synthetic fuels and others, with TRL 6-8, first-of-a-kind in 2025 and 5 new plans in 2030 • High albeit uncertain GHG impact • Potentially lower emissions to air when compared to conventional fuel production	• In some cases, these processes are already covered as ETs in existing BREFs. • In other cases, these new processes may be covered in other sectoral BREFs, so this may offer a challenge in terms of consistency and efficiency of the process (e.g. LVOC) • Further, other processes would require expanding/ updating existing sectoral BREFs (e.g. AMRT)

Table A11-2: Overview of the industrial transformation case studies

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
Cement	1. Carbon Capture and Utilisation / Storage (CCU/S)	High albeit uncertain; could reach up to 95% of baseline emissions.	Unclear impacts on other KEIs e.g., emission to water, etc.	TRL 3-8, a number of pilot projects and investments are ongoing. VDZ/Cembureau expects no or only a few full-scale operations before 2030.	Decisions will be needed on whether to base BAT on application of CCS. This would lead to requiring large investments from operators. CCU/S is a technique applicable to multiple sectors and is an IED activity in itself. Hence a BREF may be developed to define BAT for CCU/S. A technical concern would be to ensure that CO2 'leaks' are avoided, as well as their impacts on groundwater quality.
	2. Alternative energy source i. Biomass and hydrogen	Medium (biomass & hydrogen) to high (electrification); with abatement potential reaching 100% of GHG emissions from final energy consumption (not process).	Dependent on the source of energy used; use of suitable waste only has a minor influence on metal emissions from the clinker burning process; For hydrogen, although overall positive, high levels of NOx possible.	TRL 3-9, highest TRLs for biomass, lowest for electrification .	Cuts across multiple sectors. For biomass and hydrogen, impact on pollutant emissions can be positive or negative (specifically NO_x emissions in the case of hydrogen), depending on characteristics of alternative materials. BAT-AELs can thus be a driver or a barrier for increased substitution.
	3. Alternative feedstock i. Raw material substitution in clinker, including material recovery and recycling	Medium to high; Dependant on the substitute. Generally, 20-30% reduction but some binders predicted to give up to 90% GHG reduction compared to Portland cement.	Uncertain, dependent on the characteristics of the alternative feedstock.	TRL 6-9, depending on the substitute.	Impact on pollutant emissions can be positive or negative, depending on characteristics of alternative materials. BAT-AELs for pollutants can thus be a driver or a barrier for increased substitution.
	3. Alternative feedstock ii. Clinker substitution/novel	Low; Dependant on the substitute. Ultimately will depend on the quantities of	Positive impact relative to amount of cement or concrete produced; reduced	TRL 4-9, depending on the substitute.	This is partly outside the scope and control of IED cement manufacturing operators. Depends on availability and on

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
	cement	feedstock used which depends on the application.	air pollution when fly ash or blast furnace slag are used in the process.		product/application, waste and by-product standards.
	4. New processes	Low-Medium GHG impact, could reach reduction of 1.1-6.8 kg CO2/t cement, or 3% reduction.	Positive impact on air emissions due to improved energy efficiency and reduction of NOx emissions.	TRL 4-9, depending on the process.	Few challenges, as the processes are currently reported in the BREF. Updates would be required.
Iron and steel	1. CCU/S i. Top gas recycling	Medium; reduced direct emissions and 65% secondary reduction.	Positive impact on reducing air pollutant emissions, including SO_2.	Varying degree of technology readiness. Steelanol and Carbon2Chem22 are more mature (TRL 6-8). IGAR technology is in the development phase (TRL 4).	Substantial modifications are required in the industrial processes and, therefore, a BREF update and/or review of BAT Conclusions would be needed to take this into account.
	1. CCU/S ii. STEPWISE (SEWGS technology)	High; potential to reduce emissions by 75%. SEWGS is a multi-column reactive hot Pressure Swing Adsorption (PSA) system where three processes are combined in one reactor: (1) water-gas shift reaction, (2) CO_2 adsorption, (3) simultaneous acid gas removal.	Slight increase in the air pollution indicator; lower; abiotic depletion potential, Ozone Layer Depletion Potential and Human Toxicity Potential than for the CCS with MEA.	The technology is in the development phase having been demonstrated in the laboratory (TRL 4-5).	Substantial modifications are required in the industrial processes and, therefore, a BREF update and/or review of BAT Conclusions would be needed to take this into account.
	2. Alternative energy sources i. Electrification	High; greater than 70% reduction in emissions.	Depends on the source of energy used for the generation of electricity. Overall, the air emissions would be eliminated when	Some options are already TRL 9, others will continue to progress in this decade.	No direct challenges expected for the IED. Electrified production technologies are well understood for producing secondary steel. Electrification is a cross-cutting pathway

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
			renewables are used except in cases of biomass or geothermal energy.		raising horizontal issues related to the energy production system that will have impacts beyond the I&S sector.
	2. Alternative energy sources ii. Biocoal (Torero Project)	Medium; 30-70% emission reduction due to lower carbon intensity than coal.	Reduces the air emissions linked to coke-making as the energy source is changed. The direct impact of combustion in the steel-making process is not significant.	The technology is in the deployment phase having been demonstrated in a prototype operational environment (TRL 7-8,).	This process replaces powered coal with wood waste-based coal. Minor impacts to IED and existing process for steel making. The Torero project captures carbon monoxide from exhaust gas to be further processed to bioethanol. Such processes would require expanding/ updating the sectoral BREF.
	3. Alternative feedstocks i. Hydrogen as a reducing agent instead of coal/ coke (H-DRI)	High; potential to reduce GHG emissions by over 70%. However, the reduction could vary depending on the source of hydrogen and the switch from fossil fuels to renewables to deliver the demand for process energy.	Direct air emissions could be significantly reduced; whilst noting that the technology would need very large amounts of electricity (3.5 TWh per million tonne steel), in particular for the preparation of water before the electrolysis, and the electrolysis process itself. Positive impacts from lower iron ore consumption, etc.	The technology is broadly in the development phase, demonstrated in controlled environments (TRL 4-8). Many different companies are developing their own version: tkH2Steel, Hybrit, GrINHy, H2Steel (H2Future, SuSteel), Hybrid Steel Making, SALCOS; DILCOS	Would require updating BREF documents for both hydrogen production and the operational changes expected from switching from coal/coke to hydrogen. Hydrogen production is a cross-cutting pathway across many IED activities.
	4. New processes i. Smelting reduction - COREX	Low; reduced GHG emission approximately 20%	Reduction by 30% NO_X, no VOC; significantly lower SO_2. No need for coking; fuel savings of 18%. Waste generation: Lower slag production (18%	Commercially available, with several operational plants (TRL 7-9).	Reported as emerging techniques in existing BREF, although this will need updating to keep up with innovation/ technological progress.

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
			reported).		
	4. New processes ii. Smelting reduction - FINEX	Low; less than 10% GHG emission reduction.	Same as COREX above.	Commercially available Limitations relate to the design and scale up of the fluidised bed reactors (TRL 6-9).	Same as COREX above.
	4. New processes iii. Smelting reduction – Hisarna	Medium; 20% carbon emission reduction compared to conventional process, increases to 80% if it is combined with CCS.	Reduction of the emission of NO_X, SO_x and fine dust, heavy metals and dioxins, due to the elimination of iron ore sintering and coke making Positive impacts on reducing water consumption and waste generation.	The technology is broadly in the development phase, demonstrated in controlled environments (TRL 5-7). Requires new plant, cannot be retrofitted.	Hisarna employs an upgraded smelt reduction process that processes iron ore in a single step, eliminating coke ovens and agglomeration. It is more efficient and produces a concentrated CO_2 stream. Therefore, this would require updating BREF documents for both hydrogen production and the operational changes expected from switching from coal/coke to hydrogen.
	4. New processes iv. Advanced Mineral Recovery Technology (AMRT)	Low; a novel EAF technology which can smelt red mud (the waste product from alumina production-Bayer process). Emission reduction would be below 30%.	No major change in air, water, or soil emissions. Positive impact on reducing consumption of virgin material and slightly reduced energy demand.	A prototype of the technology has been demonstrated in an operational environment (TRL 7). No strong economic case.	Generally reported as emerging techniques in existing BREF, although this will need updating to keep up with innovation/ technological progress.
	4. New processes v. Iron ore Electrolysis	High; the process achieves a potential 100% reduction in direct CO_2 process emissions. Total reduction depends on carbon intensity of power sector.	Positive impact across the emission of all pollutants to air, water, and soil. Positive impact expected regarding energy use and resource efficiency.	The technology is still in the research phase (TRL 2-3). There are four projects in the early stage of developing the process ULCOLYSIS, ULCOWIN, SIDERWIN, Boston Metal.	Electrolysis of iron ore does not require coke ovens or blast furnaces and operates with electricity as its primary energy input. This is a significant difference to existing processes detailed in the I&S BREF. The process is heavily dependent on electricity and, therefore, environmental

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
					impacts would depend on power sector decarbonisation.
O&G refineries	1. CCU/S	High albeit uncertain; could reach up to 95% of baseline emissions	Unclear impacts on other KEIs e.g., emission to water, etc.	TRL 3-9, some investments already at commercial stage. Evidence from FuelsEurope suggests first-of-a-kind in 2021 and 13 new plants in 2030. There are commercial CCU plants in O&G sector, for example in Jubail, Middle East since 2015 with German (Linde) technology. Sabic is a leading petrochemicals corporation.	Decision on whether to base BAT on application of CCU/S; BREF updates and/or new BREF required. CCU/S cover techniques applicable to multiple sectors and is an IED activity, hence a BREF may be developed to define BAT for CCU/S. A technical concern would be ensuring that the CO2 remains stored/avoiding leaks. This could lead to needing large investments from operators.
	2. Alternative sources of energy (e.g. renewable energy)	High; with abatement potential reaching 100% of GHG emissions from final energy consumption (not process).	Expect an overall positive impact when compared to conventional sources.	Some options are already TRL 9, others will continue to progress in this decade.	Cuts across multiple sectors; BAT-AELs can be drivers or barriers for deployment, where sources can increase the emissions of some pollutants (e.g. H2, biomass).
	3. Alternative feedstocks (e.g. biocrude)	High; the use of biocrude emits 65-85% less CO2e than petroleum, depending on the suitability of the biomass source.	Some potential negative impacts, such as emissions of NO_x (up to 20%) and NH_3 during the production of vegetable oils with potential increases of O3 and acidification problems.	TRL 3-7, with hydro-treated vegetable oils (HVO) TRL 9, starting in 2024 and 10 plants by 2030. Other options start later in the decade.	Activity currently "Mineral Oil refinery" in Annex I may need to be updated to a term that covers a wider pool of feedstocks. No major challenges are expected since manufacturing processes are very similar to other well-known processes covered by existing REF BREF (and LVOC BREF). The existing REF BREF has a section for hydrogen-consuming processes that could be updated to cover HVO production (now

Sector	Transformation pathways	GHG impact	Pollutant impact	Technology maturity	Challenges from IED perspective
					in emerging technique section).
	4. New processes (a number of options e.g. power-to-liquid to manufacture synthetic fuels)	High albeit uncertain; depends. Some processes involve a circular carbon cycle. On the power-to-liquid example, it is assumed that the hydrogen employed will be generated with renewable electricity.	Potentially lower emissions to air when compared to conventional fuel production, although uncertain.	TRL 6-8; first-of-a-kind likely in 2025, and 5 new plants in 2030 (FuelsEurope Report).	No disruptive policy challenges are expected as BREF processes are already likely to cover these aspects even if outside of the REF BREF (e.g. LVOC). Using CO2 as a feedstock would not require an "end of waste" criteria since it is already used in other processes such as soft drinks.

Annex 12: Screening Methodology and List of Screened-out Measures for the Revision of the IED

This Annex contains the list of measures that were contemplated, but that were then progressively screened out for the IED revision. The methodology adopted to achieve this is discussed, and then the results presented. Annex 14 separately presents those measures that were screened out for the revision of the E-PRTR regulation.

More than one-hundred and thirty policy measures were initially developed and considered in this study. Of these, over ninety measures were discarded from the in-depth impact assessment as a result of a thorough screening exercise, in line with the European Commission Better Regulation Guidance.

The criteria for screening the policy measures were developed in accordance with Tool #17 of the European Commission Better Regulation Toolbox[23] and agreed in advance between the external contractors and the European Commission. The criteria are outlined below.

1. **Legal feasibility:** Policy measures must respect the principle of conferral. They should also respect any obligation arising from the EU Treaties (and relevant international agreements) and ensure respect of fundamental rights. Legal obligations incorporated in existing primary or secondary EU legislation may also rule out certain options. Therefore, it was considered whether measures were compatible with EU law, and obligations arising from the EU treaties and international agreements, via answering these three questions:
   - Is the measure compatible with EU Treaties?
   - Is the measure legally feasible to implement and enforce?
   - Will the measure respect fundamental rights?

2. **Technical feasibility**: A second important criteria to consider is whether each measure may be technologically and technically feasible to implement, monitor and enforce, including by answering:
   - Would the measure be technologically and technically possible to implement the measure?
   - Is there a system in place to monitor the implementation and impact of the measure (or could it be established)?
   - Would Member States' Authorities be able to inspect and enforce any possible sanctions under the measure?

3. **Stakeholder acceptability**: Another criterion that is important to establish is whether the measure could garner the necessary stakeholder support for legislative adoption at the EU and MS level, including by answering:

[23] Tool #17. How to identify policy options. URL: https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-17_en_0.pdf

- Is the measure consistent with EU-level and MS policies and public positions?
- Does the measure instil legislative certainty?
- Could the measure cause competitive distortion (e.g. by limiting the growth of certain industries or creating discrimination between industries based in different Member States)?

4. **Effectiveness**: the fourth criterion considered is the extent to which each measure could contribute to addressing the specific problem and/or meeting the objectives that it is seeking to address, both specifically for the IED and the wider setting of the Commission's priorities in the short-, medium- and long-term. The following questions guided this exploration:
   - To what extent could the measure contribute the protecting the environment by reducing pollution (concerning air, water, soil and waste) and/or the use of potentially toxic substances?
   - To what extent could the measure contribute to achieving climate neutrality by 2050 and/or a more circular use of resources?
   - Does the measure directly promote or incentivise investment in technological innovation and/or rapid uptake of state-of-the-art technologies that can reduce the environmental footprint of industrial activities?

5. **Efficiency**: At a high-level, the fifth criterion utilised analyses the extent to which measures can improve social, economic and environmental welfare in an efficient way, especially when compared to the alternatives. The following queries guided the assessment:
   - Could the measure have significant, positive social and environmental impacts e.g. reduced pollution, lower GHG emissions, lower use of resources, more green jobs, etc.?
   - Could the measure have a high-cost burden on consumers, businesses and/or public institutions e.g. higher price of consumer goods, lower production efficiency, etc.?
   - How do the expected benefits and costs compare?

6. **Proportionality**: This criterion determines the extent to which the measure can address the problem that is targeting in a way that is proportionate to the costs or constraints that may arise from implementing the measure. The following questions guided this:
   - To what extent are the costs resulting from the regulatory actions taken by the EU are proportionate to the potential environmental and health benefits?
   - Could the measure disproportionately impact smaller companies?

7. **EU added value**: It is also important to consider the likely advantages of EU-level intervention to resolve these problems, compared to actions at the national level, including but not only by answering the following:
   - Could the measure result in a more consistent approach across the EU than national-level alternatives?
   - To what extent could the measure help raise standards in Member States lagging behind on environmental protection?
   - To what extent would the measure be more cost-effective at the EU versus national level?

8. **Coherence**: The last criterion considers the compatibility of each potential measure with existing and ongoing policy frameworks (also where being currently subject to dynamic revision) at the international and EU level (e.g. European Green Deal, Chemical Strategy for Sustainability, EU ETS legislation, E-PRTR, and the Urban Waste Water Treatment Directive). In particular, the experts assessing this were guided by the following queries:
   - Is the measure compatible with EU acquis?
   - Is the measure coherent with the objectives and/or actions set out in the European Green Deal, the Chemical Strategy for Sustainability, EU ETS, E-PRTR and UWWTD revisions, etc.?

The screening analysis was carried out by a team of experts, employing available evidence available, especially from the recent IED evaluation study, and expert judgement. These experts scored the measures against each of these criteria: 5-high score, 3-medium score, and 1-low score, or any integer in between.

The project team developed general guidelines outlined in TableA12-1 as to what constituted the score for each criterion. These general guidelines aimed at providing consistency to the task from the start, although the screening process was iterative. However, the experts carrying out this task had multiple opportunities to come together and calibrate their assessment effectively and collectively, based on the evidence available.

Table A12-1: General guidelines for scoring across each criterion

Criteria	(5) High score	(3) Medium score	(1) Low score
1 -Legal feasibility	Compatible with EU Treaties, and legally instruments to implement and enforce are available.	Compatible with EU Treaties, but some doubts as to whether legal instruments are readily available to implement and enforce.	Not compatible with EU Treaties or no legal instruments available.
2 -Technical feasibility	Technology and techniques available to implement, monitor, inspect and enforce measure.	Technology and techniques available to implement measure, but doubts on how to monitor, inspect, and enforce measure.	Measure cannot be implemented technically, or measure cannot be enforced, inspected, or monitored.

Criteria	(5) High score	(3) Medium score	(1) Low score
3 -Stakeholder acceptability	Consistent with policies and public positions, instils certainty and does not cause distortions.	Consistent with policies, but not necessarily fitting with public positions or instil certainty.	Inconsistent with current policies, not necessarily fitting with public positions, may not instil certainty and could cause unwanted market distortions.
4 -Effectiveness	Contributes significant/clearly to one or two of: protecting environment, climate neutrality, circular use of resources, encouraging innovation.	Contributes, potentially, to one or two of: protecting environment, climate neutrality, circular use of resources, encouraging innovation.	Doubtful contribution to any of: protecting environment, climate neutrality, circular use of resources, encouraging innovation.
5 -Efficiency	Evidence of clear balance of benefits to limited costs or significant benefits to some acceptable/ proportionate costs.	Doubtful evidence on benefits but limited costs, or clear evidence on strong benefits and doubtful evidence on potentially high costs.	Limited expected or high uncertainty on benefits, but some or clear evidence on high costs.
6 -Proportionality	Benefits are high and/or address objectives at the lowest possible cost, based on evidence. SMEs not impacted disproportionately.	Benefits are high and/or address objectives at relatively low cost, based on evidence, but SMEs affected disproportionately.	Costs are too high compared to potential benefits -e.g. industry struggles to compete, etc.- based on evidence. SMEs affected disproportionately.
7 -EU value added	Bringing more consistency across the EU, raising standards across countries, and more cost-effective at EU-level.	Clear evidence on one or two of: Bringing more consistency across the EU, raising standards in some countries, and more cost-effective at EU-level.	Unclear evidence on any of: More consistency across the EU, raising standards across countries, and more cost-effective at EU-level.
8 -Coherence	Compatible with EU acquis and coherent with the objectives of EU plans/ strategies.	Compatible with EU acquis and coherent with the objectives of EU plans/ strategies.	Not compatible with EU acquis or coherent with a limited set of EU plans/strategies' objectives.

The output of this exercise is a robust and consistent shortlist of retained policy measures selected to tackle the problem drivers, areas and consequences identified and taken forward for an in-depth assessment of their potential impacts.

The measures were grouped according to the same **6 problem areas** that were used at the outset of the IED Impact Assessment, i.e., those utilised in the breakdown of IED issues consulted upon in the Targeted Stakeholder Survey. These six problem areas are:

1. The environment is polluted (split by zero pollution ambition and non-toxic environment)
2. Climate crisis is happening

3. Natural resources are being depleted
4. Innovation - State of the art techniques cannot respond satisfactorily to problem areas #1 to #3
5. Private individuals have limited opportunities to get informed about, and take action regarding impacts caused by (agro-)industrial plants
6. Excessive burdens may affect the efficiency of policy instrument(s)

(It should be noted that the "problems areas" approach was partly revised when converted into Policy Options, as discussed in the main SWD report body, and e.g., SWD Annexes 7 and 12.)

Ninety measures were discarded from the in-depth impact assessment via adopting the above qualitative but objective process. Of these, ninety discarded measures:

- **Over seventy measures were identified to have overlaps** with other measures and/or there were better alternatives available to tackle the problems targeted; that is, they were replaced by better alternatives. Most measures were discarded, and instead are incorporated - via being expected at a future date to be taken forward - as part of the baseline (i.e., BAU going forward in a natural adaptive evolution), or where their score was assessed to be, on average, below "medium" levels across the agreed criteria. These measures are outlined in a table below.
- **Over twenty measures were identified as legal measures or amendments** with a low likelihood of any significant impacts. These measures mostly focussed on legislative simplification and/or update, and as such not required to be subject to the impact assessment process. These measures are outlined subsequently in Table A12-3.

Table A12-2 gives an overview of each policy measure that has been discarded, as assembled by "Problem Area" group, as well as a brief summary of the reason(s) for the measure to be discarded.

Table A12-2: Discarded policy measures and broad rationale

Discarded policy measures	Broad rationale
Include Data Centres under scope of the IED.	The environmental issues surrounding data centres mainly relate to product-related energy use consumption for the devices per se, and their cooling (off-site electricity); 'extended product' systems such as these are better regulated through standards and certification mechanisms that are being developed, rather than BAT-based cross-media permit conditions for data centres. . An extended product approach is being pursued elsewhere in product legislation and standardisation, which seems more appropriate.
Extending the production capacity thresholds for Medium Combustion Plants. Examine the scope of Chapter III - Large Combustion Plants (LCP), detailed under IED Article 28. Move the	ELVs have not yet come into force for all installations (entry inforce for existing installations in 2025 and 2030), depending on their size) and the first reporting on implementation is not yet available (Member States are

Discarded policy measures	Broad rationale
20-50 MWth capacity threshold from the Medium Combustion Plant Directive (MCPD) (Directive (EU) 2015/2193) to LCP. The main driver for this revision is to align with the EU ETS scope threshold.	required to report to the Commission in 2021, 2026 and 2031). It has also been cited that the MCPD is a good example of Better Regulation, having been designed to be affordable for SMEs and providing long-term certainty for all economic operators concerned, whilst minimising the administrative burden for both industry and Member States. The MCPD "as is" should encourage continued innovation and thus provide the opportunity for EU industry to share in the rapidly growing global market for pollution control technology. Bringing part or all of these MCPs under the scope would create legal uncertainty until BAT conclusions would be adopted, which would be unlikely in the coming years.
Extend the current sectoral coverage to include shipbuilding (other than coating) and ship dismantling within the scope of the IED.	**Shipbuilding** is already partly covered under IED Activity 6.7, for the coating activity (being one of the main environmental pressures from the activity). Shipbuilding and repair installations that carry out coating activities with an organic solvent consumption capacity of more than 150 kg per hour or more than 200 tonnes per year are included in the scope of the IED. Furthermore, there is already a set of minimum requirements for ship recycling facilities across the EU as a result of the EU Ship Recycling Regulation (regulation (EU) No 1257/2013, which was based on the Hong Kong Convention (2009) on transboundary movements of hazardous wastes and their disposals to the ship recycling industry. This is argued to already provide a (minimum) level playing field. **NB: this measure (IED#35) was discarded at a later stage in the impact assessment.**
Revise the scope of Chapter IV on waste incineration detailed in Article 42(2) of the IED	Superseded by other measures considered in the SWD and associated consultants' report.
Thresholds for subdivisions of chemicals industry.	The measure was excluded as evidence suggests it is unlikely to lead to significant reductions in pollution and as solutions are being developed as part of the BREF process to target BAT-AELs on the main emissions, thereby addressing potential inefficiencies. Superseded by measures part of Problem Area 6, refocussed on clarifying legal requirements.
Prohibit the indirect release of polluting substances to water.	Evidence and expert judgement suggest that this measure is likely to be technically infeasible, inefficient and ineffective (especially). There were also doubts as to the EU value added and questions about coherence with other water and wastewater legislation at the EU level.
Delete the flexibility that presently allows the setting of different ELVs in permit conditions	Evidence and expert judgement suggest that this measure is likely to be technically infeasible, inefficient and ineffective

Discarded policy measures	Broad rationale
in terms of values, periods of time and reference conditions (IED Article 15(3[b]).	(especially). There were also doubts as to the EU value added.
Add to the provisions of Article 15(3) to clarify setting different ELVs in permit conditions in terms of values, periods of time and reference conditions.	Expert judgment concluded that this measure is unlikely to be effective.
Further harmonisation, clarification or provision of guidance on EU-wide definition of (co)incineration, including pyrolysis, currently left to each Member State.	Superseded by other measures considered in the SWD and associated consultants' report.
Extend the scope of current monitoring to include the use of remote sensing data (e.g. satellite data) to monitor air, water and/ or soil quality at a distance.	Evidence and expert judgement suggest that this measure is unlikely to be technically feasible and potentially burdensome.
Extend the scope of monitoring/ reporting concerning Article 15(4) derogations.	IED experts have confirmed that Article 16(1) monitoring requirements cover installations with derogations granted via Article 15(4). Therefore, no legal change is required.
Changes to the BREF exchange of information process.	Burden and complexities of changes are expected to outweigh the benefits.
Ensure greater cooperation/ harmonisation between Member State competent authorities and nature conservation agencies/ groundwater control, including public consultation (IED Article 26)	Merged with another measure that has been shortlisted.
Introduce requirements for continuous monitoring and online reporting.	Evidence and expert judgement suggest that this measure is unlikely to be technically feasible.
Formalise the legal basis of the EU Registry.	Evidence and expert judgement suggest that this measure is unlikely to be technically feasible or coherent with the objectives of the E-PRTR.
Enhance public availability of baseline reports and periodic monitoring results (including regarding soil).	Already covered by Article 22 of the existing IED and EU registry.
Option to reinforce Art. 25 (on access to justice).	Overlaps with other measures, especially those strengthening Article 24, which may indirectly reinforce Article 25 through greater and easier access to information as well as increased requirements for public participation.
Simplify the requirements for specific IED chapters.	Superseded by a better alternative implementing the same principle.
Remove redundant ELVs from the current IED Annex V referred to in Chapter III or harmonise with LCP BATC.	Evidence and expert judgement suggest that this measure is unlikely to be effective.
Remove redundant ELVs from IED Annex VI	Evidence and expert judgement suggest that this measure is

Discarded policy measures	Broad rationale
referred to in Chapter IV or harmonise with WI BATC.	unlikely to be effective.
Set-up a tailored regulatory permitting framework for addressing emissions of pollutants and GHGs from the IED agro-activities.	Superseded by other measures considered in the SWD and associated consultants' report.
Modernise and merge Extractive Waste directive (2006/ 21) into the IED.	Superseded by other measures considered in the SWD and associated consultants' report.
Merge the existing 1990s VOC Stage I directive into the IED.	Expert judgement found this measure to be more complex than potentially beneficial.
Move 20-40 MWth installations from MCPD to LCP.	Superseded by other measures considered in the SWD and associated consultants' report.
Provide clarifications on the interaction between the IED and ETS Directive.	Superseded by other measures considered in the SWD and associated consultants' report.
Rationalise overlaps between E-PRTR and IED reporting requirements.	Superseded by other measures considered in the SWD and associated consultants' report.
Add specific thresholds to certain sub-activities within activity 4 'Chemical industry', e.g., pharmaceuticals, to account for lower scale 'artisanal' production.	Screened out, given that there is ongoing work in the WGC BREF on transfer rates, i.e., expected to be addressed as part of the baseline.
Amend the legislation to remove the ambiguity on the approaches to be taken in accounting for measurement uncertainty in compliance assessments for LCPs and waste (co)-incineration plants.	Superseded by other measures considered in the SWD and associated consultants' report.
Provide guidance on the implementation of BAT conclusions in permits focussed on establishing a more consistent approach across the EU.	EC expects to address this as part of the baseline scenario.
Provide guidance on the implementation of IED provisions concerning monitoring requirements specifically for indirect releases to water and emissions to soil (Articles 14, 15 and 16).	EC expects to address this as part of the baseline scenario.
Provide guidance on baseline reports submitted for environmental protection and stringency of requirements upon definitive cessation of activities (Article 22).	EC expects to address this as part of the baseline scenario.
Provide guidance on how environmental inspections shall be carried out across the EU (Article 23).	EC expects to address this as part of the baseline scenario.
Facilitate peer-to-peer support among Member States Competent Authorities for undertaking mutual/joint environmental inspections.	EC expects to address this as part of the baseline scenario.

Discarded policy measures	Broad rationale
Promote MS pilot projects for operators to link and share their installations' continuously monitored emissions data with Member State Competent Authorities and making such information available to the public on the Internet.	EC expects to address this as part of the baseline scenario.
Promote the setting of stricter ELVs	Superseded by a better alternative implementing the same principle.
Accelerated incorporation in BAT conclusions of breakthrough technologies.	Superseded by a better alternative implementing the same principle.
Set a forward-looking formal tiered approach (as in Ecodesign) in sectoral BREFs.	Legal complexity and unclear evidence of cost and benefit balance.
Establish stricter long-term BAT-AELs	Superseded by a better alternative implementing the same principle.
The pilot innovation observatory had identified LIFE and ETV as funding schemes for ETs. Potential links to accelerator funding via Green Deal.	The IED would be unlikely to have access to specific finance, and rather, would work to facilitate funding opportunities through existing mechanisms.
Require the coverage of emerging techniques in BREF processes.	Superseded by a better alternative implementing the same principle.
Require the inclusion of long-term forecast performance of emerging techniques in BREF processes.	Superseded by a better alternative implementing the same principle.
EC/EIPPCB to update BAT-AEL range (upper and lower) every 'x' years.	Evidence and expert judgement suggest that this measure's complexity outweighs any potential benefits.
Requiring permit conditions to meet upper BAT-AEL after 4 years of BATC adoption.	This can be achieved now without the need for IED modifications. With the IED current status, any competent authority could request the operators to meet the most stringent value of the BAT-AEL (the lower end of the AEL range).
Avoid "lock in" of good performance.	Superseded by a better alternative implementing the same principle.
Avoid marginal performance improvements. Promote breakthroughs.	Superseded by a better alternative implementing the same principle.
Provide guidance as suggested in Art 27 to promote emerging techniques via MS.	Superseded by a better alternative implementing the same principle.
Dynamic BAT-AEL concept	Superseded by a better alternative implementing the same principle.
Prohibit manufacture and use of REACH SVHCs within industrial settings where BAT identifies safer chemical alternatives.	This would already be possible via BREFs (the so-called "negative BAT" prohibition mechanism).

Discarded policy measures	Broad rationale
Introduce a requirement on operators to quantify emissions.	Evidence and expert judgement suggest that this measure may not be legally infeasible, and there are doubts as to how efficient and effective it could be.
Continuous update of ELVs based on current BAT conclusions.	This is already possible under current IED.
Mandate the development of ELVs for POPs to stimulate their thermal destruction.	POPS should already be addressed in the baseline BREF process and permits, where relevant.
Introduce reporting requirements so that, where BAT identifies safer chemical alternatives for SVHCs, the information is provided to ECHA as part of the prioritisation process for Authorisation.	Covered by another retained measure, where regular reporting on progress and outcome is expected.
Introduce a requirement for MS' competent authorities to check the Water Framework Directive's priority substance exceedances for relevant water bodies, when updating environmental permits, and take this into consideration for the permit.	Superseded by other measures considered in the SWD/ consultants' report.
Encourage the systematic inclusion of information on chemical substances of concern developed under other legislation related to IED and the availability of safer chemicals in the BREF process and BAT conclusions.	EC expects to address this as part of the baseline scenario.
Delete IED Art. 9(2) regarding energy efficiency-related BAT conclusions, i.e., thus enabling mandatory action on energy efficiency, even for activities covered by ETS.	Superseded by other measures considered in the SWD/ consultants' report.
Inclusion of sectoral benchmarking in BREFs to address e.g. energy use, water use, materials use, waste generation per unit of installation output.	The assessment suggested that this measure would lead to confusion with other concepts and measures proposed, so it was screened out to mitigate these.
Support industrial symbiosis through EU guidance on good practices and the inclusion of information in BREFs	Evidence and expert judgement suggest that there are doubts as to how efficient and effective this measure could be. Alternative measures were retained.
Set a forward-looking formal tiered approach (as in Ecodesign) in sectoral BREFs.	Discarded due to legal complexity and unclear evidence of cost and benefit balance.
Also establish "BNAT" (Best Not yet Available Techniques) long-term benchmarks for stricter long-term BAT-AELs.	Superseded by other measures considered in the SWD/ consultants' report.
Update guidance on information exchange to address issues associated with sharing potentially confidential business information when setting BAT-AEPLs.	EC expects to address this as part of the baseline scenario.

Discarded policy measures	Broad rationale
Introduce an explicit reference to the binding nature of resource efficiency BAT-AEPLs for new permits and permit reviews.	EC expects to address this as part of the baseline scenario.
Introduce a requirement for the data outputs of a shortlisted measure requiring a benchmarking exercise to become inputs to the EU ETS allocation of emission allowances.	Evidence and expert judgement suggest that this measure is likely to be ineffective and inefficient, and would require close alignment with EU ETS.
Expand scope of IED to cover agro-industrial, GHG-intensive activities.	Covered by another measure in Problem Area 1.1.
Allow the granting of longer deadlines for BAT implementation.	Covered by another measure in Problem Area 1.1.
Establish a financial and/or compensatory mechanism to encourage investment in breakthrough technologies.	The IED would be unlikely to have access to specific finance, and rather, would work to facilitate funding opportunities through existing mechanisms.
Undertake systematic data collection on GHG emissions at the IED installation level within the BREF process, for those installations and/or emissions covered by the EU-ETS at an EU level.	EC expects to address this as part of the baseline scenario.
Develop BAT-AELs systematically for direct and indirect GHG emissions not covered by the ETS. This shall include emissions of non-ETS GHG by ETS installations and emissions of any GHGs by non-ETS installations.	EC expects to address this as part of the baseline scenario.

As mentioned on page 4 of this Annex, of the more than ninety measures that were discarded from the in-depth impact assessment via the thorough screening exercise, twenty-two measures belonged to the second overall group of legal measures or amendments.

These legal measures/ amendments were identified as having a low likelihood of incurring any significant impacts, instead being mostly focussed on legislative simplification and/or updating measures. The pertinent measures that were deemed as not requiring detailed impact assessment are outlined in Table A12-3 below.

Table A12-3: Policy measures focussed on clarifying and/or simplifying policy measures not taken forward for the in-depth impact assessment

Legal policy measures	Problem Area
Recital 4 – update references to latest strategies	1
Recital 11 – amend references to Directive 85/337/EEC	1

Legal policy measures	Problem Area
Recital 19 – update strategy reference	1
Recital 20 – remove, obsolete	1
Recital 29 – update	1
Recital 28 – remove, obsolete	1
Recital 30 – remove, obsolete	1
Recital 43 – remove/update, obsolete	1
Article 30(9) – remove, obsolete	1
Article 31(3) – remove, obsolete	1
Article 32 – remove, obsolete	1
Article 34(1) – remove, obsolete	1
Article 35(2) – remove, obsolete [Art 35.1 expires end 2022]	1
Article 41 – remove, obsolete	1
Article 64 – consider if to remove or if EC still wishes to exchange further information	1
Article 72(3) and 72(4) – update to reflect reporting now to the Registry	1
Article 73(2) and 73(3) – remove, obsolete	1
Article 79 – update or remove	1
Article 80 – update	1
Article 81 (repeal) – remove, obsolete as now repealed	1
Article 82 (transitional provisions) – remove, obsolete.	1
Remove production of asbestos from Annex I.	1

Annex 13: Screening of measures (E-PRTR)

158 initial measures were developed. An initial screening was undertaken in order to test their suitability and whether or not they should be retained for more detailed analysis. 24 were excluded from further analysis. The screening considered a set of criteria for determining which measures to include as set out in BR Guidelines Tool #17[24]. The interpretation used of these criteria in this assessment has been as described below:

Legal feasibility: Measures must respect any obligation from EU Treaties, any relevant international agreements and ensure and respect fundamental rights. Legal obligations incorporated in existing or secondary EU legislation must also be taken into account. In general, legal feasibility is not expected to be e a major issue.

Technical feasibility: Technological and technical constraints may impact implementation, monitoring and/or enforcement of measures. While not directly technically unfeasible, there could be cases where monitoring or measurements of certain pollutants/parameters could be difficult.

Coherence with other EU policy objectives: Measures should be coherent with other general EU policy objectives. Several of the problem/improvement areas come from a desire to increase coherence by aligning definitions of sectors/activities or reporting requirements.

Effectiveness and efficiency: This has been interpreted as the potential increased reporting burden or costs of implementation that a measure may lead to. The main trade-off relevant for the majority of the options will be between covering a large share of the overall releases and facilities whilst limiting the reporting burden on a large number of facilities.

Proportionality: Some measures may clearly have a poor balance in relation to the importance of the additional releases or contextual data compared to the costs of collecting them.

Political feasibility: Measures that would clearly fail to garner the necessary political support for legislative adoption and/or implementation could also be discarded.

Relevance: When it can be shown that two options are not likely to differ materially in terms of their significant impacts or their distribution, only one should be retained.

At this stage, the screening analysis was largely qualitative since it would not be possible to conduct a more detailed analysis of such a long list of measures. Some of the required information came from the recently completed Commission study on '*Review of E-PRTR implementation and related guidance*'[25]. Other more subjective and specific indicators (such as political feasibility) have been informed by discussion with the Commission, taking into account the results of the public and/or targeted consultation(s), reviewing the responses to earlier consultations and/or expert judgement.

Each measure from the long list was given a corresponding colour: green, yellow or red; green when the measure fulfils the criteria, yellow when it is not clear and red if not feasible.

[24] https://ec.europa.eu/info/sites/default/files/file_import/better-regulation-toolbox-17_en_0.pdf
[25] https://europa.eu/!hm46gp

A measure was retained when considered green across all the criteria. If marked red on a single criterion, then the measure was discussed with the Commission and excluded if deemed appropriate. Measures marked as yellow (with or without green) were also retained for further assessment.

The process was an iterative one, where the result of the impact assessment led to changes to the definition of the measures. This helped to further elaborate the measures in terms of what they would entail in practice and also to define the data assessment needs and to gather the associated data.

Error! Reference source not found. presents the discarded measures along with the reason for being screened out. In addition, some measures, such as updates to guidance, were identified as baseline measures and therefore not included in the more detailed analysis.

Table A13-1: Discarded measures

Problem area	Measure	Reason for screening out
5	2c – Include combustion plants between 1MW and 50 MW	It is anticipated that this measure would create a significant reporting burden, due to the number of MCPs between 1-5 MWth. In addition, the existing plants between 1-5MWth do not need to register under the MCPD (Medium Combustion plants directive) until 2029.
5	4 – Revise thresholds for biological treatment of waste	Analysis of PRTR data with activity thresholds below the E-PRTR show no facilities reporting releases or transfers undertaking biological treatment of waste below the current E-PRTR activity threshold. It is therefore anticipated that there will be a minimal increase in capture of releases/transfers with a potentially high increase in reporting burden to operators and Competent Authorities for the EU Registry dataflow.
5	13e – Revise activity thresholds for urban waste water treatment plants (1,000 p.e)	Since the urban waste water treatment directive only defines requirements for plants over 2,000 p.e (population equivalent) this measure would not give full coherence and may be technically difficult for many Member States due to not regulating facilities of this size. Additionally, this measure could increase the reporting burden on operators and Competent Authorities substantially.
5	15b – Include mixed livestock farms	This measure overlaps too significantly with the option to update the activity thresholds of activity 7(a) to LSU (thresholds of 150, 300 and 450 LSU are being considered) and as such was discarded. Updating the threshold to LSU would also result in mixed livestock farms being included within scope of the E-PRTR.
5	17 – Include data centres in activity list	While data centres are potentially interesting in terms of energy usage the majority of releases from these installations is expected to be from combustion activities – often off-site. However, while some will likely be regulated by the MCPD or even the LCPD and therefore fall under activity 1(c), especially if the threshold for this activity is reduced. However, many of the generators installed within these facilities are for back-up purposes only and would not be expected to be in use except for testing and emergencies so annual releases are not anticipated to be high and likely below the ELVs specified in the IED and below E-PRTR pollutant release thresholds. As such, this measure may be technically difficult if emissions are not monitored from these sites and not result in

Problem area	Measure	Reason for screening out
		many benefits with regards to additional capture of releases/transfers compared to the increased reporting burden.
5	19 - Include new activity of plastic convertors	The level of release from this activity is not well understood beyond releases of micro-plastics and, as the European Plastics Convertors association (EuPC) identifies that there are around 50,000 medium and small plastic convertor businesses across Europe, it is anticipated that the increased reporting burden would outweigh the benefits of capturing the potentially low releases and transfers from this activity.
5	22 – Include an additional sub sector for forging presses	This activity is not included as a specific sector for the development of ELVs in the Ferrous Metals Processing Industries BREF and therefore not thought to be a sector of high environmental concern. The additional reporting burden, and associated costs, is therefore likely to outweigh the benefits of capturing releases/transfers from this activity.
5	24 – Include and additional sub activity for metal working	With the variety of activities that fall under metal working it is difficult to define a production-based throughput threshold and potentially emission factors / methodology to calculate releases for these activities.
5	25 – Include intensive horticulture activities in activity list	While contextual information such as consumption levels may be useful from this activity, the majority of these facilities have a closed loop system and therefore releases are expected to be low. In addition, it is unknown if measurement methodologies and emission factors are available for this activity. As such the increased burden, and associated costs, are unlikely to be outweighed by the benefit of capture of a small number of releases from this activity.
5	26 – Include petrol storage	Depending on the reporting threshold, this could potentially result in a large number of additional facilities reporting to the E-PRTR. The additional VOC releases this would include within the E-PRTR is unlikely to outweigh the additional reporting burden and associated costs.
1	34 - Remove the pollutant reporting thresholds	Potential for considerable additional reporting burden in return for a small marginal improvement in data completeness.
3	36u – Include fluorinated ethers and alcohols in the Annex II pollutant list	This is a very broad pollutant group definition and therefore there are no harmonised methods of measurement for this group of pollutants, although there are methods for specific substances. Additionally, as the pollutant group definition is so broad it is not anticipated to increase the value of the E-PRTR dataset and as such the increased reporting burden, and associated costs, will outweigh the benefits.
3	36ab - Additional pollutants for inclusion - microplastics[26]	There is no harmonised method for measurement of microplastics. A 2009 report from NOAA includes "*Methods to isolate microplastics from surface waters (net tows, filters), sediments, and organisms are desperately needed before further progress can be made in this field*."[27]
3	36ae – Additional pollutants for inclusion - nitrogen trifluoride (NF_3)	No measurement methodology was identified. As such this pollutant should not be included in the Annex II pollutant list yet.
3	36aw – Additional	While this pollutant is already required to be monitored under the IED

[26] Materials consisting of solid polymer-containing particles, where ≥ 1% w/w of particles have (i) all dimensions 1nm ≤ x ≤ 5mm, or (ii), for fibres, a length of 3nm ≤ x ≤ 15mm and length to diameter ratio of >3.

Problem area	Measure	Reason for screening out
	pollutants for inclusion - Total suspended particulate (TSP)	Annex II, TSP is the same as total dust. Particulate Matter of a small size is considered far more important to human health and PM_{10} is already included in the pollutant list. The addition of this outdated pollutant is therefore not expected to increase the value of the dataset. As such the increased reporting burden, and associated costs, will outweigh the benefits.
1	47a – Reduce reporting period to 3 months for all facilities	While reducing the reporting period to three months from the end of the reporting year would decrease the time before the data is available to the public, with the current reporting infrastructure, this could reduce data quality or require a large increase in resource from MS competent authorities. This will be especially difficult for entities that are regulated at the local level and where data passes through a chain of competent authorities. This increased burden on competent authorities will likely result in this option failing to get the necessary political support.
1	47b – Reduce reporting period to 3 months for some facilities	As with the previous measure, this is likely to reduce the data quality or require a large increase in resource from MS competent authorities, although the staggered approach would not require as large an increase in resource. This increased burden on competent authorities will likely result in this option failing to get the necessary political support.
1	48 – Require simultaneous direct reporting to EEA as well as to competent authorities	This measure has the potential to reduce the reporting time lag however would require a significant increase in resource within the EEA in order to undertake the simultaneous QA. Additionally, the QA undertaken by CAs, especially the more local authorities, that are closer to the facilities reporting and have a better understanding of what is expected from them is more likely to identify errors than that done by the EEA. This measure could therefore reduce the E-PRTR data quality. This measure is also procedurally very complex due to the parallel reporting flows and is therefore unlikely to garner the necessary political support.
1	49 – Near real time reporting for CEMs	The data collected by CEMS are principally for compliance assessment under the IED and are fundamentally different to E-PRTR release/transfer data. In addition, CEMS data would represent a considerable additional burden on the E-PRTR reporting infrastructure and there are concerns with ensuring data quality / understandability.
3	50 – Operators to establish a mandatory CMS	It would not be possible to implement this measure through the E-PRTR legislation.
1	54 - Integrate IED monitoring with E-PRTR reporting	It is anticipated that this measure would fail to garner the necessary political support for legislative adoption.
1	55 – Mandate reporting of expected pollutants for specific installations	It is anticipated that this measure would fail to garner the necessary political support for legislative adoption.
1	63 – Create a data reliability indicator	This measure would provide relatively little benefit above the existing E-PRTR requirement for operators to indicate whether data is measured, calculated or estimated.
1	64 – Remove reporting of releases to soil	Whilst the existing data on releases to soil is poor by comparison with data on releases to air and water, it remains an important component of understanding the environmental impact of facilities.

Annex 14: Description of the Industrial Emissions Directive Overview of Sectors Covered, Intervention Tools Available within the IED and Implementation Methods [Excerpt from the IED Evaluation, SWD(2020)182 final]

This Annex contains a description of the Industrial Emissions Directive 2010/75/EU; this description comes directly from the IED Evaluation carried out in 2020, the results of which were presented in SWD(2020)182 final.

Section 1 of the excerpt gives some background to the 2020 Evaluation, and the description of the IED per se is contained in Section 2.

Below is an excerpt of the above Staff Working Document, from Section 1 to Section 2 (sub-sections 2.1 to 2.4 inclusive) of the SWD Evaluation Report, pp. 5-17. The page numbering has been altered slightly by reformatting into the present version, but the content is reproduced in full.

SWD Excerpt, pp.5-17 [citing from original pagination, SWD(2020)182 final].

1. INTRODUCTION

This evaluation is being completed while the EU is working to implement the European Green Deal Communication adopted in December 2019[28]. This Staff Working Document (SWD) provides therefore important elements for informing this work, in particular with regard to the Zero Pollution ambition for a toxic-free environment.

The Industrial Emissions Directive[29] 2010/75/EU (IED) is the main instrument in place at the EU level to control and mitigate the environmental and human health impacts from industrial emissions in the EU. The IED regulates around 52 000 of the largest industrial installations covering a range of agro-industrial sectors. These include: power plants, refineries, and production of steel, non-ferrous metals, cement, lime, glass, chemicals, pulp and paper, food and drink as well as waste treatment and incineration and the intensive rearing of pigs and poultry. The general objective of the IED is to prevent, reduce and eliminate as far as possible emissions into air, water and soil and remediate soil pollution arising from industrial activities.

The IED installations account for about 20% of pollutant emissions by mass to air and a similar share of emissions to water. While IED sectors are large GHG emitters (around 40% of total EU GHG emissions), their CO_2 emissions are mainly regulated under the EU Emissions Trading System (ETS) and, as stipulated by the IED itself, their IED permit shall not include an emission limit value for that gas. Nevertheless, there are a number of IED installations whose CO_2 emissions are not regulated by the ETS, and

[28] https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap_en.pdf

[29] https://ec.europa.eu/environment/industry/stationary/ied/legislation.htm

there are emissions of GHGs other than CO_2 from IED installations, most of which are not regulated by the ETS. Altogether, it is estimated that around 10% of GHG emissions of IED plants are not covered by the ETS, representing around 4% of total EU GHG emissions[30].

This evaluation provides a particularly timely opportunity to assess how well the current legal framework on industrial emissions is working, how relevant it remains in light of the stated EU policy ambitions, and the degree to which it achieved its intended impacts. It includes a review of the implementation of the IED based on Member States reports and complementary information held by the Commission.

The evaluation has been carried out in line with the European Commission's Better Regulation guidelines[31]. Evidence gathering and its analysis was carried out with the support of independent experts. This SWD was supported by their report[32]. Other evaluations have recently been concluded for legislation with which the IED interacts strongly, notably on air quality[33], water management[34], and urban waste water treatment[35]. The relevant aspects of those interactions have been considered in this evaluation.

The general public, industrial stakeholders, public authorities, and representatives of civil society have been consulted throughout the process. The evaluation assesses the legislation against the five standard criteria of effectiveness, efficiency, coherence, relevance and EU-added value. It primarily covers the period from adoption of the IED, in 2010, to the present; however, in some aspects (e.g. emissions of large combustion plants), it was pertinent to look back further to its predecessor legislation.

In terms of legislation, the evaluation covers the IED, including the information exchange process for elaborating Best Available Techniques Reference Documents (BREFs)[36]. It covers all activities within the scope of Annex I to the IED and the whole of the EU. It also covers the following main implementing decisions adopted under the IED that govern its implementation:

- the Commission Decision setting up the IED Forum[37];
- the BREF Guidance[38].

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[30] Estimation based on E-PRTR data.

[31] https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en

[32] Ricardo Energy & Environment, Umweltbundesamt (AT), Milieu (2020) ,"Support to the evaluation of the Industrial Emissions Directive (Directive 2010/75/EU)", https://europa.eu/!nY63hc

[33] SWD(2019) 427 final, https://ec.europa.eu/environment/air/pdf/SWD_2019_427_F1_AAQ%20Fitness%20Check.pdf

[34] SWD(2019) 439 final, https://ec.europa.eu/environment/water/fitness_check_of_the_eu_water_legislation/documents/Water%20Fitness%20Check%20-%20SWD(2019)439%20-%20web.pdf

[35] SWD(2019) 700 final, https://ec.europa.eu/environment/water/water-urbanwaste/pdf/UWWTD%20Evaluation%20SWD%20448-701%20web.pdf

[36] This is referred to as the "BREF process" and is described in detail in Section 3.3.

[37] 2011/C 146/03, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0517(01)

[38] 2012/119/EU, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2012.063.01.0001.01.ENG

The 17 implementing decisions containing the conclusions on Best Available Techniques (BAT conclusions) adopted so far under the IED are not individually assessed as part of the evaluation, but are indirectly addressed as a whole for the following reasons:

- The process to derive the BAT conclusions is analysed in detail and applies to all those adopted;
- The effectiveness of the IED is mainly the cumulative effectiveness of the implementation of the BAT conclusions;
- Most evaluation questions, e.g. on efficiency, apply to the BREF process, and consequently to the drawing up of all BAT conclusions. Where issues specific to individual BAT conclusions have been raised (usually by stakeholders) or assessed in studies, they have been documented.

A number of other implementing acts adopted under the IED have not been included in the evaluation. These are the following ones:

- Implementing rules on the determination of start-up and shut-down periods for large combustion plants[39] are not included because they cover a very specific technical issue;
- Implementing rules on transitional national plans[40] for ensuring compliance of Large Combustion Plants (LCPs) with IED requirements are time-limited and all expire in 2020;
- Implementing rules for Member State reporting[41] are not addressed, but they provide some of the data used in the evaluation.

This evaluation will also feed into an Impact Assessment on the revision of the IED, seeking to ensure its fullest contribution to the Zero Pollution ambition and coherence with other policy objectives, such as industrial decarbonisation, also taking note of the Masterplan[42] adopted by the High Level Group on Energy Intensive Industries, and a cleaner and more circular economy to the benefit of both public health and enhanced resilience of natural ecosystems, in line with the European Green Deal Communication.

2. BACKGROUND TO THE INTERVENTION

2.1. Description of the intervention and its objectives

Industry is responsible for a significant share of overall environmental impacts. The IED is the main EU legislation regulating the environmental impacts of large agro-industrial sources. It combines and strengthens requirements previously set under seven different EU Directives (see Annex 5 for details of legal instruments), namely:

- The Integrated Pollution Prevention and Control Directive (IPPCD)[43]
- The Large Combustion Plants Directive (LCPD) [44]

[39] 2012/249/EU, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012D0249
[40] 2012/115/EU, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012D0115
[41] (EU) 2018/1135, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018D1135
[42] https://ec.europa.eu/docsroom/documents/38403
[43] Directive 2008/1/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0001
[44] Directive 2001/80/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32001L0080

- The Waste Incineration Directive (WID) [45]
- The Solvent Emissions Directive (SED)[46]
- Council Directive 78/176/EEC on waste from the titanium dioxide industry[47]
- Council Directive 82/883/EEC on procedures for the surveillance and monitoring of environments concerned by waste from the titanium dioxide industry[48]
- Council Directive 92/112/EEC on procedures for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry[49]

As an example of better regulation, the IED was introduced following a review of the industrial pollution policy framework[50]. The motivation was to further control industrial pollution, while simplifying regulations, lowering the administrative burden, and improving enforcement. It aimed to support innovation and provide better coherence with other aspects of EU environmental policy acquis (specifically concerning air, water, soil, waste, circular economy).

2.2. Objectives of the IED and problems it is intended to solve

The IED is intended to respond to a number of needs. The first is to support a high level of protection of human health and the environment by preventing, reducing and eliminating, as far as possible, adverse impacts arising from industrial activities (e.g. emissions to air, water and soil, waste, resource consumption). The second is to ensure a level playing field for operators within sectors and across the EU for industrial pollution prevention and control. The third is to ensure access to information, public participation in decision-making and access to justice on industrial activities' environmental permitting and performance. The fourth is to reduce unnecessary or excessive administrative costs for economic operators from previous legislation controlling industrial emissions.

In response to these needs, the IED has a number of objectives. These include:

- to establish a framework for the control and permitting of the main industrial activities;
- to avoid distortion of competition by ensuring consistent environmental requirements for all economic operators within each sector;
- to ensure that permitting of industrial installations is based on best available techniques;
- to stimulate innovation by encouraging the development and application of emerging techniques;

[45] Directive 2000/76/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32000L0076
[46] Directive 1999/13/EC, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31999L0013
[47] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31978L0176
[48] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31982L0883
[49] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992L0112
[50] https://ec.europa.eu/environment/archives/air/stationary/ippc/ippc_revision.htm

- to ensure simplification and clarity of the legal framework and reduce or avoid unnecessary administrative burden.

2.3. Key requirements and principles

Scope of the Directive

More industrial activities fall under the scope of the IED than under its preceding legislation, the IPPCD. In 2015, around 51 700 installations were reported as undertaking industrial activities within the scope of the IED. Implementation of the IED, while driven by EU actions, is therefore much decentralised. It depends on the correct and consistent implementation by a large number of competent authorities across the EU.

The IED is based on several principles, in particular: an integrated approach to pollution prevention and control, the use of best available techniques in permitting, flexibility, inspections and monitoring, public participation and access to justice.

Integrated Approach and Permitting

The IED requires that emissions from industrial sources are dealt with in an integrated way and minimised. All installations conducting activities listed in IED Annex I are required to operate according to a permit issued by the competent authority of the concerned Member State, and reflecting the principles and provisions stipulated by the IED. These are the general requirements set out in Chapters I and II of the IED. The permit extends to all environmental aspects of an installation's operating activities, including emissions of pollutants to air, water and soil, waste generation, resource use, noise, odour prevention of accidents and restoration of the site upon closure.

For certain activities, i.e. large combustion plants (LCPs), waste incineration (WI) and co-incineration plants, solvent using activities (SE) and titanium dioxide production (TiO_2), the IED also sets, in specific sectoral chapters, minimum requirements based on the predecessor Directives.

Best Available Techniques (BAT)

Permit conditions must be based on the use of Best Available Techniques (BAT), which are the most environmentally effective of the economically viable techniques available. EU wide BAT conclusions are adopted as sector specific implementing decisions that define BAT and the related environmental performance to be incorporated in permits issued by Member States' competent authorities.

In order to define BAT and the BAT-associated environmental performance at EU level, the Commission organises an exchange of information with experts from Member States, industry and environmental organisations. This work is co-ordinated by the European IPPC Bureau[51](EIPPCB) at the EU Joint Research Centre in Seville (Spain). This process results in BAT Reference Documents[52] (BREFs). The BAT conclusions are a distinctive chapter of the BREFs. More information on the production of BREFs is contained in section 3.3. Figure A14-2-1 shows a schematic view of the IED.

[51] https://eippcb.jrc.ec.europa.eu/
[52] https://eippcb.jrc.ec.europa.eu/reference

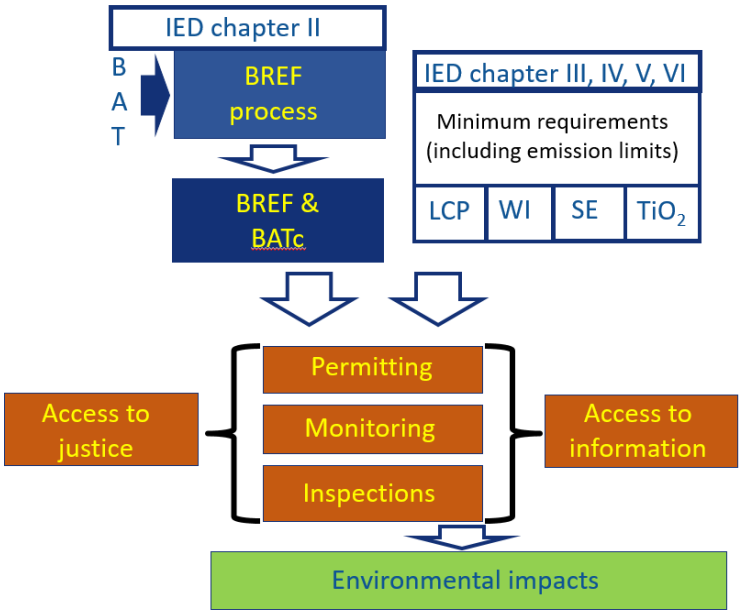


Figure A14-2-1: Schematic overview of the IED (legend: LCP - large combustion plant, WI - waste incineration and co-incineration plants, SE - solvent using activities, TiO_2 - titanium dioxide production)

The setting of BAT and BAT-AEPLs at EU level is in general based on imbalances between installations with high environmental performance and those less performing ones. The BAT used in well performing installations can then be generalised across all installations through the BREF processes, creating a level playing field and a high level of environmental performance within each industrial sector. Market demand leads to continual innovation in techniques and improved performance at lower cost. This process continues independently of the BREF review process, ensuring that better performing techniques are available in a subsequent cycle.

BREFs have a standard format, set out in the BREF Guidance, consisting of the following chapters:

Preface
Scope
General information about the sector concerned
Applied processes and techniques
Current emission and consumption levels
Techniques to consider in the determination of BAT
Best Available Techniques (BAT) conclusions (BATc)
Emerging techniques
Concluding remarks and recommendations for future work

References
Glossary of terms and abbreviations
Annexes (dependent upon relevance to the sector and availability of information)

The BAT conclusions identify a non-exhaustive and non-prescriptive list of BAT, as well as the environmental performance levels achievable with the use of BAT. They can contain:

- BAT-Associated Emission Levels (BAT-AELs), i.e. a numerical range of emission levels for specific pollutants,
- BAT-Associated Environmental Performance Levels (BAT-AEPLs) other than emission levels, which usually address the consumption of raw materials, energy or water, as well as waste generation, and/or
- Descriptive BAT which are not associated with either BAT-AELs or BAT-AEPLs, e.g. concerning monitoring, site remediation, environmental management systems, or the limitation or ban of the use of hazardous substances.

IED Article 14(3) makes BAT conclusions the mandatory reference for setting permit conditions. Article 15(3) makes BAT-AELs the binding requirements for pollutant emissions, usually to air and water. Their upper level is the upper boundary for the corresponding emission limit values set in permits, unless a derogation is granted by a competent authority subject to strict conditions set by the IED. BAT-AEPLs and descriptive BAT are not binding in the same way as BAT-AELs, but authorities must use them as a reference for setting permit conditions.

Competent authorities must update installation permits to be in line with the content of the BAT conclusions, and operators must be compliant with them within 4 years of publication of the BAT conclusions in the Official Journal of the EU. This gives BAT conclusions a more prominent role than under the IPPCD, where they were not legally binding. In doing so, permitting authorities must also ensure compliance with relevant minimum requirements contained in IED Chapters III to VI.

Flexibility

The IED allows competent authorities some flexibility to set less strict emission limit values. Such derogations are possible only in specific cases, where an assessment shows that achieving the emission levels associated with BAT described in the BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to the geographical location, local environmental conditions, or the technical characteristics of the installation, preventing the implementation of BAT. However, the use of this derogation procedure is strictly limited as the competent authority has to ensure that no significant pollution is caused and that a high level of protection of the environment as a whole is achieved. The competent authority shall always document its justification for granting such derogations. In the case of the sectors covered also by the

specific Chapters IV, V, VI, VII, derogations cannot exceed those minimum requirements.

At the same time, competent authorities must set stricter emission limits when an environment quality standard is exceeded.

Figure A14-2-2 illustrates the different regimes for emission limits under the IED.

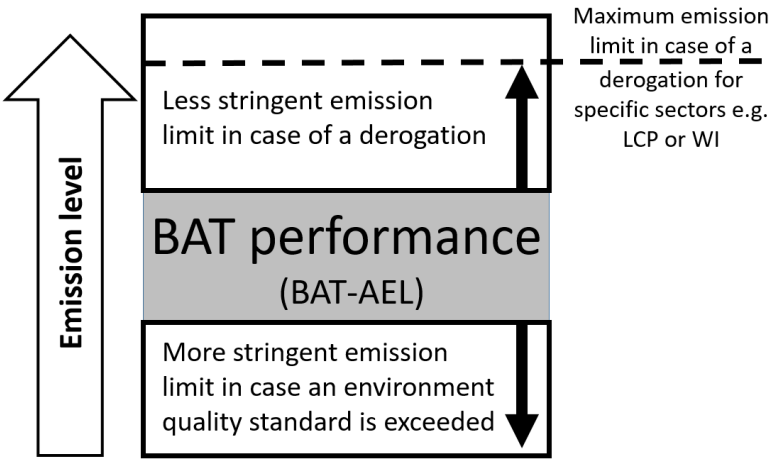


Figure A14-2-2: Emission limits under the IED

Inspections and Monitoring

The IED contains mandatory requirements on environmental inspections. Member States must set up a system of environmental inspections and draw up inspection plans accordingly. The IED requires a site visit to take place at least every 1 to 3 years, using risk-based criteria.

Operators have to report to Member State authorities the results of the monitoring requirements set by BAT conclusions, and Member States are reporting to the EU on several aspects of the implementation of the Directive. This is described in more detail in Section 3.4.

Access to Information and Access to Justice

Access to information and public participation are key elements of the IED. They enable the public to have a right to participate in the decision-making process, and to be informed of its consequences in accordance with the Aarhus Convention. This requires, in particular, ensuring public information on applications for permits by industrial operators and access to permits issued by competent authorities and the results of emissions monitoring held by them. In view of the large number of IED installations, public involvement is also key to police the correct implementation of IED requirements in permits and their respect by operators. Access to justice is another aspect of the Aarhus Convention transposed in the IED. It aims to ensure that, where a problem arises, individuals affected or NGOs can take legal action to ensure the respect of the IED requirements.

Figure A14-2-3 outlines the different roles and obligations of the Competent Authorities and operators of industrial installations in the permitting process.

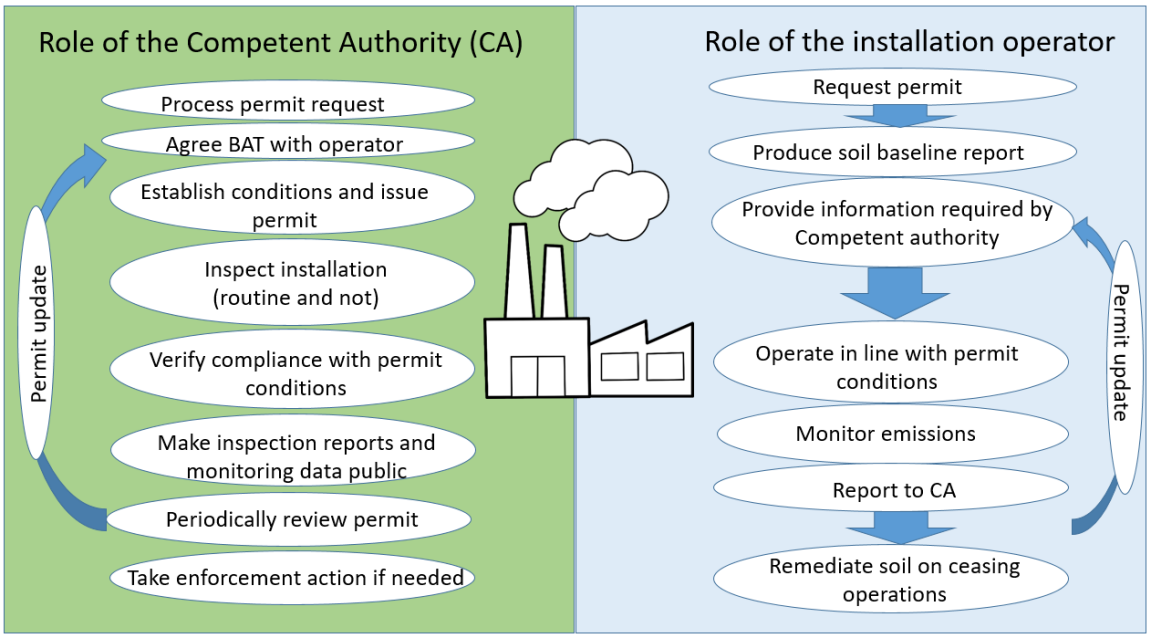


Figure A14-2-3: Roles and obligations of the Competent Authorities and installation operators

The IED Forum

The IED requires the Commission to establish and regularly convene a Forum to support the information exchange. The Forum is composed of representatives of Member States, industry and environmental NGOs. It has been created as a formal expert group through a Commission decision, and is chaired by the Commission. New members of the Forum, who are not Member States, are appointed by the Director General of DG Environment. The IED Forum has so far held 14 meetings and all documents relating to them are publicly available on the internet on CIRCABC[53].

The Commission is required to obtain the opinion of the Forum on the proposed content of BREFs and make it publicly available. The Commission must also take into account this opinion for the adoption of the BAT conclusions. The Commission also obtains the opinion of the Forum on the practical arrangements for the exchange of information including on the work programme for the revision of BREFs. This has, over the years, led to incremental improvements of the BREF process. Forum members nominate participants in the Technical Working Groups who carry out the detailed work on each BREF.

[53] https://circabc.europa.eu/ui/group/06f33a94-9829-4eee-b187-21bb783a0fbf

2.4. Intervention logic

For illustrative purposes, the approach through which the IED operates can be described through a simplified sequence:

→ IED identifies sectors with large environmental impacts

→ IED creates a framework for BAT based permitting

→ BREF process identifies BAT and associated environmental performance levels

→ MS competent authorities issue BAT-based permits for installations

→ Industrial operators apply BAT to comply with permit conditions

→ MS competent authorities undertake inspection, compliance and enforcement actions

→ Emissions and environmental impacts decrease to levels prescribed

→ Civil society can access information and challenge permit decisions

→ IED contributes to the EU's environmental quality objectives.

Figure A14-2-4 shows a summary intervention logic for the IED, the elements of which are explained below. A more detailed version is presented in Annex 2.

Objectives

The main **objectives** of the IED are described in Section 2.2.

Inputs

The **inputs** needed are essentially human and financial resources. These are made available by the European Commission, Member State authorities, economic operators and other stakeholders. EU inputs are primarily needed for the EU level actions, while Member States provide input at EU, national, regional and local levels.

Activities

The resources provided are used to undertake a range of **activities** at various different levels. The first of these, at EU level, was the preparation and adoption of the IED. From that time onwards the main actions of the Commission are to manage the production of BREFs and adoption of BAT conclusions, oversee implementation of the IED and report on it. Member States had to ensure that the necessary structures were in place at national and sub-national levels to implement the IED. Member States, industry and NGOs then participate together with the Commission in the development of BREFs and BAT conclusions. At installation level, Member State competent authorities have to engage with operators to grant permits, review them when necessary, ensure that permit conditions are respected, inspect installations and carry out enforcement action, if needed. Operators of installations must make investments, as needed, to reduce their environmental impacts and ensure that they are compliant with the permit requirements. NGOs and citizens are able to participate in permitting processes, access emissions

monitoring information and bring complaints and information to the competent authorities when needed.

Outputs

There are a number of **outputs**. All installations covered by Chapter II of the IED should hold regularly updated and BAT-based permits. Permitting decisions should be guided by BREFs and BAT conclusions. The permits should be complied with by operators and compliance should be enforced by competent authorities. The public should be involved in permitting decisions and have access to information on the environmental performance of industrial installations. Innovative techniques may be deployed to reduce the environmental impacts of industrial activities. To ensure compliance and enforcement, appropriate monitoring and reporting systems should be in place at all IED installations. Member States' competent authorities should collect accurate emissions data for all IED installations and make them publicly available. The European Pollutant Release and Transfer Register (E-PRTR) provides the legal framework for monitoring aggregate pollutant emissions from IED installations and making that information public, in line with the requirements of the Aarhus Convention.

The IED should lead to the improvement of the environmental performance of industrial installations across the EU.

Effects

If the implementation of the IED is **effective**, this should lead to benefits in four areas:

i. reduced impacts on human health and the environment through lower emissions to air, water and soil, reduced waste generation and higher resource efficiency;
ii. a contribution to increased industrial and technology innovation in the EU;
iii. reduced distortion of competition across the EU;
iv. improved transparency for the public regarding information on the environmental performance of industrial activities.

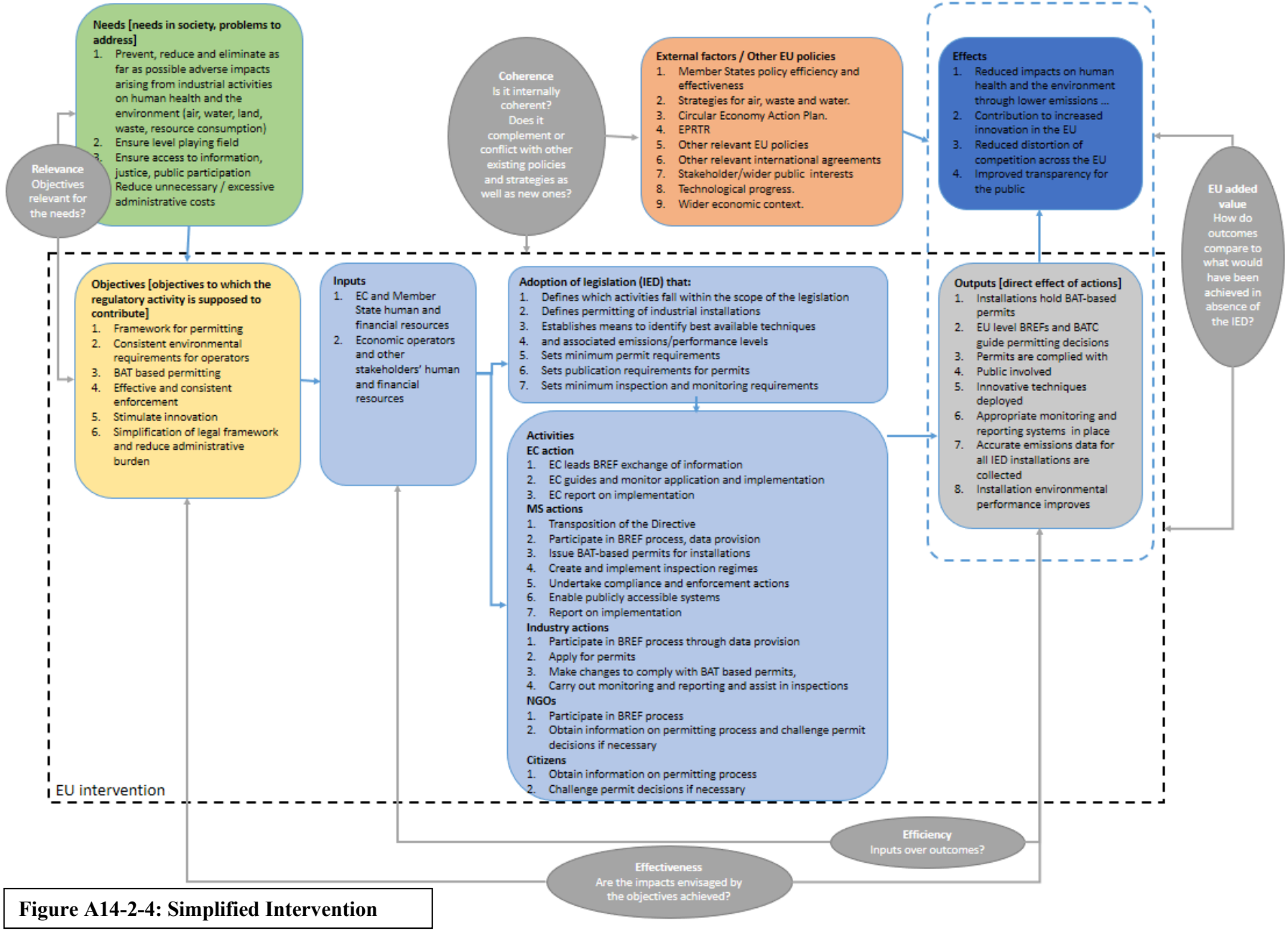


Figure A14-2-4: Simplified Intervention

Annex 15: Description of the European Pollution Release and Transfer Register (E-PRTR)

Regulation (EC) No.166/2006: Overview and Implementation Methods [Excerpt: E-PRTR 'REFIT' Exercise, SWD(2017)710 final]

This Annex contains a description of the European Pollution Release and Transfer Register (E-PRTR), Regulation (EC) No.166/2006; this description comes directly from the E-PRTR 'REFIT' exercise carried out in 2017, the results of which were summarised in the European Commission SWD(2017)710 final.

Section 1 of the excerpt gives some details regarding the purpose of the 2017 'REFIT' assessment, the description of the E-PRTR per se is contained in the background information of Section 2, and the implementation "state-of-play" in 2017 is presented in Section 3.

Below is an excerpt of the above Staff Working Document, from Section 1 to Section 3 of the SWD 'REFIT' assessment report, pp. 2-9. The page numbering has been altered slightly by reformatting into the present version, but the content is reproduced in full.

SWD Excerpt, pp.2-9 [citing from original pagination, SWD(2017)710 final].

1. INTRODUCTION

Purpose of the evaluation

To check that European Union (EU) legislation is 'fit for purpose', the Commission routinely reviews selected policy instruments through its Regulatory Fitness and Performance (REFIT) programme[54]. REFIT is about ensuring that EU legislation effectively and efficiently pursues public policy objectives that are best achieved at Union level.

In its Communication *Regulatory Fitness and Performance (REFIT): Results and Next Steps*[55], the Commission announced that the European Pollutant Release and Transfer Register (E-PRTR) Regulation would be assessed for its effectiveness, efficiency, relevance, coherence and EU added value.

The assessment looked at both the benefits delivered by the E-PRTR, as well as the potential for simplification and reduction of regulatory costs and burdens. Furthermore, it took account of Article 17 of the E-PRTR Regulation which requires that the Commission reviews E-PRTR implementation every three years on the basis of Member State returns. The second such review was exceptionally extended to four years (2010-2013) to fit with the evaluation timing.

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[54] Commission Communication on Regulatory Fitness and Performance (REFIT) http://ec.europa.eu/smart-regulation/better_regulation/documents/com_2013_en.pdf

[55] Regulatory Fitness and Performance (REFIT): Results and Next Steps, COM/2013/0685 final http://ec.europa.eu/smart-regulation/docs/20131002-refit-annex_en.pdf

In the interests of efficiency, the REFIT evaluation and the review were considered together.

Scope of the evaluation

The E-PRTR Regulation supports the EU in meeting the obligations of the (United Nations Economic Commission for Europe) UNECE Kiev Protocol on pollutant release and transfer registers[56]. The E-PRTR and the Kiev Protocol have aligned objectives around enhanced public access to information through the establishment of coherent, nationwide pollutant release and transfer registers (PRTRs).

Since the EU would have to deliver Kiev Protocol obligations even if the E-PRTR Regulation did not exist, the REFIT evaluation concentrates on requirements that are additional to those required by the Kiev Protocol, or in other EU law. In practice, distinction between the two was sometimes difficult for evaluation purposes.

The evaluation looked at E-PRTR implementation from its 2006 inception to the end of 2013 (for which the most recent data were available). In view of the improvements made during this period, more weight is given to issues that are still prevalent. And because Croatia only joined the EU in 2013, the geographical scope of the evaluation covers the other 27 Member States.

A contractor conducted a supporting study[57] to assist the REFIT evaluation, while also addressing the routine triennial check on implementation. This Staff Working Document summarises the REFIT evaluation's findings and the Commission's responses to them.

2. BACKGROUND TO THE INITIATIVE

Objective of the E-PRTR Regulation

The main aim of the E-PRTR Regulation is to transpose the Kiev Protocol in Europe and to assist Member States in implementing it consistently. Flowing from this, the E-PRTR helps improve public access to environmental information on pollutant releases and transfers from Europe's largest industrial facilities. By establishing a coherent and integrated database with clear data on the annual mass emissions (and transfers) of pollutants, the E-PRTR enables the public to become more closely involved in environmental decision-making.

An informed public is able to influence the behaviour of operators and thus encourage lower pollutant releases and transfers. So although the E-PRTR relates to information on pollutants, rather than setting controls on actual pollutant releases *per se*, it exerts downward pressure on emissions since companies do not want to be identified as among the biggest emitters.

[56] UNECE Kiev Protocol http://www.unece.org/env/pp/prtr.html

[57] Supporting the evaluation of Regulation (EC) No 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register and its triennial review – Final report. August 2016, Amec Foster Wheeler Environment & Infrastructure UK Ltd and IEEP https://circabc.europa.eu/sd/a/fd585562-0c60-48f0-ad62-9d1ff7151059/E-PRTR%20evaluation_Final%20report%20.pdf

Policy-makers also use the knowledge and evidence base provided by E-PRTR data to assess other policy instruments that deal with emissions from industrial sources, such as the Industrial Emissions Directive (IED)[58].

Legal context of the E-PRTR

UNECE Kiev Protocol*:* The E-PRTR Regulation is the EU's sole means of delivering obligations under the Kiev Protocol[59]. The Protocol binds its Parties "*to enhance public access to information through the establishment of coherent, nationwide pollutant release and transfer registers (PRTRs)"* that:

- are publicly accessible through the Internet, free of charge;
- can be searched using separate parameters (facility, pollutant, location, etc.);
- are user-friendly in their structure and provide links to other relevant registers;
- present standardised, timely data on a structured, computerised database;
- cover releases and transfers of at least 86 pollutants covered by the Protocol;
- cover releases and transfers from certain types of major point sources;
- accommodate available data on releases from diffuse sources (e.g. transport and agriculture);
- have limited confidentiality provisions;
- allow for public participation in their development and modification.

Such PRTRs should be based on a reporting scheme that, as a minimum, is: mandatory, annual, multi-media (i.e. covers air, water, and land), facility-specific and pollutant-specific. To date the Protocol has been ratified by the European Union and 34 countries, including all EU Member States, except for Greece and Italy.

UNECE Aarhus Convention: The Kiev Protocol is part of the broader Aarhus Convention[60] which establishes a number of people's rights as regards to the environment and for involvement in decision-making. Parties to the Convention are required to take steps so that public authorities (at national, regional or local level) deliver the right to:

- receive the environmental information that is held by public authorities;
- participate in environmental decision-making;
- review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general.

[58] Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010L0075

[59] Kiev Protocol on Pollutant Release and Transfer Registers to the UNECE Aarhus Convention http://www.unece.org/fileadmin/DAM/env/pp/prtr/Protocol%20texts/PRTR_Protocol_e.pdf

[60] UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters http://live.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf

E-PRTR Regulation: The E-PRTR Regulation was adopted in 2006 to implement the Kiev Protocol at EU level and to ensure consistent implementation by Member States of their obligations arising from the Protocol.

The E-PRTR provides pollutant emission and waste data on large industrial facilities, spanning not only the EU Member States, but also the European Free Trade Area (EFTA) nations and Serbia.

This data covers:

- emissions and transfers covering 65 economic activities from nine main industrial sectors[61] (as defined in Annex I to the Regulation)
- 91 pollutants (as detailed in Annex II to the Regulation) including heavy metals, pesticides, greenhouse gases and dioxins. In all, there are five additional water pollutants above the minimum requirements of the Kiev Protocol.

Contribution to the 7th Environmental Action Program:

The E-PRTR is crucial to several objectives of the 7th Environmental Action Programme (7th EAP)[62]. Priority objective 5 (*to improve the knowledge and evidence base for Union environment policy*), states that Union environment policy is based on *environmental monitoring, data, indicators and assessments linked to the implementation of Union legislation*.

The 7th EAP recognises that there has been *considerable progress on strengthening this knowledge base, raising awareness and improving the confidence of policy-makers and the public in the evidence which underpins policy, including policies where the precautionary principle has been applied. This has facilitated better understanding of complex environmental and societal challenges* (see paragraph 66 of the Annex to the Decision).

Paragraph 69 goes on to acknowledge *improvements in the way environmental information and statistics are collected and used at Union and at national, regional and local level, as well as globally. However, data collection and quality remain variable and the multiplicity of sources can make access to data difficult. Continuous investment is therefore needed to ensure that credible, comparable and quality-assured data and indicators are available and accessible to those involved in defining and implementing policy. Environmental information systems need to be designed in order to enable new information on emerging themes to be easily incorporated. Union-wide electronic data-exchange should be further developed, with enough flexibility to encompass new areas*.

[61] Energy; production and processing of metals; mineral industry; chemical industry; waste and waste water management; paper and wood production and processing; intensive livestock production and aquaculture; animal and vegetable products from the food and beverage sector; others.

[62] Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' (OJ L 354, 28.12.2013, p. 171–200) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013D1386

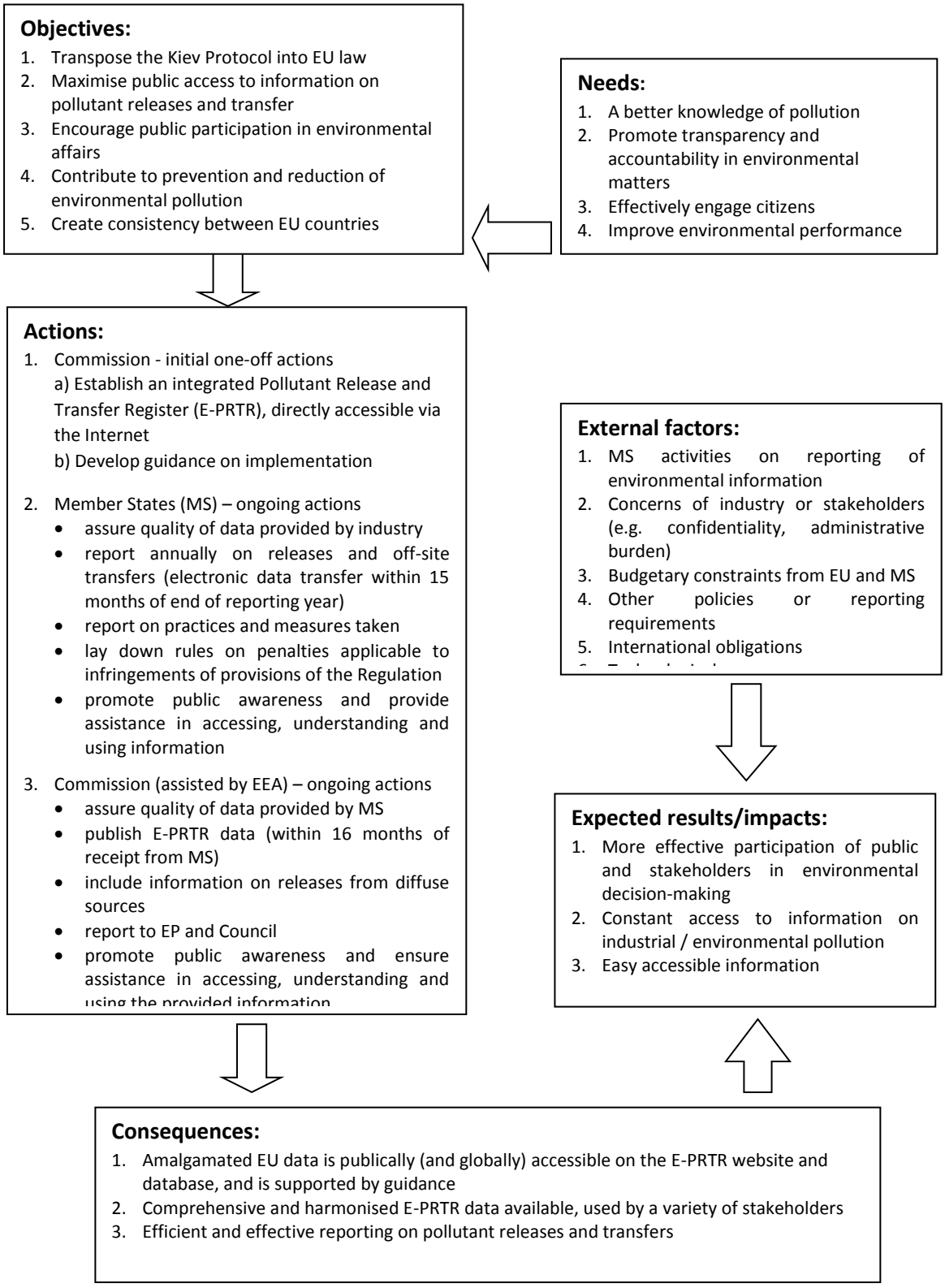
Baseline

The first E-PRTR data cover 2007 and succeed a previous EU-initiated industry registry, the European Pollutant Emission Register (EPER), under which data were reported for the years 2001 and 2004. The fact that the EPER pre-dated and evolved into the E-PRTR makes it difficult to establish an exact baseline for assessing the E-PRTR's additional impact.

No impact assessment was prepared for the E-PRTR Regulation, which is designed to transpose the EU's international obligations.

Intervention logic

The following intervention logic provides an overview of the main E-PRTR actions and their expected outcomes.


Objectives:
1. Transpose the Kiev Protocol into EU law
2. Maximise public access to information on pollutant releases and transfer
3. Encourage public participation in environmental affairs
4. Contribute to prevention and reduction of environmental pollution
5. Create consistency between EU countries
Needs:
1. A better knowledge of pollution
2. Promote transparency and accountability in environmental matters
3. Effectively engage citizens
4. Improve environmental performance
Actions:
1. Commission - initial one-off actions
a) Establish an integrated Pollutant Release and Transfer Register (E-PRTR), directly accessible via the Internet
b) Develop guidance on implementation
2. Member States (MS) – ongoing actions
• assure quality of data provided by industry
• report annually on releases and off-site transfers (electronic data transfer within 15 months of end of reporting year)
• report on practices and measures taken
• lay down rules on penalties applicable to infringements of provisions of the Regulation
• promote public awareness and provide assistance in accessing, understanding and using information
3. Commission (assisted by EEA) – ongoing actions
• assure quality of data provided by MS
• publish E-PRTR data (within 16 months of receipt from MS)
• include information on releases from diffuse sources
• report to EP and Council
• promote public awareness and ensure assistance in accessing, understanding and using the provided information
External factors:
1. MS activities on reporting of environmental information
2. Concerns of industry or stakeholders (e.g. confidentiality, administrative burden)
3. Budgetary constraints from EU and MS
4. Other policies or reporting requirements
5. International obligations
Expected results/impacts:
1. More effective participation of public and stakeholders in environmental decision-making
2. Constant access to information on industrial / environmental pollution
3. Easy accessible information
Consequences:
1. Amalgamated EU data is publically (and globally) accessible on the E-PRTR website and database, and is supported by guidance
2. Comprehensive and harmonised E-PRTR data available, used by a variety of stakeholders
3. Efficient and effective reporting on pollutant releases and transfers

3. IMPLEMENTATION / STATE OF PLAY

All Member States have adopted national legislation and procedures to implement the requirements of the E-PRTR Regulation. Appendix D of the [2017 contractors'] supporting study summarises implementation measures in each Member State. The following are general observations:

E-PRTR website

According to Article 10(1) of the Regulation, the Commission must make the register publicly accessible free of charge on the Internet. The E-PRTR website (http://prtr.ec.europa.eu) is hosted and maintained by the European Environment Agency (EEA), allowing for further integration of E-PRTR data with other datasets that the EEA manages.

The website is designed to maximise ease of public access and the information is continuously and readily accessible. At present, the E-PRTR website provides online access to data reported by more than 30 000[63] major industrial facilities covering 65 economic activities[64] in the main industrial sectors. For each facility, it provides information on the quantity of pollutant releases to air, water and land, together with off-site transfers of waste and of pollutants in waste water for 91 key substances. In addition to those core datasets, which are the main point sources of pollution, the E-PRTR also contains spatially disaggregated data on releases from diffuse sources into air and water.

Every year, industrial establishments with pollutant emissions above certain thresholds report their pollutant emissions to Member States' competent authorities. These data take the form of total masses of pollutants released to air, water and land, as well as off-site transfers of waste and of pollutants in wastewater.

In turn, Member States check these data and electronically report them annually to the Commission via a portal managed by the EEA. The reporting deadline is 15 months from the end of the reporting year (e.g. the deadline for reporting 2014 data was 31 March 2016). Since the first reporting year (2007), the deadline has by and large been met by Member States. Some minor delays (of up to a few months) have occurred but no structural issues are apparent.

The EEA then incorporates the information reported by Member States into the E-PRTR database within 16 months of the end of the reporting year (e.g. the target for publishing 2014 data was 30 April 2016)[65].

The EEA publishes the data on the E-PRTR's interactive website and also separately make it available for detailed use in its data service facilities. Emission data can be accessed in

[63] In the year 2014, data was reported by 33,246 facilities.
[64] See Annex I of the E-PRTR Regulation
[65] In practice two months are needed for the necessary consistency tests and addressing Member State reporting issues.

different ways on the E-PRTR website i.e. by searching on criteria such as pollutant, industrial activity type, country, or river-basin. The website includes a link to the EEA website, from which the full E-PRTR database and summary tables can be downloaded.

Reporting 2014

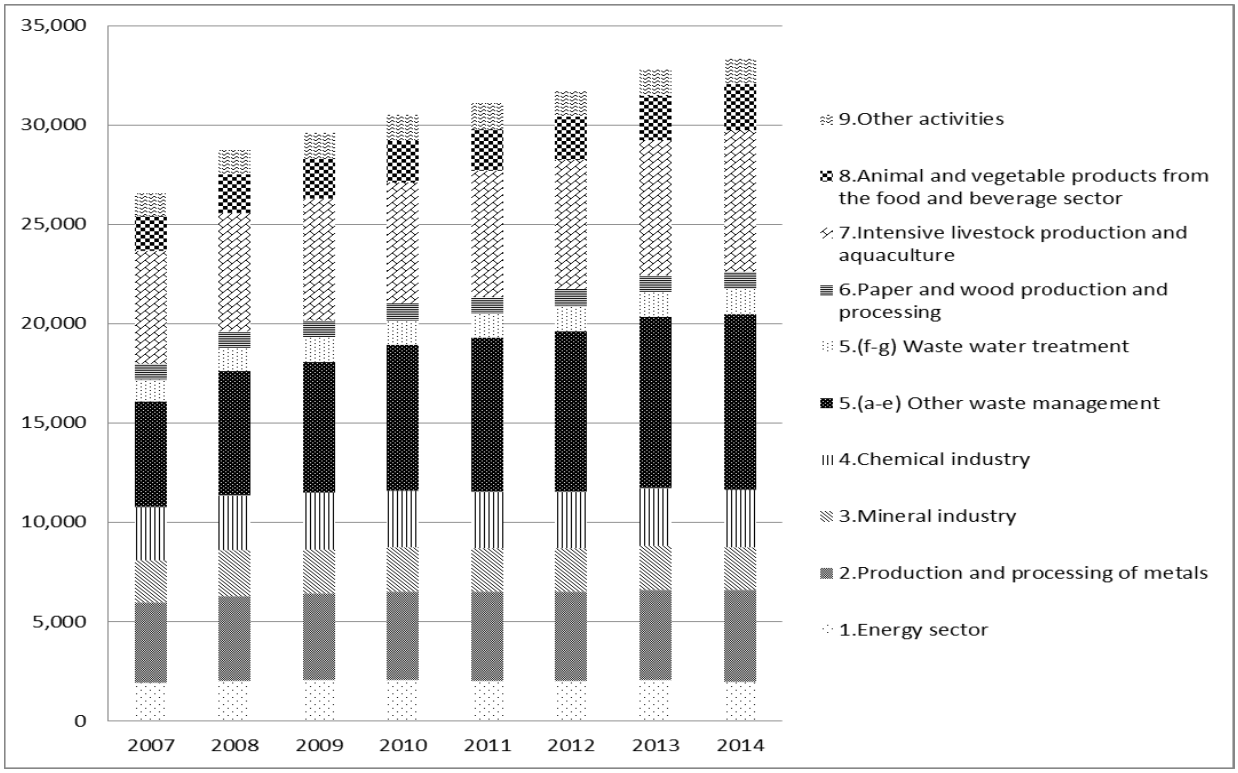
The EEA's *E-PRTR Summary Report 2014*[66] presents overall statistics for 2014 E-PRTR data and shows selected data time series since 2007.

Some key observations are listed below:

- In 2014, emissions were reported by 33 084 facilities in 33 countries – the EU-28, Iceland, Liechtenstein, Norway, Switzerland and Serbia. This was an increase of about 2% over the 32,480 facilities that reported in 2013.
- Of the E-PRTR facilities that reported in 2014, 46% had reported every year since 2007. The level of continuity is probably higher still as it does not include facilities that have changed name or are close to the reporting thresholds in Annex II of the Regulation (and so do not need to report every year).
- 11% of facilities reported for the first time in 2014, including those in Croatia.
- In 2014 the largest number of facilities carried out *waste and waste-water management* (31%), followed by *intensive livestock production and aquaculture* (21%).
- Between 2007 and 2014, some industrial activities saw significant increases in the number of facilities reporting emissions. For instance, the figure for waste and waste water management was up 58% and for food and beverage industries it rose by 28%. This probably reflects higher reporting by existing facilities, rather than the opening of new facilities.

The following figure shows the number of E-PRTR facilities per main activity over the period 2007 to 2014.

[66] EEA Summary Report on 2014 E-PRTR Data https://circabc.europa.eu/sd/a/fb8035be-a0b3-4b0f-9de1-58e2c602063f/E-PRTR%20Summary%20Note%202014.pdf



Quality assurance

After receiving annual data returns from facility operators, Member States carry out quality checks before transmitting their compiled data to the EEA.

An automated validation tool developed by the EEA helps Member States validate E-PRTR data and assure compliance with the agreed reporting format. The validation covers information such as: pollutant types, industrial sector codes, geographical coordinates, mandatory checks for formatting, quantitative checks of release / waste values (including outliers), and checks for confidential data. If errors are found, Member States may resubmit data.

To help implement the Regulation, the EEA also checks the quality of data in the E-PRTR annually through a process known as the 'informal review', after which:

- Member States are provided with detailed feedback on the quality and completeness of their submitted data. EEA checks cover an evaluation of the number of facilities and release reports, the amounts of releases and transfers reported, confidentiality claims and accidental releases;
- to identify and address potential inconsistencies, E-PRTR data are also subsequently compared with data reported under other reporting obligations (e.g.

the National Emission Ceilings Directive[67], the Emissions Trading Scheme[68], the Urban Waste-Water Treatment Directive[69] and the Waste Statistics Regulation[70]).

Commission guidance

As required under Article 14 of the Regulation, the Commission published a guidance document[71] in 2006 to support implementation of the E-PRTR. The guidance covers practical matters such as who should report, what information is required and how data should be submitted. It also includes an indicative list of sectors and pollutants for which data reporting is expected.

Enforcement action

The Commission has had little need to resort to formal action against Member States to enforce the requirements of the Regulation. There has only been one pilot action (now closed) and that hinged on whether an activity carried out at a facility was covered by the Regulation. While there have been some delays with the annual submission of data by Member States, these have been resolved through informal reminders and have not necessitated formal action.

[67] Directive 2001/81/EC http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Al28095

[68] Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1488376075580&uri=CELEX:32003L0087

[69] Directive 91/271/EEC

[70] Regulation (EC) No 2150/2002 http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32002R2150

[71] Guidance Document for the implementation of the European PRTR http://prtr.ec.europa.eu/docs/EN_E-PRTR_fin.pdf

Annex 16: Mapping of the scope of IED, E-PRTR, ETS and other relevant instruments

E-PRTR	IED	EU-ETS	Other instruments
1(a) Mineral oil and gas refineries	1.2. Refining of mineral oil and gas	Refining of mineral oil	
1(b) Installations for gasification and liquefaction	1.4. Gasification or liquefaction of: (a) coal; (b) other fuels in installations with a total rated thermal input of 20 MW or more.		
1(c) Thermal power stations and other combustion installations with a heat input of 50 megawatts (MW)	1.1. Combustion of fuels in installations with a total rated thermal input of 50 MW or more	Combustion of fuels in installations with a total rated thermal input exceeding 20 MW (except in installations for the incineration of hazardous or municipal waste)	Directive (EU) 2015/2193 on medium combustion plants covers MCPs with a total rated thermal input exceeding 1 MW
1(d) Coke ovens	1.3. Production of coke	Production of coke	
1(e) Coal rolling mills with a capacity of 1 tonne per hour			
1(f) Installations for the manufacture of coal products and solid smokeless fuel			
2(a) Metal ore (including sulphide ore) roasting or sintering installations	2.1. Metal ore (including sulphide ore) roasting or sintering	Metal ore (including sulphide ore) roasting or sintering, including pelletisation	
2(b) Installations for the production of pig iron or steel (primary or secondary melting) including continuous casting with a capacity of 2,5 tonnes per hour	2.2. Production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2,5 tonnes per hour	Production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2,5 tonnes per hour	
2(c) Installations for the processing of ferrous metals:	2.3. Processing of ferrous metals:	Production or processing of ferrous metals (including ferro-alloys)	
(i) Hot-rolling mills with a capacity of 20 tonnes of crude steel per hour	(a) operation of hot-rolling mills with a capacity exceeding 20 tonnes of crude steel per hour	Where combustion units with a total rated thermal input exceeding 20 MW are operated. Processing includes, inter alia, rolling mills, re-heaters, annealing furnaces, smitheries, foundries, coating and pickling	
(ii) Smitheries with hammers with an energy of 50 kilojoules per hammer, where the calorific power used exceeds 20 MW	(b) operation of smitheries with hammers the energy of which exceeds 50 kilojoule per hammer, where the calorific power used exceeds 20 MW		
(iii) Application of protective fused metal coats with an input of 2 tonnes of crude steel per hour	(c) application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour		

E-PRTR	IED	EU-ETS	Other instruments
2(d) Ferrous metal foundries with a production capacity of 20 tonnes per day	2.4. Operation of ferrous metal foundries with a production capacity exceeding 20 tonnes per day		
		Production of primary aluminium	
		Production of secondary aluminium where combustion units with a total rated thermal input exceeding 20 MW are operated	
2(e) Installations:	2.5. Processing of non-ferrous metals:		
(i) For the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes	(a) production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes	Production or processing of non-ferrous metals, including production of alloys, refining, foundry casting, etc., where combustion units with a total rated thermal input (including fuels used as reducing agents) exceeding 20 MW are operated	
(ii) For the smelting, including the alloying, of non-ferrous metals, including recovered products (refining, foundry casting, etc.) with a melting capacity of 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals	(b) melting, including the alloyage, of non-ferrous metals, including recovered products and operation of non-ferrous metal foundries, with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals.		
2(f) Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats equals 30 m3	2.6. Surface treatment of metals or plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 m3		
3(a) Underground mining and related operations			
3(b) Opencast mining and quarrying where the surface of the area effectively under extractive operation equals 25 hectares			
3(c) Installations for the production of:	3.1. Production of cement, lime and magnesium oxide:		
(i) Cement clinker in rotary kilns with a production capacity of 500 tonnes per day	(a) production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day	

E-PRTR	IED	EU-ETS	Other instruments
(ii) Lime in rotary kilns With a production capacity of 50 tonnes per day	(b) production of lime in kilns with a production capacity exceeding 50 tonnes per day	Production of lime or calcination of dolomite or magnesite in rotary kilns or in other furnaces with a production capacity exceeding 50 tonnes per day	
(iii) Cement clinker or lime in other furnaces with a production capacity of 50 tonnes per day	(a) production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day	Production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day	
	(c) production of magnesium oxide in kilns with a production capacity exceeding 50 tonnes per day.		
3(d) Installations for the production of asbestos and the manufacture of asbestos-based products	3.2. Production of asbestos or the manufacture of asbestos-based products		
3(e) Installations for the manufacture of glass, including glass fibre with a melting capacity of 20 tonnes per day	3.3. Manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day	Manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day	
3(f) Installations for melting mineral substances, including the production of mineral fibres with a melting capacity of 20 tonnes per day	3.4. Melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tonnes per day	Manufacture of mineral wool insulation material using glass, rock or slag with a melting capacity exceeding 20 tonnes per day	
3(g) Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain with a production capacity of 75 tonnes per day, or with a kiln capacity of 4 m3 and with a setting density per kiln of 300 kg/m3	3.5. Manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain with a production capacity exceeding 75 tonnes per day and/or with a kiln capacity exceeding 4 m^3 and with a setting density per kiln exceeding 300 kg/m^3	Manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day	
		Drying or calcination of gypsum or production of plaster boards and other gypsum products, where combustion units with a total rated thermal input exceeding 20 MW are operated	
4(a) Chemical installations for the production on an industrial scale of basic organic chemicals, such as:	4.1. Production of organic chemicals, such as:		
(i) Simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)	(a) simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)	Production of bulk organic chemicals by cracking, reforming, partial or full oxidation or by similar	

E-PRTR	IED	EU-ETS	Other instruments
		processes, with a production capacity exceeding 100 tonnes per day	
(ii) Oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins	b) oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters and mixtures of esters, acetates, ethers, peroxides and epoxy resins		
(iii) Sulphurous hydrocarbons	(c) sulphurous hydrocarbons		
(iv) Nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitriles, cyanates, isocyanate	(d) nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitriles, cyanates, isocyanates		
(v) Phosphorus-containing hydrocarbons	e) phosphorus-containing hydrocarbons		
(vi) Halogenic hydrocarbons	(f) halogenic hydrocarbons		
(vii) Organometallic compounds	(g) organometallic compounds		
(viii) Basic plastic materials (polymers, synthetic fibres and cellulose-based fibres)	(h) plastic materials (polymers, synthetic fibres and cellulose-based fibres)		
(ix) Synthetic rubbers	(i) synthetic rubbers		
(x) Dyes and pigments	(j) dyes and pigments		
(xi) Surface-active agents and surfactants	(k) surface-active agents and surfactants		
4(b) Chemical installations for the production on an industrial scale of basic inorganic chemicals, such as:	4.2. Production of inorganic chemicals, such as:		
(i) Gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride	(a) gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride	Production of ammonia	
(ii) Acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids	(b) acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids	Production of nitric acid; Production of adipic acid; Production of glyoxal and glyoxylic acid	
(iii) Bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide	(c) bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide		
(iv) Salts, such as ammonium chloride, potassium	(d) salts, such as ammonium chloride, potassium		

E-PRTR	IED	EU-ETS	Other instruments
chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate	chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate		
(v) Non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide	(e) compounds such as calcium carbide, silicon, silicon carbide		
4(c) Chemical installations for the production on an industrial scale of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)	4.3. Production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)		
4(d) Chemical installations for the production on an industrial scale of basic plant health products and of biocides	4.4. Production of plant protection products or of biocides		
4(e) Installations using a chemical or biological process for the production on an industrial scale of basic pharmaceutical products	4.5. Production of pharmaceutical products including intermediates		
4(f) Installations for the production on an industrial scale of explosives and pyrotechnic products	4.6. Production of explosives		
		Production of carbon black involving the carbonisation of organic substances such as oils, tars, cracker and distillation residues, where combustion units with a total rated thermal input exceeding 20 MW are operated	
		Production of hydrogen (H2) and synthesis gas by reforming or partial oxidation with a production capacity exceeding 25 tonnes per day	
		Production of soda ash (Na2CO3) and sodium bicarbonate (NaHCO3)	
5(a) Installations for the recovery or disposal of hazardous waste receiving 10 tonnes per day	5.1. Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving one or more of the following activities: (a) biological treatment;		

E-PRTR	IED	EU-ETS	Other instruments
	(b) physico-chemical treatment; (c) blending or mixing prior to submission to any of the other activities listed in points 5.1 and 5.2; (d) repackaging prior to submission to any of the other activities listed in points 5.1 and 5.2; (e) solvent reclamation/regeneration; (f) recycling/reclamation of inorganic materials other than metals or metal compounds; (g) regeneration of acids or bases; (h) recovery of components used for pollution abatement; (i) recovery of components from catalysts; (j) oil re-refining or other reuses of oil; (k) surface impoundment.		
5(a) Installations for the recovery or disposal of hazardous waste receiving 10 tonnes per day	5.2. Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants: (b) for hazardous waste with a capacity exceeding 10 tonnes per day		
5(a) Installations for the recovery or disposal of hazardous waste receiving 10 tonnes per day	5.6. Underground storage of hazardous waste with a total capacity exceeding 50 tonnes		
5(b) Installations for the incineration of non-hazardous waste in the scope of Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste with a capacity of 3 tonnes per hour	5.2. Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants: (b) for non-hazardous waste with a capacity exceeding 3 tonnes per hour		
5(c) Installations for the disposal of non-hazardous waste with a capacity of 50 tonnes per day	5.3.(a) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment:		

E-PRTR	IED	EU-ETS	Other instruments
	(i) biological treatment; (ii) physico-chemical treatment; (iii) pre-treatment of waste for incineration or co-incineration; (iv) treatment of slags and ashes; (v) treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components.		
5(d) Landfills (excluding landfills of inert waste and landfills, which were definitely closed before 16.7.2001 or for which the after-care phase required by the competent authorities according to Article 13 of Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste has expired) receiving 10 tonnes per day or with a total capacity of 25 000 tonnes	5.4. Landfills, as defined in Article 2(g) of Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25 000 tonnes, excluding landfills of inert waste		
5(e) Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity of 10 tonnes per day	6.5. Disposal or recycling of animal carcases or animal waste with a treatment capacity exceeding 10 tonnes per day		
5(f) Urban waste-water treatment plants with a capacity of 100 000 population equivalents			Council Directive 91/271/EEC concerning urban waste water treatment defines standards and emission limits for UWWTP above 2 000 population equivalents
5(g) Independently operated industrial waste-water treatment plants which serve one or more activities of this annex with a capacity of 10 000 m3 per day	6.11. Independently operated treatment of waste water not covered by Directive 91/271/EEC and discharged by an installation covered by Chapter II		
	5.3(b) Recovery, or a mix of recovery and		

E-PRTR	IED	EU-ETS	Other instruments
	disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, and excluding activities covered by Directive 91/271/EEC: (i) biological treatment; (ii) pre-treatment of waste for incineration or co-incineration; (iii) treatment of slags and ashes; (iv) treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components. When the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day.		
	5.5. Temporary storage of hazardous waste not covered under point 5.4 pending any of the activities listed in points 5.1, 5.2, 5.4 and 5.6 with a total capacity exceeding 50 tonnes, excluding temporary storage, pending collection, on the site where the waste is generated		
6(a) Industrial plants for the production of pulp from timber or similar fibrous materials	6.1(a) Production in industrial installations of pulp from timber or other fibrous materials;	Production of pulp from timber or other fibrous materials	
6(b) Industrial plants for the production of paper and board and other primary wood products (such as chipboard, fibreboard and plywood) with a production capacity of 20 tonnes per day	6.1. Production in industrial installations of: (b) paper or card board with a production capacity exceeding 20 tonnes per day; (c) one or more of the following wood-based panels: oriented strand board, particleboard or fibreboard with a production capacity exceeding 600 m3 per day.	Production of paper or cardboard with a production capacity exceeding 20 tonnes per day	
(c) Industrial plants for the preservation of wood and wood products with chemicals with a	6.10. Preservation of wood and wood products with chemicals with a production capacity		

E-PRTR	IED	EU-ETS	Other instruments
production capacity of 50 m3 per day	exceeding 75 m^3 per day other than exclusively treating against sapstain		
7(a) Installations for the intensive rearing of poultry or pigs (i) With 40 000 places for poultry (ii) With 2 000 places for production pigs (over 30 kg) (iii) With 750 places for sows	6.6. Intensive rearing of poultry or pigs: (a) with more than 40 000 places for poultry; (b) with more than 2 000 places for production pigs (over 30 kg), or (c) with more than 750 places for sows.		
7(b) Intensive aquaculture with a production capacity of 1 000 tonnes of fish or shellfish per year			
8(a) Slaughterhouses with a carcass production capacity of 50 tonnes per day	6.4(a) Operating slaughterhouses with a carcass production capacity greater than 50 tonnes per day		
8(b) Treatment and processing intended for the production of food and beverage products from:	6.4(b) Treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed from: (iii) animal and vegetable raw materials, both in combined and separate products, with a finished product production capacity in tonnes per day greater than: - 75 if A is equal to 10 or more; or, - [300- (22,5 × A)] in any other case, where 'A' is the portion of animal material (in percent of weight) of the finished product production capacity. Packaging shall not be included in the final weight of the product.		
(i) Animal raw materials (other than milk) with a finished product production capacity of 75 tonnes	(i) only animal raw materials (other than exclusively milk) with a finished product		

E-PRTR	IED	EU-ETS	Other instruments
per day	production capacity greater than 75 tonnes per day		
(ii) Vegetable raw materials with a finished product production capacity of 300 tonnes per day (average value on a quarterly basis)	(ii) only vegetable raw materials with a finished product production capacity greater than 300 tonnes per day or 600 tonnes per day where the installation operates for a period of no more than 90 consecutive days in any year		
Treatment and processing of milk with a capacity to receive 200 tonnes of milk per day (average value on an annual basis)	(c) Treatment and processing of milk only, the quantity of milk received being greater than 200 tonnes per day (average value on an annual basis)		
9(a) Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles with a treatment capacity of 10 tonnes per day	6.2. Pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of textile fibres or textiles where the treatment capacity exceeds 10 tonnes per day		
9(b) Plants for the tanning of hides and skins with a treatment capacity of 12 tonnes of finished product per day	6.3. Tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day		
9(c) Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating with a consumption capacity of 150 kg per hour or 200 tonnes per year	6.7. Surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with an organic solvent consumption capacity of more than 150 kg per hour or more than 200 tonnes per year		
9(d) Installations for the production of carbon (hard-burnt coal) or electro-graphite by means of incineration or graphitisation	6.8. Production of carbon (hard-burnt coal) or electrographite by means of incineration or graphitisation		
9(e) Installations for the building of, and painting or removal of paint from ships with a capacity for ships 100 m long			
	6.9. Capture of CO_2 streams from installations covered by this Directive for the purposes of geological storage pursuant to Directive	Capture of greenhouse gases from installations covered by this Directive for the purpose of transport and geological storage in a storage site	

E-PRTR	IED	EU-ETS	Other instruments
	2009/31/EC	permitted under Directive 2009/31/EC	
		Transport of greenhouse gases by pipelines for geological storage in a storage site permitted under Directive 2009/31/EC	
		Geological storage of greenhouse gases in a storage site permitted under Directive 2009/31/EC	