

Proposal for a Harmonised Leakage Reporting Index

Summary

EurEau supports the Drinking Water Directive's (DWD) goal of reducing water leakage, but emphasises the need for reliable data to underpin this effort. As the first step towards leakage reduction plans will involve calculating a Union average leakage rate, Member States must include the same index in their reporting. This index should be based on volumetric units so that all drinking water operators can easily implement it within the DWD timeframe.

Introduction

The 2020 recast of the Drinking Water Directive (DWD) highlighted leakage control as an important management tool for sustainable water management in EU Member States. **The DWD now contains a general obligation for Member States to assess, report and tackle leakage.**

EurEau supports the DWD objective of reducing leakage. The Directive mandates EU-wide leakage reporting by January 2026 so as to assess the current situation, but the method for calculating this is not explicitly outlined in the Directive. In particular, the prospect of calculating a Union average leakage rate based on the national leakage assessments raises methodological concerns.

In May 2021, EurEau published a [Briefing Note on Drinking Water Supply and Leakage Management](#). This was the result of detailed feedback from water operators in 28 countries, and it concluded that **a harmonisation process must be established in order to achieve a basic level of leakage estimation and comparability.**

This Position Paper presents recommendations elaborated by EurEau's Leakage Working Group for a **harmonised method of leakage measurement and reporting across the EU** for the January 2026 reporting deadline. The proposed framework is based on **simple scientific rules**, relies on **minimum technical capabilities** from water suppliers and provides **comparable information** from the different countries.

This harmonised index is meant to be used as a universal basis for comparison but can and should be complemented by additional information, including other



leakage indexes at the discretion of Member States. The proposal incorporates suggestions for essential contextual information to enable a meaningful interpretation of the reported data.

Background

Article 4 (3) of Directive 2020/2184 (the Drinking Water Directive (DWD)) introduced a general obligation for Member States to assess and tackle leakage, and requires national authorities to report on leakage levels to the European Commission by January 2026. According to the Directive, these one-off national assessments should cover water suppliers supplying at least 10,000 m³ per day or serving at least 50,000 people, and should evaluate leakage “using the infrastructural leakage index (ILI) rating method or another appropriate method”.

The Commission is then mandated by the Directive to calculate an EU-wide average leakage rate on the basis of the national assessments. Using this Union average as a reference, the Commission has until January 2028 to set a threshold value for leakage, above which Member States will be required to present leakage reduction action plans. The Member States concerned will have two years to present these action plans, i.e. at the latest January 2030.

Why do we need harmonised leakage reporting?

The purpose of the assessment and reporting exercise set out in the DWD is to establish a threshold for leakage levels, based on a Union average leakage rate calculated on the basis of all national assessments. If the Commission does not receive comparable data from all Member States, it will be impossible to calculate a meaningful Union average, or to compare each national situation to that Union average.

As things stand today, leakage reporting methodologies vary between Member States, and in some cases between regions of the same Member State: some report volumetric figures (expressed in m³/km/year or in m³/connection/year), some percentages (expressed in % of water entering the distribution system), while others use ILI. It should be noted that there is no linear or other robust correlation between the different indexes.

It is therefore necessary to agree a harmonised leakage index, to be included by all Member States in their reporting under the DWD.

Which index should be used?

The DWD does not specify which unit, index or reporting method should be used by Member States in their national assessments. While Article 4 does mention ILI as one possible method, it also leaves the door open for “another appropriate method” to be used.

While EurEau recognises ILI as an advanced and useful indicator for assessing leakage levels, it is **not realistic** to use it as a harmonised index, for reporting and target setting



purposes, in all 27 Member States **within the timeframe set by the DWD**.

The Directive gives Member States until January 2026 to communicate their assessments to the Commission. National authorities, in turn, will need to collect the relevant data from drinking water operators over the course of 2025. This means that **the latest full-year data available for reporting by operators will only cover 2024**.

This leaves very little time for drinking water operators to adapt their data gathering equipment, methods and procedures to a potentially new index. **In aiming to harmonise reporting for the DWD-mandated exercise, it is therefore necessary to focus on commonalities between existing practices across the EU**.

While ILI is used by some operators in the Union today, it requires the input of a greater variety of parameters than other usual methods, in particular service pressure which can be especially difficult to establish in harmonised way. This means that shifting from using more traditional indexes to using ILI takes time and effort. Given the timeframe outlined above, it is not feasible for even a majority of operators to implement ILI methods for the full-year 2024 in a comparable manner and a reliable way.

EurEau proposal for a harmonised index

We propose the following **harmonised index** to be used by operators, Member States and the Commission for the reporting mandated by the DWD.

The **level of leakage** should be expressed using the following **volumetric index**:

$$\text{m}^3 \text{ of non-revenue water} / \text{km of water mains} / \text{year}$$

In line with the IWA Water Balance methodology (see Fig. 1, p.4), we define non-revenue water (NRW) as follows:

$$\text{NRW} = \text{Metered System Input Volume} - \text{Billed Consumption Volume}$$

System input volume refers to the drinking water supplied for consumption.

Water mains refer to the drinking water distribution network, excluding connections as defined in standard ISO/DIS 24528.

Reporting this leakage index should be achievable by all drinking water operators concerned, as the required input data is routinely collected by operators of all sizes. It does not need to be used exclusively, but must be included by all operators and, in turn, Member States in order to ensure comparability of the data received by the Commission.

Context Annex

Comparing leakage data across different suppliers and different Member States requires an understanding of the context of each reporting supplier. Many factors can affect the level of leakage and the indicator on which we propose to base the reporting. Moreover, not all operators have access to the same kind and amount of data about their own



networks. Taking this information into account is necessary to enable a meaningful interpretation of the reported data.

Due to the technical challenges involved in measuring physical water losses, the proposed harmonised index or any other leakage index is only a proxy for real leakage.

The International Water Association’s (IWA) Water Balance classification (see Figure 1 below) helps break down the different flow components and factors involved. Authorised consumption is the amount of water that reaches households and businesses with an authorised connection to the network. In Europe, it is often extensively metered, but not always. It can also be unbilled (metered or not metered), for example when used by emergency services or by the water supplier itself in its own facilities or to flush the network.

Water losses are split between real losses, i.e. water lost to leaks, and apparent losses: these can stem from unauthorised connections to the network (water theft) or from metering inaccuracies leading to discrepancies between the volume of water recorded and billed to consumers and the actual volume delivered.

Figure 1: IWA Water Balance methodology

System Input Volume	Authorized Consumption	Billed Authorized consumption	Billed Metered Consumption	Revenue water
			Billed Unmetered Consumption	
		Unbilled Authorized Consumption	Unbilled Metered Consumption	Non Revenue Water (NRW)
			Unbilled Unmetered Consumption	
	Water Losses	Apparent Losses	Unauthorized Consumption	
			Metering Inaccuracies	
		Real Losses	Leakage on Transmission and/or Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
Leakage on Service Connections up to point of Customer Metering				

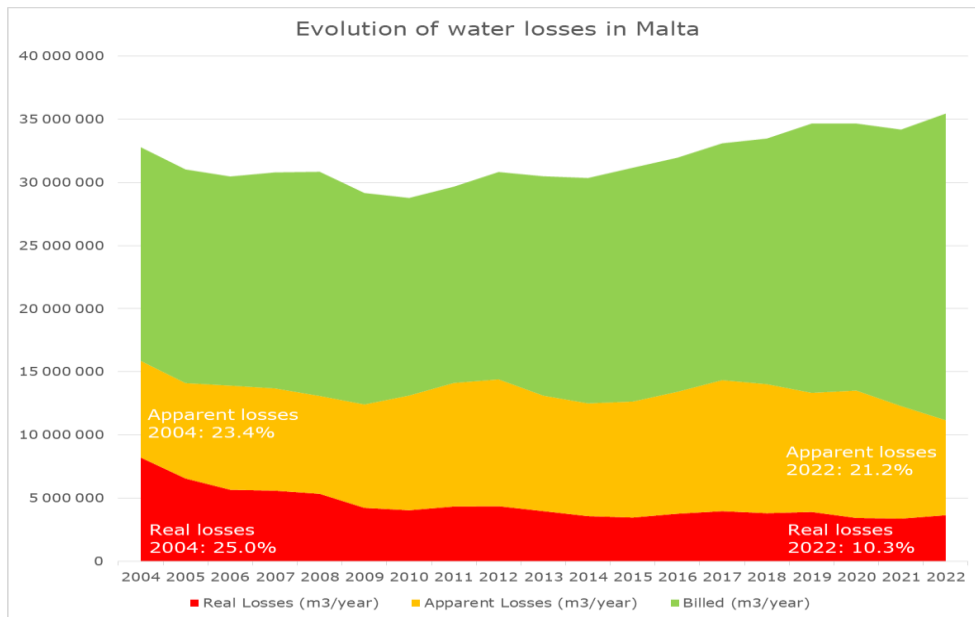
Source: IWA

The level of deployment of sensors other than customer meters across the drinking water network varies widely within Member States and between them. Many operators therefore use Non-Revenue Water (NRW) as a proxy indicator for leakage, as it may be the only indicator they can reliably measure. NRW is the difference between the total volume of drinking water fed into the distribution network (the System Input Volume) and the volume of water billed to consumers. NRW can rely on estimates as well as measured volumes if some authorised connections to the network are not equipped with a meter.

Figure 2 (below) shows the example of EurEau’s Maltese member, the Water Services Corporation (WSC), where the difference between real losses and NRW is particularly pronounced. In this case, the WSC designates NRW as real losses + apparent losses.



Figure 2: WSC Water Losses reporting data, 2004-2022



Source: WSC

Case examples we have received from our members indicate local conditions as well as operating practices followed do influence the balance between the real losses and the apparent losses and there will always be some discrepancy between NRW (our proposed indicator) and physical water losses. This is why we suggest that operators may attach a Context Annex when reporting to their national authorities, containing information that the operator considers relevant. This may include additional leakage indexes such as ILI. We urge Member States, in turn, to take this context into account when drafting their national leakage assessments.

Suggestions for the type of information to be given in the Context Annex are offered in **Annex I** to this Position Paper.

Conclusion

EurEau welcomes the new Drinking Water Directive, and the decision to address water losses within the scope of this legal text. While we see the value in EU-wide leakage reporting, **we believe it would be made most effective by using a harmonised reporting index to enable meaningful comparisons between Member States.**

Our proposal for a harmonised index uses a volumetric indicator, which can be put in place easily by Member States and individual water suppliers **using tools and techniques already at their disposal. As the operating environment affects the level of leakage,** it is important to note the context to ensure accurate interpretation.





About EurEau

EurEau represents Europe's drinking and waste water sector. We encompass 37 national water services associations including public and private operators from 32 countries.

Together we promote the access to safe and reliable water services for Europe's citizens and businesses, the management of water quality and resource efficiency through effective environmental protection.



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Annex I: Suggestions for the Context Annex

Providing contextual information about the reported data is essential to enable Member States and, in turn, the Commission to interpret this data in a meaningful way. We suggest the following, non-exhaustive list of potential topics to be included in the Context Annex accompanying the reported indicators. Each operator should be free to decide which relevant information to include in the Context Annex.

Additional leakage indexes

Although a harmonised index is necessary to calculate a Union average leakage rate, additional indexes can shed a useful light on the data expressed by the harmonised index. Water suppliers may choose to include other leakage indexes, such as m^3 / number of connections / year, ILI or others as context to the harmonised index.

Length of the water distribution network, water mains and basis for calculation

Water suppliers may specify which of the cases below apply:

1. A GIS system is used for recording more than 80% of the distribution networks.
2. Paper and/or electronic (Autocad) maps are used for recording more than 80% of the distribution networks.
3. A combination of the above is used, at a combined level of more than 80%.
4. None of the above.

Number of connections

In order to clarify the representativeness of measured consumption, water suppliers may specify the number of metered and unmetered connections in their perimeter, as well as the number of smart meters (as defined in CSN standard EN 14154-4) as a subset of metered connections.

It may also be desirable to provide the total number of connections (metered or not), as well as a brief description of the nature of authorised non-metered connections and of the way unauthorised connections are dealt with in the supplier's water balance assessment and leakage reduction strategy planning.



Pressure

The water pressure inside distribution networks is a key factor affecting leakage volumes, meaning that information on network pressure can provide a useful perspective on reported leakage data. Water suppliers may provide information on the prevailing pressure regime in their networks as context for the reported index.

Number of zones

Water suppliers may specify the number of separate, distinct zones or district metering areas (DMA) utilised to derive the presented data on water volumes and distribution length, when relevant to interpret the reported data.

Leakage management strategies

Active leakage reduction strategies pursued during the reference year are expected to influence (reduce) leakage to a certain extent. Therefore, a brief report on the kind of strategies used, the extent/intensity of the relevant activities and the results obtained may give an indication of the evolution of the leakage situation within the reporting year, which would be obscured by relying solely on the annual reported figures used for the main indicator.

Operators with an already low level of leakage can describe the strategies used to maintain this low level.