FEBRUAR 2022
LANDBRUG & FØDEVARER

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FEBRUARY 2022
LANDBRUG & FØDEVARER

COUNTRY REPORT FOR POLAND

FINAL REPORT

PROJECT NO.

A231827

VERSION	DATE OF ISSUE	DESCRIPTION	PREPARED	CHECKED	APPROVED
Final	Feb. 10, 2022	Report	AK	LSSA	JDCR

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Delimitation

The Water Framework Directive requires every Member State to draft the River Basin Management Plans (RBMPs) for each river basin within a country. The party responsible for drafting the documents was the President of the National Water Management Authority.

During planning cycle 1 and 2, ten River Basin Management Plans were elaborated for the following river basins: Odra, Vistula, Dniestr, Danube, Jarft, Elbe, Neman, Pregolya, Prokhladnaya, Ücker. First River Basin Management Plans were drafted in line with the WFD in 2009 and approved by the Resolution of the Council of Ministers on 22 July 2011. Documents were drafted for the planning cycle 2010-2015 (1st RBMPs, 2 planning cycle, PGW, 2011).

The first update of the Water Plan was completed in 2015-2016. Upon preparing, draft documents underwent environmental impact assessment and six month long public consultations. On 18 October 2016, Council of Ministers has issued the **1st update of the RBMPs** for the planning cycle 2016-2021 (2nd RBMPs, 3 planning cycle) in the form of a resolution (aPGW, 2017).

Currently, works aiming at drafting the **2nd update of the River Basin Management Plans** (3rd RBMP, planning cycle 2022-2027) are under way. The draft Plans have been introduced for public consultancy starting from May 2021 (Draft 2aPGW, 2021).

Note, that the information presented in this report, which refer to the 3rd RBMP are derived from the draft documents retrieved from the website of the National Water Management Authority (https://apgw.gov.pl/pl/konsultacje-projekty-planow) and therefore, has not been officially approved nor reported, and may change for the final version.

Table 1 Status on Water Plan 2, Poland

Country	Status on WP2	Link to WP2	Comment
Poland	*River Basin Management Plans for 10 river basins delimitated in Poland for the 2nd water cycle accepted by the National Water Management Authority and published in 2016*	*https://apgw.gov.pl/pl/II-cykl-materialy-do-pobrania*	*RBMPs for all 10 river basins in Poland have been published in a set of Regulations of the Council of Ministers of 18 October 2016 on the river basin management plans*

Table 2 Status on Water Plan 3, Poland

Country	Status on WP3	Link to WP3	Comment
Poland	*River Basin Management Plans for 9 river basins delimitated in Poland for the 3nd water cycle elaborated and directed for public consultations. Projects have been in consulting starting from May 2021 (consultancy in progress).*	*Link to the draft documents:* *https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania*	*RBMPs for the 3rd cycle will be finalised in 2022*

Table 3 Delimitation of the analysis, Poland

Country	River basin management plans
Poland	Area of the country, ca. 314 000 km^2 including 9 river basins

Country context and analysis

Poland is situated in the catchments of three seas: the Baltic Sea (99.7% of the country's area), the North Sea (0.1% of the country's area) and the Black Sea (0.2% of the country's area). During the first two planning cycles, the River Basin Management Plans were elaborated for 10 river basins: Oder, Vistula, Dniester, Danube, Jarft, Elbe, Nemanas, Pregolya, Prokhladnaya and Ücker. Due to the new division of river basins introduced by the new Water Law in 2017 (Water Law, 2017), during the 3rd planning cycle, the following 9 river basins will be subject to drafting management plans: Vistula, Oder, Dniester, Danube, Banówka, Elbe, Nemanas, Pregolya and Prokhladnaya (Świeża).

Poland's area is ca. 314 ths. km^2 and the RBMPs cover the entire area of the country. The substantial part of the country is shared by the two of nine river basins, i.e., Vistula River covering almost 59% of the country area and Oder River covering 38%. The other river basins cover less than 3% area each (Figure 1, Table 4).

Figure 1 The division of Poland into river basins for the 3rd Water Plan

Source: https://apgw.gov.pl/pl/III-cykl-informacje-ogolne

Table 4 River Basins in Poland for the 3rd Water Plan;

River Basin	Area within Poland (km2)	Total length of river WBs within Poland
Vistula	185 090.0	62 765.0
Oder	118 030.0	41 564.7
Pregolya	7 522.0	2 938.1
Nemunas	2 515.0	833.6
Danube	385.0	248.9
Elbe	238.0	146.6
Dniester	233.0	129.7
Banówka	209.0	106.6
Prokhladnaya (Świeża)	161.0	64.8
Total	**314 383**	**108 798**

Source: draft 2aPGW, 2021, National Water Management Authority, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

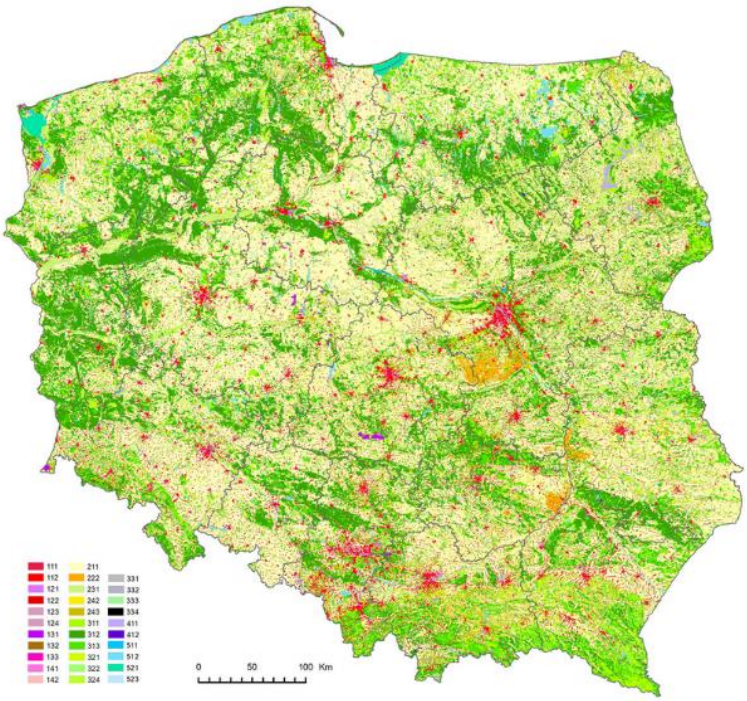
The dominating land use category in Poland is agriculture. Agricultural areas cover almost 60% of the country, followed by the forests and semi-natural areas covering 33% of the total country area. Industrial areas, including cities, rank third with the proportion of about 6% (Table 5, Figure 2).

Table 5 Land use in Poland according to CORINE, 2018

CLC2018 category (1st level)	Area within Poland (km^2, %)
Anthropogenic	19 274.01 (6.2%)
Agriculture	183 434.73 (58.7%)
Forests and seminatural areas	103 156.43 (33.0%)
Wetlands	1 111.61 (0.4%)
Waters	5 519.57 (1.8%)

Source: https://clc.gios.gov.pl/index.php/clc-2018/statystyki

Figure 2 Land use in Poland according to CORINE, 2018



Source: http://clc.gios.gov.pl/index.php/clc-2018/o-projekcie

Surface waters cover about 2% of the country area. They belong to four categories: rivers (total length of about 110 ths. km), lakes (about 7 ths. lakes of an area >0.1 km^2; about 1 ths. >0.5 km^2), transitional and coastal waters (area of ca. 2400 and 630 km^2, respectively). Within all categories, so-called "significant waterbodies" were designated (see sections below for detailed statistics), which are all covered by the Plan.

1 Changes since last COWI comparative assessment

> Have there been significant changes in aspects and approaches described in "Nabotjek af EU-landes fremgangsmåder ved planlægning for marine vandområdet i henhold til Vandrammedirektivet", by COWI for Miljøstyrelsen (The Danish Environmental Agency) in 2018?

The planning cycle 2016-2021 introduced a number of substantial changes in water management in Poland. On July 20, 2017, a new water law was adopted (Water Law, 2017). The fundamental change made by the Act concerned the structure of water management - institutional changes took place, full compliance with EU law was ensured (including, in particular, the WFD provisions) and many instruments were introduced to enable the rational use of water resources, including the reimbursement of costs for water services.

When elaboration the 3rd RBMP for Poland, the methodological approach in many aspects followed the one employed for the 2nd WP. The reference conditions and classification systems for biological elements, the approach to set environmental goals and exemptions or the expected reductions in nutrient loads to marine waters, reminded unchanged. However, for the 3rd Plan the new set of monitoring data from the period 2014-2016 and actual assessment results for all water categories were employed as well as other substantial changes, which affected the outcome of the currently drafted RBMPs, were introduced:

1 Change of river basin district delineation (Water Law, 2017) - water management plans have been developed for 9 river basin districts, and not for 10. The Ücker basin district was additionally included in the Odra river basin district, which in the 2016-2021 planning cycle constituted a separate river basin district. Due to the new division of river basins introduced by the new Water Law, during the 3rd planning cycle, the following river basins are a subject to drafting management plans: Vistula, Oder, Dniester, Danube, Banówka, Elbe, Nemunas, Pregolya and Prokhladnaya (Święża)

2 Verification and updating of planning units (Hobot et al., 2015) - as a result of the verification and update of the boundaries of the WB catchment area as well as the verification and update of the water typology along with the definition of reference conditions for new water types, the designation of a planning units has changed in their delimitation and number:

   2.1 Introduction of a new surface water WB list. The need for the verification appeared after collecting the monitoring data from the period 2008-2014, which indicated typological inaccuracies (lower

variation in biological assemblages than in abiotic condition resulting in reduced number of biotic types compared to abiotic ones as designed in 2005). Moreover, the initial number of river WBs (over 4.5 ths.) appeared too numerous to enable effective management. The need for slight reduction was considered justified.

The number of WBs have changed from over 5600 to 4240, and particularly for the river water category this number was reduced from over 4586 to 3.116 (see Table 6).

Table 6 Number of waterbodies assigned for the 2nd and 3rd Water Plan

Water category	2016-2021	2022-2027
Rivers	4586	3116
Reservoirs		45
Lakes	1044	1068
Transitional	9	7
Coastal waters	10	4
Total	5650	4240

Source: Hobot et al., 2015; RBMP, 2016; https://apgw.gov.pl/pl/II-cykl-materialy-do-pobrania, draft RBMP, 2021; https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

Of the 3116 WBs in the new division, 6 were newly designated, 739 changed their delimitation and 2371 remained unchanged compared to the previous designation. Moreover, reservoirs, which were previously included into the river water category, were designated as a separate category.

For transitional and coastal waters, the verification of the typology was aimed at: 1) harmonisation of the typology with HELCOM CORSESET basins, 2) harmonisation of the objectives and measures related to the Water Framework Directive and Marine Strategy Framework Directive and 3) harmonisation or the typology in border areas and 4) application of the minimum area criterion (40 km2 per type of water body). Ultimately, the number of WBs has been reduced from 19 to 11 and the most significant reduction occurred for coastal waters from 10 to four (Table 6). This change resulted from combining "old" WBs into larger units based on the typological criteria, i.e., salinity, retention time and exposure to waves (Table 7); the WB boundaries have been also corrected accordingly based on the typological criteria. It is worth mentioning that in both classifications (2004 used in RBMPs and 2014) the Zalew Szczeciński (Szczecin Lagoon) is classified in Poland as transitional water, while its German part is classified as coastal water. The reason is the main inflow to this body of water (the Oder River) located in Poland where the influence of freshwater is much greater than in Germany.

Table 7 New verified typology of coastal and transitional waters in Poland for the 3rd WP (2021-2027)

Water body	Salinity	Retention time (days)	Exposure to waves
Transitional waters			
Kamienski Lagoon	0,5-5	>30	Isolated
Puck Lagoon	0,5-5	138	Partially isolated
External Gulf of Puck	5-8	7-30	Partially isolated
Vistula mouth Przekop	0.5-5	<7	Partially isolated
Internal Gulf of Gdansk [Includes former Vistula Spit]	5-18	<7	Partially isolated
Szczecin Lagoon	0,5-5	52	Isolated
Vistula Lagoon	0,5-5	45	Isolated
Coastal waters			
Gulf of Pomorze [Includes former: Swina mouth, Dziwna mouth, Part of Sarbinowo – Dziwna]	5-8	<7	Partially open
Coastal waters of the Bornholm basin			
Coastal waters of the Gotland basin			
Hel Peninsula [Includes former: Hel Peninsula, Władysławowo Harbour, Władysławowo - Jastrzębia Góra];			

Source: Hobot et al., 2015; Kraśniewski, Krzymiński, 2014 (available at: https://docplayer.pl/23770715-Nowa-typologia-wod-przejsciowych-i-przybrzeznych-w-polsce-wojciech-krasniewski-wlodzimierz-krzyminski-imgw-pib-oddzial-morski-w-gdyni.html last access September 2021)

Prior to the 3rd RBMP, the assessment results and the analysis of achieving the environmental objectives have to be transferred from the "old" to the "new" division.

2.2 Verification of the division of ground WBs, currently the division into 174 GWBs applies;

2.3 Changes to the register of protected areas. The amendment to the Water Law Act of 2017 introduced a new list of protected areas, in relation to the one in force in the 2nd planning cycle, reducing the number of types of protected areas from 6 to 5. The new Water Law (2017) changed the way of implementing the provisions of the Nitrate Directive. Currently, the whole country area is subject to one programme of measures to reduce water pollution with nitrates from agricultural sources and to prevent further pollution so no areas exposed to pollution with nitrogen compounds from agricultural sources (so-called Nitrate Vulnerable Zones) are designated). The norms and conditions for application of nitrogen fertilizers are indicated in the regulation of the Council of Ministers on the adoption of the "Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further

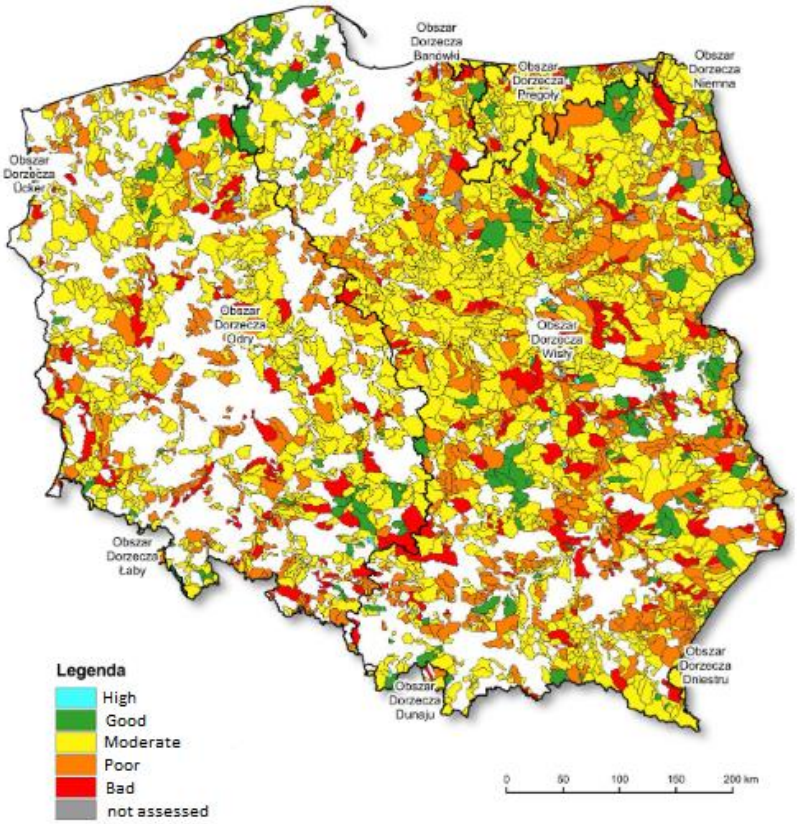
pollution" (Journal of Laws, 2020, 243) and are applicable and consistent throughout the entire country. This piece of legislation is separate from the Water Plans but both documents must be consistent in their regulations.

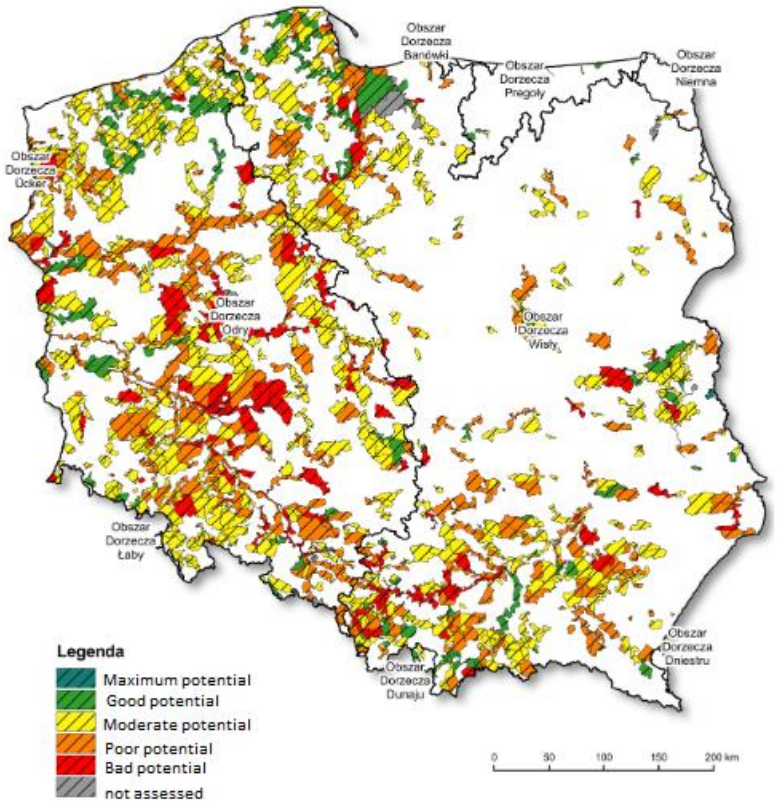
3 Establishment of a new monitoring network 2022-2027 for the updated WB units.

4 Changes in the classification system for assessment of the status/potential of surface water bodies (Kolada et al. 2018) – elaboration of the new environmental standards for physico-chemical supporting elements (including nutrients). The new standards are usually more stringent than the previous ones that affected significantly the environmental objectives (more stringent environmental goals for the 3rd Water Plan). During the 2nd Water Plan the former classification system was applied (Figure 3). The new environmental standards are to be introduced starting from the 3rd Water Plan (2022), therefore the new classification system did not affect assessment results from the period 2016-2021. Moreover, the assessment results, which are reported annually to EEA, are official and could not be changed backwards. For the 3rd Water Plan the assessment results from the 2nd cycle (assessment results from the monitoring network collected in the years 2014-2019) have been transferred into new waterbodies.

Most of the river WBs in Poland represent moderate status (50% of the area and 43% of the river WB total number). About 20% ranks poor, while high/good and bad status were assigned to less than 10% of area/number of river WBs (for more details see Status and Table 9 and Table 10).For coastal and transitional waters, all WBs designated for 2nd WP (11 WBs) as well as for the 3rd WP (7 WBs) were assessed as in bad status and they all were at risk of failing environmental objectives. The main change in the assessment system for transitional and coastal waters refers to the introduction (starting from 2022) of the new fish index – Polish Multimetric Fish Index. No significant changes in assessment system for physico-chemical parameters were introduced except for the new site-specific, statistically derived values of the water transparency (Secchi disk reading). These were for three waterbodies less stringent of about 0.5 m, while for other three waterbodies more stringent of about 0.5 m in the 3rd WP compared to the ones applied in the 2nd WP. For one WB environmental standards reminded unchanged.

Figure 3 The assessment results for the river WBs in Poland (ecological status for natural WBs – upper pannel, ecological potential for HMWBs – lower pannel) monitored in the period 2014-2019


Obszar Dorzecza Banówki
Obszar Dorzecza Pregoły
Obszar Dorzecza Niemna
Obszar Dorzecza Odry
Obszar Dorzecza Wisły
Obszar Dorzecza Łaby
Obszar Dorzecza Dniestru
Obszar Dorzecza Dunaju
Legenda
High
Good
Moderate
Poor
Bad
not assessed
0 50 100 150 200 km


Obszar Dorzecza Banówki
Obszar Dorzecza Pregoły
Obszar Dorzecza Niemna
Obszar Dorzecza Odry
Obszar Dorzecza Wisły
Obszar Dorzecza Łaby
Obszar Dorzecza Dniestru
Obszar Dorzecza Dunaju
Legenda
Maximum potential
Good potential
Moderate potential
Poor potential
Bad potential
not assessed
0 50 100 150 200 km

Source:https://www.gios.gov.pl/images/dokumenty/pms/monitoring_wod/Synteza_ocena_stanu_wod_powierzchniowych_2014-2019.pdf.

5 Introduction of new specific objectives, which are served by the implementation of activities:

5.1 aimed at preventing a significant increase in the concentrations of priority substances showing a tendency to accumulate in sediments or fauna and flora;

5.2 indicating that complementary measures may also be adopted to ensure additional protection or improvement of the status of waters or for the implementation of international agreements aimed at the protection of waters, including the protection and prevention of pollution of the marine environment,

6 Change in the scope of information to be presented for each action in the set of actions - it has been extended with such attributes as the result of the socio-economic analysis effects, the cost-effectiveness analysis, the result of prioritization of activities, and the climatic test;

7 Changes in the establishment of protection zones for water intakes and protection areas for inland water reservoirs (scope of the set of measures) - establishing direct protection areas has become obligatory for each intake under special use.

The protection zone of the groundwater intake is established in order to ensure the appropriate quality of water taken to supply the population with drinking water and to supply the plant requiring high-quality water, as well as in order to protect water resources. Within the protection zone the dedicated prohibitions, injunctions and limitations in the use of land and water apply. The protection zones covering the area of direct and indirect protection are established by the Voivode, by an act of local law, at the request and expense of the owner of the water intake or ex officio, if the risk analysis shows the need to establish it. The protection zones covering only the area of direct protection are established by the competent authority of Polish Waters in a way of a decision (Water Law, 2017). The risk analysis of water intake is performed for: i) water intakes providing more than 10 m3 of water per day or providing water to more than 50 people; ii) individual water intakes supplying up to 10 m3 of water per day or serving water to 50 people, if the water is supplied as water intended for human consumption, as part of commercial, service, industrial or public utility buildings. It is carried out by the owner of the water intake and transferred to the competent voivode. The water intake risk analysis includes an assessment of health hazards, taking into account factors that negatively affect the quality of the abstracted water.

2 Reference for quality parameters in WFD

How is the reference condition for the quality parameters used in the country established? i.e. are historical measurements, modelling, or expert assessments used and which point in time/year is used as reference for quality parameters in the WFD, in the case of historical measurements or modelling back to a historical point in time?

In Poland, waterbodies of all four water categories have been designated, i.e. rivers, lakes, coastal and transitional waters. Starting from 2006, for all water categories and all biological elements relevant for a category, assessment methods and classification systems have been elaborated, progressively. Together, 15 biological assessment methods are now in use in the State Monitoring Program. For most methods adequate biological data from monitoring were not available, hence the methods were based mainly on research data, i.e., measured data collected within the research projects not from the state monitoring program, which were not available for biological quality elements at the beginning of 2000s in Poland. Different biological methods have been elaborated by different institutions/authors, therefore, the approach to set reference conditions varies depending on the data availability for a quality element for a category. For most methods, the "best-of-existing" approach was applied, usually along with the expert opinion. Sites that are considered reference or only minimally impacted were selected based on the pressure criteria. Reference conditions are defined as a state of biological assemblages, i.e. phytoplankton, phytobenthos and macrophytes, macrozoobenthos and fish, demonstrating no evidences of deterioration (this is usually defined based on the literature data from the pre-pressure period, i.e. 1960-ties in Poland). Lakes defined as reference site must be both not under anthropogenic pressures and have undisturbed biological assemblages. Lakes that are under anthropogenic pressures but their biological assemblages are not deteriorated are assessed as high but should not be considered reference. No reference conditions for physichochemical parameters are determined, as these are relevant only for biological elements. Undisturbed state of biological assemblages is determined based on literature data from 1960-ties and earlier if available together with expert opinions/experiences). In some cases, e.g. for ecosystems currently degraded where nearly-pristine conditions were unavailable (i.e., macrophyte method for lagoons), historical data (literature data from 1960-ties) with expert opinion were used. Paleoreconstruction or modelling were not employed to derive reference conditions.

For the biological indicators in coastal and transitional waters angiosperms and macroalgae (transitional waters and coastal waters), macrozoobenthos and fish (fish only in transitional waters), reference values were established based on e.g. expert method, temporary data from measurement and control points of State Monitoring, historical data, and Least Disturbed Conditions (see Table 8 for

details). For phytoplankton (chlorophyll a concentration) however, it has not been possible before the publication of this report to identify the method used.

For the ichtiofauna, until recently the fish index SI elaborated in 2012 has been applied for the transitional waters only, while for the coastal waters no assessment method based on fish has been used. In the years 2015-2020, the new fish index (Polish Multimetric Fish Index) has been elaborated. This index is applicable for both coastal and transitional waters and is expected to be implemented in the state monitoring for the ongoing Water Plan 2022-2027.

For phytoplankton assessment of coastal and transitional waters, no dedicated phytoplankton index has been elaborated until recently. This biological element is evaluated using simple chlorophyll a concentration. Attempts have been made to develop a composition-abundance phytoplankton index for coastal and transitional waters. However, due to the common opinion of the experts about a limited value of the taxonomic composition of phytoplankton in these water categories, development of a composition based index for transitional and coastal waters has not yet been completed. The taxonomic composition of phytoplankton in transitional and coastal waters of the Baltic Sea is monitored and reported as a part of the ICES, however, this goes beyond the basic scope of monitoring and classification for the needs of the WFD.

Concerning supporting quality elements (including nutrients, salinity, pH, oxygen conditions and hydromorphological conditions), environmental targets were set based on the response of biological metrics as recommended in the EU Guidance by ECOSTAT WG "Best practice for establishing nutrient concentrations to support good ecological status" (Phillips et al., 2018). A correlation was searched between the biological indices and physiochemical characteristics. The reference values for nutrients were derived as the concentrations corresponding to the high status of biological indicators. To set the standards, contemporary data from the State monitoring were used.

For most biological methods the "best-of-existing" approach has been applied. In this approach contemporary sites that are considered reference or minimally impacted based on the pressure criteria were used. In some cases, historical data were used, which are dated back to 1960s. The natural environment in Poland has been relatively well preserved until 1960s when the anthropogenic pressure, mainly the use of fertilizers, started to increase significantly. The extensive literature overview on biological characteristics of aquatic ecosystems from that period demonstrated the lack of evidence for ecosystem degradation. More details on biological methods used for WFD-compliant monitoring in Poland, can be found in the English summary descriptions available at: https://www.gios.gov.pl/images/dokumenty/pms/monitoring_wod/Anglojezyczne_streszczenia_metodyk.pdf

Table 8 Quality parameters used and their reference condition method

Quality parameter	Establishment method for reference condition	Point in time/year as reference (if historical or modelling)	Comment
Phytobenthos in rivers	Existing near-natural reference sites, Expert knowledge, Least Disturbed Conditions (30 sites for different abiotic river types	Contemporary data collected from the period 2004-2009	The summary descriptions in English of the methods together with the reference condition approach are available at https://www.gios.gov.pl/images/dokumenty/pms/monitoring_wod/Anglojezyczne_streszczenia_metodyk.pdf
Macrophytes in rivers	Existing semi-natural reference sites (109 sites)	Contemporary data collected from the period 2005-2016	
Macrozoobenthos in rivers	Reference conditions were determined based on the selected reference sites from the dataset of over 1114 sites. Reference sites constituted 20% of all sites.	Contemporary data collected from the period 2000-2011	
Fish in rivers	Existing near-natural reference sites, modelling, expert knowledge least disturbed conditions (EFI+ method: a total of 533 reference sites and 2526 slightly disturbed sites for different abiotic river types in Europe; IBI_PL method: 16 reference and slightly disturbed sites for different abiotic river types)	Contemporary data collected from the period EFI+: 1982-2007, IBI_PL: 2011-2015	
Phytoplankton in lakes	Reference values of parameters for all abiotic types of lakes were established by "best of existing" method.	Contemporary data	
Phytobenthos in lakes	Existing near-natural reference sites, Expert knowledge, Least Disturbed Conditions	Contemporary data collected from the period 2006-2009	
Macrophytes in lakes	Existing near-natural reference sites, Expert knowledge, Least Disturbed Conditions	Contemporary data (lakes surveyed in 2000-2006)	
Macrozoobentohs in lakes	Existing near-natural reference sites (n = 8)	Contemporary data collected from the period 2013-2016	
Fish in lakes	Historic fishery data on near-natural reference sites, Expert knowledge, Least Disturbed Conditions	Historical and contemporary data collected from the period 1952-2013	

Macrozoobenthos in transitional and coastal waters	Expert knowledge, Least Disturbed Conditions (a total of 900 samples representing sites of different marine habitats)	Contemporary data	
Angiosperms and macroalgae in transitional and coastal waters	Expert knowledge, Historical data	Literature overview from 1960-ties	
Fish in transitional waters (expected to be implemented also for coastal waters in WP3)	Not provided; the lack of historical data and relevant reference points, representing a good or high ecological status, does not currently allow setting reference conditions	-	
Chlorophyl-a is measured as indication for phytoplankton in transitional and coastal waters*	Not identified	Not identified	*Podrecznik_Monitoringu_Wod.pdf (gios.gov.pl)*

Source: own elaboration based on GIOŚ, 2020;
https://www.gios.gov.pl/images/dokumenty/pms/monitoring_wod/Anglojezyczne_streszczenia_metodyk.pdf
*and *Podrecznik_Monitoringu_Wod.pdf (gios.gov.pl)*

Status

How large part of the country's/region's water areas are in high, good, moderate, and poor condition, respectively?

The total area of Poland is about 314 ths. km^2. The entire area of the country is covered by the basins of the river waterbodies.

During the Water Plan 2016-2021 as many as 4586 river WBs have been designated. Between 2nd and 3rd RBMP significant changes in WBs' designation were introduced and the number of river WBs has been reduced from over 4.5 ths. to 3116 (Hobot et al., 2015). This change affected the proportion of WBs in particular conditions as the assessment results for status/potential were reassigned from "old" to "new" waterbodies of different delimitation. However, this effect was not substantial and similar proportion of river WBs (as well as WBs of other categories) were classified to particular ecological status/potential classes with the moderate status predominating. A substantial part of all WBs was not assessed for ecological status/potential due to the lack of monitoring data or too limited pressure data to extrapolate the assessment result.

Table 9 The comparison of the assessment results between "new" and "old" river WBs' designation

Class	River WBs 2016-2021	River WBs 2022-2027
High	7 (0.2%)	8 (0,3%)
Good	287 (6%)	227 (7%)
Moderate	1691 (37%)	1347 (43%)
Poor	598 (13%)	582 (19%)
Bad	173 (4%)	253 (8%)
Not assessed	1830 (40%)	699 (22%)
Total	**4586**	**3116**

Source: own elaboration based on the Draft aPGW, 2021; *https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania*

To obtain the assessment results for an area unit (km^2), the assessment for river waterbodies were assigned to their catchment areas and summarized within ecological status/potential classes. The WBs' area was derived from the national spatial GIS database on waterbody assignment (MPHP10, 2017).

The status/potential assessment results were derived from the State Monitoring Program from the period 2014-2019. The presented data refer to the assessment results reassigned from "old" to "new" waterbodies for the purpose of the 3rd RBMP (Table 10 and Table 11).

Table 10 Ecological conditions, Poland (per waterbody area and number)

Class	Poland (river body catchment area in the status/potential)	Poland (number of WBs of all water categories in the status/potential)
High	426,63 Km² (0.12%)	13 (0.3%)
Good	23 165,19 Km² (6.7%)	397 (9.4%)
Moderate	173 013,3 Km² (50.3%)	1606 (37.9%)
Poor	85 305.8 Km² (24.8%)	744 (17.5%)
Bad	27 850,16 Km² (8.1%)	342 (8.1%)
Not assessed	33 886,62 (9.9%)	1138 (26.8%)

Source: own elaboration based on the Draft aPGW, 2021, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

The assessment results are usually reported at the waterbody level, thus, the relevant information is presented in Table 11.

Table 11 Ecological conditions, Poland (per waterbody number)

Class	Rivers	Reservoirs	Lakes	Transitional waters	Coastal waters
High	8 (0,3%)	1 (2.2%)	4 (0.4%)	0	0
Good	227 (7%)	16 (36%)	154 (14%)	0	0
Moderate	1347 (43%)	14 (31%)	242 (23%)	0	3 (75%)
Poor	582 (19%)	9 (20%)	148 (14%)	4 (57%)	1 (25%)
Bad	253 (8%)	-	86 (8%)	3 (43%)	0
Not assessed	699 (22%)	5 (11%)	434 (41%)	0	0
Total	**3116**	**45**	**1068**	**7**	**4**

Source: own elaboration based on the Draft 2aPGW, 2021, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

Irrespective whether the area covered by the catchments or the number of waterbodies is analysed, most of the river WBs in Poland represent moderate status (50% or the area and 43% of the river WB total number). The second ranks the poor status (ca. 20%), while high/good and bad status were assigned to less than 10% of area/number of river WBs. For lakes, these proportions are similar with moderate status dominating, although good status covered 14% of waterbodies. For transitional and coastal waters, the number of WBs is low and their status range between moderate and bad (no well-preserved transitional and coastal waters (TRAC) waters in Poland are available).

As many as 27% of all WBs in Poland were not assessed for ecological status/potential due to the lack of monitoring data or too limited pressure data to extrapolate the assessment result.

What is the current status for implementing Water Plan 2 in the country?

The effectiveness of implementation of the program of measures introduced by the 2nd RBMP in 2016 is reflected by the assessment of the achievement of environmental objectives set for the Water Plan 2016-2021. Of all 3116 river WBs in Poland, 176 WBs (5.6%) achieved environmental goals. Of these, 96 (3.0%) maintained good condition, while in the case of 80 WBs (2.6%) the improvement to good ecological status/potential was documented. In 2020 river WBs (64.8% out of all 3116 WBs and 92% of 2196 WBs being assessed), environmental objectives were not achieved, in 1475 due to no improvement to ecological status/potential to good and in 513 due to deterioration to ecological status / potential below good. (table 13a). In 32 WBs the goal was not achieved, but an improvement in the condition/potential by at least one class was noted. In case of 920 WBs (29.5%), no progress assessment was made in achieving the environmental objectives due to the lack of an assessment of the ecological condition/potential or the lack of an environmental target transferred from old to the new assignment.

For transitional and coastal waters (together 11 WBs in 3rd WP), WBs were assessed as either moderate (1WB), poor (7 WBs) or bad (3 WBs) concerning ecological status and bad concerning chemical status (all 11 WBs). The poor and bad ecological status of TRAC waters resulted from the poor or bad assessment results for phytoplankton (chlorophyll a concentration), water transparency and nutrient concentrations. This was primarily related to the pressure factors affecting these waters and it can be concluded that the measures taken so far to reduce the supply of nitrogen and phosphorus from river basins (activities within river water bodies) and water treatment systems have not been sufficient to achieve the expected goals. An additional contribution to the supply of marine waters with nutrients is their release from sediments and atmospheric deposition related to sea transport, i.e. natural factors and anthropogenic factors occurring mainly outside the transitional and coastal areas. Factors beyond Poland's control also include the transboundary transport of pollutants, mainly through the open borders of coastal waters.

To each WB, which was assessed at the beginning of the 2nd WP as being at risk of failing environmental objectives by 2021, dedicated measures were designed and implemented in full or at least partially. However, ca. 65% of all WBs in Poland have not achieved environmental goals by 2021. The most common cause of failure to achieve environmental goals was the continued impact of pressures. The most usual reason for such situation was that the action measures planned under 2nd RBMP were implemented to a limited extent (not implemented in full to provide complete mitigation of the measure) or the implemented activities appeared not effective enough (not fully relevant or too weak effort was planned to mitigate a pressure). The conditions in the catchment area could also have contributed to the failure to achieve the environmental objectives (inflow of pollutants from other WBs, low sorption potential of WB catchment, reduced or lack of water flow in the riverbed or the risk of drought). Apart from those mentioned, also legislative changes, such as the change of boundary values for classes (environmental objectives more

stringent than in the previous Water Plans) and abiotic typology, were the basis for indicating the deterioration of the ecological condition/potential.

Table 12 The achievement of environmental objectives, Poland (per waterbody number)

Achievement of environmental objectives (EO) for ecological status/potential	River WBs (number/%)	Transitional and coastal water WBs (number/%)
EO not achieved – lack of progress	1475 (47.3%)	9 (81.8%)
EO not achieved – deterioration of the status/potential	513 (17.0%)	0
EO not achieved – but the status/potential improved	32 (1.0%)	0
EO achieved - good ecological status maintained (no adverse change in status)	96 (3.1%)	0
EO achieved - good ecological status achieved	80 (2.6%)	0
Assessment not performed	920 (29.5%)	2 (18.2%)

Source: own elaboration based on the Draft 2aPGW, 2021, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

Concerning the measures for marine waters included in the National Marine Water Protection Program (KPOWM, 2016), the first program was developed in 2016 and adopted in December 2017. It included 55 measures addressing 11 characteristics, i.e.:

1. Biodiversity
2. Alien species
3. Commercially used fish and invertebrates
4. Food chains
5. Eutrophication
6. Integrity of seabed
7. Hydrographical conditions
8. Pollutants and effects of pollution
9. Pollutants in organisms
10. Solid waste
11. Underwater noise

The assessment of effectiveness based on the monitoring data from the years 2011-2016 confirmed the unsatisfactory condition of Polish sea waters. Out of the 22 distinguished WBs (including transitional, coastal and marine waters), the majority did not correspond to the GES in terms of most features (8 characteristics assessed as subGES, feature 7 and 11 not analysed due to the lack of methodology and only the feature 10 met GES).

Water Plan 3 contents

Are efforts planned on other pressure factors than nutrients in Water Plan 3?

The program of measures for 3rd RBMP includes actions dedicated to reduce impact of physical and chemical pressures, hydrological pressures, hydromorphological pressures and cumulative pressures (i.e., a mixture of different kinds of pressures, which negative effects on the status cannot be separated, e.g., eutrophication and hydromorphological alterations; in EU nomenclature this is sometimes called "general degradation").

Please, note that the information provided below was derived from the draft document of the RBMP being under public consultancy and is not final and officially accepted.

The catalogue of national basic activities contains 169 measures grouped into the following categories:

1. industry,
2. municipal sewage management,
3. agriculture,
4. shaping natural hydromorphological conditions,
5. protection of habitats and species,
6. shaping natural hydrological conditions,
7. monitoring and evaluation,
8. organizational, legal, informational and educational activities,
9. shaping water relations and protection of water-dependent ecosystems (including the morphology and biological continuity of watercourses),
10. control and supervisory activities,
11. research and development projects.

Measures dedicated specifically to the river WBs include 31 actions addressing:

- adaptation to climate change,
- education and information,
- sewage management,
- regulating water conditions in the catchment area of the WB,
- reduction of diffuse pollution from agriculture,
- improvement of conditions for protected areas,
- improvement of the hydromorphological conditions of rivers and streams,
- reduction of emissions and discharges of priority substances,
- verification of the environmental protection program,
- ensuring the biological and morphological continuity of rivers and streams,

The highest number of activities was included in the category: ensuring the biological continuity of rivers and streams (22.6% of all activities in the entire catalogue), the second in terms of the number of activities is the category: adaptation to climate change (19.4% of all activities in the catalogue).

The catalogue for lake contains 24 activities grouped into categories:

- shaping buffer zones,
- integrated drought monitoring system,
- individual programs to improve the condition of WB, i.e., restoration program,
- education and information,
- sewage management,
- reduction of emissions and discharges of priority substances,
- reduction of diffuse pollution from agriculture,
- verification of the environmental protection program,
- monitoring,
- improving conditions for protected areas.

The most numerous category of activities is: individual programs to improve the condition of WB (25% of all activities in the directory). The second category is: activities related to the improvement of conditions for protected areas, and the next in terms of the number of measures are: wastewater management and shaping buffer zones (12.5% each).

For transitional and coastal waters 16 activities were designed grouped in the categories:

- sewage management,
- waste management,
- rainwater management,
- reducing diffuse pollution related to the development of urban areas, tourism and transport,
- improvement of the condition of hydromorphological elements and habitat conditions of the coastal zone,
- protection and restoration of natural hydromorphological processes in the coastal zone,
- adaptation to climate change,
- improving conditions for protected areas.

The most numerous category of activities is the improvement of the hydromorphological elements and habitat conditions of the coastal zone (31.3% of all activities in the catalogue), followed by the categories: sewage management (18.8%), rainwater management and improvement of conditions for protected areas (12.5% of all activities in the catalogue).

In addition to the measures included in the RBMPs under WFD, the measures dedicated to marine waters (including coastal and transitional waters) are included in the national Marine Water Protection Program for Poland under Marine Strategy Framework Directive (MSFD). The first Program, which was drafted in 2016 and adopted in 2017 (KPOWM, 2016), has been updated in 2021 for the forthcoming water cycle. The document is currently at the stage of public consultancy and has not been officially accepted yet, hence [similarly as RBMPs for the period 2022-2027] should be considered draft (Draft aPOWM, 2021).

From among 55 measures, 18 of them were considered completed, three were accepted for continuation without modifications, 19 were adopted for continuation with significant modifications, and 15 actions were abandoned.

Measures that are considered completed with no need for their further implementation include:

1. Plan to rescue animals that suffered from oil spills;
2. Conducting research on the state of fish resources in marine waters;
3. Identification and analysis of routes of unintentional introduction or spread of invasive alien species posing a threat to the European Union, within the territory of the country, including marine waters;
4. Supporting the follow-up of the IMO forum on the establishment of Nox emission control areas (NECAs);
5. Application of the comprehensive guidelines on the ecosystem-based methodology for selecting the site of sediment (dredged material) deposition in the sea and the management of coastal lap sites in the Baltic Sea area;
6. Analysis of threats to the marine environment posed by the Stuttgart shipwreck together with an analysis of the existing technologies for the utilization of the threat;
7. Preparation of a waste management plan for oil spills resulting from maritime accidents;
8. Analysis of the occurrence of plastic microparticles in the marine environment;
9. Preventing alien species from escaping from livestock facilities;
10. Development and promotion of the use of liquefied natural gas by ships as fuel;
11. Development of port reception facilities for waste and cargo residues from ships;
12. Additional beach cleaning;
13. Reduction of phosphorus emissions from the phosphogypsum heap in Wiślinka;
14. Modernization of the warehouse of fuel and lubricants Świnoujście Karsibór;
15. Introduction of a "no special fee" principle for the reception of ship-generated waste in ports;
16. Increasing the degree of phosphorus removal in the wastewater discharged from the treatment plant;
17. Educational and information campaign for rational rainwater management;
18. Limiting the introduction of paraffins and derivatives to sea waters.

Ultimately, the draft of PoM includes 3 measures continued with no modifications, 19 measures continued being modified compared with the previous program and 37 new measures. Of them, 7 continued actions and 11 new actions are focused on mitigation eutrophication pressure:

Continued measures:

- Assessment of the technical and economic feasibility of increasing nitrogen reduction in selected wastewater treatment plants in the chemical industry;
- Banning the discharge of untreated sanitary sewage from passenger ships in the Baltic Sea area;
- Increasing the area of agricultural land covered by fertilization plans;
- Providing conditions for the safe storage of natural fertilizers;
- Optimization of technological processes in the existing municipal sewage treatment plants;
- The use of selected water melioration devices to reduce the load of nutrients from agricultural areas (introducing mechanisms obliging the owners of water facilities to retain water in drainage ditches, which will enable full use of natural self-purification processes to reduce nutrient loads transported through ditches to rivers and further to the Baltic Sea);
- Continuation and strengthening of the topic of water protection in agricultural advisory services, including the development and promotion of the Code of Good Agricultural Practice.

New measures:

- Extending monitoring and increase nutrient removal requirements in wastewater treatment plants;
- Charges for nutrients in wastewater;
- Differentiation of increased charges for nutrients;
- Discharges from overflows of combined sewerage - analysis of the scale of the problem and strategy of action;
- Elaboration of program for reduction of pollution from agricultural catchments – pilot;
- Establishing the agricultural catchment funds;
- The catchment area agricultural pollution reduction programs;
- Changing the rules of slurry management;
- Expansion of the nitrogen and phosphorus database in agricultural areas;
- Limiting the felling use of forests in the vicinity of waters;
- Recovery of biogens from sewage sludge – pilot.

Table 13 Pressure factors identified in water plans, Poland

		Poland	Actions planned
Point sources	Industry	Significant	Yes
	Treatment plants	Significant	Yes
	Aquaculture	Significant	No
Diffuse sources	Scattered settlements	Significant	Yes
	Agriculture	Significant	Yes
	Rain-related outlets	Significant (particularly in TRAC)	Yes
	Airborne deposits	Significant (particularly as condition preventing environmental objectives achievement)	Yes
	Other diffuse sources	Not defined	not identified
Physical impacts	Water extraction	Significant	Yes
	Physical modification	Significant	Yes
Other	Invasive species	Not addressed in RBMP	not identified
	Fisheries	Not addressed in RBMP	not identified
	Acidification	Not addressed in RBMP	not identified
	Other	Hydromorphological modifications, hydrological alterations, climate changes, prolonged drought	Yes

Source: own elaboration based on the Draft 2aPGW, 2021, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

Have exemptions from the WFD been used in Water Plan 3 – which and to which extent?

In the 3rd Water Plan the following types of exemptions under Art. 4 have been designed (note, the draft documents of RBMPs are not accepted and this can be modified during the public consultation process):

- Art. 4.4, i.e., extension of the time limits for achieving environmental objectives either due to technical, economical or natural reasons;

- Art. 4.5, i.e., less stringent environmental objectives in situation where a waterbody has suffered considerably from human activity or for which the natural conditions are such that the achievement of the environmental objective is impossible or economically unjustified) and

- Art. 4.7, i.e., failure to achieve environmental objectives as a result of new modifications to the physical characteristics of or new sustainable human development activities.

The extension of time limits was attributed to 71% of the WBs of all categories and in all cases, the reason for this exemption were unfavourable natural conditions. The time limits for this type of exemption set in the 3rd RBMPs in the vast majority of cases was 2027. For about 10% of all WBs (including about 260 river stretches and most WBs of transitional [5 of 7 WBs] and coastal [3 of 4 WBs] waters) the time limit beyond 2027 was set due to naturally slow process of recovery (natural conditions) and the elements that require longer recovery time were indicated. In all cases, the quality element(s) that need longer time for recovery (beyond 2027) has been indicated at the WB basis and these were mainly biological quality elements.

The catalogue and definitions of "unfavourable natural conditions" were established and included in the RBMPs. This catalogue includes a set of circumstances defined as "unfavourable natural conditions", i.e., geochemical background, high content of substances (including: pollutants) in the soil, slow renewal of quantitative groundwater resources, historical pollution, flood, drought, atmospheric deposition, biochemical, physicochemical, hydromorphological and ecological processes, alien / invasive species, inflow from another WB, lack of environmental flow. All these situations were defined and described.

For 12 priority substances introduced by the Directive 2013/39/EU amending Directives 2000/60/EC and 2008/105/EC, the Directive enables that the time extension beyond the environmental target may be postponed until 2039 due to not only natural conditions, but also technical feasibility and disproportionate costs. For WBs where one or some of the 12 priority substances introduced by the Directive 2013/39/EU amending Directives 2000/60/EC and 2008/105/EC, caused failure of achieve environmental objectives, in addition to natural conditions, the exemption under Art. 4.4 due to technical feasibility was implemented and the environmental target was postponed until 2039. This was the case for all WBs of coastal and transitional waters.

For more than a half of all WBs in Poland (52%), the exemption under Art. 4.5 was applied and in vast majority of cases it was due to lack of technical feasibility to achieve environmental objectives in a reasonable time limits. Usually this reason was combined with the unfavourable natural conditions. In limited number of cases (ca. 10 WBs), unfavourable natural conditions were indicated as the only reason for exemption under Art. 4.5 application. The

detailed indication of the exemptions attributed to particular water categories is included in Table 13.

43.9% of all WBs in Poland were attributed both exemption types, i.e. 4.4., and 4.5, while for 20.5% no exemptions have been applied (Table 13).

Table 13 Exemption application, Poland (per waterbody number)

Exemption	Rivers	Reservoirs	Lakes	Transitional waters	Coastal waters	Total
Art. 4.4	2303 (73.9%)	38 (84.4%)	675 (63.2%)	7 (100%)	4 (100%)	3027 (71.4%)
Art. 4.5	1819 (58.4%)	35 (77.8%)	346 (32.4%)	3 (42.9%)	2 (50%)	2205 (52.0%)
Exclusively 4.4	755 (24.2%)	8 (17.8%)	395 (37.0%)	4 (57.1%)	2 (50.0%)	1164 (27.5%)
Exclusively 4.5	271 (8.7%)	5 (11.1%)	67 (6.3%)	0	0	343 (8.1%)
Both 4.4. and 4.5	1548 (49.7%)	30 (66.7%)	279 (26.1%)	3 (42.9%)	2 (50.0%)	1862 (43.9%)
None	542 (17.4%)	2 (4.4%)	327 (30.6%)	0	0	871 (20.5%)

Source: own elaboration based on the Draft 2aPGW, 2021, available at: https://apgw.gov.pl/pl/III-cykl-materialy-do-pobrania

An obligatory element of a water management plan is a list of investments or activities that may affect the feasibility of achieving the environmental objectives. Such activities/projects can be considered for meeting the criteria for exemption under Art. 4.7 WFD. According the provisions of Water Law in Poland, each case of the implementation of an activity, investment or project that may pose a threat to the environmental objectives of the WB requires authorisation in the form of an administrative decision. For the 3rd water cycle, 455 investments and activities meeting the conditions set out in Art. 4 sec. 7 WFD were identified and included in the Plan. Detailed information about each activity/project was attached to the Plan.

To the author's best knowledge, no "Plan B" is considered at the moment in Poland.

What are the targets for nitrogen and phosphorus in Water Plan 3? How large reductions (in tons and %) are necessary, and are there concrete targets such as concentration in river waters by estuary?

National target loads and reduction needs for nutrients are not determined in the same management context as for specific water bodies. National reduction needs handled in the RBMPs relate to fulfilment of the environmental goals for each WBs, while specific target requirements and reductions for coastal waters in the Baltic Sea are handled in the Polish Marine Strategy Plan under the Marine Strategy Directive.

In the RBMPs, the targets for nitrogen and phosphorus are established via setting environmental objectives for each waterbody of all categories and no special focus for any particular water category over the other categories is made. Environmental objectives for nutrients usually refer to the type-specific good/moderate boundary values of ecological classes (i.e., targets are mirrored by the nutrient concentrations in water). These are reflected by the environmental objectives and defined as target concentrations for good ecological status/potential, i.e.:

- for rivers: 1.10-3.50 mgN l^{-1}, 0.10-0.35 mgP l^{-1} (depending on the river type);
- for lakes: 1.10-1.50 mgN l^{-1}, 0.025-0.080 mgP l^{-1} (depending on the lake type);
- for coastal waters: 0.3-0.4 mgN l^{-1}, 0.030-0.038 mgP l^{-1} (site specific targets);
- for transitional waters (0.30-1.90 mgN l^{-1}, 0.030-0.150 mgP l^{-1} (site specific targets);

For estuaries (river waterbodies which enter the Baltic Sea) the specific concentration targets in the 3rd RBMP are ≤3.0 mgN l^{-1} and ≤0.35 mgP l^{-1}. These values were set statistically based on the relationship with Biological Quality Elements (concentrations supporting good ecological conditions of BQEs).

Nutrient-oriented measures are expected to reduce impact of pressure so that the WB could achieve good ecological conditions.

The measures and targets are designed individually for each WB and they include a set of actions that are aimed at reducing pressures causing risk of failure of environmental objectives. These measures most usually include:

- for reduction of pollution from agricultural sources – implementation and controlling of the national Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution (see sec. 5 for more details on the program);

- for reduction of pollution from municipal waste– implementation of the National Program of Municipal Sewage Treatment, i.e., construction or reconstruction and modernization of sewage treatment plants and sewage network, construction of individual sewage treatment plants;

The catalogue of national basic activities contains 169 measures grouped into 11 categories presented in the sec. 4 of the report.

No concrete targets in tons of % for nutrient reduction were introduced in the River Basin Management Plans. The reduction targets from the previous Baltic Sea Action Plan were not included in the Water Plan due to the lack of their acceptance in Poland. Acceptance of the reduction targets under the revised BSAP is a subject of discussion; however, they have not been transferred to the forthcoming RBMP.

For marine waters (affecting also transitional and coastal waters), nutrient targets and reductions as well as the complementary environmental objectives and measures are included in the first and the update of the Marine Water Protection Program (KPOWM, 2016 and aPOWM, 2021, respectively) elaborated under marine strategy framework directive (MSFD). These two programs (RBMP and MSDF) are complementary and are expected to act synergistically in achieving environmental targets.

Target nutrient loads for Polish coastal waters were defined based on the HELCOM cooperation. These targets set for Poland by the HELCOM (2013) in relation to the average load in the period 1997-2003 was 149,866 tN/y and 4,845 tP/y, which means the required load reductions by 43,610 tN/y and 7,480 tP/y.

These targets are not consistent with those set for Poland based on the "Report regarding the estimation of phosphorus and nitrogen loads from the inland sources, and regarding measures aimed at the reduction of nutrients load" prepared in 2016 at the request of the National Water Management Authority. Based on the national report, the expected reductions in relation to the load used as reference status for modelling are 13,920 tN/y and 5,041 tP/y. These targets are consistent with the data presented in Poland's report 2018 as no new estimates since 2016 have been performed.

As mentioned before, due to the lack of their acceptance in Poland, the reduction targets from the previous BSAP were not included in the Water Plan, and the acceptance of the new reduction targets under the revised BSAP is a subject of discussion.

In general, nutrient target load has not been used as an operational target in marine management in Poland or as a defining parameter for good ecological status. It is used only as an indicative value. The legislation defines the objectives as nutrient concentrations in transitional waters and coastal waters that must be achieved in order to comply with the Water Framework Directive and the Marine Strategy Directive.

The Marine Water Protection Program (Draft aPOWM, 2021) includes 7 measures, which are already implemented and will be continued in the next perspective as well as 11 new measures aimed at reduction of eutrophication pressure (see sec. 4.4 of the report for details). Of them, nine measures are considered significant for reduction of the nutrient load to sea waters. Their full implementation until 2039 and beyond are expected to reduce nutrient load in 62,652 tons N per year on average and 5,180 tons P per year on average (Table 14).

Table 14. Estimated reduction of nutrient loads discharged into the Baltic Sea from Poland after implementation of measures dedicated to mitigate eutrophication

Measure	N [t N/year]	P [t P/year]

Prohibition of the discharge of untreated sanitary sewage from passenger ships in the Baltic Sea area	2	0
Extending the area of agricultural land where elaborating and controlling of the fertilization plan is required	6 000	300
Providing conditions for the safe storage of natural fertilizers	8 500	780
The use of selected water melioration devices to reduce the load of nutrients from agricultural areas	2 400	50
Extend monitoring and increase nutrient removal requirements in wastewater treatment plants	0	1 100
Charges for nutrients in wastewater	2 200	20
Implementing the individual programs for the catchment area agricultural pollution reduction	40 000	2 900
Changing the rules of slurry management (liquid natural fertilizer)	3 300	0
Limiting the felling use of forests in the vicinity of waters	250	30
Total	**62 652**	**5 180**

Source: own elaboration based on the Draft aPOWM, 2021; available at:
https://chronmorze.eu/wp-content/uploads/2021/07/Projekt-aPOWM-20210629-v1.00.pdf

Do the countries have efforts in Water Plan 3 that are expected to lead to achieving good ecological condition and is there an implementation plan for the efforts in Water Plan 3?

Each Member State shall ensure that for all river basin districts or parts of international river basin districts lying within its territory a program of measures (actions) is established, taking into account the results of the analyses required by Art. 5 of the WFD (including overview of the impact of human activities on the environment and economic analysis of water use). Program of measures (PoMs) is focused at achieving environmental objectives for surface waters, groundwater and protected areas. The river basin management plan should ensure that these measures are implemented no later than 3 years from the date of publication of the plan.

The 3rd RBMP for each river basin in Poland include a dedicated PoM for surface waters, groundwater and protected areas. Measures are planned at the national and WB levels. Together, over 20 ths. activities were attributed to river WBs, ca. 5 ths. to lake WBs and about 100 to TRAC waters in the RBMPs in Poland. All these activities are aimed at supporting achievement of good ecological conditions.

The catalogue of national measures is a set of actions that can be implemented at the national level, aimed at achieving environmental goals by eliminating the pressure affecting the condition of water. The catalogue includes both technical measures and a number of supporting (non-technical) measures, without which it would be impossible to achieve the environmental goals. The catalogue contains 169 measures in total.

For individual surface and groundwater WBs, a set of dedicated measures both basic and complementary are designed. Each set of actions includes the "basic" actions defined in Art. 11 sec. 3 of the WFD, and, if appropriate, "complementary" measures that may be adopted in order to achieve environmental objectives, indicated in Art. 11 sec. 4 WFD. The basic activities include all measures required to implement EU legislation on the protection of waters falling outside the scope of the WFD. They also include measures necessary to achieve the objectives set out in the WFD itself (Articles 4, 7, 9, 10). The catalogue of complementary measures is open. Their aim is to support basic activities in the implementation of the essential objectives of Art. 4 WFD.

It is expected that the measures designed in the PoM will effectively support achieving environmental objectives and all WBs, which are not assigned exemptions under art. 4, are expected to achieve goals (usually good ecological status) by 2027. The statistics concerning exemptions are included in the sec. 4.2.

The examples for such measures designed in the draft of the RBMPs are listed below. The scope of implementation of each measure is described in detail for each WB where applicable individually.

- **Educational and advisory activities for farmers**
  - Reduction of water pollution with nutrients from agriculture and reduction of pesticide pollution

- **Control activities**
  - Control of compliance with the conditions for the use of plant protection products
  - Checks on the application of the program of measures to reduce nitrate pollution of waters from agricultural sources and to prevent further pollution from agricultural and active operators
  - Control activities related to the review of permits
  - Water management control and review of water permits

- **Wastewater management in agglomerations**
  - Implementation of the National Program of Municipal Sewage Treatment
  - Wastewater management in non-urbanized areas
  - Technical and economic analyses of wastewater management in the commune, outside agglomerations
  - Organization and improvement of infrastructure related to sewage management in the commune, outside agglomerations

- **Remedial actions for protected areas**
  - Implementation of remedial actions for protected areas in terms of the inflow of pollutants
  - Actions resulting from protection plans / plans of protective tasks established for areas intended for the protection of habitats or species for which the maintenance or improvement of water status is an important factor in their protection,

- Implementation of activities resulting from protection plans for protected areas

- **Check of the functioning of fish migration devices.**
  - Monitoring the effectiveness of existing fish migration devices
  - Assessment of the impact of transverse structures on biological continuity and environmental objectives of the WB
  - Protection of aquatic and dependent water ecosystems / restoration of habitat conditions, taking into account the environmental objectives indicated for natural areas
  - Protection and restoration of natural hydromorphological processes in the riverbed in terms of meeting the environmental objectives of natural areas
  - Implementation of remedial actions for protected areas to maintain the natural character of the channel

- **Protection and enhancement of forest retention**
  - Development of a program to improve forest retention in the WBs' catchment
  - Implementation of projects aimed at increasing or restoring natural / artificial forest retention in the WBs' catchment
  - Protection and enhancement of retention in agricultural areas
  - Development of a soil and landscape retention improvement program in agricultural areas in the WBs' catchment
  - Implementation of projects aimed at increasing the water retention time on agricultural land in the catchment area of WBs
  - Improvement of the condition of hydromorphological elements in terms of meeting environmental goals

- **Restoration activities**
  - Implementation of remedial actions for protected areas in terms of meeting the requirements for rivers with Ranunculion fluitans vegetation
  - Reconstruction of damming structures to ensure biological continuity and fulfillment of environmental objectives
  - Reconstruction of transverse structures in a way that ensures the restoration of biological continuity;
  - Analysis of the possible reconstruction of damming structures in the scope ensuring biological continuity and meeting environmental objectives.
  - Development of a variant analysis of the method of unblocking the damming structures in the watercourse together with an indication of the variant to be implemented and the development of design documentation.
  - Analysis of the possibility of decommissioning transverse structures / reconstruction of transverse structures into rapids / other activities in the field of permeability.

- **Retention and management of rainwater and snowmelt in urbanized areas**
  - Development of a retention improvement program in urbanized areas in the WBs' catchment
  - Implementation of projects aimed at increasing the water retention time in urbanized areas in the WBs' catchment

- **Verification and update of the environmental protection program**
  - Verification and update of the environmental protection program in terms of improving the effectiveness of reducing the inflow of pollutants to jcwp
  - Expansion of the flow monitoring network in rivers threatened with a significant reduction in flows

Beside the PoM in RBMP, additional measures contribution to the reduction of eutrophication are included in the Marine Water Protection Program (MWPP) elaborated under marine strategy framework directive (MSFD). These two programs are complementary and are expected to act synergistically in achieving environmental targets. The MWPP includes 7 measures, which are already implemented and will be continued in the nearest perspective as well as 11 new measures aimed at reduction of eutrophication pressure. These are:

Actions for continuation

There are seven activities dedicated to eutrophication reduction included in the Program. These activities have been verified and modified and will be implemented:

1. Introduction in the Baltic Sea area the prohibition on the discharge of untreated sanitary sewage from passenger ships
2. Increasing the area of agricultural land where fertilization plans are required and are under control
3. Providing conditions for safe storage of natural fertilizers
4. Optimization of technological processes in the existing municipal sewage treatment plants
5. The use of selected water melioration devices to reduce the load of nutrients from agricultural areas
6. Continuation and strengthening of the topic of water protection in agricultural advisory services, including the development and promotion of the Code of Good Agricultural Practice
7. Assessment of the technical and economic feasibility of increasing nitrogen reduction in selected wastewater treatment plants in the chemical industry

For marine waters, including transitional and coastal waters, dedicated measures are included in the Marine Water Protection Program. The first program, which was adopted in December 2017, included 55 measures. In 2021, 18 of them were considered completed, three were accepted for continuation without modifications, 19 were adopted for continuation with significant modifications, and 15 actions were abandoned. Among the activities that were abandoned, there were those that were replaced with new ones that pursued the same goals

in a highly modified manner, and those that turned out to be unsuccessful in retrospect, due to being too vague or duplicating existing solutions. Newly designed measures include 37 activities, of which 11 are aimed at mitigation eutrophication pressure. Measures supporting reduction of the nutrient loads to the Baltic Sea from Poland were proposed:

1. Broadening the monitoring and increasing the nutrient removal requirements in wastewater treatment plants

- It is proposed to introduce the following maximum concentrations of total phosphorus in treated sewage, regardless of whether it is discharged into lakes, watercourses or soil:

- - 1 mg P / l in domestic and municipal sewage with an average load from 301 to 10,000 PE and in industrial sewage with an average hydraulic load from 30 to 1000 m3 / d,

- - 0.5 mg P / l in domestic and municipal sewage with an average load above 10,000 PE and industrial sewage with an average hydraulic load above 1000 m3 / d.

2. Charges for nutrients in sewage
3. Differentiation of increased charges for nutrients
4. Discharges from overflows of combined sewage system - analysis of the scale of the problem and strategy of action
5. The catchment area agricultural pollution reduction programs - pilot study

- In the catchments of 10 WB representing various natural conditions, the effectiveness of a wide range of traditional and innovative measures to reduce the loads of agricultural nutrients will be tested in field conditions (pilot study).

6. Agricultural catchment funds
7. Development of catchment area agricultural pollution reduction programs
8. Changing the rules of slurry management

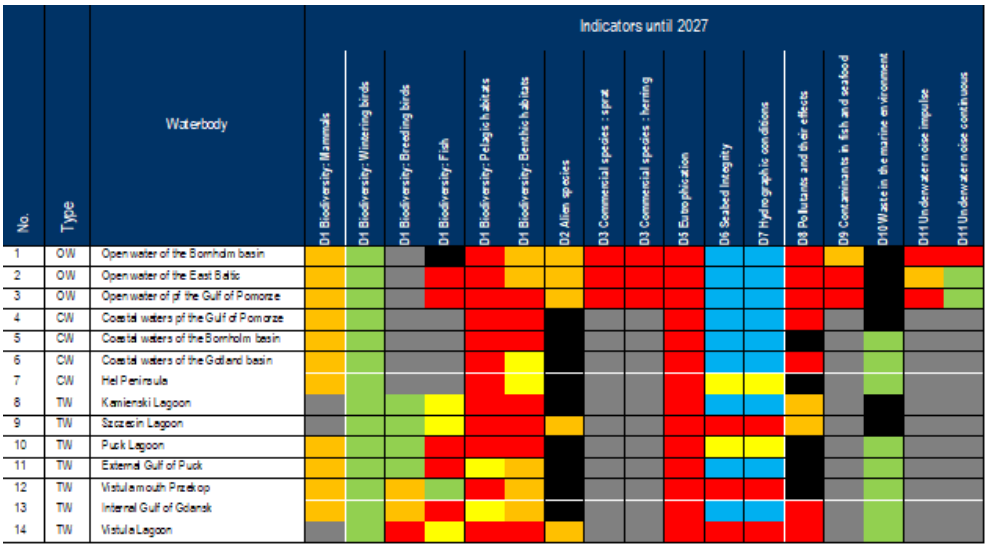
- The action consists in introducing a general obligation to use soil application in the case of fertilizing arable land with slurry, introducing a distinction between slurry and fertilizers obtained by separating the slurry into a solid and liquid fraction.

9. Expansion of the nitrogen and phosphorus database in agricultural areas
10. Limiting the felling use of forests in the vicinity of waters
11. Recovery of biogens from sewage sludge – pilot study

Ultimately, in the updated Marine Water Protection Program for the new perspective includes a set of measures addressing each of 11 characteristics and they are all focused on achieving GES (see sec. 4.1). However, one should be aware that even immediate implementation of all planned activities in the vast majority of cases will not lead to achievement of the environmental objectives in the current water cycle (2016-2021). Also by 2027, reaching GES in terms of features, criteria and indicators currently not compliant with GES will in most

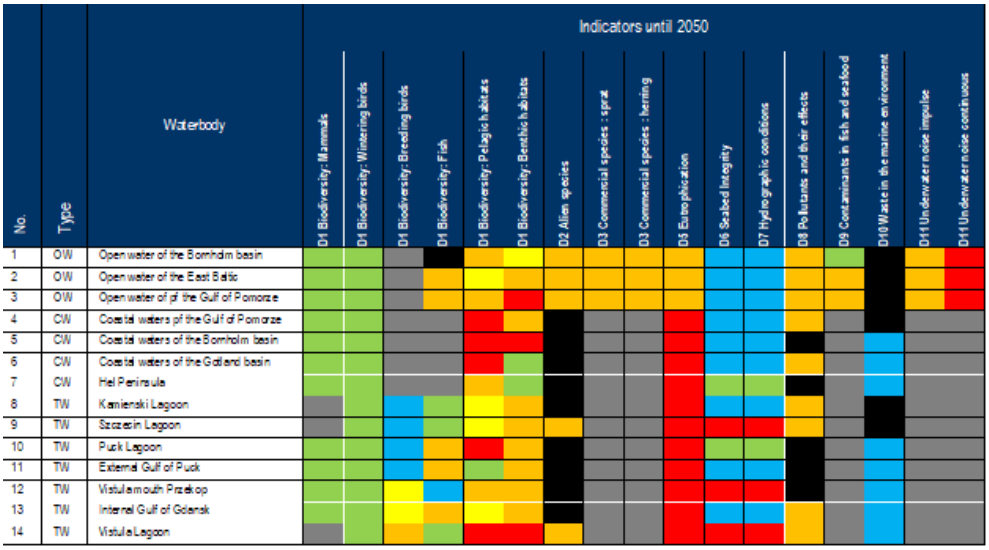
cases be impossible due to the long response times of marine ecosystem components to the reduction of pressures (Table 15). These requires years and decades (Table 16). Moreover, the achievement of GES across the Polish Baltic Sea will, in many cases, be impossible, especially in terms of eutrophication-dependent features, without appropriate action by other Baltic States.

Table 15 Results of the analysis of the possibilities of achieving GES by 2027



Note: achievement of GES: red – impossible; orange – hardly possible, yellow – rather possible, green – possible; blue – sure and certain; black – uncertain; grey – not applicable; OW – open waters; CW – coastal waters, TW – transitional waters. Source: Draft aPOWM, 2021.

Table 16 Results of the analysis of the possibilities of achieving GES by 2050



Note: achievement of GES: red – impossible; orange – hardly possible, yellow – rather possible, green – possible; blue – sure and certain; black – uncertain; grey – not applicable; OW – open waters; CW – coastal waters, TW – transitional waters.
Source: Draft aPOWM, 2021.

In the case of heavily modified water bodies, the achievement of GES would have to involve the liquidation of various types of water structures and shore modifications, and thus serious economic and sometimes environmental damage. Finally, in some cases, the build-up of originally man-made threats is now the result of natural processes. This is the case with the expansion of alien species already present in Polish waters. The aforementioned conditions constitute the basis for the application of exemptions under Art. 14 MSFD and authorizations to extend deadlines for achieving environmental / GES targets beyond the perspective of 2027. These exceptions will generally apply to most water bodies for all features except Feature 10 (Waste) and Feature 11 (Noise).

The RBMP includes an implementation plan, which indicates the schedule of the action implementation (expected time limits for each activity or indication as a continuous action), the cost of action implementation and the units responsible for action implementation.

Regulation of fertilizer storage and application

Which rules apply regarding fertilizer use? Specifically: Are there norms/quotas for nitrogen and phosphorus application? Which ones?

For the nitrogen, the provisions of the Nitrate Directive are implemented into the national law (Water Law). The Nitrates Directive (1991) was implemented in the Polish law first in 2001 in the Art. 47 of the Water Law (2001). According to this act, nitrate vulnerable zones were designated and verified every 4 years.

Since 2017, according to the new Water Law (2017), the whole country area is a subject to one programme of measures to reduce water pollution with nitrates from agricultural sources and to prevent further pollution. Therefore, the norms and conditions for application of nitrogen fertilizers indicated in the regulation of the Council of Ministers on the adoption of the "Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution" (Journal of Laws, 2020, 243) are applicable and consistent throughout the entire country.

The program defines (among others):
1) Conditions for applying fertilizers near surface waters;
2) Conditions for the use and storage of fertilizers in areas with steep slopes;
3) Dates for application of fertilizers;
4) Natural fertilizer storage conditions and leachate treatment;
5) The amount of the applied doses and methods of nitrogen fertilization.

Farmers are obliged to prepare a nitrogen fertilization plan, in general. The nitrogen fertilization plan is developed annually, separately for each agricultural plot. The method of applying natural fertilizers to individual crops must be planned in such a way that the permissible nitrogen dose from natural fertilizers in its pure component, i.e., 170 kg N/ha, is not exceeded during the year. If the amount of natural fertilizers produced on the farm is so large that it cannot be managed in an environmentally safe way (so that the dose of **170 kg N/ha** is not exceeded), the surplus of fertilizers can be disposed of. The sale of fertilizers must be documented in a written contract.

For the phosphorus, no legal norm has been introduced and only recommendations for the "good agricultural practices" are promoted.

Table 1 Nutrient norms

Nutrient	Quota / Norm	Comment
Nitrogen	170 kg/ha/year	-
Phosphorus	Not provided	

Source: own elaboration based on the Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution (Journal of Laws, 2020, 243)

Are there requirements to equipment for storing and applying livestock manure? Which ones?

The "Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution" (Journal of Laws, 2020, 243) regulates the conditions for natural fertilizer storage and leachate treatment. Throughout the year, it is not allowed to store directly on the ground of poultry manure and silage. Silages should be stored in silos, in foil sleeves, on plates or on a foil base, chaff, straw or other material that absorbs leachate, and under a foil cover. It is forbidden to store natural fertilizers and silage at a distance of less than 25 m from the points of water intakes/wells and from the shoreline of surface waters and the sea belt. The program allows manure to be stored directly on agricultural land, but not longer than for a period of 6 months and under certain conditions.

The amount of the annual dose of natural fertilizers used for agriculture must contain no more than 170 kg of pure N per 1 ha of agricultural land. The amount of natural fertilizers produced on the farm and the amount of nitrogen in these fertilizers should be calculated on the basis of the annual average livestock calculated in accordance with Annex 4 to the Program and the average annual amount the production of natural fertilizers and the concentration of nitrogen contained in these fertilizers specified in Annex 6 to the Program.

The distribution of the natural fertilizers in agricultural parcels should be so that the permissible nitrogen dose is not exceeded during the year from natural fertilizers in the pure component amounting for 170 kg N / ha of agricultural land, with where the permissible amount of manure = 170 kg N / ha: content N kg / t or kg / m3 (the content of N kg / t or kg / m3 should be taken from Annex 6 to the Program or documented analysis of the composition of a natural fertilizer).

Concerning limitations to protect surface waters, no fertilizers are applied on agricultural land in the vicinity of surface waters within the defined distances, which are:

- 5 m from the shoreline of lakes <0.5 km^2, rivers, streams and canals for all fertilizers excluding slurry (liquid natural fertilizer; liquid manure?),
- 10 m from the shoreline of lakes <0.5 km^2, rivers, streams and canals for slurry;
- 20 m from the shoreline of lakes >0.5 km^2, water intakes (if not in the protection zone with individual distances) and coastal belt areas.

Question: Are there requirements in terms of point in time for storing and applying livestock manure? Which ones?

According to the "Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution" (Journal of Laws, 2020, 243), the capacity of the tanks for storing liquid natural fertilizers (here referred to as slurry) should allow for the **storage of fertilizer for a period of 6 months.** The area of the storage places for solid fertilizers (here referred to as manure) should allow for its **storage for a period of 5 months.** The Program provides the coefficients and formulas for calculating the capacity of plates for manure or the capacity of tank for slurry for different livestock species.

Depending on the location, type of soil and type of fertilizer, the fertilizer application period starts on **March 1 and ends between October 15 and November 30.**

Table 17 Regulation for application of fertilizer

Type of soil/cultivation	Mineral nitrogen fertilizers and liquid natural fertilizers (slurry)	Solid natural fertilizers (manure)
Arable lands	1 March – 15/20/25 October (depending on the locality in Poland)	1 March - 31 October
Permanent crops, perennial crops, permanent grasslands	1 March - 31 October	1 March - 30 November

Source: own elaboration based on the Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution (Journal of Laws, 2020, 243)

Pressure factors from other regions

How are pressure factors dealt with, e.g. nutrient supply and non-natural substances, from other countries/regions?

About 43% of the length of the Polish borders (over 1,318 km long) constitute waters, mainly rivers. In particular, the Bug basin (the Polish border with Belarus and Ukraine), and in the Odra basin that Poland shares with Germany and the Czech Republic, have a significant impact on Poland's water resources. Most of the transboundary waters flow from the territory of neighbouring countries on the territory of Poland.

International cooperation in transboundary waters is a matter of both national and international law, including provisions of the WFD. Water regulations of international and national law constitute the basis for concluding international agreements that define the goals and scope of cooperation in water management. Representatives of the ministry responsible for water management chair the committees and coordinate cooperation at the central level. First, they ensure compliance of cooperation with the state water policy, the legal order and international agreements. The monitoring of transboundary waters is the responsibility of the Chief Inspectorate for Environmental Protection, in particular the regional environmental monitoring departments. The transboundary monitoring includes sampling and laboratory testing of physicochemical and chemical parameters of the samples taken. The parties exchange research results that are used for different purposes including preparation of the annual reports on the quality of transboundary waters. The parties care about the quality of the research and comparability of data, working on the unification of the monitoring system.

The Water Plan for each river basin contains a dedicated section with the detailed overview of the cooperation with neighbouring countries in the field of transboundary waters. Each section includes the summary of legal acts regulating cooperation, overview of the international agreements, and cooperation initiatives, such as commissions, working groups, etc. The effectiveness of the international cooperation in protecting transboundary waters is also addressed.

Poland has bilateral agreements on cooperation in transboundary waters with all states lying within the international river basins. The characteristics of cooperation under individual agreements differ due to different water management problems and other issues, including political ones.

For the Odra river basin, Poland cooperates with Germany and Czech Republic. The agreement on cooperation in the International Odra River Basin District was concluded covering the entire international river basin district, where all neighbouring states cooperate in integrated water management, and bilateral

agreements covering a part of the river basin district along the common border of the parties' states.

One of the most important initiatives is the International Commission for the Protection of the Oder River against Pollution was established under an agreement signed on April 11, 1996 between the government of the Republic of Poland, the government of the Czech Republic, the government of the Federal Republic of Germany and the European Union. On May 1, 2004, as a result of the accession of the Republic of Poland and the Czech Republic to the European Union, the agreement was changed and the European Union ceased to be a party to it. The basic tasks of the Commission include the prevention and permanent reduction of water pollution of the Odra and the Baltic Sea, restoring the most natural conditions in water and coastal ecosystems, enabling the use of the Oder for drinking water and water for agriculture from infiltration coastal intakes, preventing and permanently reducing the risk of damage. flood risk, coordination of the implementation of the WFD and Directive 2007/60 / EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks in the Odra basin area, coordination of joint international projects.

For the Vistula river basin, Poland cooperates with Slovakia, Ukraine, Belarus and Russia. Three of the five countries sharing the international Vistula river basin, i.e., Ukraine, Belarus Russia, are not EU members. The agreements were concluded at different times, before or after the accession of the Republic of Poland to the European Union. The implementation of cooperation is therefore at various stages of advancement, depending on the date of conclusion of the contract.

Poland is also a signatory to the Convention on the Protection of the Marine Environment of the Baltic Sea Area of 1974 (Journal of Laws of 2000, No. 28, item 346) and is a member of the Baltic Marine Environment Protection Commission (Helsinki Commission, HELCOM). The signatories of the Convention are all states located within the Baltic Sea basin: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden, as well as the European Union. The aim of the Convention is to protect the Baltic marine environment - waters, seabed, living resources - against pollution from all sources - land, marine activities and the atmosphere. The Helsinki Convention was ratified by Poland on October 8, 1999, and entered into force on January 17, 2000. Poland's membership in the Commission involves participation in the work of individual working, expert and correspondence groups and HELCOM projects, preparation of studies and expert opinions, as well as providing information on the state of the environment and pollution discharged into the sea. Actions taken under HELCOM concern both marine waters and the entire Baltic Sea catchment area, which covers 99.7% of Poland's territory.

According to the draft document on the update of the Sea Water Protection Program (www.chronmorze.eu), the long-term trends (1995-2018) in the nutrient load to the Baltic Sea exhibit the decrease of both nitrogen and phosphorus loads (Figure 4).

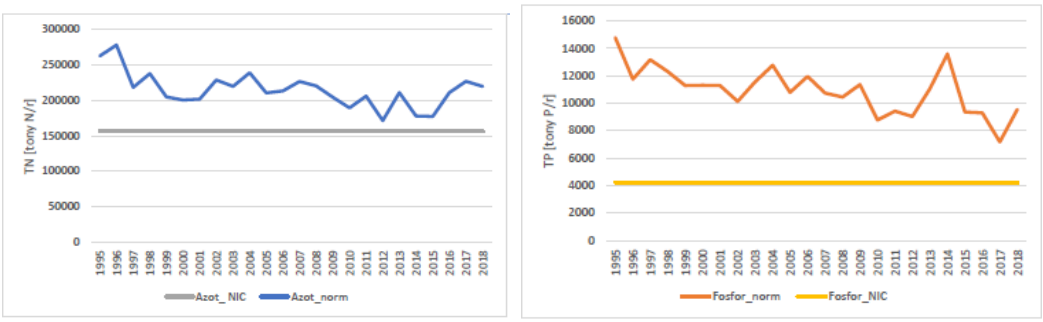


Figure 4. Normalised loads of nitrogen (left panel) and phosphorus (right panel) introduced with Polish waters into the Baltic Sea in the period 1995-2018. Grey (left) and yellow (right) straight lines indicate NIC for nitrogen and phosphorus, respectively
Source: draft aPOWM, 2021 https://chronmorze.eu/wp-content/uploads/2021/07/Projekt-aPOWM-20210629-v1.00.pdf

Poland's contribution in the total nitrogen load in the period 1995-2018 fluctuated between 21-26% of the total nitrogen load entering to the Baltic Sea from all sources and amounted to 25% in 2018 (Figure 5). In the case of phosphorus, this share fluctuated from 29% to 42% and in 2018 amounted to 33% of the total phosphorus load entering to the Baltic Sea from all sources (Figure 5).

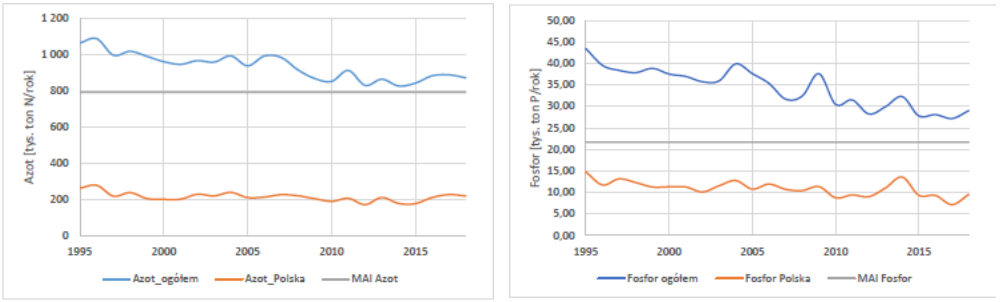


Figure 5. Changes in the load of nitrogen (left panel) and phosphorus (right panel) discharged from Poland (yellow line) to the Baltic Sea compared to the load from all sources (blue line) and MAI (grey line) for the Baltic Sea in the period 1995-2018.
Source: draft aPOWM, 2021 https://chronmorze.eu/wp-content/uploads/2021/07/Projekt-aPOWM-20210629-v1.00.pdf

As part of the Polish PLC-7 report, a comparative analysis of the structure of loads carried to the Baltic Sea by waters from Poland in 2000, 2006, 2012 and 2018 was performed. For the nitrogen, agriculture was by far the dominant source in all years. Municipal sewage treatment plants other than the coastal ones ranked second. For the phosphorus, the largest sources were also agriculture and municipal sewage treatment plants other than the coastal ones, but the advantage of agriculture over treatment plants was clearly lower than in the case of nitrogen. In 2000, the share of agriculture and municipal sewage treatment plants was almost equal. By 2012, the load of phosphorus from municipal treatment plants had decreased more than twice, therefore, the proportions have clearly changed - it can be estimated that since 2012,

agriculture has brought at least 3 times more phosphorus to the Baltic Sea than municipal treatment plants. However, a clear decrease in nutrient load trends is observed.

The environmental targets for eutrophication are focused on maintaining the decreasing trend of nitrogen and phosphorus inflow to Polish sea areas. Action of measures addressing eutrophication and expected nutrient load reductions are presented in the chapter Water Plan 3 contents of the report. Efforts to achieve GES focus on agriculture and municipal treatment plants, with the emphasis in sewage treatment plants on phosphorus reduction. Their full implementation until 2039 and beyond are expected to reduce nutrient load in 62 652 tons N per year on average and 5180 tons P per year on average.

Other information

How many km waterways are covered by the plans?

The summary length of all river WBs in the country is ca. 110 000 km. They are all covered by the RBMPs.

Which sizes/catchment area sizes are included in the water plans? e.g. >10 km^2

In Poland, the minimum size threshold to assign a river as a waterbody is 10 km^2 of the catchment area, for lakes 0.5 km^2 of the surface area; for other water categories, no limits were established.

Distribution in characterization: natural, strongly modified, and artificial streams.

Table 21 Distribution in characterization

Type	Distribution	Number	Comment
Natural	82 250 Km (77.1%)	2454 (78.7%)	
Strongly modified	23 000 Km (21.6%)	588 (18.9%)	
Artificial streams	1400 Km (1.3%)	74 (2.4%)	

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Summarized findings

Table 18 Summary table, Poland

	Subject / Question	Poland
1	***Changes since last COWI neighbour assessment***	
1.1	*Have there been significant changes in aspects and approaches described in Vandrammedirektivet.pdf (mst.dk)?*	Yes. The main changes included: 1. Change of river basin district delineation 2. Verification and updating of planning units • a new surface water WB list. • a new division of ground WBs, • Changes to the register of protected areas. 3. Establishment of a new monitoring network 4. Changes in the classification system for assessment of the status/potential 5. Introduction of new specific objectives, 6. Change in the scope of information to be presented for each action in the set of actions 7. Changes in the establishment of protection zones for water intakes and protection areas for inland water reservoirs
2	***Reference for quality parameters in WFD***	
2.1	*Methodology for establishing reference condition for quality parameters?*	I majority of methods the "best-of-existing" approach was employed (contemporary least disturbed sites) usually together with expert opinion; rarely historical data from the literature from 1960s.
2.1	*Point in time*	Contemporary data, if historical, from 1960s
3	***Status***	
3.1	*Water areas in high, good, moderate, and poor condition*	Based on the area of catchments of river WBs assigned to the status/potential classes: 0.12 % high, 6.7% good, 50.3% moderate, 24.8% poor, 8.1% bad, 9.9% not classified due to the insufficient data availability
3.2	*Status for implementing Water Plan 2 and Water plan 3*	WP2: River Basin Management Plans for 10 river basins delimitated in Poland for the 2nd water cycle accepted by the National Water Management Authority and published in 2016 in a set of Regulations of the Council of Ministers of 18 October 2016 on the river basin management plans; plans are currently under evaluation for their effectiveness and completeness of application (end of the water cycle); WP3: River Basin Management Plans for 9 river basins delimitated in Poland for

		the 3nd water cycle elaborated and directed for public consultations. Projects have been in consulting starting from May 2021 (consultancy in progress). RBMPs for the 3rd cycle will be finalised in 2022
4	***Water Plan 3 contents***	
4.1	*Efforts planned on other pressure factors than nutrients in WP3?*	Yes
4.2	*Exemptions from the WFD used in WP3? And is there a "Plan B", e.g. preparations for a potential 4th plan period or for seeking exemptions to larger degrees?*	Yes To my best knowledge, no plan B is considered at the moment
4.3	*WP3 target, nitrogen (ton, %)*	Not provided
4.3	*WP3 target, phosphorus (ton, %)*	Not provided
4.3	*Reductions necessary to reach targets, nitrogen? (ton, %)*	Not provided
4.3	*Reductions necessary to reach targets, phosphorus? (ton, %)*	Not provided
4.3	*Concrete targets, e.g. concentration in estuaries, nitrogen?*	Yes, concentrations determining at least good status/potential
4.3	*Concrete targets, e.g. concentration in estuaries, phosphorus?*	Yes, concentrations determining at least good status/potential
4.4	*Efforts in WP3 expected to lead to good ecological condition and is there an implementation plan for efforts in WP3?*	Yes, in vast majority of WBs Yes
5	***Regulation of fertilizer storage and application***	
5.1	*Norms/quotas for nitrogen application?* *Which ones?*	The norms and conditions for application of nitrogen fertilizers are regulated by the regulation of the Council of Ministers on the adoption of the "Action Program to reduce water pollution with nitrates from agricultural sources and to prevent further pollution" (Journal of Laws, 2020, 243) consistent throughout the entire country area. The amount of the annual dose of natural fertilizers used for agriculture must contain no more than 170 kg of pure N per 1 ha of agricultural land. No fertilizers are applied on agricultural land in the vicinity of surface waters within the defined distances, which are: • 5 m from the shoreline of lakes <0.5 km2, rivers, streams and canals for all fertilizers excluding slurry (liquid natural fertilizer; liquid manure?), • 10 m from the shoreline of lakes <0.5 km2, rivers, streams and canals for slurry; • 20 m from the shoreline of lakes >0.5 km2, water intakes (if not in the protection zone with

		individual distances) and coastal belt areas.
5.1	*Norms/quotas for phosphorus application?* *Which ones?*	Not provided, only recommendations (good practices)
5.2	*Requirements to equipment for storing and applying livestock manure?* *Which ones?*	Yes. Throughout the year, it is not allowed to store manure directly on the ground. It should be stored in silos, in foil sleeves, on plates or on a foil base, chaff, straw or other material that absorbs leachate, and under a foil cover. It is forbidden to store natural fertilizers and silage at a distance of less than 25 m from the points of water intakes/wells and from the shoreline of surface waters and the sea belt.
5.2	*Requirements in terms of point in time for storing and applying livestock manure?* *Which ones?*	Yes. The program allows manure to be stored directly on agricultural land, but not longer than for a period of 6 months.
6	***Pressure factors from other regions***	
6.1	*How are pressure factors dealt with, e.g. nutrient supply and non-natural substances, from other countries/regions?*	There are no national specific regulations covering this issue. International management of waters, including management of pressures/nutrient supply from other regions rely on international agreements, cooperatives and strategies.
7	**Additional information**	
	Km waterways covered by the plans, e.g. >10 km2	Total river length in Poland, i.e., about 110 ths. km; although river are designed as WBs as far as their catchments exceed 10 km2, smaller stretches are most frequently included in bigger ones.
	Delimitation: sizes/catchment area sizes included in the water plans, e.g. >10 km2	>10 km2
	Distribution in characterization: natural, strongly modified, and artificial streams.	77.1% in length and 78.7% in WBs' number is natural, 21.6% in length and 18.9% in WBs' number is strongly modified, and 1.3% in length and 2.4% in WBs' number is artificial

Table 19 List of interviewees

Country	Name	Organisation