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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Ninth Report on the implementation status and the programmes for implementation (as required by Article 17) of Council Directive 91/271/EEC concerning urban waste water treatment

{SWD(2017) 445 final}

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Contents

1. POLICY CONTEXT

The Urban Waste Water Treatment Directive (UWWTD) is one of the key policy instruments under the EU *water acquis* for protecting the environment and human health. Progress in implementing the UWWTD over the past 25 years played a substantial role in improving the quality of waters in EU rivers, lakes and seas (see Fig 1). It also underpinned a lot of progress in meeting the objectives of other EU Directives such as the Drinking Water, Bathing Water, Water Framework, and Marine Strategy Framework Directives[1].Together with the Bathing

[1] http://ec.europa.eu/environment/water/water-drink/index_en.html; http://ec.europa.eu/environment/water/water-bathing/index_en.html; WFD, http://ec.europa.eu/environment/water/water-framework/index_en.html; and MSFD: http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/index_en.htm

and the Drinking Water Directives, this Directive also contributes to growth and jobs. For example:

- between EUR 19 and 25 billion investment is needed invested in water infrastructures each year;
- about 600 000 full-time equivalent jobs are related to water management.

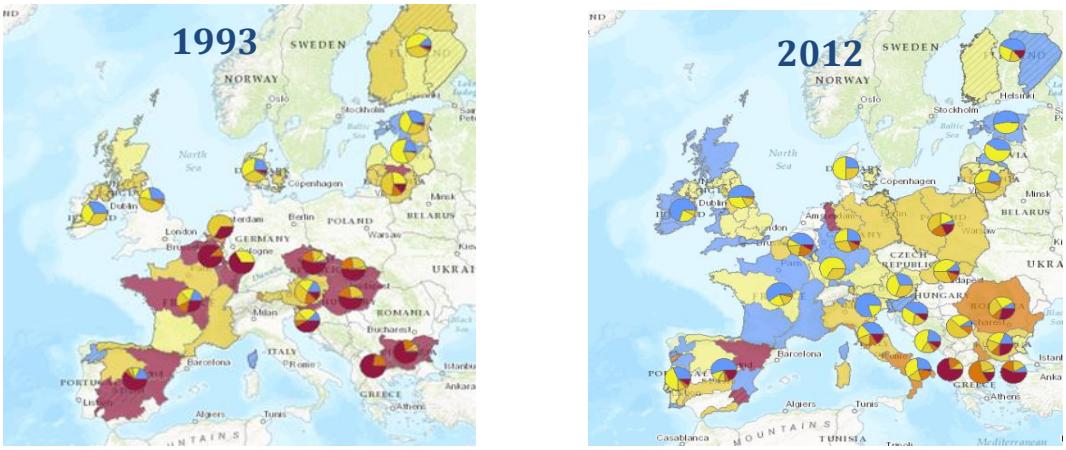

Fig 1 — Evolution in biological oxygen demand (BOD_5) in European Rivers- the reduction of BOD_5 is an indicator of the improvement of the quality of the EU waters (source: European Economic Area (EEA [2]))

The UWWTD should be also seen in the context of implementing Sustainable Development Goal 6 (SDG 6) — 'ensure access to water and sanitation for all[3]'. Considering that worldwide 2.4 billion people live without access to improved sanitation facilities, and still around 10 million people at EU level. SDG 6 offers new hope in terms of improving health and the environment for everyone. It also offers an opportunity for investments and operations in the water sector.

This report is based on data collected from January to December 2014, based on the requirements of Art. 15 and 17 of the UWWTD. It is accompanied by a staff working document providing a more detailed analysis. For this report, the Commission assessed the situation in all Member States[4] based on accurate implementation data. This was possible through an in-depth dialogue with Member States and the improvement of the IT tools used by the Commission and the European Environment Agency[5] [6]. The report shows the countries that joined the EU since 2004 (EU-13[7]) have made significant improvement in achieving the objectives.

2. COMPLIANCE ASSESSMENT

In 2014 the EU had around 23 500 'agglomerations' as defined in the UWWTD, of 2 000 population equivalent (p.e.) and above. These agglomerations generated a total load of 604 million population equivalents (M p.e.), corresponding to domestic but also to some industrial

[2] http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/wise-soe-bod-in-rivers

[3] http://www.un.org/sustainabledevelopment/water-and-sanitation/

[4] IT and PL were not included in the eighth report as they did not report either on time or correctly. HR had no compliance obligations by the reported year (2014). Its first compliance deadline will be end-2018.

[5] 28 European national urban waste water websites https://www.geospatialworld.net/news-posts/geospatial-media-communications-announces-winners-geospatial-excellence-award/.

[6] Reportnet-Eionet: https://www.eionet.europa.eu/reportnet

[7] BG, CY, CZ, EE, HR, HU, LT, LV, MT, PL, RO, SI, SK.

and run-off rain waste waters. The difference compared to the load reported in the previous report (500 M p.e.) is mainly due to the inclusion of PL and IT.

580 'big cities', with more than 150 000 inhabitants generated a total load of 256 M p.e. – or 42 % of the total. Fig 2 shows that 89 % of the total load is generated in agglomerations above 10 000 p.e., therefore these agglomerations are considered as a priority in terms of achieving compliance.

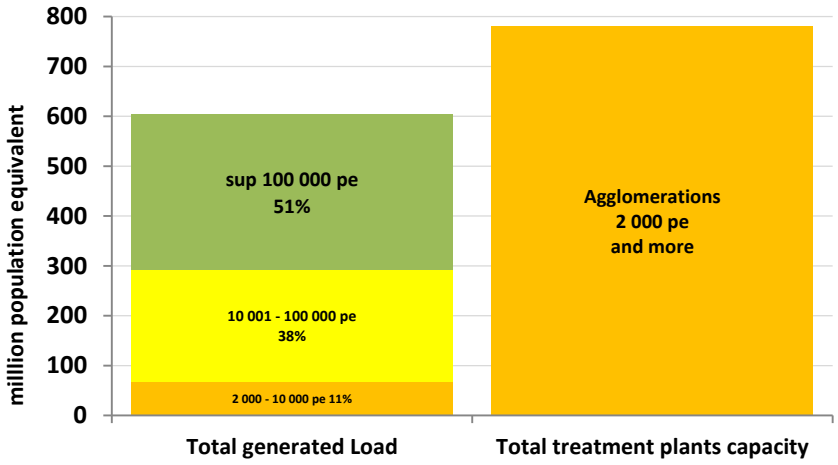

Fig 2 — Total EU waste water load per agglomeration size, compared to treatment plants capacity

In general terms, the EU reached a high level of compliance by 2014, with rates of:

- 94.7 % for collection (either through collecting systems or the alternative individual or other appropriate systems (IAS[8]));
- 88.7 % for secondary treatment;
- 84.5 % for more stringent treatment than secondary treatment, removing nitrogen (N) and/or phosphorus (P), when required.

However, there are still substantial differences between Member States, especially on compliance with the requirements of more stringent treatment (see below).

[8] IAS should provide an 'equivalent level of environmental protection' according to the UWWTD.

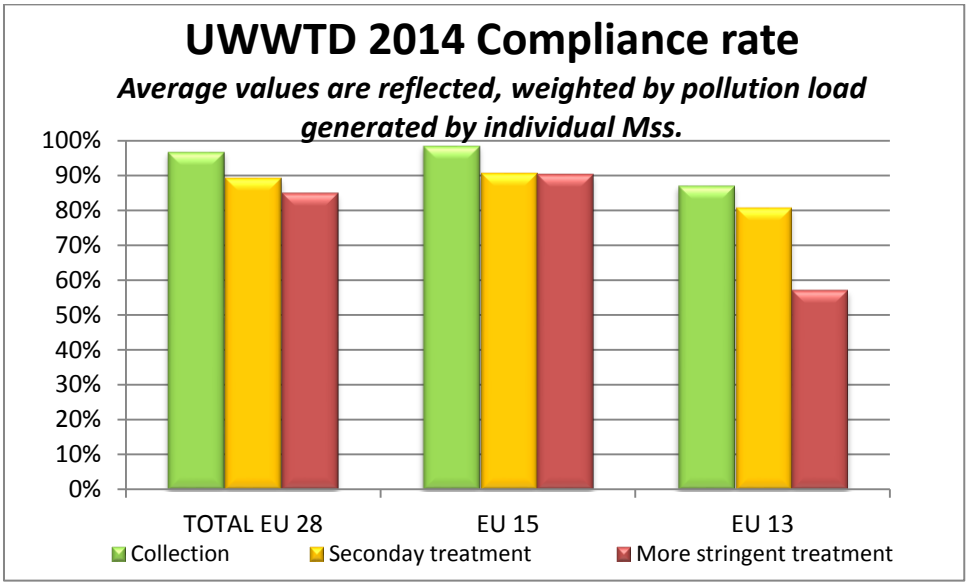

Fig 3 — UWWTD compliance rates (weighted average — year 2014) at EU-28, EU-15 and EU-13 levels (Art. 3, collection; Art. 4, secondary treatment, Art. 5, more stringent treatment. Secondary treatment is higher in the EU-13 due to differentiated conditions and deadlines in the accession treaties.

The overall EU compliance figures have fallen slightly from those in the previous report (98.4 % for collection, 91.9 % for secondary and 87.9 % for more stringent treatment), but figures in the current report more accurately represent the current implementation status of the UWWTD than figures in the former report. This is due to a combination of factors, such as:

- new compliance deadlines for the EU-13;
- the inclusion of IT, PL and RO , which have lower implementation rates;
- Improvements in collecting and verifying data.

The total installed treatment capacity in the EU represents about 780 M p.e. (Fig 2) which is higher than the load generated at EU level. This would lead in principle to future treatment needs being addressed even though the situation differs from one location to another. There are cases of over-dimensioning of treatment plants, but also of insufficient collection and/or connection to already existing plants.

2.1 Collecting systems and/or other appropriate systems[9]

The EU compliance rate on collection of waste waters is high, with an average value of 94.7 %. The decrease in 3.7 percentage points (pps.) from the previous report is mainly due to the inclusion of IT, PL and more accurate values for RO[10]. Most Member States have maintained or improved their compliance rates, except RO, CY and to a lesser extent ES[11]. Compliance rates are very high in 19 Member States, in the range of 98 to 100 %, while Four Member States still have low rates of below 70 % (RO, BG, SI and CY).

[9] Art. 3 of the UWWTD requires Member States to ensure that all agglomerations are provided with collecting systems.

[10] The compliance rate for Art 3 in RO in the eighth report (year 2012) was higher than expected, because it was calculated on the basis of the total compliant load (regardless the agglomerations it was associated with and their obligations under the Accession Treaty). It should have been calculated on the basis of the load associated with the list of agglomerations in full compliance, and under expired deadlines in the Accession Treaty, but this was not possible because such a list was not available in that reporting exercise.

[11] CY: -35 %, due to new compliance requirements in 2012; RO -96%, due to change in the methodology of calculation; and ES: -3% due to improvements in the accuracy of the dataset.

The application of IAS as an alternative to centralised collection has decreased on average in comparison to the eighth Report. Higher values of IAS are observed in SK, EL, HU, PL and CZ. The Commission is investigating whether the conditions for applying IAS (register, permits, monitoring and inspection, types and related environmental protection) are in line with UWWTD requirements.

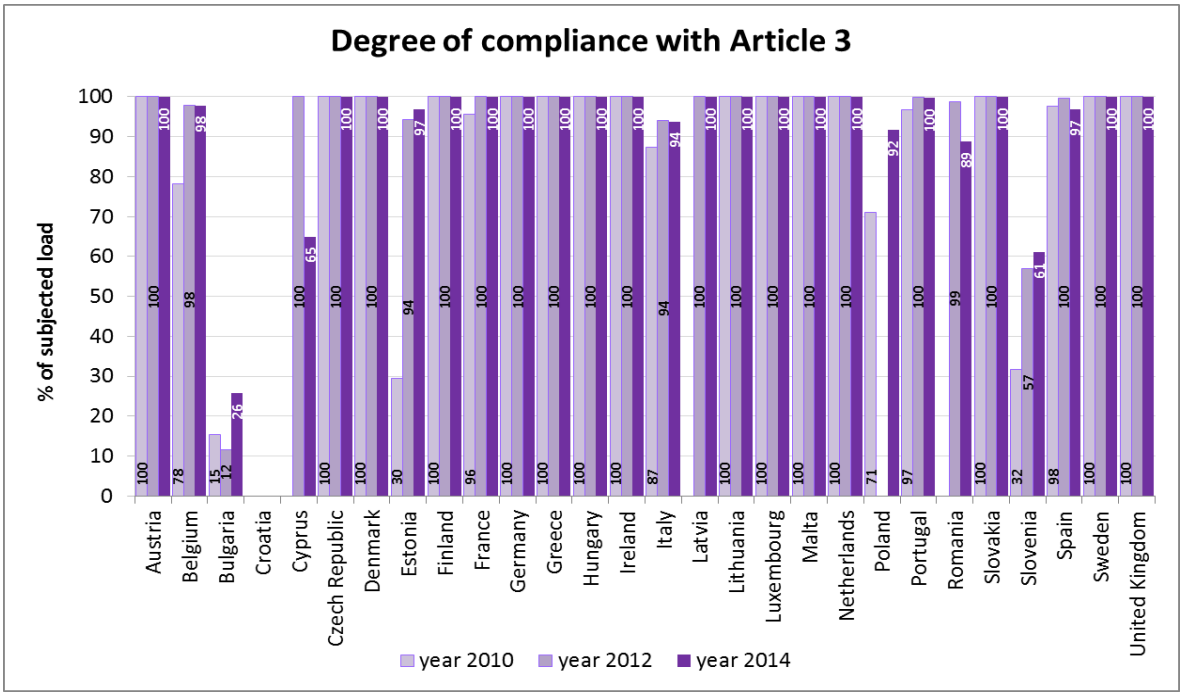

Fig 4— Progress in compliance rates for Art. 3 UWWTD in the last three reports in % of the subjected load — data from 2010, 2012 and 2014

2.2 Secondary or biological treatment[12]

88.7 % of EU waste waters are properly treated by secondary treatment, down 3.2 % since the previous report. The reasons for this were explained in paragraph 2.1. Some 17 Member States had compliance rates between 90 and 100 %, while four (MT, RO, BG and SI) still have to make significant efforts at compliance, with rates below 20 %. IE, which has a compliance rate below 70 %, is a specific case[13], and IT is only making slow progress. Despite the lower average compliance rate for the EU, this has increased for the EU-13 from 68 % in the eighth report to 75 %. Progress is remarkable in countries such as EE, LV, LT and SK. The inclusion of PL, has lowered the EU-28 average rate, but increased the EU-13 rate.

12 Art. 4 of the UWWTD require that waste water entering collecting systems, before discharge, be subject to secondary or equivalent treatment.

[13] Mainly due to the Dublin treatment plant not being compliant in 2014.

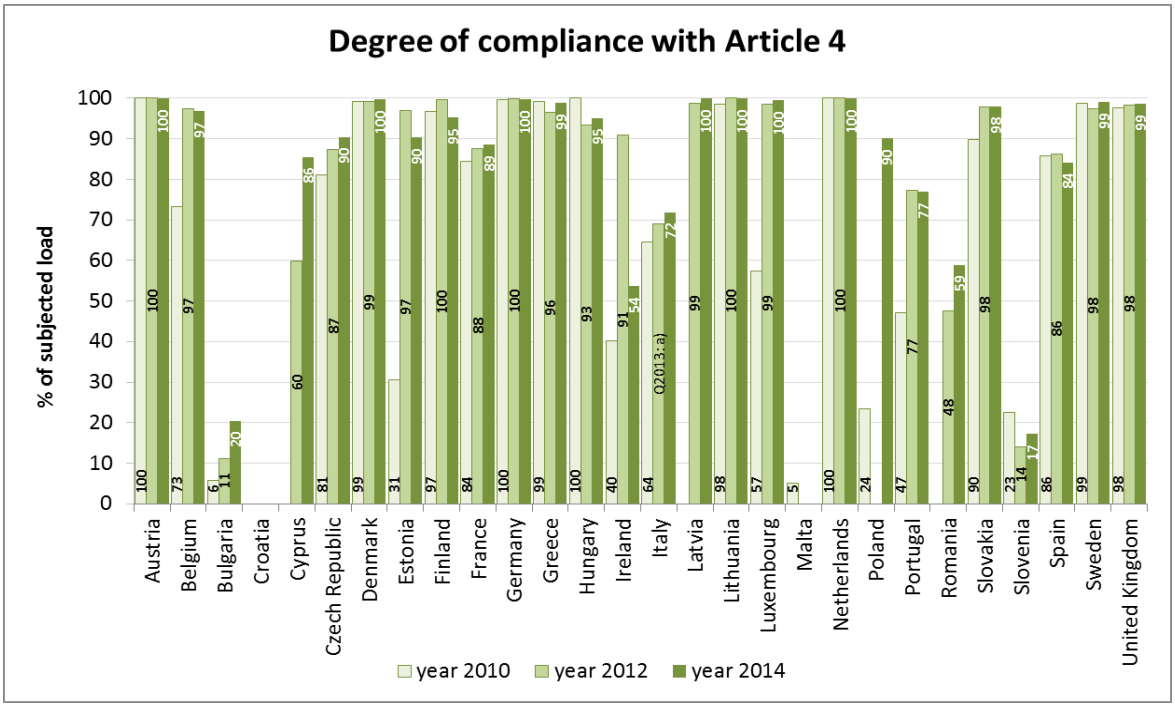

Fig 5—Progress in compliance rates for Art. 4 UWWTD in the last three Reports in % of subjected load — data from 2010, 2012 and 2014

2.3 More stringent or tertiary treatment and sensitive areas[14]

More stringent treatment (than that of secondary[15]) is applied to waste water discharged in areas covering 76 % of EU territory. 15 Member States apply it throughout their entire territory, whereas the other 13 have identified certain areas as 'sensitive' according to the UWWTD. The territory designated as 'sensitive' has increased in the latter, bringing up the total EU territory designated as 'sensitive' by 4%, improving the protection of waters.

The compliance rate for more stringent treatment (applicable to agglomerations discharging into 'sensitive' areas) is 84.5 %, down by 3.4 % since the previous report. This is mainly due to the availability of more accurate data but also to new reported data showing less compliance by IT, PL and RO, below EU average. To a lesser extent, this is also due to a slight decrease in eight Member States' results due to the expiry of new deadlines for compliance. 15 Member States reached compliance levels of between 85 and 100 % (including CY, EE, HU, LV, and LT). Overall, there is still a large difference between Member States, with rates ranging from below 70 % to full compliance, and this should be sufficiently addressed. Significant efforts are still needed in several Member States with rates below 20 % (BG, MT, IE and RO).

[14] Art. 5 of the UWWTD requires Member States to identify sensitive areas and to ensure that waste water undergoes treatment that is more stringent than secondary treatment before it is discharged into these areas.

[15] In general, N and/or P removal

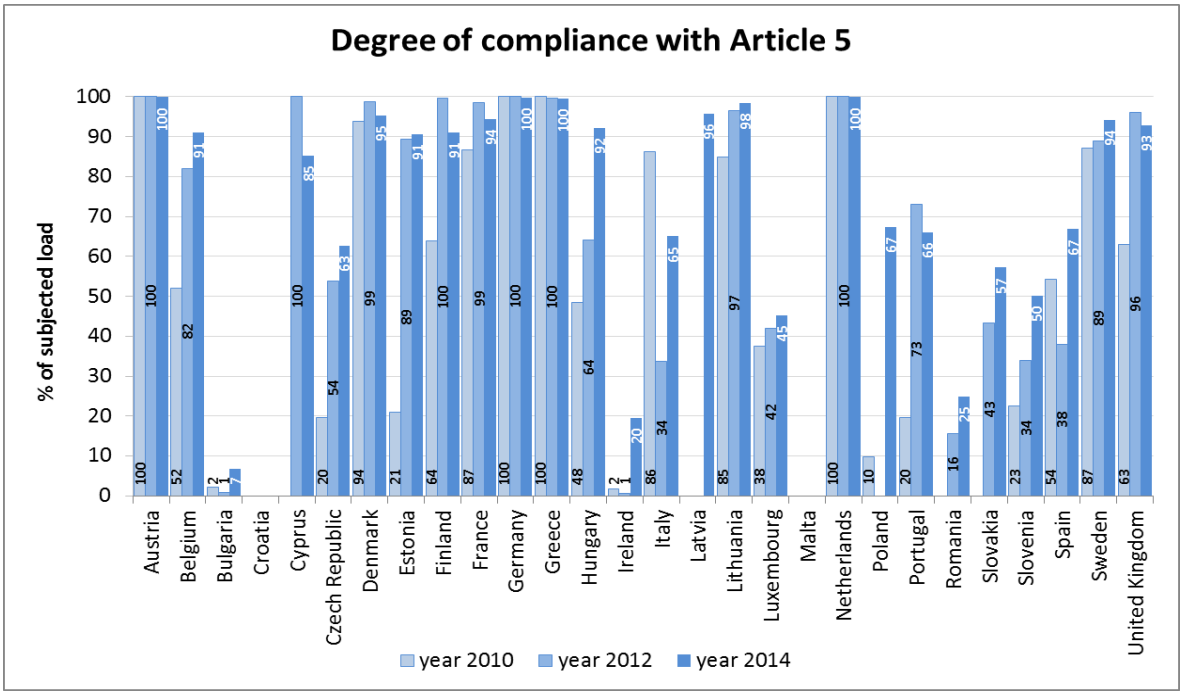

Fig 6—Progress in compliance rates for Art. 5 UWWTD in the last three Reports in % of the subjected load — data for 2010, 2012 and 2014

2.4 Distance to compliance

'Distance to compliance' could be defined as the calculation of the waste water load in p.e. not collected or treated properly. It shows the extent to which efforts are still needed, but also shows a more realistic picture of the progress achieved. It is calculated on the basis of the remaining p.e. that must be collected or, if collected, that must still receive appropriate treatment for the terms of the UWWTD to be fully implemented. The picture shown by this concept complements the compliance assessment, which considers only the agglomerations that fully meet the requirements of the UWWTD[16] to be 'in compliance'.

The graph below (Fig 7) shows the trends of 'distance to compliance': between 2012 and 2014, approximately one additional million p.e. was collected, an additional 10 million p.e. received a 'compliant' secondary treatment, and an additional 5 million p.e. received a 'compliant' more stringent treatment[17].

[16] An agglomeration collecting 98% of its waste waters in accordance with the requirements of the UWWTD will be considered as 'non-compliant' even though the distance to target would only amount to 2%.

[17] PL was not included in the 2012 calculations and Italy was only partially considered.

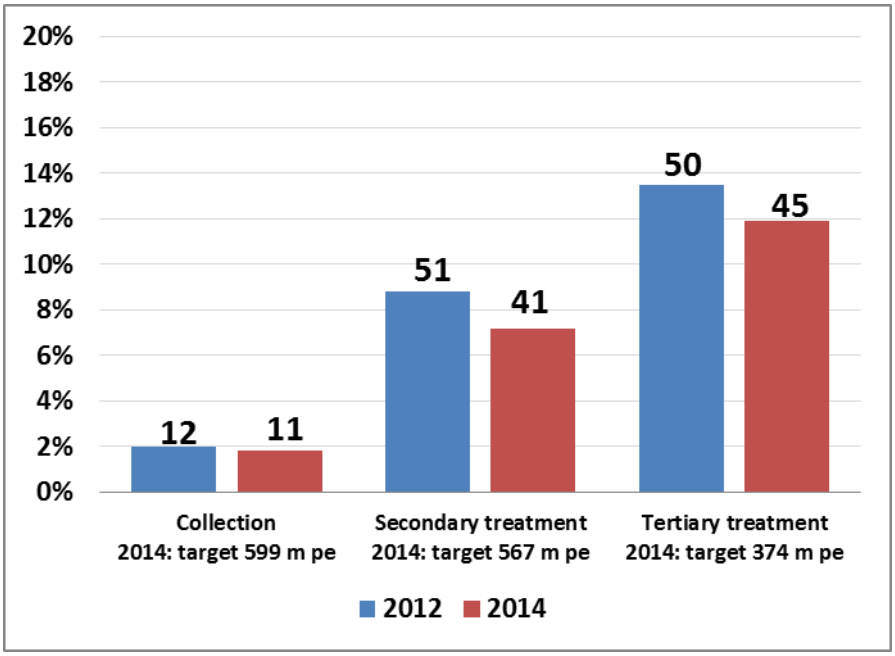

Fig 7 — Distance to compliance EU-27. Evolution from 2012 to 2014(HR not included), in % and M p.e.

The 'distance to compliance' calculated using 2014 data, shows more clearly the nature and size of the remaining challenges:

- 11 million p.e. are not properly collected (1.8 % of total EU load). The p.e. not properly collected are not properly treated either;
- 41 million p.e. don't meet the performance requirements of secondary treatment (7.2 % of the total EU load that requires this treatment);
- 45 million p.e. don't meet the performance requirements of more stringent treatment (11.9 % of the total EU load that requires this treatment).

Large differences exist between Member States. 9 countries have 'distance to compliance' rates above 20 % for collection, secondary or more stringent treatment. Low 'distance to compliance' rates achieved in some countries for collection or treatment are based on the application of considerable rates of IAS.

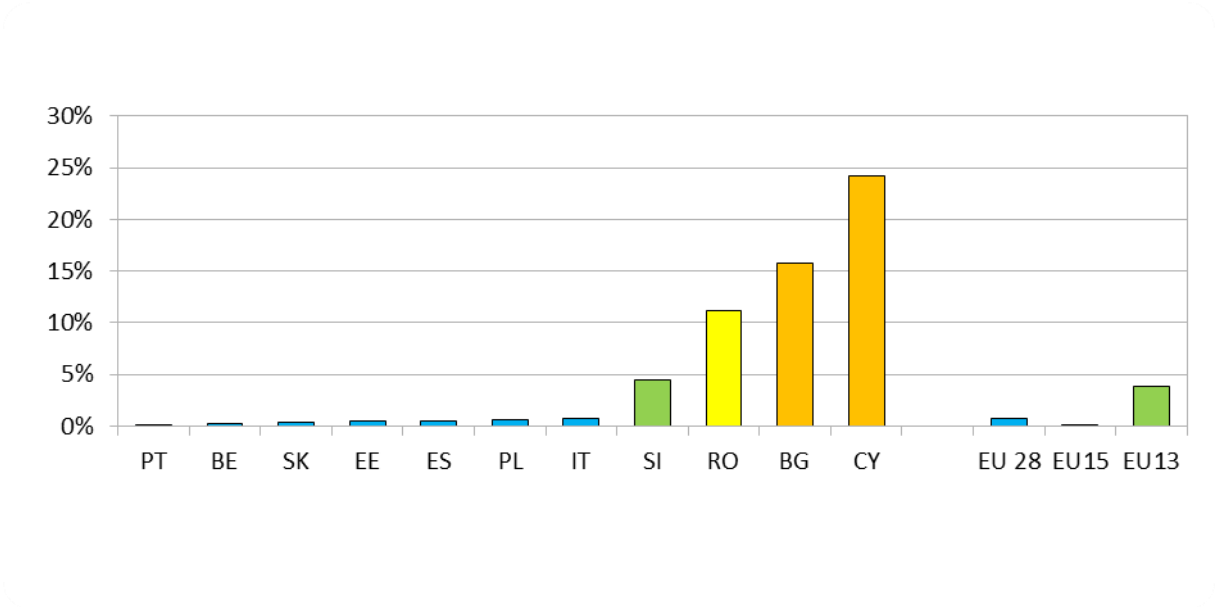

Fig 8—Distance to compliance (collection) in EU Member States (2014 data).Some Member States are not shown in this figure because their distance to compliance is equal to 0%.

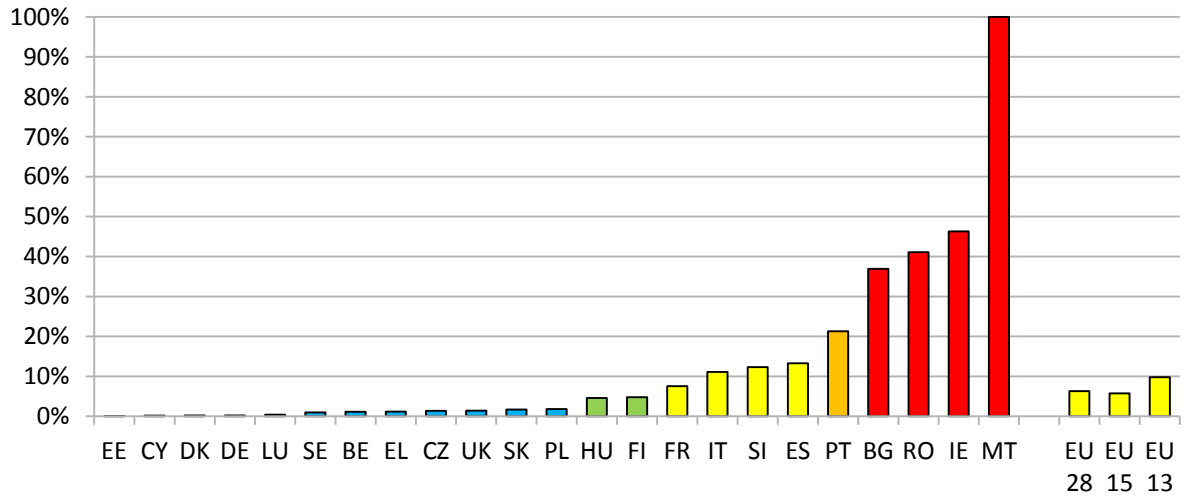

Fig 9—Distance to compliance (secondary treatment) in EU Member States (2014 data)

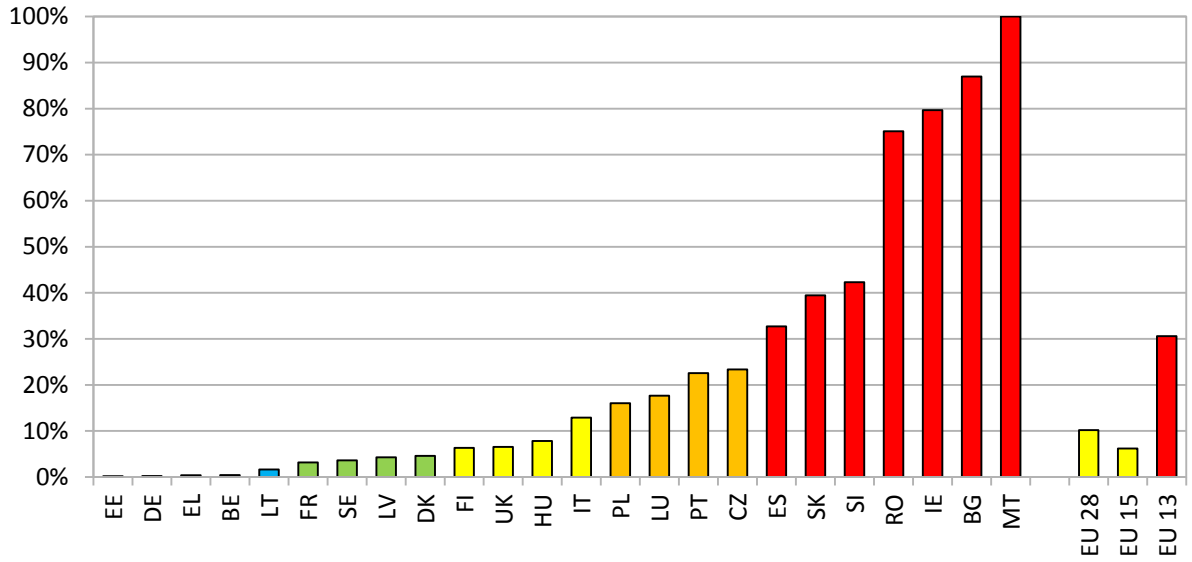

Fig 10—Distance to compliance (more stringent treatment) in EU Member States (2014 data)

2.5 Trends in compliance

In general, the implementation trends are positive, particularly for the EU-13: their average compliance rates have significantly increased since 2009/10 (i.e. over three reports) on collection, secondary and more stringent treatment. The decrease in compliance on collection at EU-13 level for this report is mainly due to systematically using the correct assessment methodology for legal compliance.

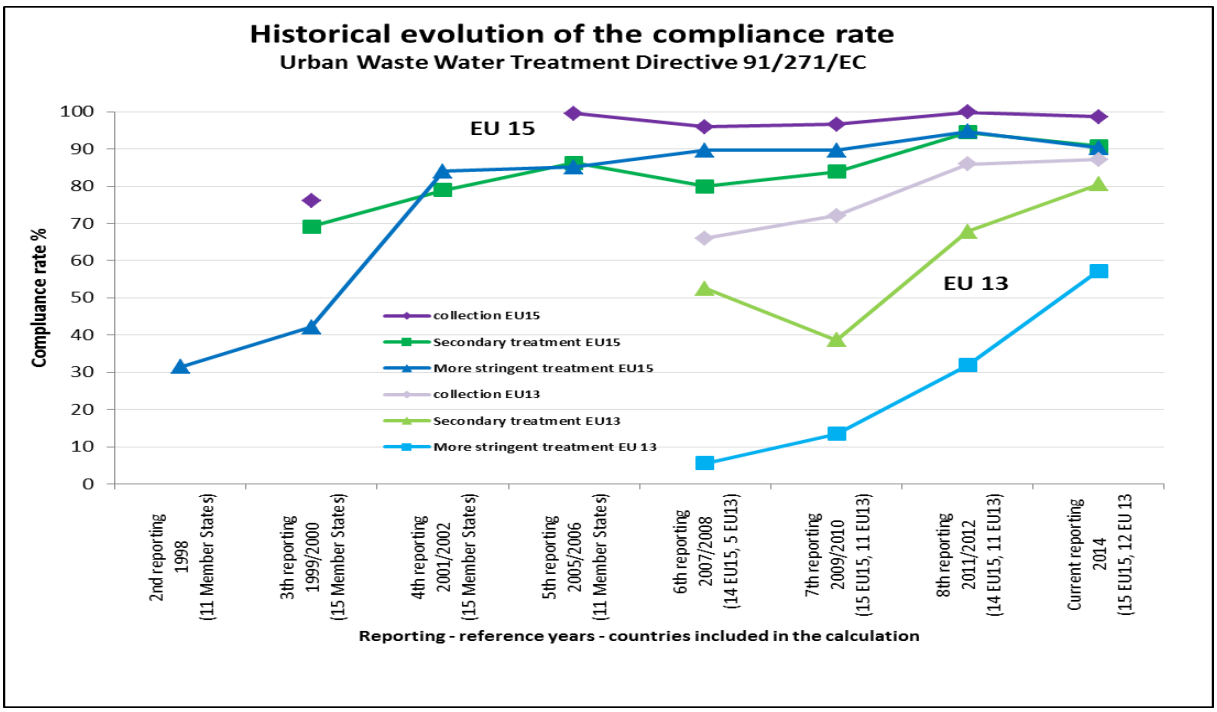

Fig 11—Historical evolution of compliance rates (1998-2014)

However, some countries are still far from reaching full compliance with the UWWTD. Malta is in a specific situation: its infrastructure is partly in place but it has operational problems that need to be solved[18]. After more than 25 years of applying the UWWTD, some Member States are still facing difficulties in reaching full compliance — these countries include IE, IT, ES and PT.

2.6 Big cities/big dischargers

As explained above, 580 EU big cities generate 42 % of the total EU waste water load. 86 % of this load receives more stringent treatment than secondary treatment. The percentage of non-collected and untreated load has remained stable since the previous report, at around 2.3 %. The degree of compliance varies, and 18 out of the 27 capitals[19] can be considered to be in full compliance in 2014, 4 more than in the previous report. Additional efforts are still needed for the capitals remaining in non-compliance[20].

2.7 Sewage sludge production and reuse

Based on 2014 data, some relevant facts and figures on sludge management can be highlighted:

- 8.7 M tonnes of dry solid matter of sludge were produced in the EU, representing approximately 17 kg per inhabitant;
- BG, CY, IT, PT and RO showed ratios below 10 kg per inhabitant, suggesting an insufficient level of collection and treatment;
- 58 % of the generated sludge was reused, mostly in agriculture (Fig 12).

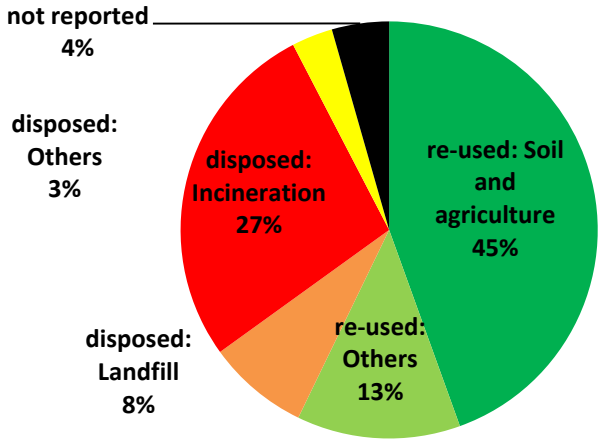

Fig 12 — Destination of reported urban waste water sludge

The potential contribution to circular economy of the sector is significant:

[18] Excess of discharges of farm manure into the treatment systems, and the presence of salt in sewage, together with plants that are likely under-capacity.

[19] Zagreb not assessed (still without compliance obligations).

[20] Luxembourg, Bratislava and Prague (more stringent treatment), Ljubljana, Valletta, and Rome (secondary treatment), Bucharest (collection), Dublin (secondary and more stringent treatment) and Sofia (collection, secondary and more stringent treatment).

- More than half of the P removed from the waste water in treatment plants was reused or recycled.
- The quantity of N and P recycled in the soil amounts to 250 000 tonnes[21] respectively. With a value of EUR 1 300 per tonne for N and EUR 900 per tonne for phosphorus pentoxide ($P2O_5$),[22] the total value recycled from sewage sludge would reach EUR 550 M in 2014[23].
- 27 % of sludge is incinerated (mainly that which is generated in urban areas). This is mostly the case in AT, DE and NL.

The development of digestion technology contributes, in parallel, to reducing sludge production while producing renewable energies (biogas).

2.8 Waste water reuse

The last reported information confirms the limited reuse of waste water: only eight Member States have signalled a regular reuse of part of their treated waste waters (EL, UK, FR, IT, MT, CY, ES, BE). Related data are not regularly collected and therefore not completely available. The percentage of treated waste water that is reused ranges from 0.08% in the UK to 97% in Cyprus, with an average of 2 % in the EU. Reuse mainly happens in agriculture, and occasionally in industry and aquifer feeding. HR, HU, SK, and RO reported intentions to reuse waste water in future. Latvia and Austria explained that it is not necessary due to the large availability of freshwater. The remaining 14 Member States reported that they do not reuse their waste waters.

In the context of its Communication 'Closing the loop — An EU action plan for the circular economy[24]', the Commission is preparing a legislative initiative to promote waste water reuse. This EU action would aim to enable cost-effective waste water reuse for agricultural irrigation, while ensuring a high level of protection for health and the environment.

3. IMPLEMENTATION OF THE UWWTD AND STATE OF WATERS

Improvement in the quality of many EU rivers due to UWWTD implementation[25] can be demonstrated through assessing parameters such as BOD5[26] (see Fig 1), ammonium or orthophosphate. It is harder to draw similar conclusions on good ecological status, which takes into account the biological life. However, analysis of the number of fish species in some rivers (like the Seine[27]) clearly shows that their number has increased in parallel to the decrease of untreated waste water discharges. This is because heavy sewage pollution causes lack of oxygen and prevents the development of sensitive biological species.

[21] As a tonne of sludge includes 5 % of N and 5 % of $P2O_5$ or P anhydride http://www.eau-loire-bretagne.fr/les_rendez-vous_de_leau/les_rencontres/Rencontres_2012/Boues-2_Syprea.pdf

[22] http://www.sede.be/fr/produits/recyclage-agricole/boue/

[23] It should be noted that a fraction of these nutrients may be flushed off from the soil.

[25] With the exception of certain rivers, e.g. in Southern and Eastern EU countries

[26] The UWWTD addresses pollution by organic matter and nutrients

[27] http://www.siaap.fr/fileadmin/user_upload/Siaap_Ecole_OLD/Education/Mediation_p%C3%A9dagogique/Livret_bio.pdf

Currently the Commission is examining the second river basin management plans (covering 2009-2015) submitted under the Water Framework Directive (WFD), and will publish an assessment report in 2018.

4. PROMOTING COMPLIANCE

The Commission has set up several initiatives to support, encourage and ensure full implementation of the UWWTD.

4.1 Funding programmes

European funds, in particular the European Regional Development Fund and the Cohesion Fund, have played a decisive role in implementing EU water policies[28]. This support spans the last two decades and entails both financing and promoting an enabling policy framework: EUR 20.7 billion in 2000-2006 and EUR 21.9 billion in 2007-2013 were allocated to water investments.

For 2014-2020, investments are concentrated in Member States with less developed regions. With allocations of EUR 14.8 billion, water is the most important environmental area of the cohesion policy. The focus is on wastewater treatment and drinking water supply, while also investing in water conservation, flood prevention and other water-related topics. This support leverages additional private funding and is complemented by other EU funding sources such as the European Agricultural Fund for Rural Development, LIFE and Horizon 2020.

The largest share of the available budget, about EUR 10 billion, goes to wastewater treatment infrastructure, including the construction or upgrading of plants and sewerage networks, with some funding also going to sludge management. In 2014-2020, Member States are expected to connect 17 million people to new or upgraded wastewater treatment facilities, adding to the 7 million people connected between 2007 and 2013.

Cohesion policy also offers a policy framework for integrated regional development, working in partnership with stakeholders on the ground. This includes preconditions for funding**.** To ensure that resources are used in the best way, investments must be based on Member States' river basin management plans, as set out in the WFD. Moreover, for the financial sustainability of projects, water pricing policies that have proper incentives to use water efficiently are required. These include, following the polluter-pays principle, an appropriate contribution of different water uses to the cost recovery of water services. This 'ex ante conditionality' has also boosted the WFD's implementation.

4.2 Legal enforcement

In 2014, the Commission launched investigations for most of the countries that acceded in 2004 or later, and opened infringement procedures for those in breach in 2016 and 2017.

For those that were Member States before 2004, identified breaches led to several infringement procedures and most have been subject by now to at least one judgment of the Court of Justice of the EU. Since the publication of the Commission's eighth implementation report[29], the Court has issued four judgments, and two cases are still pending.

[28] European Court of Auditors, Special report No 2/2015, 'EU-funding of Urban Waste Water Treatment plants in the Danube river basin: further efforts needed in helping Member States to achieve EU waste water policy objectives'.

[29] The Commission's most recent report on UWWTD implementation (COM (2016)105) provided information on Court's judgments between 2013 and 2016. Information last updated 10 April 2017.

One of these judgments sentenced PT under Art. 260, (second judgment) of the TFEU. So far, four Member States have been sentenced by the Court to fines and/or penalty payments under the UWWTD (BE, LU, PT and EL). Member States are imposed with a fine and/or a lump sum when they fail to comply with a previous judgment of the Court on the same subject.

4.3 Compliance promotion strategy

The Commission has undertaken several activities to improve compliance with the UWWTD, such as:

- organising workshops, seminars and meetings either in candidate/accession countries, or in Member States during the first years after they join the EU, to provide the necessary support for a future, high level of implementation;
- Coordination and cooperation between DG ENV and DG REGIO for ensuring the best possible outcome of the Operational Programmes;
- Improving the Art. 17 reporting formats and improving data management using the new IT tool;
- Launching infringement procedures over persistent breaches.

Despite these efforts and the subsequent progress achieved in many cases, there is still the need to improve implementation in certain Member States. The Commission is therefore considering more initiatives and *ad hoc* dialogues with Member States facing the most difficulties in implementing the UWWTD.

4.4 Research and Innovation

Research and innovation plays an important role in the implementation of the UWWTD. New technologies and innovative business and governance models are necessary for more effective treatment of urban waste water and for reducing the cost of compliance. To support research and innovation the EU 7th Framework Programme for Research and Innovation funded more than 140 research and innovation projects related to waste water of the total value of 330 million Euro in the period 2007-2013. Other projects are being or will be supported by Horizon 2020 in the current period 2014-2020.

5. IMPROVING THE REPORTING PROCESS

A very large amount of data is reported to the EEA's centralised database. This poses a challenge to extract, use, and show the available data and as well as interlink it to other related databases and sources of information, such as the WFD, Natura 2000 reporting or Bathing Water or the State of environment Reporting. An updated EEA data viewer has improved access to EU level information[30]. The reporting process and public access to environmental information have improved due to the development of a user-friendly digital platform[31] at national level, under the structured implementation and information framework (SIIF). This happened in the context of the ninth reporting exercise. SIIF is an open-source web-based tool that enables automated and standardised processing and dissemination of data.

[30] https://tableau.discomap.eea.europa.eu/t/Wateronline/views/UWWTP/Menu?:embed=y&:showShareOptions=true&:display_count=no&:showVizHome=no

[31] 28 European national urban waste water websites (in http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html)

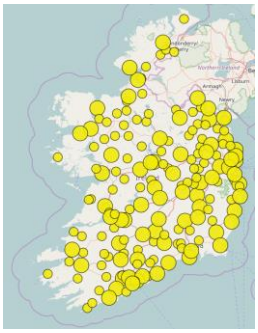

Fig 13 — Example of the picture of the IE national platform

Under the SIIF, 28 national platforms disseminate data through charts, maps, tables and statistics, with a strong geospatial component also performing automatic calculations. Information is also displayed about planned projects, addressed to reach compliance with the UWWTD. Moreover, information on bathing water, Natura 2000 and river quality is fully integrated into this tool.

6. JOBS, GROWTH AND INVESTMENTS

The UWWTD, together with the Drinking Water and the Waste Directives, is one of the pieces of EU environmental legislation with largest economic implications. The UWWTD significantly contributes to investment in maintenance and further improvement of waste water treatment facilities in Europe, as well as providing a competitive edge for companies active beyond Europe.

The EU-28 Member States have reported detailed information about the ongoing and planned 11 500 projects addressed to comply with the requirements of the UWWTD. Among them, at least 6 000 treatment plants are expected to be built or renovated, with a total capacity of about 94 million p.e., or 12 % of the EU total.

According to Member States' reports, investments in urban waste water have increased and reached a plateau of EUR 19 to 25 billion *per* year (despite some Member States providing only partial information, missing that on the renewal and extension of infrastructure). The investments in this sector represent, on average, EUR 38-50 per inhabitant and year.

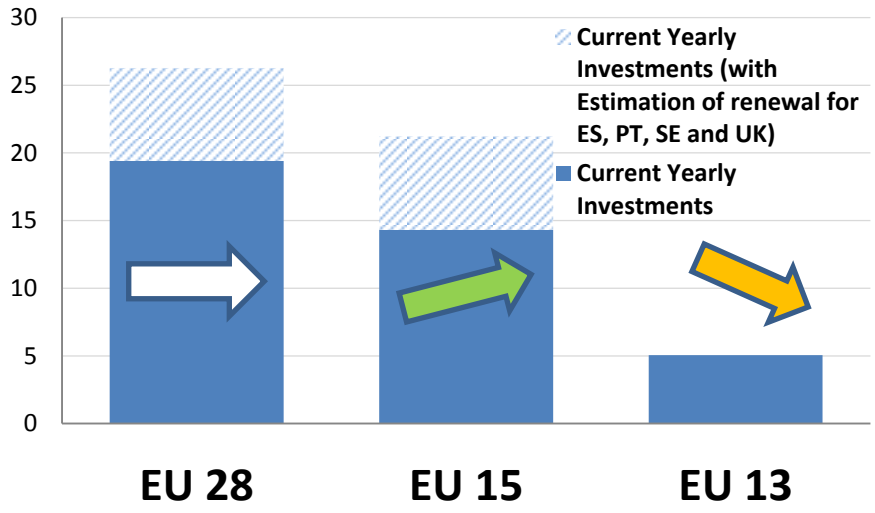

Fig 14 — Investments in new and renewed collecting systems and treatment plants in the EU (EUR billion/year)

Compared to the previous reporting period, a fall in investments for the EU-13 can be seen, according to the figures reported under the Art. 17 report**.** This is a result of higher implementation rates.

On the basis of Member States estimates, investments worth approximately EUR 49 billion are needed within the next 10 years to ensure compliance with the UWWTD. This includes investing in an increasing number of projects to reduce storm water overflows and partially renew/improve infrastructure (e.g. replacement of IAS by collecting systems). EU funds are expected to partly cover these investments.

Investments are expected to increase in the other 15 Member States, mainly in infrastructure renewal and better control of rain events (storm water overflows). Some countries, such as IT or ES, still need to strongly increase their investments to achieve full compliance with the main UWWTD requirements.

When referring to the waste water sector[32] as a whole, including exports it is important to highlight its substantial contribution to the European economy. This sector creates a production value of about EUR 96 billion each year, and an added value of about EUR 41 billion each year. It generates about 600 000 full-time equivalents of employment.

The Commission is currently looking into assessing overall investment needs for maintenance and new installations across the EU.

7. EVALUATION OF THE UWWTD

The Commission is carrying out an evaluation of the Directive. The scope and objectives of the evaluation are outlined in the roadmap which has been published for feedback[33].

[32] http://ec.europa.eu/eurostat/web/environment/environmental-goods-and-services-sector/database

[33] https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-4989291_en

8. CONCLUSIONS

More than 25 years after the adoption of the UWWTD, significant progress towards full implementation was achieved by 2014. This has led to gradual but significant improvement in the quality of European waters. However, despite the generally high level of implementation of the UWWTD, a number of challenges remain, such as:

- Investing further in the waste water sector to increase or maintain implementation. There needs to be a special focus in some Member States still facing low implementation rates and more generally on more stringent treatment, combined with the need to ensure good operation and infrastructure maintenance.
- Gathering additional evidence on how IAS systems function.
- Improving the quality and recovery of sludge.
- Reducing the effects of storm water overflows polluting water bodies with untreated waste water. This can be achieved by:
    - promoting natural water retention systems;
    - improving the management of the networks in connection with the treatment plants;
    - Additional investments (when needed[34]).
- Improving the connections between the basic requirements of the UWWTD and the WFD, particularly when these requirements are not sufficient to achieve compliance with the water quality objectives set out in the WFD.
- Increasing the reuse of treated wastewater (in cases of water scarcity) while ensuring the appropriate water quality.
- Optimising the energy consumption of sanitation systems, producing renewable energy at treatment plant level (e.g. biogas) when possible.
- Ensuring the affordability of waste water services in the knowledge that the needs for investments in the water sector are broader than only for collection and treatment, as they also include drinking water, protection against floods and water availability in some regions.

These challenges and other findings of the forthcoming evaluation will feed into the Commission's reflection on possible further action. In the meantime, specific attention will be given to Member States facing difficulties in implementing the Directive and the reporting activities will be improved to ensure suitable and timely data collection and assessment.

[34] Storm water overflows study: https://circabc.europa.eu/w/browse/e00a649a-7eb4-40b3-9b19-f5ace7a80e08