

European Union Network for the Implementation and Enforcement of Environmental Law

IMPEL Project

LINKING THE WATER FRAMEWORK DIRECTIVE AND IED DIRECTIVE

Report of Phase 3 of the Project

November 2013

Including:

Guidance for water managers

Guidance for IED managers



Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the EU Member States, acceding and candidate countries of the European Union and EEA countries. The association is registered in Belgium and its legal seat is in Brussels, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 6th Environment Action Programme and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its websites at: http://europa.eu.int/comm/environment/impel www.impeltfs.eu

Title report: Linking the Water Framework Directive and the Industrial Emissions Directive, Phase 3.	Number report: 2013/XX
Project manager: Christof Planitzer (Austria) and Filipe Vitorino (Portugal) Core team: Christof Planitzer (Austria), Filipe Vitorino (Portugal), Andrew Farmer (IEEP), Valeria Marchesi (Italy) and Anabelo Rebelo (Portugal)	Report adopted at IMPEL Plenary Meeting:
Authors: Andrew Farmer	Number of pages: Report: 10 Annexes: 50
Project participants:	

Representatives of 6 IMPEL member countries

Executive summary:

The Industrial Emissions Directive (IED) 2010/75/EU and Water Framework Directive (WFD) 2000/60/EC are two of the most wide-reaching items of EU environmental law. With the introduction of a basin wide and integrated water resource management concept into the EU through the WFD in 2000, cooperation and coordination in the various decisions making process within water and industry has become important. It is needed to shift from mainly monitoring hydrological data to data related to water use and policy processes and implementation. A challenge with seems to be still underdeveloped and which has also become a high priority under the UNDP Water Governance Programme and other initiatives. This has presented many challenges to the Member States and continues to do so. These challenges have included interpretation of the provisions of the Directives and the enormous practicalities of implementation. Installations regulated under IED may impact on the water environment, such as through direct or indirect discharges of pollutants, water abstraction, etc. IED requires installations to operate to conditions in permits compliant with Best Available Techniques (BAT). They are also required to respect environmental quality standards established in EU law, including those derived under EU water law. However, the relationship between the two sets of obligations is often far from simple. Therefore, ensuring integration of the implementation of the Directives is a challenge and this report seeks to analyse the different elements underlying this challenge. A desk based legal/policy analysis of these interactions was presented in an earlier report of Phase 1 of this project and Phase 2 sought views and best practice from IED regulators and water authorities in IMPEL member countries.

This report presents the results of phase 3 of the project. The aim of this project was to take the results of phases 1 and 2 and develop guidance for water management authorities and for IED competent authorities on which attention to information should be put on and on the sharing of information in different phases of their water management cycles and regulatory cycles.

The checklist for water management authorities is structured around the cycle of river basin planning:

- Understanding significant water pressures
- Establishing and implementing measures
- Monitoring

The guidance for IED competent authorities is structured around the regulatory cycle of the IED:

- Permitting
- Monitoring
- Inspection planning
- Inspection
- Permit review

The checklists contain a series of actions the relevant authorities may take to aid in their work, including information they could request from another authorities or information they could supply. It is hoped that the checklists are widely used by water and industrial sector managers as a mean to understand better information needs of each sector.

This report presents a summary of the methods undertaken to produce this guidance, together with the guidance itself (in the form of two checklists). It also includes further information from IMPEL members of practical examples of the interaction between water management authorities and for IED competent authorities.

The report recommends that relevant authorities for water management and IED implementation in the Member States examine the checklists, amend them where appropriate to national circumstances and use them in the different parts of decision making within river basin management and IED regulation. The project also recommends that IMPEL members promote the use of the checklists to its members and related public authorities.

Disclaimer:

This report is the result of a project within the IMPEL-Network. The content does not necessarily represent the view of the national administrations or the Commission.

CONTENTS

Acrony	7ms	.6
1. Int	troduction	.7
2. Me	ethodology	.8
4. Re	esults of the project	.9
5. Co	onclusions and recommendations	10
Annex]	I: Guidance for water managers	11
Annex]	II: guidance for competent authorities for the industrial emissions directive	17
Annex]	III: presentations at the project workshop	23
Annex]	IV: Participants at the project workshop	50

ACRONYMS

BAT	Best Available Techniques
EQSD	Environmental Quality Standards for Water Directive
ELV	Emission Limit Value
GES	Good ecological status
GWD	Groundwater Directive
IED	Industrial Emissions Directive
IPPC	Integrated Pollution Prevention and Control
POM	Programmes of Measures
RBMP	River Basin Management Plan
WFD	Water Framework Directive

1. INTRODUCTION

The Industrial Emissions Directive (IED) 2010/75/EU and Water Framework Directive (WFD) 2000/60/EC are two of the most wide-reaching items of EU environmental law. With the introduction of a basin wide and integrated water resource management concept into the EU through the WFD in 2000, cooperation and coordination in the various decisions making process within water and industry has become important. It is needed to shift from mainly monitoring hydrological data to data related to water use and policy processes and implementation. It is necessary to have a common understanding and a system in place to determine who gets water, when and how. This has presented many challenges to the Member States and continues to do so. These challenges have included interpretation of the provisions of the Directives and the enormous practicalities of implementation. Each of these Directives is also supported by other EU law, such as E-PRTR, the EQS Directive, GWD and others. Each of these has their own implementation challenges.

The directives strongly interact. IED requires the permitting process to consider environmental objectives (such as those derived from the WFD) and the WFD requires action to be taken on pressures on water bodies (which may include provisions for IED installations). The nature, timing, scope and limitations of these interactions (and more specific interactions with the 'supporting' Directives) are not always clear and they present a major challenge for competent authorities in the Member States to address.

IMPEL established a project in 2010 to examine the nature of the interaction between these directives. This was followed by a second phase of the project in 2011 which brought together IMPEL members to examine the practical problems they face in addressing the interaction between the directives in decision making as well as the good practice solutions that have been developed.

The results of phase 1 of the project can be found at: <u>http://impel.eu/wp-content/uploads/2012/02/WFD-IPPC-final-report-phase-1-GA-101118-6.pdf</u>.

The results of phase 2 of the project can be found at: <u>http://impel.eu/projects/linking-the-implementation-of-the-water-framework-directive-to-the-implementation-of-the-ippc-directive-phase-2/</u>.

This report presents the results of phase 3 of the project. The aim of this project was to take the results of phases 1 and 2 and develop guidance for water management authorities and for IED competent authorities on the sharing of information in different phases of their water management cycles and regulatory cycles.

This report presents a summary of the methods undertaken to produce this guidance, together with the guidance itself (in the form of two checklists). It also includes further information from IMPEL members of practical examples of the interaction between water management authorities and for IED competent authorities.

2. METHODOLOGY

The methodology of this short project involved three steps:

- 1. The development of two draft checklists on information exchange for water managers and IED competent authorities based on the issues identified in the analyses and conclusions of the reports from Phases 1 and 2 of the project.
- 2. A project workshop of IMPEL members to debate the draft checklists, refining their content. The workshop also included presentations of experience in selected Member States of examples of interaction between water managers and IED competent authorities, including a testing of the checklists. Copies of the presentations are provided in Annex III to this report. The workshop was held in the IMPEL offices in Brussels with eight participants. The list of participants is provided in Annex IV to this report.
- **3.** Following the workshop, participants provided further comments on the checklists in writing, so that the checklists were revised for inclusion in this report.

4. RESULTS OF THE PROJECT

The results of Phase 3 of the project are provided in the Annexes to this report. These consist of the guidance to water management authorities, guidance to IED competent authorities and copies of the presentations from the project workshop.

The guidance for water management authorities covers those authorities responsible for implementing EU water directives. The guidance is in the form of a checklist, indicating particular actions that could be taken by water management authorities to improve their interaction with IED competent authorities in order to help them deliver implementation of EU water directives. The checklist is structured around the cycle of river basin planning:

- Understanding significant water pressures
- Establishing and implementing measures
- Monitoring

The guidance for IED competent authorities is a similar checklist, indicating particular actions that could be taken by those to improve their interaction with water management authorities and so help deliver implementation of the IED. The checklist is structured around the regulatory cycle of the IED:

- Permitting
- Monitoring
- Inspection planning
- Inspection
- Permit review

Within each of the respective headings of checklists there is a series of actions the relevant authorities may take to aid in their work, including information they could request from another authorities or information they could supply. Alongside each action is a brief explanation of why that action should be undertaken. The checklist also contains three columns headed 'once', 'periodic' and 'ongoing'. Here the relevant authorities can indicate or comment on whether an action is a one-off activity, whether it is periodic or intermittent or whether it is an ongoing continuous activity.

In both cases the checklists are written for generic water management and IED competent authorities. Where appropriate, these can be amended at national level by adding specific institutional names, dates, etc. Further, for practical use any actions that would not be relevant to an individual authority can be deleted (e.g. if the authority is only responsible for permitting).

The presentations at the workshop in Annex III present examples of the interaction between water management authorities and IED competent authorities in different contexts.

5. CONCLUSIONS AND RECOMMENDATIONS

The project has produced checklists for both water management authorities and IED competent authorities and it has proved possible to focus on the key practical issues for interaction between these authorities in a relatively concise format. It is hoped that the checklists are widely used by water and industrial sector managers as a means to understand better information needs of each sector and that they help to improve achieving water quality objectives in the framework of the WFD. The checklists put strong emphasis on: seeking a comprehensive approach, thinking outside of the 'water box' and outside of the "industry box", going beyond formal institutions throughout the entire assessment, decision-making and inspection processes.

The project makes a recommend to the relevant authorities for water management and IED implementation in the Member States to examine the checklists, to amend them where appropriate to national circumstances and to use them in the different parts of decision making within river basin management and IED regulation.

The project also recommends that IMPEL members promote the use of the checklists to its members and related public authorities.

ANNEX I: GUIDANCE FOR WATER MANAGERS

Interaction between EU water directives and the Industrial Emissions Directive

Guidance for Water Managers

Introduction

The control of pollution from industrial sources is important in meeting the objectives of water bodies and, specifically, the objectives set in EU water directives. Industrial pollution emissions are regulated by the Industrial Emissions Directive. Therefore, there are potential interactions between these directives in their respective implementation. These interactions have been explored by IMPEL in the following two studies:

- Linking the Water Framework Directive and IPPC Directive, Phase 1, 2010. <u>http://impel.eu/wp-content/uploads/2012/02/WFD-IPPC-final-report-phase-1-GA-101118-6.pdf</u>
- Linking the Water Framework Directive and IPPC Directive, Phase 2, 2011. <u>http://impel.eu/projects/linking-the-implementation-of-the-water-framework-directive-to-the-implementation-of-the-ippc-directive-phase-2/</u>

A figure from the first of these reports is provided on the following page. It summarises some of the key interactions between water and industrial pollution control directives. The purpose of this figure is to illustrate the complexity of interaction and, therefore, the need for collaboration between competent authorities responsible for the implementation of these directives.

A critical conclusion from the IMPEL work that competent authorities for both EU water directives and IED identified was that there needs to be effective and timely exchange of information between these competent authorities. This is essential to ensure they effectively perform their functions as competent authorities. However, as there is a large amount of data and other information generated in implementing these directives, it is important for competent authorities to share necessary information and to share it at the right time for decision making. This guidance aims to help in this process.

This guidance

This guidance is written for those authorities responsible for implementing EU water directives – here called 'water managers' (WMs). The guidance is in the form of a checklist, indicating particular actions that could be taken by WMs to improve their interaction with IED competent authorities (IED CAs) and so help deliver implementation of EU water directives.

The checklist is structured around the cycle of river basin planning:

- Understanding significant water pressures
- Establishing and implementing measures
- Monitoring

Within each of these headings, the checklist includes a series of actions WMs may take to aid in their work. This may include information they could request from IED competent authorities or information they could supply. Alongside each action is a brief explanation of why that action should be undertaken. The checklist also contains three columns headed 'once', 'periodic' and 'ongoing'. Here WMs can indicate or comment on whether an action is a one-off activity, whether it is periodic or intermittent or whether it is an ongoing continuous activity.

Note: this checklist is written for generic water management and IED competent authorities. Where appropriate, please amend by adding specific institutional names, dates, etc.

Note also that the checklist is written for a generalised interaction between competent authorities

responsible for these directives and, therefore, it is recommended to add or delete elements which are not appropriate for your situation.

Figure: an illustration of the complexity of interaction between EU law relating to industrial pollution control and water management

Note that boxes in blue are largely the responsibility of water management authorities, those in yellow the responsibility of IED competent authorities and those in green are a joint responsibility



Information action	Explanation	Ac	tion to be tal	ken
Understanding significant water pressures		Once	Periodic	Ongoing
WM to inform the IED CA of the range of	IED CA might focus on pollutant substances, but			
potential activities arising from IED installations	installation could emit heat, use water, etc., as well as			
that might affect water status/EQS.	diffuse emissions, all of which should be subject to BAT			
	determination and informed by possible impacts on			
	water objectives.			
WM to seek information from IED CA on	All such data are important in understanding current and			
location of installations, permit conditions,	possible future significant water pressures. In particular			
monitoring results, etc.	operators may collect useful data and undertake analysis			
	which is particular useful for WMs. Where IPPC/IED			
	permits have already been issued these provide useful			
	information for WMs to help determine significant			
	water pressures.			
WM to seek information from IED CA on the	The spatial element of the impacts of IED installations			
spatial distribution of IED installations in a	is addressed in river basin planning and WMs have to			
catchment.	bring together this spatial element to consider relative			
	issues and pressures, including comparisons with non-			
	IED pressures.			
WM to identify where multiple IED installations	Where there are multiple discharges these may combine			
discharge to single water body and communicate	to produce impacts on water directive objectives, but			
with IED on how to address this.	how this is to be address needs to be determined with			
	IED CA, such as options for action compared to BAT			
	for the different installations, etc., where it is necessary			
	to go 'beyond BAT'.			
WM to provide information to the IED CA of	While the EQSD (and mixing zones) are a focus of			
issues concerning pollutant objectives set at	interaction with IED, MS may set objectives for other			
river basin level.	pollutants in water bodies and if these exist, these need			
	to be communicated to the IED CA.			

Information action	Explanation	Action to be taken
WM to inform the IED CA of the nature of GES	IED permits need to ensure EU EQSs are not	
and EQSs in relation to meeting water objectives	compromised by activities of IED installations, but	
(WFD, EQSD and GWD), including issues not	requirements of water directives can be complex, so this	
related to EQSD.	requires interpretation – potentially at water body level.	
WM to determine mixing zones in co-operation	Determining mixing zones under the EQSD requires	
with the IED CA.	expertise of WMs. This must be accurate as their	
	calculation affects permit determination and if this is	
	wrong it could result in future compliance issues.	
WM to inform the IED CA of the timetables in	Installations may be given time to upgrade performance	
water directives required to meet objectives.	to meet BAT and this needs to reflect timetables for	
	meeting water objectives.	
WM to discuss with IED CA on where operators	If IED installations (including through diffuse pollution	
should consider options to prevent or limit	through the soil at the IED site) contribute to inputs of	
inputs of pollution to groundwater.	pollutants addressed by the GWD these need to be	
	addressed.	
Establishing and implementing measures		
WM to obtain information on IED installation	In establishing PoMs it is important to understand future	
performance from IED CA where relevant to	performance of IED installations to determine if future	
considering potential measures.	application of BAT will address pressures identified.	
WM to discuss possible additional measures for	If the WMs determine that additional action should be	
IED installations with IED CA.	taken by an IED installation as part of a PoM, this	
	should be discussed with the IED CA (e.g. whether the	
	measure is appropriate as an IED permit condition,	
	whether it goes 'beyond BAT', etc.).	
WM to discuss with IED CA, where appropriate,	WFD requires that use of disproportionate cost under	
use of disproportionate cost arguments where	WFD cannot be used to reduce any obligations arising	
affecting IED installations.	from IED.	
WM to ask IED CA for information on	Inspection under IED requires consideration of the	

Information action	Explanation	Action to be taken
inspection regime.	environmental impact of the installation. WMs can	
	provide information to support this as well as ensure	
	concerns of installation performance are addressed by	
	the inspection authority. However, it is important for the	
	IED CA to ensure WMs are aware of inspection	
	activities so that this interaction can happen.	
Monitoring		
WM to seek information from IED CA	Such information may be useful in contributing to	
information on monitoring being undertaken	monitoring programmes within RBMPs for WFD,	
(now or in future) by IED installations.	EQSD, GWD.	
WM to supply the IED CA with appropriate	Water monitoring data may provide information on the	
monitoring data to inform permitting, inspection	release of pollutants, use of water, etc., by IED	
and permit review.	installations and of the impacts of those installations	
	which may be important in permitting and inspection.	
	Note that WM may need to work with IED CA to help	
	understand the type of data which would be useful.	
WM to work with IED CA to determine whether	Where the relative importance of discharges from	
monitoring should specifically analyse the	several IED installations to the same water body is not	
relative importance (impacts) of several IED	fully understood, monitoring programmes under the	
installations discharging to the same water body.	WFD may be necessary to determine this.	

ANNEX II: GUIDANCE FOR COMPETENT AUTHORITIES FOR THE INDUSTRIAL EMISSIONS DIRECTIVE

Interaction between EU water directives and the Industrial Emissions Directive

Guidance for Competent Authorities for the Industrial Emissions Directive (IED)

Introduction

The control of pollution from industrial sources is important in meeting the objectives of water bodies and, specifically, the objectives set in EU water directives. Industrial pollution emissions are regulated by the Industrial Emissions Directive. Therefore, there are potential interactions between these directives in their respective implementation. These interactions have been explored by IMPEL in the following two studies:

- Linking the Water Framework Directive and IPPC Directive, Phase 1, 2010. <u>http://impel.eu/wp-content/uploads/2012/02/WFD-IPPC-final-report-phase-1-GA-101118-6.pdf</u>
- Linking the Water Framework Directive and IPPC Directive, Phase 2, 2011. <u>http://impel.eu/projects/linking-the-implementation-of-the-water-framework-directive-to-the-implementation-of-the-ippc-directive-phase-2/</u>

A figure from the first of these reports is provided on the following page. It summarises some of the key interactions between water and industrial pollution control directives. The purpose of this figure is to illustrate the complexity of interaction and, therefore, the need for collaboration between competent authorities responsible for the implementation of these directives.

A critical conclusion from the IMPEL work that competent authorities for both EU water directives and IED identified was that there needs to be effective and timely exchange of information between these competent authorities. This is essential to ensure they effectively perform their functions as competent authorities. However, as there is a large amount of data and other information generated in implementing these directives, it is important for competent authorities to share necessary information and to share it at the right time for decision making. This guidance aims to help in this process.

This guidance

This guidance is written for those authorities responsible for implementing the IED – here called 'IED CAs'. Note that in several Member States permitting and inspection functions are undertaken by separate authorities and there are many examples of distribution of competence across different levels of governance. Here we do not distinguish these divisions, but refer simply to IED CAs.

The guidance is in the form of a checklist, indicating particular actions that could be taken by IED CAs to improve their interaction with water managers (WMs) and so help deliver implementation of the IED. The checklist is structured around the regulatory cycle of the IED:

- Permitting
- Monitoring
- Inspection planning
- Inspection
- Permit review

Within each of these headings, the checklist includes a series of actions IED CAs may take to aid in their work. This may include information they could request from WMs or information they could supply. Alongside each action is a brief explanation of why that action should be undertaken. The checklist also contains three columns headed 'once', 'periodic' and 'ongoing'. Here IED CAs can indicate or comment on whether an action is a one-off activity, whether it is periodic or intermittent or whether it is an ongoing continuous activity.

Note: this checklist is written for generic water management and IED competent authorities. Where appropriate, please amend by adding specific institutional names, dates, etc.

Note also that the checklist is written for a generalised interaction between competent authorities responsible for these directives and, therefore, it is recommended to add or delete elements which are not appropriate for your situation.

Figure: an illustration of the complexity of interaction between EU law relating to industrial pollution control and water management

Note that boxes in blue are largely the responsibility of water management authorities, those in yellow the responsibility of IED competent authorities and those in green are a joint responsibility



Information action	Explanation	Act	ion to be ta	ken
Permitting		Once	Periodic	Ongoing
IED CA to discuss scope of potential impact of	IED allows some flexibility in the 'boundary' of an			
installation to determine what should be	installation, so discussion with WM can ensure relevant			
included in permit application/determination.	directly associated activities impact on water can be			
	included in BAT determination and setting permit			
	obligations.			
IED CA to discuss with WMs possible generic	Water management issues should be recognised at an early			
or specific issues relating to operation or	stage in permit applications, rather than introduced late on			
monitoring that should be included in guidance	as detailed applications become discussed with WMs.			
to operators applying for permits.				
IED CA to inform WMs of the timetables for	This allows for WMs to supply relevant information/raise			
permit determination and how their input fits	issues, etc. on time and allow for the permit determination			
into those timetables.	process to proceed smoothly, reducing administrative			
	burdens and reducing unnecessary costs to businesses that			
	could arise from delays in the permitting process.			
IED CA to discuss with WMs the obligations	Water directive obligations are complex and may need			
of water directives and where these could be	interpretation by WMs.			
impacted by an IED installation and so address				
these in permit determinations.				
IED CA to seek expertise of WMs in	Where impacts of pollutants (substances and heat) depend			
understanding pollutant dispersion/behaviour	on how they spread, etc., in water bodies, WMs are likely			
in water where this may affect permit	to have the expertise to understand, model and interpret			
determination.	this.			
IED CA to discuss with WM situations where	Where there are multiple discharges these may combine to			
several IED installations discharge to a single	produce impacts on water directive objectives, but this			
water body.	needs to be determined with WMs. WMs need to			
	understand potential timetabling issues with the different			

Information action	Explanation	Action to be taken
	installations, options for action compared to BAT for the	
	different installations, etc., and where it is necessary to go	
	'beyond BAT'.	
IED CA to inform WMs of the results of	WMs need to understand current and future pressures on	
permit determinations.	water bodies and this includes limits to discharges, etc.,	
	from installations.	
Monitoring		
IED CA to seek views of WMs on appropriate	Where appropriate monitoring by operators may contribute	
monitoring conditions to set in permit	to surveillance or investigative monitoring under the WFD	
conditions.	or enhance development of inventories of emissions under	
	EQSD, but this needs to be communicated to IED CA.	
IED CA to seek relevant information from	IED CAs tend to rely on operator self-monitoring, but	
WFD/EQSD monitoring from WMs.	WFD/EQSD monitoring could identify unexpected	
	pollutant concentrations, etc., to trigger investigation by	
	IED CA.	
IED CA to provide WMs with data arising	Monitoring data arising under IED may provide useful	
from operator monitoring under IED and	information for WMs and they should be fully informed as	
inform WMs of its format, frequency and	to its nature and availability.	
availability.		
Inspection planning		
In developing inspection plans, IED CAs to	Inspection plans prioritise inspection activity and may take	
liaise with WMs on key risks to water bodies	a risked-based approach. A key aspect of risk is the	
that should be taken account of in risk-based	sensitivity of the receiving environment and WMs can	
planning.	interpret the sensitivities of water bodies and receptors in	
	them and risks from different types and quantities of	
	pollutants on those receptors.	
Inspection		
IED CA to seek information from WMs on	Water monitoring will identify if there are potential issues	

Information action	Explanation	Action to be taken
pollutant, etc., issues for water bodies relevant	with an installation, either from non-compliance with a	
to installation to help assess permit compliance	permit not necessarily identified by operator self-	
and environmental impacts of installation.	monitoring or impacts arising despite compliance with a	
	permit (both required to be considered under IED).	
IED CA to inform WMs of the results of	Such information may be important in understanding that	
inspections, including any measures to be	issues affecting water bodies are being addressed.	
taken.		
Permit review		
IED CA to seek information from WMs on	As with a permit determination, understanding the impacts	
whether they are issues concerning compliance	on water directive objectives is important. Note that	
with water directives potentially arising from	objectives may change as directives are amended, so issues	
the activity of an installation.	relating to an installation may change. Furthermore, results	
	of WFD monitoring may change the understanding of the	
	objectives and/or the relationship between pressures and	
	objectives.	
IED CA to seek views from WMs on whether	As with determination of monitoring obligations in the	
monitoring obligations in permits should be	initial permit, views of WMs may have changed on the	
changed.	appropriateness of specific monitoring activities by IED	
	operators.	

ANNEX III: PRESENTATIONS AT THE PROJECT WORKSHOP

The presentations include in this Annex are:

- A practical case of the use of the guidance in Portugal for a landfill site with a wastewater permit discharge.
- Presentation on EDM (Electronic Data Management) (Electronic tool used in Austria to enhance partnership and cooperation between authorities, stakeholders and public through data collection, sharing and assessment)
- Presentation on WFD and IED managers cooperation and coordination in the Eastern River Basin District in Ireland
- Presentation on Risk based Inspection Planning in Poland
- Case Study from Lombardy Region

PRACTICAL CASE OF USE OF THE GUIDANCE IN PORTUGAL

Urban Waste Landfill with an Environmental Permit (delivered by IED CA) that includes a Wastewater Permit Discharge (delivered by WM)

Environmental Permit:

- Describes installations and sets conditions for operation to prevent pollution, including the use of BAT
- Sets monitoring programmes for: groundwater and surface water (only physical and chemical parameters)
- Sets report conditions
 - Annual environmental report with a specific format

Wastewater Permit Discharge:

- Describes wastewater treatment plant characteristics (type and treatment level, capacity, type of discharge)
- Sets discharge conditions
 - ELVs (with annual compliance rules)
 - Maximum daily loads (applied to priority substances and specific pollutants)
- Defines a mixing zone
- Sets monitoring programmes for:
 - Wastewaters
 - Groundwater (physical and chemical parameters)
 - Surface waters (physical, chemical and ecological parameters)

Discharge: In a small stream which will link to another one (downstream) designated to support fish life and with good ecological status.

Discharge influence area: 2000 m downstream.

Distance to stream designated to support fish life (and with good ecological status): \pm 6500 m.

Water Managers checklist	Wastewater Permit Discharge (WWPD)
Understanding significant water pressur	es
WM to inform the IED CA of the range of potential activities arising from IED installations that might affect water status/EQS.	ELVs are addressed and defined to ensure the receiving water body quality, i.e., the compliance of EQS for critical parameters. For PS/PHS and specific pollutants are defined ELVs with annual compliance rules and maximum daily loads to prevent acute effects.
WM to seek information from IED CA on location of installations, permit conditions, monitoring results, etc.	Yes through the Environmental Permit (EP) application.
WM to seek information from IED CA on the spatial distribution of IED installations in a catchment.	Yes through the RBMPs development.
WM to identify where multiple IED installations discharge to single water body and communicate with IED on how to address this.	Yes. In the current example, diffuse sources were identified and assessed with the IED CA to detect potential inputs of nitrogen (ammonia and nitrates) to the receiving water body.
WM to provide information to the IED CA of issues concerning pollutant objectives set at river basin level.	The WWPD is attached to the EP to ensure IED CA and operators are aware of critical pollutants related with the specific IED installation and the receiving waters. The pollutant objectives set at river basin level are defined in RBMPs.
WM to inform the IED CA of the nature of GES and EQSs in relation to meeting water objectives (WFD, EQSD and GWD), including issues not related to EQSD.	 The WWPD includes several monitoring programmes to evaluate the potential impacts arising from the IED installation. Monitoring plans include: Wastewater self-monitoring; Surface water: <u>Chemical parameters</u>: 1 point upstream, 2 points downstream: 1 after mixing zone limit and a 2nd before the stream's connection with another watercourse (designated to support fish life); <u>Ecological parameters</u>: 1 point before the stream's connection with another stream (designated to support fish life); Groundwater: 4 points in the surrounding area of IED installation.
WM to determine mixing zones in co- operation with the IED CA.	No. The mixing zone was only determined by WM, and fixed on the WWPD
WM to inform the IED CA of the timetables in water directives required to meet objectives.	This is indirectly achieved. By the definition of appropriate ELVs and by the revision of WWPD conditions whenever

	appropriate measures are needed to not jeopardize water directives objectives
WM to discuss with IED CA on where	WM and IED CA discuss about operation
operators should consider options to	issues to prevent diffuse pollution sources
prevent or limit inputs of pollution to	F
groundwater.	
Water Managers checklist	Wastewater Permit Discharge (WWPD)
Establishing and implementing measure	\$
WM to obtain information on IED	The operator presents to IED CA and to
installation performance from IED CA	WM an annual environmental
where relevant to considering potential	performance report.
measures.	Then, more coordination should be
	addressed to improve the communication
	between both authorities regarding the
	report assessment.
WM to discuss possible additional	Yes. The leachates treatment plant
measures for IED installations with IED	needed to be improved to increase the
CA.	nitrogen removal level. The several
	options were discussed with IED CA,
	including measures for the stream's
	riparian gallery located in the discharge
WM to discuss with IED CA where	The definition of the best option to be
with to discuss with IED CA, where	The definition of the best option to be
appropriate, use of disproportionate cost	applied for the augment of introgen
installations	removal, the combination of reverse
Instanations.	wore considered instead of more
	sophisticated systems due the respective
	high cost
	To ensure this treatment level is enough
	monitoring plans (later defined on the
	WWPD) were improved
WM to ask IED CA for information on	Usually no.
inspection regime.	, j
Monitoring	
WM to seek information from IED CA	Usually no, since all the monitoring
information on monitoring being	results are delivered to WM by the
undertaken (now or in future) by IED	operator.
installations.	
WM to supply the IED CA with	WM usually supplies information about
appropriate monitoring data to inform	the monitoring assessment.
permitting, inspection and permit review.	
WM to work with IED CA to determine	Not applied to this IED installation.
whether monitoring should specifically	
analyse the relative importance (impacts)	
of several IED installations discharging to	
the same water body.	

IED competent authorities checklist	Environmental Permit (EP)
Permitting	
IED CA to discuss scope of potential	When the operator applies for the EP,
impact of installation to determine what	IED CA ask WM to deliver opinion on
should be included in permit	potential impacts of installations to water
application/determination.	resources
IED CA to discuss with WMs possible	Both EP and WWPD define monitoring
generic or specific issues relating to	programmes for water resources (but not
operation or monitoring that should be	linked).
included in guidance to operators	IED CA discuss some operation issues
applying for permits.	with WM, namely to prevent diffuse
	pollution sources (e.g. from runoff)
IED CA to inform WMs of the timetables	The permits define different timetables:
for permit determination.	 Different expiration dates
	• Different timetables to present reports to
	WM and IED CA
IED CA to discuss with WMs the	The IED CA ask WM to delivers a
obligations of water directives and where	separate WWPD to ensure obligations of
these could be impacted by an IED	water directives
installation and so address these in permit	
determinations.	
IED CA to seek expertise of WMs in	IED CA usually ask WM about critical
understanding pollutant	pollutants and agree with ELV definition
dispersion/behaviour in water where this	
may affect permit determination.	
IED CA to discuss with WM situations	Not applied to this IED installation.
where several IED installations discharge	
to a single water body.	
IED CA to inform WMs of the results of	IED CA sends a copy to WM from the
permit determinations.	final document of the EP.
Monitoring	
IED CA to seek views of WMs on	Both EP and WWPD define monitoring
appropriate monitoring conditions to set	programmes for water resources (but not
in permit conditions.	linked).
IED CA to seek relevant information	Usually no.
from WFD/EQSD monitoring from	
WMs.	
IED CA to provide WMs with data	Yes. Previously to the EP emission, IED
arising from operator monitoring under	CA delivers a copy to WM where all the
IED and inform WMs of its format,	requirements are described.
frequency and availability.	
Inspection planning	
In developing inspection plans, IED CAs	Usually no.
to liaise with WMs on key risks to water	
bodies that should be taken account of in	
risk-based planning.	
Inspection	
IED CA to seek information from WMs	WM usually supplies information about:
on pollutant, etc., issues for water bodies	 Monitoring assessment to help IED CA on

relevant to installation to help assess	permit compliance evaluation;
permit compliance and environmental	 Abnormal situations to assess potential
impacts of installation.	environmental impacts.
1	IED CA seeks information from WM
	when additional facts are needed.

IED competent authorities checklist	Environmental Permit (EP)
IED CA to inform WMs of the results of	Usually no.
inspections, including any measures to be	
taken.	
Permit review	
IED CA to seek information from WMs	WM usually supplies information about
on whether they are issues concerning	the monitoring assessment and its
compliance with water directives	relevance.
potentially arising from the activity of an	
installation.	
IED CA to seek views from WMs on	Usually yes.
whether monitoring obligations in	
permits should be changed.	

What needs improvement?

Communication between IED CA and WM to a better coordination on:

- a. Timetables for permit obligations
- b. Report assessment between:
 - i. IED CA \rightarrow WM
 - ii. WM \rightarrow IED CA
- c. Inspection planning and outputs

Austria: EDM (Electronic Data Management)

(Electronic tool used in Austria to enhance partnership and cooperation between authorities, stakeholders and public through data collection, sharing and assessment)

Austrian Example - EDM

IMPEL Project "Linkage WFD and IED" Workshop Brussels, 24.- 25. October 2013

> Christoph Planitzer Lower Austria

Electronic Data Managem Int

- Integrated EGovernmentin the Environmental Field v
- 23 applications on Inc.
- 45.000 registered comp.
- 17.000 locations
- > 20.000 installations
- 800.000 messages א כר א ב
- 20 millions accesses per ye
- Contact: Franz Mochty, Federal Ministry of Agriculture, Forestry, Environment and Water Management Austria

Winner 2013 of EuoCloud Award Category "Best Cloud Service Case Study Public Sector"

licati

Content

- EDM Objectives
- Paper versus electronic Data
- Legislation covered by EDM (eg IED and WFD)
- Information Flow in EDM
- Data exchange between water and IED sector under EDM
 - Permit conditions
 - Inspection Planning
 - Access to Inspection reports
 - Closure Measure
 - GW Monitoring networks
 - Industrial Emission do surface water



What are the objectives of EDM?

- Reduction of the administrative burden on authorities and companies
- Integrated comprehensive system for the entire environmental field and thereby optimised utilisation of synergies between different domains
- Integration with other eGovernment Register (eq Austrian company register)
- Utilisation of international EDI (Electronic Data Interchange) standards well-established in the economy for messages and unique international identification system (of companies, locations and installations)
- Single sign-on for all users and all applications
- Prevention of data redundancy, in particular by a centralised master data management across applications (eRAS)
- To the extent possible use of already available data (eg from Procurement and accounting)



Present Situation

- Companies are confronted with series of report-obligations
- Basic data on enterprises, locations and installations are required for:
 - for public administration

 - Applications for permits, granting of permits
 Record-keeping and reporting obligations
 - internal business purposes
 - In-company organisation, logistics
 Procurement and accounting
- At present, logics of reporting, structures and level of detail vary for the different fields of application
- Companies and authorities have to maintain and in part × report the same data in different formats for different sectors



EDM – Solutions

- > ONE eGovernment application for many obligations
- Fully integrated into the comprehensive Austrian eGovernment system
- A harmonized data model for all procedures involved
- EDM data structures and exchange procedures also served as a basis for the "European Data Interchange for Waste Notification Systems (EUDIN)":
 - Data exchange concerning transfrontier waste shipments
 - Project partners: Belgium, Luxembourg, Nordic-TFS, Austria Core components and message structures standardized by UN/CEFACT



What is EDM-Environment?

> An integrated eGovernment application:

- Replaces conventional paper-based records and reports (including applications submitted to the authorities) through efficient electronic data management in line with international standards (e.g. with regard to barrier-free access for disabled people) in the environmental field
- Contribution to i2010 and Digital Agenda for Europe (a Europe 2020 Initiative)
 - i2010: An EU policy framework promoting the positive effects of information and communication technologies (ICTs) to the economy, society and personal quality of life
 - The Digital Agenda for Europe (DAE) aims to reboot Europe's economy and help Europe's citizens and businesses to get the most out of digital technologies



EDM - legal background





Electronic Data Management -EDM Environment

Master data register - eRAS/ZAReg

Single sign-on - Portal

eEvaluation and

data interpretation

EDM Waste Managem	ent		Environment		Key Cross	-cutting lss	ues	
eVVaste Mass Balance Sheets	eEnd-of	-Life Vehicles	Emission Certifica Act	ite	eGov. Integr	ration	Usability	
eShipment	evveee		eindustrial Emissi	ons	Data Protect	tion	EDM - Sh Interface	ared User
EUDIN	ePackag	ing	European Polluta Release and Tran	nt sfør	Data Securit	y	Commun Notificati	cation/ on
eincineration - VVaste	eBatterie	96	EMREG/ Surface V	Water	Role-based Access Con	trol	Creation of Docum	Commenting
eCompost	eRefuse	derived Fuel	Ennission Rediction Destant		Identification	n/ on	Parts Mark	
eConsignment Note	eCertific	ate	Radiation Protect	on	Data Require	ements/	Data Upio	ad/ Export
			Cooling Agents		Harmonisatio	on	Storage	ite Data
ePermit	eLandfill		eincineration		Overall Arch	tecture	Template	Project



EDM – Data exchange on permits conditions

- Permits
 - · Clear permit conditions
 - Consolidation of permits
 - Authorities have to spend high effort to get an overview about the currently valid content of all permits
- IT support helps to reduce this effort for authorities and operators
- Inventory of permits accessible by water and IED authorities
- New permits published and handled within EDM
 - a summary
 - actual status of the permit conditions and
 - conclusions
- Obligatory use of EDM for permits in the waste management sector (integrated permit)
- Deliberately use of EDM in other sectors

EDM - Support of Environmental Inspections of Industrial Installations

Art. 23 IED - INSPECTION - Report

- > Available Data in EDM permit conditions and conclusions including emission limit values to air and water and waste treatment operations
- Information on the installations, location, e mission data (EQS directive) and information on produced and treated waste are provided by EDM as a basis for the environmental inspection
- EDM supports the writing of environmental inspection reports and provides methods for a save and secure exchange of documents between experts, companies and authorities
- A summary of the inspection reports describing the relevant findings on whether an installation is operated in compliance with legal conditions is published via EDM



EDM - information for RBMP

- Inventory of installations (IED, waste plants)
- Monitoring stations from IED installations and waste plants
- Inventory of emissions into water
- PRTR inventory
- BREF information



Visualisation of locations and installations



WISA

- Water Information System Austria
- http://gis.lebensministerium.at/wisa/frames/index.php?&gui_id=WisaStan



Presentation on WFD and IED managers cooperation and coordination in the Eastern River Basin District in Ireland



Water Framework Directive and Industrial Emissions Directive

Ray Earle Eastern River Basin District Coordinator, Dublin City Council





Purpose

- Collation and strengthening of existing provisions (seven different previous Directives)
- Reducing Industrial Emissions throughout the EU





- Majority of the IED Directive taken from the IPPC Directive.
- Recasting of existing directives
 - Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC)
 - Volatile Organic Compounds (VOC) Solvents Directive (99/13/EC)
 - Waste Incineration Directive (WID) (2000/76/EC)
 - Large Combustion Plants (LCP) Directive (2001/80/EC).
 - 3 Titanium Dioxide Directives (78/176/EEC, 82/883/EEC and 92/112/EEC). Not Applicable to Ireland
- Transposed into Irish law by
 - Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013 S.I. No. 137 of 2013
 - European Union (Industrial Emissions) Regulations 2013 S.I. No. 138 of 2013





Point Sources in the ERBD





Point Sources in ERBD

IPPC/IED	166
Licensed Waste Facilities	78
Other PRTR Facilities	2
UWWT Plant	102
Landfill	90
Mine	12
Quarry	119





Pollutant release and transfer register (PRTR)

Waste and wastewater management	38
Animal and vegetable products from the food and beverage sector	12
Intensive livestock production and aquaculture	9
Production and processing of metals	4
Mineral industry	6
Chemical industry	23
Energy sector	6
Paper and wood production and processing	1
Other activities	3





IPPC Emissions to Water





Pollutant release and transfer register (PRTR)







Checklist Guidance for Water Managers and Competent Authorities (EPA)

- Water Managers: Information needs for implementation of the Water Directives
- Competent Authority: Information needs for implementation of Industrial Emissions Directive

Data Flow in both directions





WFD Governance in Ireland

Tier 1 National Management and Oversight	 Led by DECLG Policy, regulations and resources Sign-off of river basin management plans
Tier 2 National Technical Implementation and	Led by EPA Competent Authority Monitoring, assessment and reporting Evaluation and implementation of measures River basin management plans
Tier 3 Regional Implementation via Water Networks	 Led-by lead coordinating Authority Local authority monitoring, licensing and enforcement actions Implementation of Programmes of Measures by relevant public bodies, tracking and reporting in consultation with EPA
	Water Managers Comhaider Cathrach Bhrme Atha Citath Dubin Otly Council



Water Managers (Local Authorities)

Information Needs/Responsibilities

- Understanding Significant Water Pressures (SWMI)
- · Establishing and Implementing Measures (Plan and PoMs)
- Monitoring (Surveillance, Operational, Investigative)





@ Morpholo	gical 🥝	Hydrological	0
Notes []			
	-	19	

River	0	Pressures Refinement Complet	107 12 18	Notes []			
Avoca	0		_		-	-	
Balytunny	0	WHU	-			-	
Dargle	0	avoce.	24	10	***	**	
Dodder	0	AughrimTRIB_DerryWater1	60	20	0	20	-
Kimumy	0	EA_10_1394	10	90	0	0	
Liffey	0	AvocaTRUS_BallyduH1_L0w EA 10 1477		1000		-	
Newcastle	0	Avoca2_Upper	20	10	50	20	
Potters	0	EA_10_1482 AvonbedTRIB Boravore	80	20	0	0	
Rathnew	0	EA_10_1504	20	ao 1	0	6	
Tempelrainy	0	EA 10 1611				-	
Vartry	0	Avocal_Lower	20	12V	50	10	
Laka	ä	AughrimTRIB_DerryWater2	70	30	0	0	
Carlo		EA_10_194	100	0	0	0	
Groundwater		EA_10_209	60	-	6	120	
Transitional	0	AvocaTRI8_Kimagip	00	2	0	50	
Constal	0	Avorbeg2_Upper	10	90	0	0	
200300		EA_10_355	60	40	0	0	
Construction Gammany	Constantial .	EA_10_407	lea 1	Teo T	6	-	
		AvocaTRI8_Avorimore3_Uppe	100	140	0	-	
		AvocaTRI8_Furnace	50	50	0	0	
		EA_10_458 Automotive TRIM Temphoneter	60	30	0	10	1.1.1
		PA 10 287	1.1		22		



Understanding Significant Water Pressures Establishing and Implementing Measures Monitoring

- ensure EPA understands the range of potential activities arising from IED installations that might affect Water Status.
- seek information from EPA installations, permit conditions, monitoring results, etc.
- seek information from EPA on the spatial distribution of IED installations in a catchment
- identify multiple IED discharge to single water body and communicate with EPA on how to address this
- ensure EPA understands the timetables in WFD
- ensure EPA requires operators to consider options to prevent or limit pollution to groundwater





Understanding Significant Water Pressures Establishing and Implementing Measures Monitoring

- obtain information on IED installation performance from EPA
- discuss possible additional measures with EPA (beyond 'BAT')????
- discuss with EPA, where appropriate, use of disproportionate cost arguments where affecting IED installations
- ask EPA for information on inspection regime.





Understanding Significant Water Pressures Establishing and Implementing Measures Monitoring

- seek information from EPA on monitoring by IED installations
- ensure EPA is supplied with appropriate monitoring data to inform permitting, inspection and permit review
- work with EPA to determine whether surveillance or investigative monitoring should specifically analyse the impacts of several IED installations discharging to the same water body





- Permitting
- Monitoring
- Inspection
- Permit Review





- discuss scope of potential impact of installation to determine what should be included in permit application/determination
- discuss with Water Managers possible issues relating to operation or monitoring that should be included in guidance for permits application
- · ensure Water Managers understand the timetables for permit determination
- ensure obligations of water directives are fully understood where these could be impacted by an IED installation
- seek expertise of Water Managers in understanding pollutant dispersion/behavior in water where this may affect permit determination
- discuss with Water Manager situations where several IED installations discharge to a single water body
- ensure Water Managers are fully informed of results of permit determinations





- seek views of Water Managers on appropriate monitoring conditions to set in permit conditions
- ensure relevant information from Water Framework Directive/ Environmental Quality Standards monitoring are supplied
- ensure Water Managers are fully aware of the data arising from operator monitoring under IED, its format, frequency and availability





- seek information from Water Managers on pollutant, etc., issues for relevant water bodies to help assess permit compliance and environmental impacts
- ensure Water Managers are fully informed of the results of inspections, including any measures to be taken.
- ensure Water Managers are fully aware of the data arising from operator monitoring under IED, its format, frequency and availability.





- seek information from Water Managers on whether there are issues concerning compliance with water directives potentially arising.
- seek views from Water Managers on whether monitoring obligations in permits should be changed.





- Data flow in both directions Installation information, Monitoring data, Permit conditions, timetables etc.
- Mutual consultation on impacts of multiple discharges into the same water body
- ...



IT Control Support System in Poland

IT Control Support System (CSS)

Adrian Zajac senior inspector of environmetal protection

What CSS is?

Main goals:

- standardize the inspections of business entities;
- inspectors work planning;
- o database of business entities;
- inspection protocol creator;
- checklist database;
- supervising tool;
- aftercontrol activity tool;
- delinquency and pollution databases.

Database of business entities

- category I annual inspection;
- category II biannual inspection;
- category III an inspection every three years;
- category IV an inspection every four years.
- category V turnouts (are not included in the plan of controls).

Database of business entities

Examples of companies in risk category:

- Category I (car disassembling stations, IPPC installations falling under the Accession Treaty, Large industrial fattening pig farms requiring integrated permit, ...);
- Category II (waste water treatment plants above 2000 PE, Facilities operated without any required permit, ...)
- Category III (waste-water treatment plants below 2000 PE, Landfills and incineration facilities other than the ones from category I and II);

Multi-criteria categorization

- probability of risk;
- probability of impact on the environment;
- facility on the neighbouring recipients;
- background in observing the environmental provisions;
- environmental management systems.



Work scheduling

- macro-plan of inspections;
- Iong-term work schedule;
- annual work schedule;
- quarterly work schedule.
- Inspections (planned and unplanned)

Inspection report

- Standardize reports in all voivodship inspectorates of environmental protection;
- Creating reports in in the electronic and paper form;
- creating database of aftercontrol activities, delinquency and pollution;

Databases - examples

	Prove and a second							-		
Dest service a								CO. Contraction		
	Contrast of the second	and of some close	table of Replace Lawrence	-						
FORM DESTROY AND					line		and the same of		(+) (2)	
Annes well on 11 m	1000		-	_					Dmilless Wite	Tubble and
-	1 Catholic C	-	a line of the second		Carl Franking	Next to an	President and a second second	- Peart I	and a little lit	-
C Automa										
Contract of Contra		cheater? _ empres		RECONST	PROFIL		(Transit	the straight	18. M.	
	- mere cana	and other	-		100		UROS/Comp	And Distance	- C	
		Taxan .		- Contract		1		man and and		
	(Barbo	a catala anti-		all many	Long of	100		1.1.1.1.1.1.1		
		Substances cald	at Contractor of		COLUMN 1					
		Publishers (shite	de l'ambailta							
		Purpoperant Aprents	and Contraction						14	
	: Stronender	fare adverselyinger	** mounted	status situatus	and identity				1	
		Car pollege mit	and another lines	aporte pinel di	preservante Direct fait	AND A DRIVEN AND A	other the second	and a submittee		
			Responsible to	NO 111122006	The sprante prove	menerurania migal	-			
	Unex Deservices	AL SEA DESCRIPTION	2000-1379-1 - W	grants pages all	a spriderph a s	t synumetry			and the second second	1-10 4 21
	- Marriel		2006/11/0/01/10/1	statistical participation	participante aprilete	incomposition pre-	the property of the second	a materialari		
		and the state of the	INVALUATION OF A	people including	with publications, of	arrest partecipte	Lippen pand	white takes	and some of	
	Million and Add . In	and the second second	CONTRACTOR CONTRACTOR	COLUMN AS INCOME.		and the second se			and the second s	WHITE Dates of
	and the second s	170 Restatuto	THE THE BOARD	ATTENT STATE	a with prived series	Clyspicentain an	and an an other states		(MDa)	Lagran
	and the second s	176 Besela Laho T Grigta - Ha Beneratis pos	A DEPARTMENT	ylagot mayor ylagot mayor ylagot altitud	orania proved starting access - parcipation	Parlahe Calentine reported to the second	anti-	na scolary pol.	acts given	Logenz
	D servers 1	170 Results Labor Gright - sta Bernstein pop	PLUTINE OF CHI	younged muryon younged muryon planete utilitatio multiple end do spinetes utilitatio process tablect	o wild proved trains access - Deviation Cytato persea montes access - Deviation	Partete Catendari pr Partete Catendari e picconani hate etito actendari i picconani hate		na soltariy peti-	and against	Lagran
	D persons of	176 RenderLaho T Grapte via Americana para RenderLaho para RenderLaho para RenderLaho para RenderLaho para	A DEPARTMENT OF A DEPARTMENTA	ylongol ellyne ylongol ellyne ylongo	with prived symp privile prived symp privile prive broken privile prive and and privile prive and and and any be requested	Partole Calendari di Partole Calendari e partole Calendari di partolectari fute di partolectari fute partolectari		na acchery peri- nil ang de anti- na perintipat- enel tet	archivene archivene	Lapera
	D service o	170 Benda Labo I Gegla - da enereta a de Proposition Respecto Con Lapore Con According to Con	TERMINO DA TERMINO DA TERMIN	Victoria estatoria victoria della de restatoria della de activaria della del activaria della del activaria della del activaria della della della della della della della della della della della della della della della della della della	visit privet rams a consect for allow priver a particular description and a state allowed and a state private state and original in the state private state and a state private state state and a state private state state and a state private state state state and a state private state state state state state private state state state state state state private state state state state state state state private state state state state state state state state private state state private state stat	Proprietaria (California) (Ca	antine antine pri ta e battana in tana interactionali tana interac	er anders per of eq at and personalited and of property	inclusion activity activity activity	Lagena
	D servers 1	170 Benda Labo T Origila - da determina ante Proposition Proposition Response to tap Acceptor es Lap experior Topological Acceptor es Lap	PERMIT ADDRESS OF PERMIT ADDRE	y of the start of	a sent proof parts a sentencia de la sente posta a sente traba de sentencia de la sente de sentencia de la sentencia de sentencia de la sentencia de sentencia de la sentencia de la sentencia de la sentencia de la sentencia del sentencia del la sentencia del sentencia de la sentencia de la sentencia de la sentencia del sentencia de la sentencia del sentencia de la sentencia de la sentencia de la sentencia de la sentencia de la sentencia del sentencia del sentencia de la sentencia del sentencia de la sentencia del sentencia del sentencia del la sentencia del sentencia del sentencia del sentencia del la sentencia del sentenci del sentencia del sentencia del	Partner pri Partner Caterony I partner Caterony I partner in partner inter automatic fait partner inter automatic inter automatic fait partner inter automatic fa		na politika poli na politika na politika n	and a second	Lapine
	D merners	170 Benda Labo T Ghigle - de energia and Promotion and Promotion Promotion Receptor to Accord a to Coglamma a to	PERMIT	y of the second	 versit proved travel versit - proved tra	Province of the second		na konterio poli chi ege di seli na passati (ni regi ta: fri(dr. mang manufit	ects ects about ects about	Lapina Lapina
	D servers v	Restances a plane of Segments and segments and Restances of Restances of the Restances of the	Participation of the second se		 visit prived system 	Carponet and the second		A Borrar Sont of age as and a parametry of any of a sont any o		Lapera Lapera
	D permana s	1.71 Results Liphes T Glugalas - An Brenzellas page Provincials page Programmers Resultantian Programmers Resultantian Resultantian Programmers Resultantian R	A DESCRIPTION OF A DESC		 with proof system with proof the system with pr	Carpenciestante per Partiale Catantiante especiestante ante personale ante person	Andreas and a second se	ni sonor uni ni un ni sono ni un ni promotioni promotioni nimenti ni nimenti nimenti ni nimenti ni ni ni ni ni ni ni ni ni ni ni ni ni	A DOUGO ADAM	lapera lapera
	D moneto o	 Restance Laboration Graphice - role Graphice - role Graphice - role Graphics - role Anophic - role Anophic - role Anophic - role Anophic - role Anophic - role Graphics - role Graphics Company Anophic - role Graphics Company A - role Company A - role A - ro	And Control of the second seco		vini pod pret vini pod pod pret vini pod pod pret pod	Capacitation of a constrainty of Particle Cateriors of a pactoriant fails and a second fails of the second fails of the	And Andrewson and Andrewson and Andrewson and Andrewson and Andrewson and Andrewson	na Boliney pol chi egi de sel ni renessionel pol pol conseq renession lagrese Panad lagrese Lagre	With a DOLARDON, along	Lapera Lapera
	0 parameter	Annual and a statistic of the stati	And Descriptions of the second		 Wild Josef Land Josef Josef Land Josef Josef Land Josef Land Josef Land Josef Land Josef Land Wagness Land Wa	Tagenery of the second	The COLOR OF COLOR	na potera poi chi ne da sel. In presentaria and in Artifica and an Artifica and an Artifica and an Artifica and an Artifica and an Artifica and an Artifica and an Artifica Ar		
	0	Bender Lafte T Bender L			sense internet and a status of the status of the anticipation of the status of the status of the status of the status of the status of the status of the status of the status of the status of the status of the status of the status of the	Tagence of the second s	And a second sec	na postara posi- cit region uni : na postara posi- nata na : Alfan- mana : Nagena Panadi Nagena Panadi Nagena Panadi		

6	ho	al lists a	vamplac		
\sim	TIE	CK-11212 - 6	xumples		
N 20121009.01	Contract of Contra		Uzyliawsk a dobrzyniecki. Waterz te) 8
iec seaji za: 34 mi	inut(s).	(Berner and a lot of the second second second	A REAL PROPERTY AND A REAL	ZINDAJAN ESIS	is industry
poty Pill, and	i, introlicie	repto taxatos > repto paros contos	Additional Additional Internation		
Zeceptra		20	3		
Adunetani	Actually	fwszyckie - M Dokument			
		(Wyszuką) (Wyszyłć krytera)			
	(Peter pik)	(Druling)	© Papernethin 10 11-20 z 149	🗶 tänstgann. 12 (*	
	Hybert Dokut	hant		Archinatog T	
	0	13.12(6) 24L 5 AU	NT BRODOWSKOWY	Ne	
	0	1313_014 Zecady wykony	wania kontroli anwestyczytych	Ne	
	0 1111	_0.04 (FQ Zasady wykonywania i dolumentowania kuntrul na po	dotavie dokumentacji bez wyjazdu u teren anaz kontroli revych	I w terenie - Ne	
	0	1,3,1,5 _0,02,2010,285	acy with some constraints of the second	Tae	
	0	13.15_0.00 (1) 24C 1 UBM (1020)	e i sena pyran kontrolných dla 20% i 20%.	The No.	
	0	1217/02/04 0 000	ang aya kontra nation nyina ma STAC IE DAI Mi dar	1	
	12	13.17 (1) 74: 1 Lista outai k	antrainuch STACUE PALIW date	Ne	
	0	1317 (2)3/28 2)3/0r de	ed. par i Tabela tiessaeidteeneri	Ne	
	0	1317 E01WMcz	ne dia kont, stacio palve	The	
	(Palled pik)	(Duble)	@ Exploredmin.10 17-20 z 549	S tientgene 12 0	
	training 1 Date	sh plante kontrol Baante kontroll Baante douted polyantrole	uch 1 Rejest dokumentów Systemu Kentroli 1 Zmiara h	asts 1 Epitor, 1 Xtu/oppositie	
Barris No.	Cascolated a code				

Checklists - examples

Załącznik nr 1 Lista pytań kontrolnych Nr Pytanie Uwagi Wpisad TAK /NIE/ ew. OPIS WYMAGANIA ROZPORZĄDZENIA MINISTRA GOSPODARKI Z DNIA 21 LISTOPADA 2005R. W SPRAWIE WARUNKÓW TECHNICZNYCH, JAKIM POWINNY ODPOWIADAĆ BAZY I STACJE PALIW PLYNNYCH, RUROCIĄGI PRZESYŁOWE DAŁEKOSIĘŻNE SŁUŻĄCE DO TRANSPORTU ROPY NAFTOWEJ I PRODUKTÓW NAFTOWYCH I ICH USYTUOWANIE (DZ. U. Z 2005R. NR 243, POZ. 2063 Z PÓŹN. ZM.) Czy stacja paliw wyposażona jest w instalację kanalizacyjną? kanatzacyjną: Czy stacja paliw wyposażona jest w urządzenia zabezpieczające przed przenikaniem produktów naftowych do gruntu, wód powierzchniowych i gruntowych (określić rodzaj urządzeń)? 2 3 Czy stacja paliw wyposażona jest w certyfikowane urządzenia do pomiaru i monitorowania stanu

Protocol creating in piece pase prove peaks proste fore; . + A (Contrepand) 070 B-100 P + #. etter II. 📴 Portan 🎧 Media 🎽 Adhace 🔂 Soline 🔂 Lahare 📢 Raphine Centuria. Dunitan finis titlesa Uzykowsk audobrzymiecki. Wybiez to SWK 20121009.01 dist. Powert patienties Powert plantie kontrol Register kantow Provert standow Provert standow Provert standowych Edycja daných Kontroli z listy rejestru Panel nawigacyjny (Ignz Unic potential Anaphanit) Inpiz + Frenty Factoria (Instagly) Ontri Jakolez korenię tagora kontroli Z wygodon w leine z ustalonym podnichem – Typ kontroli: Planova – Charakter kontroli: Probe amer kontrolk. 28. 195/2011 Names zakladar: Ginime Przedniątkorstwa Komunatiw Sp. p.s.o. - Komunatiw Sale Dese patrianne kuttel Produkt konnell Taket zapresis kertetych Araiza weikopresis Italie, persedu Jaket Arts Preses IE Oper Londongy Podeswa provide Underscharted Secureta interestituted Secure Interpolation Academic PCA art. 3 vetawy z dna 20 lpca 1997 c o hogelszji Ochrony Šredowska (Dz.U. z 2013 c psz. 696), w zwiądku z art. 71a wstawy z dna 2 lpca 2004: o sechodzie działatności gospołaczny (Dz. U. z 2013 r. psz. 672)

Typ i setted Caudities to storie Role glave Stypentus pectode. Otra supportus Systems pectode. Otra supportus - Cry kontrol a removement - Cry kontrol a rem	Parenese Problemose 2019 2019 2010 16:40-2013 16:40-2013 16:52 16:	Onto entenning or Namer zaklada va O Namer Zaklada va O Namer Zaklada va O Namer Zaklada va Namer Namer Zaklada va Namer Zaklada va Namer Zaklada va Namer Zakl	ny J. Hi 201 Source Produktionalis Kamunalis S. Source Participation Kamunalis Statistication Opadities HATSING J. 2. 2016/5812 Ka B. 2. 2016/5812 Ka B. Pelgrymta mer et al. 2016/00 Pelgrymta 10. Pelgrymta 10. Pelgrymt
 Jicel Zapp. Inve study scientificzące w kontoś 	Prezes Zarządu	Adres kontrolowanej dzialalno	nici
Osoba poinformowana o kontroli Stanoweska osoby poinformowanej Okwa silegiy kontrolij	Acoff Zage: Prezent Zazzątu od 01 01 3011 + do dma k	* Sty Area Surfaceure, Statement	onl og Stearen 🔐 🖉

Protoc		oroating		
FLOIDE	\mathbf{O}	creanna		
110101		ere annig		
			10	
	CHOODELANYOR	NUMBER OF STREET, STREET, SALES AND ADDRESS.		
	TH IT WANTED	as an other and		
	M. 10110-12-48	 A regular of particular participants of the second s		
	Talapton Wild + Lop	the latest and a lat		
	Recomposition (1911)	a mail hyperaction process of		
	CALIFORNIA			
		IOTOKOL KONTROLI NE DL 165280		
	Control on the local diversion of the local d	TRUE VELOCIES	10	
	Padester B.	at 4 unitery other 30 land 1967 or height prickness broken das 2017.	1	
	Wantib Logist	methoda doubtered propriet at the Local Color and Col		
	March Longitude	designed for K.C. and second states in the l	1	
	ar 10, 214.	the designed in states, designed are and N.V.		
	Manufactory in the state of the	nge allem	4	
		Adjustice. 1975 The Polymouth, Casta Polymouth Instantial Provid Adversarial		
	Ending Arabidratics, Andrease in the second side	landaria.	1	
	The distance at the second	 Mantevide operative or wells show a department of strappenets around any in the Martine bit a set or or presented in the set of the set of th		
	Advantation and	2000 tog 19.00 Kulemania, Linna Arbeirania Iniziala, Paris Americal		
	Distriction of the local district of the local district of the local district of the local distribution of the local distr	Burldon New York	4.	
	And an in the second se	and the	4. I I I I I I I I I I I I I I I I I I I	
	Report calificate laits	Ten of the Control of	1	
	not plotted registering			
	PLDGED Larvert	36(2)	1	
	Automa .	Second and	1	
	Address and the second		1	
	and the second second	arkenierunteiseentokut.	4	
	Aria streak	And Some Room Locate	4	
	agine drafts pool			
	ming think particul			
		ni. National and an	5 E	
	Name of Cold Street, or other	أفحد بخلا متعر الركبونة الشعبة طلبستك إلجو ومعتجرتها ومقتصع تبار تابعا ف	1	
	The second se	and the second sec	10 L	

Case Study from Lombardy Region

An important Project was developed from 2009 to 2012 by Regione Lombardia and ARPA Lombardia (Regional Environmental Protection Agency) with the technical and scientific support of Politecnico of Milano and University Bicocca of Milano to analyze through a **water quality simulation models** the restoration possibilities of the Lambro-Seveso-Olona system, investigating both the **source apportionment of the macropollutants**, the **discharge limits that should be set to achieve the good quality status** and their corresponding cost.

The Lambro-Seveso-Olona (L-S-O) system is not a natural watershed since it derives from the human regulation of the natural hydrology of the territory around Milan city area. Olona and Seveso rivers were not originally natural tributaries of the Lambro river but now they are. Olona river in fact merges into the so called southern Lambro river which merges in its turn into the Lambro river about 20 km upstream the Lambro confluence into the Po river. Seveso river, sadly known because of the ICMESA ecological disaster occurred in 1976, is now connected to the Lambro-Olona system since its waters flow through the channel system beneath the Milan urban area and as Redefossi channel flows into the northern Lambro river (Fig. 1). The Lambro-Seveso-Olona watershed is one of the most densely populated. The average population density in this area is higher than 1,000 inhabitants/km² (peak values are more than 7,000 inhabitants/km² in the Milan urban area and around 1,500-2,000 inhabitants/km² respectively in the areas of the provinces of Varese and Como which are mostly drained by the Lambro). These population densities are among the highest in Italy and Europe. Industry is also highly developed in this basin, chemical, textile, paper, pulp and food industries being the most important ones.

Although at present the Lambro-Seveso-Olona system does not receive any more the untreated wastewaters of the Milan urban area, **depurated wastewaters** constitute about half of the streamflow.

Biotic communities in this river have a long history of poor quality status, having suffered great damage due to domestic and industrial discharges.

The Lambro-Seveso-Olona system constitutes also the most polluted tributary of the Po river, the largest Italian river. Although representing only 6% of Po river drainage area (Lambro-Seveso-Olona watershed has a drainage area of about 2,700 km²) the significant contribution of this river system to the Po river pollutant load has been largely documented.

Fig. 1. Lambro-Seveso-Olona system (L-S-O). Hydrography and major urban areas are shown.



Recently new **chemical quality standards for macropollutants** (i.e. LIMeco index according the legislative decree n.152, 2006) have been set by the Italian legislation as support for the good ecological status according the WFD. This new index considers dissolved oxygen (i.e. deficit for dissolved oxygen saturation, 100-DOsat), ammonia and nitrate concentration, and total phosphorus concentrations and is extremely restrictive, particularly concerning nitrate and phospshorus (see Table 1). The new index makes challenging the achievement of water quality objectives for many Italian rivers and, consequently, it makes extremely hard to reach the good quality for the Lambro-Seveso-Olona system.

Aim of the Project was to analyze the restoration possibilities of the L-S-O, focusing both on the source apportionment of the macropollutants and on the effluent limits that should be set by law, to achieve the good quality status according to the LIMeco index. Based on the modeled scenarios, the technical and economic feasibility of the requested discharge limits were evaluated.

Thresholds							
LIMeco	high	good	moderate	poor	bad	LIMeco	
100-DO _{sat}	≤ 10	≤ 20	≤40	≤ 80	> 80	high	≥ 0.66
N-NH4 (mg/l)	< 0.03	≤ 0.06	≤ 0.12	≤ 0.24	> 0.24	good	≥ 0.5
N-NO3 (mg/l)	< 0.6	≤ 1.2	≤ 2.4	≤ 4.8	> 4.8	moderate	\geq 0.33
Total-P (ug/l)	< 50	≤ 100	≤ 200	≤ 400	>400	poor	≥ 0.17
						bad	< 0.17
Score	1	0.5	0.25	0.125	0		

Table 1. LIMeco index enforced by the Italian legislation. Scores need to be assigned according to the Thresholds and the final score is the average of the 4 parameter scores.

Table 2. Effluent limits assumed in the wastewater treatment plants as function of the plant size (expressed as People Equivalent, PE) in the considered scenarios.

	Dir 271/91CE		MBR	RO
	PE<100,000	PE>100,000	PE>50,000	PE>50,000
BOD, mg/l	10	10	4	4
COD, mg/l	60	60	15	30
N-org, mg/l	0.75	0.5	0	0
N-NH ₄ , mg/l	2.25	1.5	1	1
N-NO ₃ , mg/l	12	8	9	4
Total Phosphorus, mg/l	2	1	0.5	0.5

QUAL2K models system was used to develop a **quantitative understanding of the inputs and processes affecting the water quality** of the Lambro-Seveso-Olona system. Measurements of different water quality parameters, coming from the Lambro-Seveso-Olona watershed, were used to implement the **water quality simulations**. All the measurements came from the monthly monitoring activity, carried out by ARPA during the period 2009–2010 at 44 sampling stations. Such water quality monitoring refers mainly to low-or mean-flow conditions, less than 25% of the measurements available concerning higher flow conditions. QUAL2K simulations relied also on the direct measurements of the input point sources made available by ARPA. Non point sources contributions, not particularly relevant in this area, were estimated by difference from in-stream measurements and modeling outputs considering only point sources. Table 2 shows the effluent limits assumed for the considered scenarios.

QUAL2K models showed overall a discrete model accuracy (i.e. errors of about \pm 20-30%) for the median annual scenario. The median was assumed as reference for the scenarios and it was preferred to the average to avoid any skewness effect present in the water quality measurements. QUAL2K enabled to assess the **apportionment of the main pollutant sources in the system**.

Wastewater treatment plants (hereinafter WWTPs) constitute more than 90% of the waste flow discharged to the river system, 91% of the discharged organic load and 99.4% of the total nitrogen load. At the watershed closure (i.e. at the Po river confluence) the cumulated flow of discharges accounts for about 40% of the river streamflow. It is also relevant to remark that WWTPs in the L-S-O range from very small (i.e. less than 2,000 PE, about 20% of the total number), to medium size (i.e. 2,000-10,000 PE, 25% of the total number) to bigger sizes. More than 40% of the WWTPs are larger than 10,000 PE and a little less than 10% are larger than 600,000 PE and account for the majority of the discharged pollutant load. However, being the latter almost all around the Milan urban area, where the river has already acquired a low quality status, they do not constitute the most significant pressure for the river water quality. At present, and according to the new LIMeco index, most (i.e. over 200 km out of a total of 253 km) of the L-S-O river length is classified in between a poor and a bad quality status (see Figure 2). Less than 10% of the river length is classified as good or high quality.

The QUAL2K modeling was also used to evaluate the effluent limits required to achieve the good LIMeco quality status. Besides ammonium whose concentration is extremely high all through the river and denotes the presence of untreated wastewaters and of scarcely efficient removal treatments, the most challenging

parameters to control in order to achieve the good LIMeco status appear to be nitrate and total phosphorus that should be respectively removed at a level of 1-2 mg l⁻¹ and of 0.2-0.4 mg l⁻¹. These limits are hardly achivable by conventional activated sludge treatments. Only a tertiary Reverse Osmosis (RO) filtering stage would guarantee the respect of these limits and that would increase the treatment cost by 2.5-2.7-fold with respect to the coventional "nitrification/denitrification + phosphorus removal + filtration" treatment scheme. Moreover it should be observed that all through the Lambro-Seveso-Olona system more than 160,000,000 m³ y⁻¹ of wastewaters need to be treated, and this would imply investments of the order of hundreds million euro. On the other hand, even in the hypothesis of the full RO scenario (i.e. all the WWTPs operating a RO treatment), there would be concerns for the river ecosystem due to the fact that RO is not a selective treatment and its full scale application could significantly alter the ion balance of the system, posing at risk the osmolarity of riverine organisms.



Figure 2. Water quality classification of the Lambro-Seveso-Olona system according the LIMeco index and the its four components (i.e. DO: deficit for dissolved oxygen saturation, $N-NH_4$: ammonium, $N-NO_3$: nitrate and P-tot: Total phosphorus).

The results of the Project show the peculiarity of the Lambro-Seveso-Olona-System and demonstrate that a compromise is needed between restrictive quality targets, costs and the real possibility of recovery of such human effluent-dominated system.

Moreover, the results of the Project show that in the perspective of the cost-benefit analysis the expected benefits should be evaluated with appropriate indexes, adequately sensitive to detect improvements in these effluent-dominated streams.

The knowledge acquired though modelling may suggest intermediate scenarios that maximize the efficiency, significantly reducing the costs.

Country	Participant	Organisation
Austria	Christoph Planitzer	Lower Austria, Environment
		Department
Ireland	Ray Earl	Dept. Environment, Heritage and Local
		Government, WFD Eastern River Basin
		District Project
Italy	Valeria Marchesi	ARPA Lombardia - Environmental
		Protection Agency of Lombardia
Poland	Adrian Zając	Voivodship Wrocław - Inspectorate for
		Environmental Protection
Portugal	Anabelo Rebelo	Algarve River Basin District
		Administration
Portugal	Filipe Vitorino	Inspecção-Geral do Ambiente e do
		Ordenamento do Território
Sweden	Pia Almbring	Swedish Agency for Marine and Water
		Management
United Kingdom	Andrew Farmer	Institute for European Environmental
		Policy

ANNEX IV: PARTICIPANTS AT THE PROJECT WORKSHOP