

CHIEF INSPECTOR OF ENVIRONMENTAL PROTECTION

APPROVED BY

Minister of the Environment

**THE STATE ENVIRONMENTAL MONITORING
PROGRAMME**

for the years 2016–2020

Chief Inspector
of Environmental Protection

Warsaw, 2015

The State Environmental Monitoring Programme for the years 2016–2020 implements the provision of Article 23 paragraph 3 point 1 of the Act of 20 July 1991 on the Inspection of Environmental Protection (Journal of Laws of 2013, item 686, as amended)

The Programme has been prepared in the Department of Monitoring and Environmental Information of the Chief Inspectorate of Environmental Protection

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Introduction

The State Environmental Monitoring (SEM) was established pursuant to the Act of 20 June 1991 on the Inspection of Environmental Protection to provide reliable data on the state of the environment.

In accordance with Article 23 paragraph 3 point 1 of the Act of 20 July 1991 on the Inspection of Environmental Protection (Journal of Laws of 2013, item 686, as amended), The Chief Inspector of Environmental Protection is responsible for developing long-term programmes under the State Environmental Monitoring to implement the tasks arising from separate legislative acts, international commitments as well as development strategies and programme documents referred to in the Act of 6 December 2006 on Principles of Development Policy (Journal of Laws of 2009, No 84, item 712, as amended). The SEM programmes have been developed since 1991.

The new SEM programme covers the years 2016–2020 and is obviously adapted to the time perspective of Polish and European strategic documents concerning the environment, such as: the national strategy “Energy Security and the Environment – perspective until 2020”, Decision of the European Parliament and of the Council on a General Union Environment Action Programme to 2020 “Living well, within the limits of our planet” (also called the 7th Environmental Action Programme), “Biodiversity Strategy until 2020”, “Thematic Strategy on Air Pollution”, a resolution of the Council of Ministers on the adoption of National Development Strategy 2020 as well as a Communication of the Commission – “Europe 2020: A European strategy for smart, sustainable and inclusive growth”. What is equally important, the Programme complies with the financial perspective of the NFEPWM Priority Programme “Supporting Environmental Monitoring” and the financial perspective of the Operational Programme Infrastructure & Environment 2014–2020. In the perspective until 2020, both these programmes will be a significant financing source of the new SEM programme. Simultaneously, the SEM programme implements selected actions (intervention directions) included in the resolution of the Council of Ministers on the adoption of the Strategy “Energy Security and the Environment – perspective until 2020” (O.G. of 2014, item 469).

The State Environmental Monitoring Programme for the years 2016–2020 continues the majority of the former actions and simultaneously covers new tasks to implement new EU requirements to Polish monitoring system. Water monitoring is to be highlighted, especially as regards the implementation of Directive of the European Parliament and of the Council 2013/39/EU of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy (OJ L 226, 24.08.2013, p. 1). An important task will be also to implement the mathematical modelling support for the annual air quality assessments system.

Assuring high quality of measurement results and assessments under all the tasks within SEM is the main element of the new SEM programme.

1. The definition, objectives and tasks of the State Environmental Monitoring

State Environmental Monitoring, pursuant to Article 25 paragraph 2 of the Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) is the system of measurements, assessments and outlooks of the state of the environment as well as the system of collecting, processing and disseminating information on the environment. The collected data are used to support environmental protection activities by systematically informing public administration authorities and society about:

- the quality of natural elements, compliance with environmental quality standards and other limits specified by law, areas of exceedance of these or other standards,
- changes in the quality of natural elements, the reasons for these changes, including cause-and-effect relations between emissions and the state of natural elements.

The SEM serves to generate and collect the data on the state of the environment which Poland is obliged to report in accordance with its international commitments.

One of the key objectives of the SEM is to produce the data and assessments to meet the EU legislation requirements, in particular, framework regulations concerning environmental protection, as well as international agreements signed and ratified by Poland. The scope of the EU reporting obligations implemented under SEM by the Inspection of Environmental Protection have been presented in detail in the descriptions of individual tasks and in Appendix 2.

The State Environmental Monitoring provides the data that have to be made accessible within the meaning of the provisions of the Act of 3 October 2008 on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (Journal of Laws of 2013, item 1235, as amended) regulating the issues of free access to environmental information.

The statutory objectives of the State Environmental Monitoring will be implemented through tasks covering the measurements of indicators characterising specific environmental components, the observations of natural elements, the collection and analysis of measurements and observation results, the assessment of the state and trends in the quality of specific environmental elements based on set criteria, the identification of areas of exceedance of environmental standards, cause-and-effect analyses, the preparation of lists, reports, announcements and disseminating them in a printed or electronic form.

The priority is to assure high quality of the data generated under the State Environmental Monitoring System. It includes the ongoing implementation of the quality assurance/quality control systems in monitoring subsystems, the modernisation of the measurement infrastructure, methodological work, the organisation of and participation in national or international intercomparisons and substantive support in the form of trainings devoted to system procedures and legal requirements.

2. The structure of the State Environmental Monitoring

The State Environmental Monitoring is the source of environmental information derived from the measurements and assessments of the state of the environment as well as the analysis focusing on the impact of various factors, including pressure resulting mainly from human activity. In order to provide such a broad spectrum of data, as in the previous years, the tasks under the State Environmental Monitoring will be implemented within the structure based on the DPSIR model (driving forces/pressures/state/impact/response) used by the European Commission, the Organisation for Economic Cooperation and Development (OECD) and the European Environment Agency to prepare integrated assessments as well as the evaluations of development strategies and programme documents. This structure facilitates effective generation of comprehensive environmental information, based on research, analyses and assessments, for the use of society, central and local government administrations as well as international institutions.

Only some of the information categories listed above is and will be produced under the SEM system. The comprehensive information on components of the environment remain the basic SEM information category. Measurement and research programmes will be implemented in seven subsystems representing specific environmental components or specific impacts. Similarly, as to date, the SEM system will cover the activities associated with obtaining, collecting, analysing and disseminating information on substance levels and other indicators describing the state of specific environmental elements.

The environmental data generated and collected will underlie the assessments of specific components as well as the integrated assessments and outlooks of the state of the environment, cause-and-effect analyses on the linkages between the current state of the environment and driving forces originating from socio-economic activity. The assessment of the effectiveness of recovery and prevention measures will be also included

The data on pressures on the environment, including the sources and loads of the pollution released into the environment, will be obtained from the administration and public statistics systems. Only selected information on pressures not to be obtained from other systems, but necessary for proper implementation of the tasks covering research and assessment of the state and outlook of environment will be generated under the SEM.

Figure 2.1. shows the SEM structure as a source of information on the environment. The SEM scope and implementation have been described in detail in the further part of the Programme.

The SEM will use socio-economic data collected by public statistics and other administration systems. In addition, proper functioning of SEM will require free access to the data produced by legally responsible government authorities, including meteorological and hydrological data.

Pursuant to Article 24 of the Act of 20 July 1991 on the Inspection of Environmental Protection (Journal of Laws of 2013, item 686, as amended), the activity of the State Environmental Monitoring is coordinated by the bodies of the Inspection of Environmental Protection.

At voivodship level, the State Environmental Monitoring tasks are performed by the Voivodship Inspector of Environmental Protection as a government administration body in the voivodship (Article 3 and Article 5 of the Act on Inspection of Environmental Protection). At national level, the SEM tasks are performed by the Chief Inspector of Environmental Protection; the CIEP also coordinates all the tasks conducted for the purposes of the State Environmental Monitoring.

The law requires also other entities to be involved in the SEM implementation – e.g. central and local government administration bodies, services, entities managing roads, airports and railways, entities managing installations, as well as scientific and research institutes carrying out tasks under contracts with CIEP. The organisational structure of the State Environmental Monitoring has been presented in Figure 2.2.

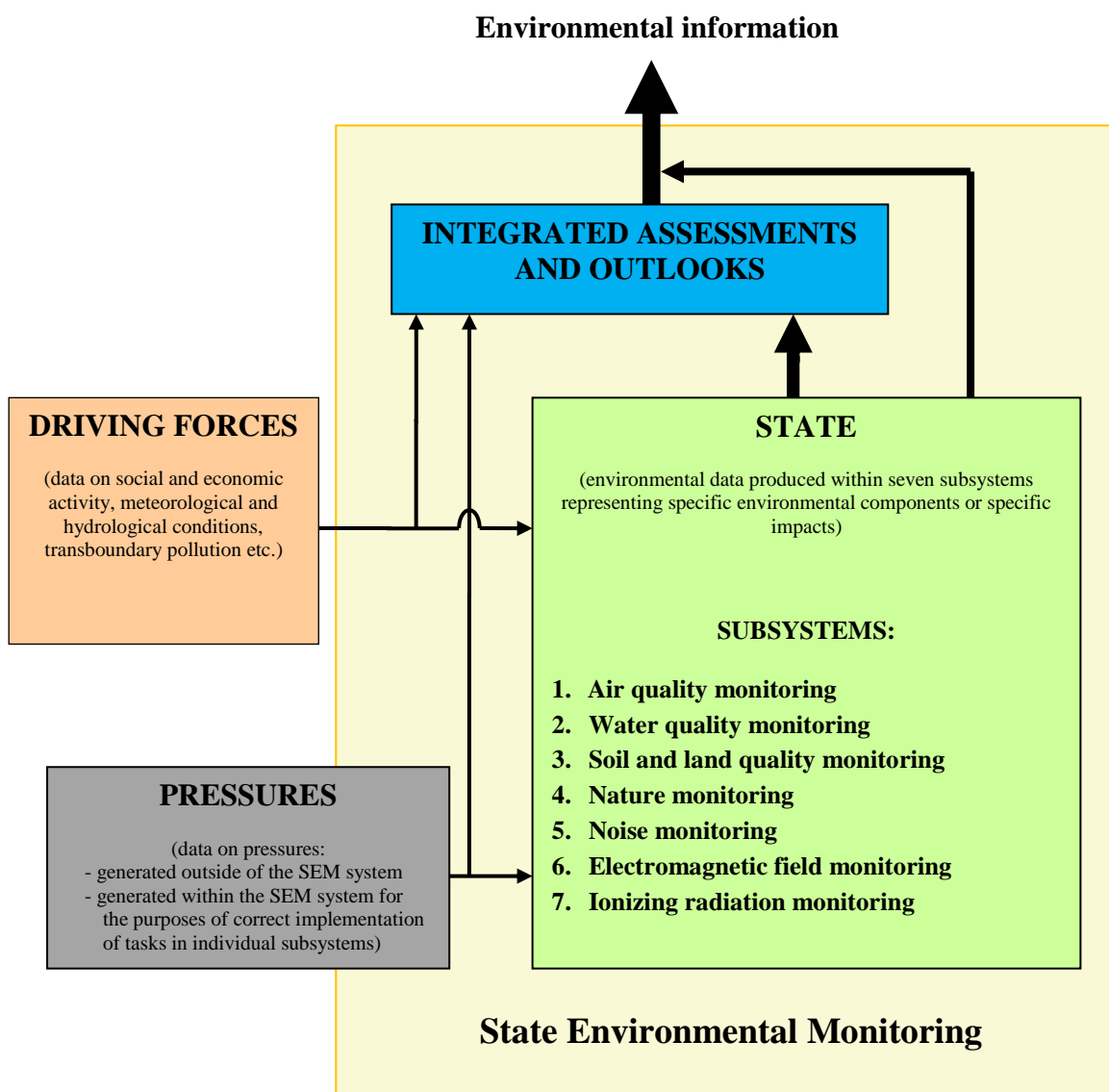


Fig. 2.1. State Environmental Monitoring – environmental information source

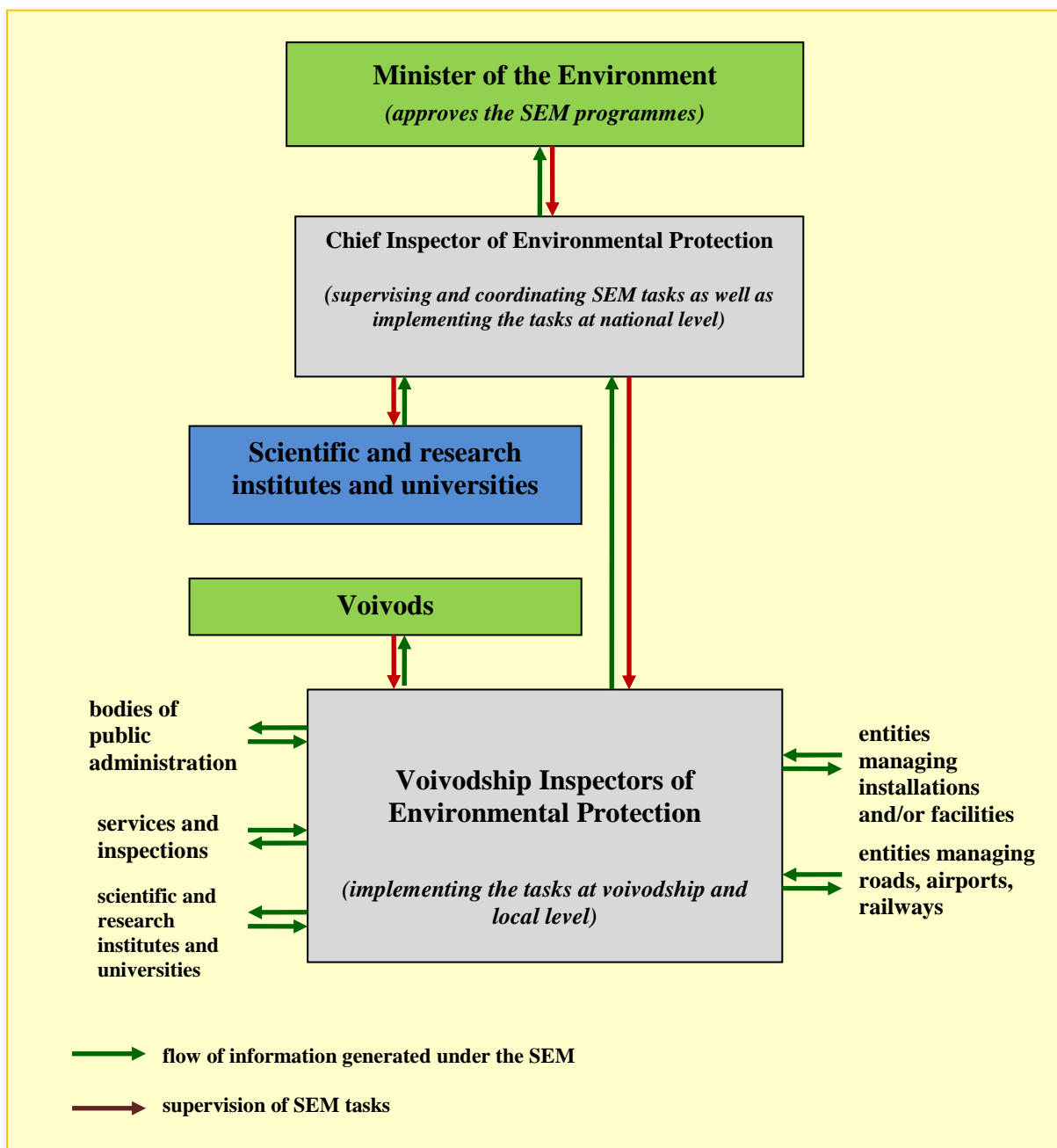


Fig. 2.2. Bodies, services and other entities in the SEM system

3. Monitoring and assessments of the state of the environment

The major role of SEM in the environment management and integrated environmental problem solving system is obtaining, collecting, analysing and disseminating information on substance levels and other indicators describing the state of specific natural elements. Special significance in this context is given to the assessments of specific environmental components which take into account the influence of pressure elements.

The aim of the SEM tasks is to provide competent bodies with the information necessary to manage the environment in accordance with their competencies and fulfil their national and international reporting obligations. Another key objective is to provide society with access to complete and simultaneously comprehensible information on the state of the environment.

In accordance with statutory regulations (Article 26 paragraph 1 of the Environmental Protection Act), taking into account the needs resulting from development strategies and programme documents, as well as international and national reporting obligations, environmental monitoring will be conducted on the basis of the current structure of seven subsystems:

- 1. the air quality monitoring subsystem,**
- 2. the water quality monitoring subsystem,**
- 3. the soil and land quality monitoring subsystem,**
- 4. the nature monitoring subsystem,**
- 5. the noise monitoring subsystem,**
- 6. the electromagnetic field monitoring subsystem,**
- 7. the ionizing radiation monitoring subsystem.**

The subsystems encompass the tasks having specific objectives as well as corresponding measurement and research programmes. These tasks are associated with direct fulfilment of statutory obligations, international commitments as well as with the necessity to adjust the environmental monitoring system to new Polish and international regulations.

The description of the tasks contains the information at which (national, regional/voivodship, local) level they will be implemented.

For specific tasks under a given subsystem, a chart is provided with information about the legal basis, the scope of monitoring, the methods to obtain and disseminate information and the reporting obligations fulfilled. Additionally, for the tasks implemented at local and/or voivodship level and coordinated at national level the diagrams of information flow are provided.

Apart from obtaining information on the status of environmental components, a cross-cutting and/or problem-oriented work will be done to track the flow of pollutants in addition to assessing the state of the environment. An example of such a SEM task is the monitoring of persistent organic compounds in the environment.

The key task under SEM for the years 2016–2020 will be to ensure ongoing operation and further development of thematic databases within the EKOINFONET Information System (SI EKOINFONET) which collects, stores, processes and disseminates SEM data on the quality of environmental components according to the draft Regulation of the Minister of the Environment on the IT System of the Inspection of Environmental Protection “Ekoinfonet”.

The SEM system will be supplied with pressure data, generated within other systems or legal obligations binding other administration bodies or business entities, as well as data generated by the Inspection of Environmental Protection. The public statistics system, and in case of water – the water cadastre kept by the national and regional water management authorities, will be a key source of the data on emissions. In exceptional cases, and only for proper monitoring of the state of environment, the Inspection of Environmental Protection will generate information on pressures under SEM.

In the section on legislation, the Programme refers to the existing legislation that is specific for a given environmental component as well as to draft legislation projected to be in force in the years 2016–2020. However, it should be emphasised that all monitoring activities are founded upon general competencies of the Inspection of Environmental Protection associated with organising, coordinating and conducting the measurements of the quality of the environment as well as observing and assessing its state provided for in Article 2 of the Act of 20 July 1991 on the Inspection of Environmental Protection (i.e. Journal of Laws of 2013, item 686, as amended).

3.1. The air quality monitoring subsystem

In accordance with Article 26 of the Environmental Protection Act, the air quality monitoring subsystem operates to obtain the information and data on concentration of pollutants levels in ambient air as well as the results of analyses and assessments regarding the compliance with air quality standards. The data provided under the subsystem will additionally help to monitor the changes in the acidification and eutrophication of the environment as a result of the deposition of pollutants into the soil, and to monitor and assess the impact on air quality of measures to limit the emission of pollutants to the air. This information will be used to assess the efficiency of measures to protect the ozone layer over Poland and Europe. The data obtained under the subsystem will serve to manage air quality in the country, e.g. via air quality plans and programmes, and to make proposals and control of the implementation of the air quality strategy at national and EU levels. Additionally, under the reporting obligations, the data obtained will be submitted to the European Commission, the European Environment Agency (Appendix 2) and the international conventions bodies.

Within the air quality monitoring subsystem, 15 tasks will be implemented in the years 2016–2020, including:

- a) the tasks associated with monitoring and assessing the air quality in accordance with the Environmental Protection Act transposing the requirements of Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe (OJ L 152, 11.06.2008, p. 1) and Directive of the European Parliament and of the Council 2004/107/EC of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ L 23, 26.01.2005, p.3), which include:
 - ✓ the monitoring and assessment of ambient air quality in zones,
 - ✓ the support of the annual air quality assessments system with mathematical modelling methods.
 - ✓ the five-year air quality assessment to establish the appropriate manner of conducting annual air quality assessments,
 - ✓ the urban background monitoring as regards PAH,
 - ✓ the measurements of air pollution regarding PM_{2.5} for monitoring of the national exposure reduction target,
 - ✓ the monitoring of composition of PM₁₀ and PM_{2.5}, as well as mercury, heavy metals and polycyclic aromatic hydrocarbons deposition at rural-background monitoring stations,
 - ✓ the monitoring of ozone precursors,
 - ✓ determining representativeness of monitoring stations functioning under State Environmental Monitoring
- b) the tasks associated with air pollution forecasts/projections and analyses of pollution concentration episodes:
 - ✓ the long-term projections on PM₁₀ and PM_{2.5} concentration and determining pollution background,
 - ✓ the short-term forecasts on air pollution,
 - ✓ the analysis of selected episodes of high PM₁₀ concentration;

- c) the research programmes focusing on global and continental phenomena implemented at national level by CIEP in connection with the commitments arising from the environmental protection conventions signed by Poland:
- ✓ the monitoring of atmospheric pollution at the stations of Łeba, Jarczew, Puszcza Borecka and Śnieżka in compliance with the EMEP, GAW/WMO and COMBINE/HELCOM programmes,
 - ✓ the monitoring of the chemical composition of precipitation and the assessment of the deposition of pollutants into the soil,
 - ✓ the monitoring of the ozone layer over Poland and the UV-B radiation intensity measurements;
- d) the task associated with obtaining the information on the sources and loads of substances released into air for the purposes of assessment and forecasts/projections under air quality assessment.

These tasks will constitute mostly the follow-up of previous measurement programmes. However, as it is necessary to adjust the system of air quality measurement and assessment to dynamically changing EU regulations, including the requirements of Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe, and Commission Implementing Decision 2011/850/EC laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality, new tasks will be introduced associated mainly with implementing mathematical modelling to annual air quality assessments. Simultaneously, within the task “The monitoring and assessment of air quality in zones” air quality monitoring database JPOAT2.0 will continue to be developed. Ultimately the database will collect all the data related to measurements and assessments of air pollution generated under SEM, so that the data stored in the database allow to fully comply with its reporting obligations under the above-mentioned decision and guidance of the European Commission to the decision (Guidance on the Commission Implementing Decision laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air – Decision 2011/850/EU).

As part of the air monitoring subsystem, work will be done to broaden the scope of monitoring of persistent organic compounds in the air, however, the launching and scope of work will depend on financial resources.

Task: The monitoring and assessment of ambient air quality in zones

The obligation to conduct the measurements and assessment of air quality under the State Environmental Monitoring arises from Articles 88–94 of the Environmental Protection Act which transposes Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe and Directive of the European Parliament and of the Council 2004/107/EC of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The aim of the task is to obtain for all zones in the country the information on concentration of pollutants in the air with regard to air quality standards and other air quality assessment criteria, to identify the areas requiring air quality improvement, the so called areas of exceedance, and to subsequently monitor, through air quality measurements and assessments, the influence of measures undertaken under air quality plans and programmes to air quality in areas of exceedance.

The task will be implemented at voivodship level by VIEP and coordinated by CIEP.

In the years 2016–2020, the Voivodship Inspector of Environmental Protection – responsible for measurement and air quality assessment – will continue to monitor the concentrations of PM10 and PM2.5, SO₂, NO₂, NO, NO_x, O₃, benzene, CO as well as Pb, As, Cd, Ni and benzo(a)pyrene in PM10, employing the measurements and other monitoring techniques referred to in the Regulation of the Minister of the Environment of 13 September 2012 on Conducting the Assessment of Substance Levels in the Air (Journal of Laws of 2012, item 1032).

The data from monitoring stations will be stored in voivodship air quality databases (CAS) and the JPOAT2.0 air quality monitoring database operating within the SI EKOINFONET and will supply the air quality assessment system. Moreover, in accordance with reporting requirements, they will be submitted to the European database (AIRBASE+).¹

VIEP will continue annual air quality assessments and zone classification. Simultaneously, at national level, CIEP will continue ozone air pollution modelling for the annual air quality assessments and implement the support system of annual air quality assessments with modelling methods of the dispersion of pollutants in ambient air in terms of PM10 and PM2.5, SO₂, NO₂, and benzo(a)pyrene in PM10, in accordance with the requirements of the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe. Until the full implementation of air quality modelling at national level, VIEP will optionally perform air quality modelling for the annual air quality assessments at voivodship level.

The results of the annual assessment will be used by voivodship boards to develop and update air quality programmes for the zones designated to implement them as well as in order to monitor the effectiveness of the programmes developed in the past. The results of the annual air quality assessments for the years 2015, 2016, 2017, 2018 and 2019 conducted by VIEP will be employed by CIEP to prepare compiled air quality assessments in Poland.

Moreover, the report concerning the annual air quality assessment and the results of air quality monitoring will serve to fulfil the reporting obligations arising from the Community legislation, i.e. Commission Implementing Decision 2011/850/EU of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, pp 86–106) and guidelines of the European Commission to that decision.

After the entry into force of the Directive of the European Commission amending certain Annexes to Directives 2004/107/EC and 2008/50/EC laying down rules concerning reference methods, data validation and location of sampling points for the assessment of ambient air quality (currently its enactment is underway) measurement and air quality assessment system, will be adapted to the requirements contained in this document, subject to availability of funds.

¹ AIRBASE+ - European database on air quality maintained by the European Environment Agency.

Table 3.1.1. The monitoring and assessment of ambient air quality in zones

Subsystem	Task	
The air quality monitoring	The monitoring and assessment of ambient air quality in zones	
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26 and Article 85–95; - Regulation of the Minister of the Environment of 13 September 2012 on Conducting the Assessment of Substance Levels in Air (Journal of Laws of 2012, item 1032); - Regulation of the Minister of the Environment of 24 August 2012 on Levels of some Pollutants in Air (Journal of laws of 2012, item 1031); - Regulation of the Minister of the Environment of 10 September 2012 on the Scope and Method of Reporting on Air Pollution (Journal of Laws of 2012, item 1034); - Regulation of the Minister of the Environment of 2 August 2012 on Zones which are Subject to Air Quality Assessment (Journal of Laws of 2012, item 914); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485). 	
Objective scope		
<p>the years 2016–2020</p> <p>As part of the air quality assessment systems, voivodship inspectors of environmental protection will monitor concentrations of the following: SO₂, NO₂, NO_x, PM10, PM2.5, CO, benzene, O₃ and Pb, As, Cd, Ni and B(a)P in PM10 in the air. These measurements will be conducted either continuously (automated measurements) or systematically (manual measurements) in the zones where concentrations exceed upper assessment threshold and in the agglomerations with the number of inhabitants > 250 thousand. In the remaining zones it will be possible to conduct less intense measurements or conduct assessment using other methods such as mathematic modelling, passive sampler methods, etc. These methods may also complement the highest quality (automated and manual) measurements in the agglomerations and zones where concentrations exceeding upper assessment threshold are observed. Automated and/or manual measurements will be conducted at ca. 260 stations. A detailed list of air monitoring stations, their measurement programmes and the scope of supplementary assessments are specified by VIEP in voivodship environmental monitoring programmes.</p> <p>On the basis of the data obtained for the specific substances listed above, voivodship inspectors of environmental protection will conduct annual air quality assessments in the zones specified in the Environmental Protection Act and classify the zones basing on the criteria referred to in the Regulation of the Minister of the Environment, identify the areas where limit values, target values and long-term objectives are exceeded. In the years 2016, 2017, 2018, 2019, 2020 annual air quality assessment will be conducted for the years 2015, 2016, 2017, 2018 and 2019 respectively. Every year, CIEP will prepare a compiled air quality assessment at national level and submit the data on the air quality in Poland to national and EU institutions. The assessment will be conducted for each of the 46 zones and will cover in total the entire country.</p> <p>The detailed information on the number and location of the stations monitoring air pollution with the substances referred to above will be included in voivodship environmental monitoring programmes.</p> <p>Apart from the measurement programmes encompassing the substances for which air quality assessment criteria have been established, the voivodship inspector of environmental protection may take into account other substances in the voivodship environmental monitoring programme, taking into consideration specific sources of pollutants located within the voivodship.</p>		
Task implementation		
Measurements	Databases	Supervision and assessment
VIEP and other entities indicated by VIEP in the voivodship environmental monitoring programme	VIEP – a voivodship database of monitoring stations CAS (central data acquisition unit collecting data from monitoring stations) CIEP and VIEP – JPOAT2.0 air quality	VIEP – annual assessment of air quality in the voivodship CIEP – compiled national level annual air quality assessment

	database supplied with data from CAS and VIEP databases		
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP and other entities indicated by VIEP in the voivodship environmental monitoring programme	- measurement results and metadata in the system (CAS air quality databases)	- entities indicated by VIEP in the voivodship environmental monitoring programme as agreed with VIEP (without undue delay)	VIEP (CAS)
CIEP	- results of ozone modelling to support air quality assessment	- once a year	VIEP
CIEP	- results of modelling of PM10, PM2.5, benzo(a)pyrene, NO ₂ and SO ₂ to support air quality assessment	- once a year from 2016	VIEP
VIEP (CAS)	- measurement results from stations under the voivodship environmental monitoring programme – supplied automatically	- ranging from a continuous basis to an annually basis according to the regulation of the Minister of the Environment on the Scope and Method of Reporting on Air Pollution	CIEP (JPOAT2.0)
VIEP	- metadata on networks, stations and measurements	- on a current basis, depending on availability of data	CIEP (JPOAT2.0)
VIEP	- the data on exceedances of alert thresholds of substances in the air	- on a twenty-four-hour basis,	CIEP, voivodship board, voivodship crisis management team
VIEP	- the data on risk of exceedances of the limit or target values of substances in the air	- in a possibly shortest period from becoming aware of the risk of exceedance	CIEP, voivodship board, voivodship crisis management team
VIEP	- results of the annual air quality assessment and classification of zones at the level of voivodship	- once a year	CIEP, voivodship board
CIEP	- aggregated measurement data in table form	- once a year in accordance with the Statistical Research Programme	CSO
CIEP	- raw measurement data in table form	- once a year	CSI
CIEP	- verified measurement data from VEMP stations – in XML files in accordance to decision of the Commission 2011/850/EU and guidelines to decision 2011/850/EU	- data for the previous year - once a year	EC, EEA

CIEP	- unverified and initially verified measurement data from automated VEMP stations in accordance to decision of the Commission 2011/850/EU and guidelines to decision 2011/850/EU	- data in a current year - every hour	EC, EEA
CIEP	- results of annual air quality assessments in the country in XML files in accordance to decision of the Commission 2011/850/EU and guidelines to decision 2011/850/EU	- once a year	EC, EEA
CIEP	- information on planned air quality monitoring system and zones in Poland in XML files in accordance to decision of the Commission 2011/850/EU and guidelines to the decision	- once a year before the start of measurement year	EC, EEA
CIEP	- information on the air quality monitoring system used and zones in Poland in XML files in accordance to decision of the Commission 2011/850/EU and guidelines to the decision	- once a year after the end of measurement year	EC, EEA
ME	- information on air quality programmes, short-term action plans, postponement of the attainment of deadline for air quality standards	- on an annual basis at minimum, information submitted without undue delay if necessary	CIEP (for the purposes of availability of information in the Air Quality Portal)
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information(min.)	Addressee of final information
VIEP	- communications	- ranging from an hourly basis to an annual basis	central and local government administration, universities, schools, libraries, society
VIEP	- thematic reports	- optionally	
VIEP	- VIEP websites	- ranging from an hourly basis to an annual basis	
CIEP	- online service on air quality in Poland on the CIEP website - air quality data by zone - air quality measurement results - short-term and long-term forecasts/projections results - air quality assessment results - information on air quality programmes, short-term action plans	- ranging from an hourly basis to an annual basis	
CIEP	- compiled annual air quality reports in Poland for previous year;	- every year by 31 October	
CIEP	- thematic / EML publications	- optionally	

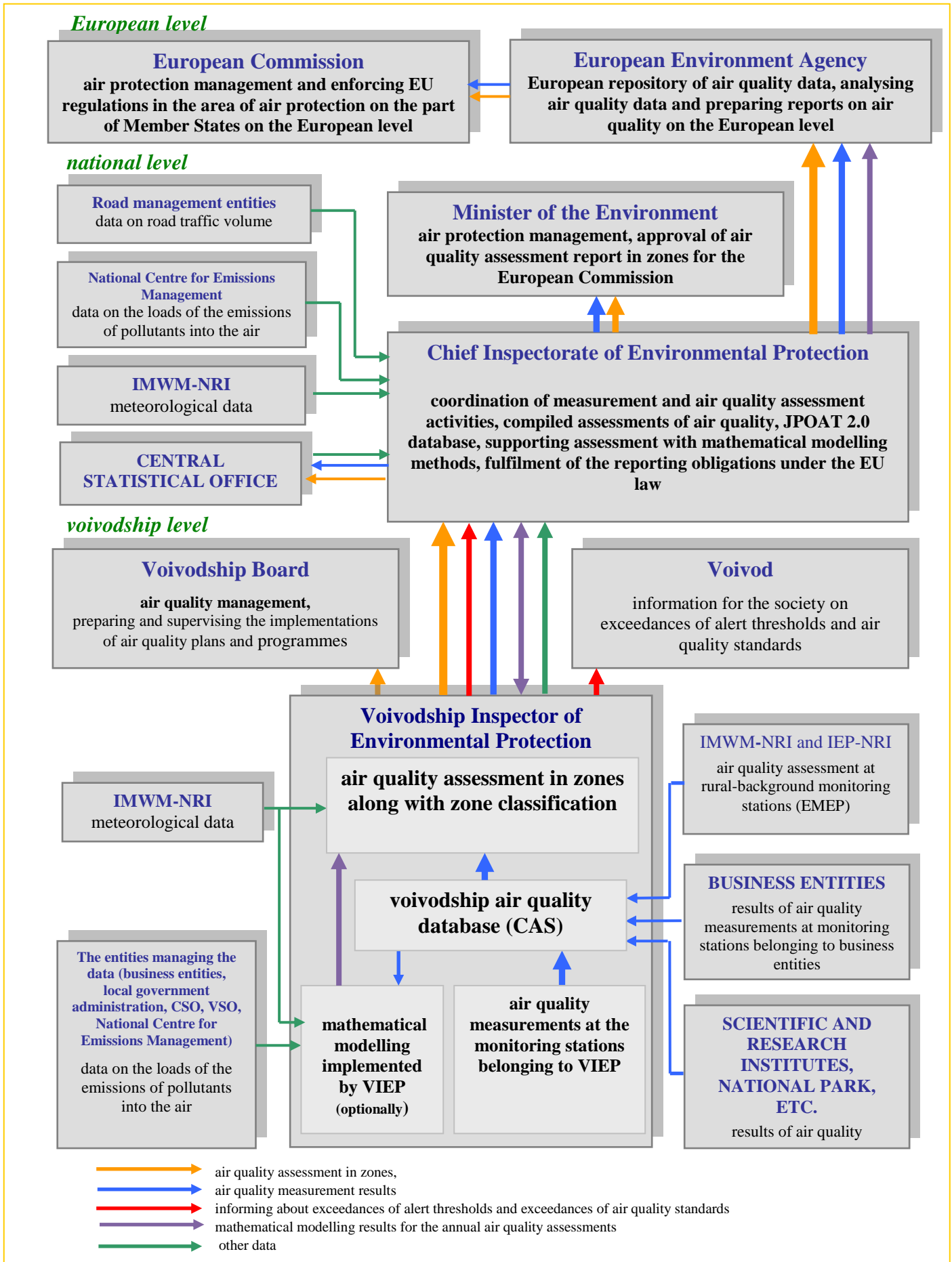


Fig. 3.1.1. The flow of air quality information

Task: The support of the annual air quality assessments system with mathematical modelling methods

The implementation of the task arises both from the provisions of Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe and Commission Implementing Decision 2011/850/EC of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, pp 86–106). The first recommends modelling as a supplementary method to air quality measurements or as a method replacing the measurements in exceptional cases and the latter requires to report spatial data to the European Commission including areas where air quality standards have been exceeded.

The aim of the task is to obtain the spatial distribution of pollutant concentrations for the annual air quality assessments, which will allow more accurate identification of the location and size of the areas where air quality standards were exceeded and to specify the population exposed to the excessive pollutant concentrations.

The task at national level will continue to support the system of annual air quality assessments regarding tropospheric ozone modelling using measurement data from the State Environmental Monitoring. In addition, since 2016, CIEP in cooperation with voivodship inspectorates of environmental protection will work on implementing, at national level, air quality modelling in terms of PM10 and PM2.5, benzo(a)pyrene in PM10 and sulphur dioxide (SO₂) and nitrogen dioxide (NO₂) to the system of annual air quality assessments performed by VIEP, which is also mentioned in the task “The monitoring and assessment of ambient air quality in zones”.

Until the full implementation of air quality modelling at national level, VIEP will optionally perform air quality modelling for the annual air quality assessments in the voivodship.

Task: The five-year air quality assessment to establish the appropriate manner of conducting annual air quality assessments

The obligation to verify the air quality assessment system in zones arises from Article 88 of the Environmental Protection Act which transposes Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe and Directive of the European Parliament and of the Council 2004/107/EC of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

In 2019, VIEP will verify air quality measurements and assessments system in zones for the years 2014–2018 in order to determine the appropriate method of annual assessments for SO₂, NO₂, NO_x, O₃, PM10, PM2.5, benzene, CO and Pb, As, Cd, Ni and B(a)P in PM10, respectively. On the basis of the assessment results, VIEP will modify voivodship systems of measurements and assessments of air quality

The results of these assessments developed by VIEP will serve CIEP to complete a compiled report of the five-year assessment and to plan the measurement systems in the context of changing international requirements, development of measurement and analytical techniques. Moreover, they will serve to fulfil the reporting obligations arising from the Community legislation, i.e. Commission Implementing Decision 2011/850/EU of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC of the

European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality and guidelines of the European Commission to that decision.

Task: Determining representativeness of monitoring sites functioning under the State Environmental Monitoring

The aim of the task is to harmonise the approach to determining the representativeness of measuring sites. The representativeness of the monitoring sites is in fact key information necessary to both carry out annual assessments of air quality and to monitor the effectiveness of implemented air quality programmes.

The information about the representativeness of the monitoring sites is also a very important reporting information submitted to the European Commission under European Commission Implementing Decision 2011/850/EU of 12 December 2011 laying down rules for the application of Directives 2004/107/EC and 2008/50 /EC of the European Parliament and of the Council with regard to the system of mutual exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, p. 86–106).

Under the task, CIEP will develop guidelines for determining the representativeness of air quality monitoring sites, and then, based on the guidelines, using the spatial analysis methods it will define representativeness of measurement sites operating under SEM, including the manual and automated sites for measurements of PM10, PM2.5 and pollutants in PM10 (As, Cd, Ni, Pb, benzo(a)pyrene), and for automatic sites for monitoring gaseous pollutants (SO₂, NO₂, NO_x, CO, O₃, benzene).

Task: The long-term projections on PM10 and PM2.5 concentration and determining pollution background

The purpose is to estimate whether the activities carried out currently and the ones planned in the coming years, aimed at reducing emissions of pollutants into the air, will efficiently and sustainably lead over the next 5 to 10 years to a reduction in the concentration of PM10 and PM2.5 to values not exceeding the limit values as defined in the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.

Long-term projections for the years 2020 and 2025 will be made for the area of the country and all voivodships as well as cities with the population of over 100 thousand inhabitants.

As part of this task, pollutant concentrations for PM10 and PM2.5 and precursors (SO₂, NO₂, CO) at background level for the years 2016–2020 will also be specified throughout Poland. In addition, the impact of emissions from a given voivodship on the PM10 and PM2.5 concentrations in other voivodship will be determined for 2015.

In 2016, the task will be carried out at national level by CIEP.

Task: The short-term forecasts on air pollution

The aim of the task is to provide current information about future concentrations of pollutants in the air. This information is necessary to warn the public about the risk of high concentrations of pollutants that are hazardous to health, as well as to launch measures envisaged in the short-term action plans consistent with the requirements of the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on air quality and cleaner air for Europe.

At national level, in the years 2016–2020, CIEP will continue to present forecasts concerning tropospheric ozone concentration, and from 2018, CIEP plans to start implementing short-term air quality forecasts for selected additional gaseous pollutants and PM10 and PM2.5.

Short-term forecasts will be presented on:

- CIEP online service on air quality in Poland, as a national level forecast
- websites of individual VIEP, as a voivodship level forecast.

Task: The analysis of selected episodes of high concentration of PM10

The purpose is to improve the knowledge of the causes for the episodes of high concentrations of PM10 in ambient air on Polish territory and the territories of the neighbouring countries, taking into account the contribution of transboundary air pollution in the analysed cases of exceedances. Such analyses will, e.g. allow to systematically track transboundary pollution from the neighbouring countries and their impact on smog situation in Poland, and to estimate the impact of Polish pollution on smog situations in these countries.

As part of the task, analyses of episodes of high concentrations of PM10 will be carried out, which took place in the winter season of 2013–2016, both on Polish territory and in border areas of the neighbouring countries. If the frequency of smog situation will persist, the task will be continued in subsequent years.

The results of the analyses could be used in work on the revision of the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe. They will also constitute important information for the purpose of the work within the framework of bilateral working groups for air protection (Polish-German, Polish-Czech and Polish-Slovak). The task will be implemented at national level by CIEP.

Task: The urban background monitoring as regards polycyclic aromatic hydrocarbons

The obligation to measure the composition of particulate matter with respect to polycyclic aromatic hydrocarbons (PAH) contents arises from Article 4(8) of Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The aim of the study is to determine the share of benzo(a)pyrene in polycyclic aromatic hydrocarbons contained in PM10.

In the years 2016–2020, one urban background monitoring station in the voivodship conducting the measurements of PM10 and benzo(a)pyrene in PM10 will continue to measure benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene in PM10. These measurements will be carried out by VIEP.

The results of the measurements from the years 2015–2019 will serve to prepare annual assessments of air pollution regarding PAH in Poland.

Data from urban background monitoring for PAHs will be collected in voivodship databases (CAS) and the JPOAT2,0 air quality monitoring database which functions within the SI EKOINFONET and will supply the air quality assessment system. Moreover, in accordance with the reporting requirements, they will be transferred to the European database (AIRBASE+).

Task: The measurements of air pollution regarding PM2.5 for monitoring of the national exposure reduction target

Obligation to conduct PM2.5 measurements in order to determine the PM2.5 average exposure indicator² arises from Article 15(3) and Annex XIV Section A of Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

The purpose of the task is to monitor human exposure to fine dust by monitoring the process of achieving national exposure reduction target and exposure concentration obligation³.

The measurements of PM2.5 will be implemented by VIEP. The average exposure indicators for all agglomerations and cities with a population of more than 100 thousand inhabitants and the national average exposure indicator (NAEI) will be calculated by CIEP.

Information about measurement sites of PM2.5 which will conduct measurements for the average exposure indicator along with the measurement results will be presented on the CIEP website. In addition, by 31 October each year, this website will present information about the values of the average exposure indicators for all agglomerations and cities with a population of more than 100 thousand inhabitants and the national average exposure indicator.

Measurements of air pollution with PM2.5 for the purpose of monitoring of the achievement of national exposure reduction target will be collected by voivodship databases (CAS) and the JPOAT2.0 air quality monitoring database which functions within the SIEKOINFONET, and will supply the air quality assessment system. Moreover, in accordance with reporting requirements, they will be submitted to the European database (AIRBASE+).

² The national average exposure indicator represents the mean concentration of PM2,5 in the air determined on the basis of measurements at urban-background locations in cities with a population of more than 100 thousand inhabitants and agglomerations throughout the country.

³ Exposure concentration obligation is a concentration of PM2.5 in the air determined on the basis of values of national average exposure indicator in order to reduce the harmful effects of the pollutant on human health, which is to be achieved by 2015; the exposure concentration obligation is an air quality standard.

Table 3.1.2. The measurements of air pollution regarding PM2.5 for monitoring of the national exposure reduction target

Subsystem		Task	
The air quality monitoring		The measurements of air pollution regarding PM2.5 for monitoring of the national exposure reduction target	
Legislative acts		<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26 and Articles 86a–86c, Article 94; - Regulation of the Minister of the Environment of 13 September 2012 on Method for Calculation of Average Exposure Indicator and Method for Assessment of Achieving Exposure Concentration Obligation (Journal of Laws of 2012, item 1029); - Regulation of the Minister of the Environment of 14 August 2012 on the National Exposure Reduction Target (Journal of Laws of 2012, item 1030); - Regulation of the Minister of the Environment of 2 August 2012 on Zones which are Subject to Air Quality Assessment (Journal of Laws of 2012, item 914); - Regulation of the Minister of the Environment of 10 September 2012 on the Scope and Method of Reporting on Air Pollution (Journal of Laws of 2012, item 1034). 	
Objective scope			
<p>In the years 2016–2020, the air quality monitoring stations, located in the urban-background areas in agglomerations and cities with a population of more than 100 thousand inhabitants will carry out measurements of PM2.5 for the purposes of monitoring of average exposure indicators for agglomerations and cities with a population of more than 100 thousand inhabitants and the national average exposure indicator. In cities over 100 thousand inhabitants and agglomerations not exceeding 1 million inhabitants, measurements will be carried out by one monitoring site. In Warsaw Agglomeration and the Upper Silesian Agglomeration, measurements will be conducted by two monitoring sites.</p> <p>The detailed information on the location of the monitoring sites that measure air pollution regarding PM2.5 will be included in voivodship environmental monitoring programmes.</p> <p>In the years 2016–2020, by 30 June each year, based on measurements conducted by VIEP in the previous year, CIEP will calculate average exposure indicators for all agglomerations and cities with a population of more than 100 thousand inhabitants and the national average exposure indicator. These calculations will be conducted annually, and the results will be immediately reported to the Minister of the Environment.</p> <p>Minister of the Environment, by 30 September, will announce through a notice in the Journal of Laws of the Republic of Poland “Monitor Polski” the value of the average exposure indicator for agglomerations and cities with a population of more than 100 thousand inhabitants with respect to the exposure concentration obligation.</p>			
Task implementation			
Measurements	Databases		Supervision and assessment
VIEP	VIEP – a voivodship database of monitoring stations CAS (central data acquisition unit collecting data from monitoring stations) CIEP and VIEP – JPOAT2.0 air quality database supplied with data from VIEP CAS databases		CIEP
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP	- the results of measurements from the PM2.5 monitoring sites which carry out measurements of PM2.5 for the purposes of calculating NAEI, metadata and the information about the quality of the measurements (in CAS air quality databases)	- on a current basis (without undue delay)	VIEP (CAS)

VIEP (CAS)	- the results of measurements from the PM2.5 monitoring sites measuring PM2.5 for the purposes of calculating NAEI, metadata – automated transmission	- according to the regulation of the Minister of the Environment on the Scope and Method of Reporting on Air Pollution	CIEP (JPOAT2.0)
VIEP	- the metadata on monitoring sites and measurements	- on a current basis, depending on available data	CIEP (JPOAT2.0)
CIEP	- the values of average exposure indicators for all agglomerations and cities with a population of more than 100 thousand inhabitants and the value of the national average exposure indicator	- once a year by 30 June	ME
CIEP	- the values of average exposure indicators for all agglomerations and cities with a population of more than 100 thousand inhabitants and the value of the national average exposure indicator	- once a year in accordance with the Statistical Research Programme	CSO
CIEP	- the measurement results from monitoring sites which carry out measurements of PM2.5 for the purposes of calculating NAEI – according to the guidelines to Decision 2011/850 /EU	- data for the previous year – once a year	EC, EEA
CIEP	- NAEI value	- once a year	EC, EEA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- the online service on air quality in Poland on the CIEP website presenting: - the information on the location and characteristics of monitoring sites of PM2.5 which carry out measurements for the purposes of designation of the average exposure indicator for cities and agglomerations and the national average exposure indicator; - the values of average exposure indicators for cities and agglomerations and the national average exposure indicator; - the measurements of PM2.5 from monitoring sites which conduct measurements for the purposes of monitoring of average exposure indicators for agglomerations and cities with a population of more than 100 thousand inhabitants and the national average exposure indicator.	- on a current basis, in case of changes in the location and surroundings of the monitoring site - every year by 31 October - according to the regulation of the Minister of the Environment on the Scope and Method of Reporting on Air Pollution	central and local government administration, universities, schools, libraries, society
ME	- announcement by way of a notice in the Journal of Laws of the Republic of Poland “Monitor Polski” of the values of average exposure indicators for agglomerations and cities with the number of inhabitants of more than 100 thousand with respect to the exposure concentration obligation	- every year by 30 September	
CIEP	- thematic / EML publications	- optionally	
VIEP	- VIEP websites (measurements of PM2.5 and metadata)	- ranging from a 24-hour basis to an annual basis	

Task: The monitoring of composition of PM10 and PM2.5, as well as mercury, heavy metals and polycyclic aromatic hydrocarbons (PAH) deposition at rural-background monitoring stations

The obligation to measure heavy metals and PAH in PM10 and deposition as well as gaseous mercury at rural-background monitoring stations arises from Article 4(9) of Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. While the obligation to conduct measurement of the chemical composition of PM10 arises from Article 6(5) of Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

In order to assess the background concentrations of heavy metals and PAH as well as chemical composition of PM2.5, at 3 selected rural-background stations in the Dolnośląskie Voivodship, the Kujawsko-Pomorskie Voivodship and the Warmińsko-Mazurskie Voivodship the following measurements will be conducted: total gaseous mercury, PM10, heavy metals and PAH in PM10 and total deposition of these pollutants, as well as measurements of PM2.5 concentration and its chemical composition for selected cations and anions and elementary and organic carbon. In addition, in order to monitor the impact of industrial areas of Górny Śląsk and Małopolska on air quality at the level of rural background, one measurement station in the Śląskie Voivodship located on the Kraków-Częstochowa Jura will carry out measurements of the composition of PM2.5 and measurements of the concentration of total gaseous mercury. In addition, one rural-background station in Mazowieckie Voivodship will carry out measurements of the concentration of total gaseous mercury in terms of the impact of the Warsaw Agglomeration on rural-background air pollution.

Simultaneously, in order to monitor transboundary transfer of pollutants between Poland and the Czech Republic, the VIEP station located in the area of the Moravian Gate (the Śląskie Voivodship) will monitor air pollution, including PM10 and PM2.5 composition, within the scope specified by the directives listed above.

The results of the measurements from the years 2015–2019 will serve to prepare annual air pollution assessments at the rural-background level.

The data from the stations will be stored in voivodship air quality monitoring databases (CAS) and the air quality monitoring database JPOAT2.0 operating within the SI EKOINFONET and will supply the air quality assessment system. Moreover, in accordance with reporting obligations, they will be submitted to the European database (AIRBASE+).

Simultaneously, the results of measurements of the background air pollution in terms of PM10 and PM2.5 composition, as well as total gaseous mercury from the rural-background stations in the Warmińsko-Mazurskie Voivodship and the Kujawsko-Pomorskie Voivodship and ultimately from the station in the Dolnośląskie Voivodship will be used to fulfil the reporting obligations under the Convention on Long-range Transboundary Air Pollution.

Table 3.1.3. The monitoring of composition of PM10 and PM2.5, as well as mercury, heavy metals and polycyclic aromatic hydrocarbons deposition at rural-background monitoring stations

Subsystem	Task	
The air quality monitoring	The monitoring of composition of PM10 and PM2.5, as well as mercury, heavy metals and polycyclic aromatic hydrocarbons deposition at rural-background monitoring stations	
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 - Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26 and Articles 86a–86c, Article 94; - Regulation of the Minister of the Environment of 13 September 2012 on Conducting the Assessment of Substance Levels in Air (Journal of Laws of 2012, item 1032); - Regulation of the Minister of the Environment of 10 September 2012 on the Scope and Method of Reporting on Air Pollution (Journal of Laws of 2012, item 1034); - Regulation of the Minister of the Environment of 2 August 2012 on Zones which are Subject to Air Quality Assessment (Journal of Laws of 2012, item 914). 	
Objective scope		
<p>In order to assess background air pollution, PM10 and heavy metals and PAHs:</p> <ul style="list-style-type: none"> - 5 selected rural-background stations in the Dolnośląskie, Kujawsko-Pomorskie, Mazowieckie, Śląskie and Marmińsko-Mazurskie Voivodships will perform measurements: of total gaseous mercury; - 3 selected rural-background stations in the Dolnośląskie, Kujawsko-Pomorskie and Warmińsko-Mazurskie Voivodships will conduct the measurements of: arsenic, cadmium, nickel, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene in PM10 and the total deposition of these pollutants. <p>In order to obtain the average annual information on concentrations of PM2.5 in rural-background areas and chemical composition of PM2.5, the 4 selected rural-background stations in the Dolnośląskie, Kujawsko-Pomorskie, Śląskie and Warmińsko-Mazurskie Voivodships will perform measurements of PM2.5 and measurements of selected cations (Na⁺, K⁺, Ca²⁺, Mg²⁺, NH₄⁺) and anions (SO₄²⁻, NO₃⁻, Cl⁻) and the organic and elementary carbon in PM2.5.</p> <p>The “Godów” transboundary air pollution monitoring station located in the Moravian Gate area will perform comprehensive measurements of the composition of PM10 and PM2.5 including arsenic, cadmium, nickel, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene in PM10 and measurements of selected cations (Na⁺, K⁺, Ca²⁺, Mg²⁺, NH₄⁺) and anions (SO₄²⁻, NO₃⁻, Cl⁻) and organic and elementary carbon in PM2.5.</p> <p>The “Borecka” station located in the Warmińsko-Mazurskie Voivodship is a station belonging to the Institute of Environmental Protection – National Research Institute (IEP-NRI); at the station, the measurement and analysis of samples will be performed by the IEP-NRI commissioned by CIEP. Other stations involved in the task are VIEP stations, collection and analysis of samples taken at these stations will be performed by VIEP.</p> <p>The detailed information on the number and location of the stations monitoring air pollution within the task referred to above will be included in voivodship environmental monitoring programmes.</p> <p>In the case of stations in the Dolnośląskie, Kujawsko-Pomorskie, Śląskie and Mazowieckie Voivodships, sampling and the analysis of samples will be performed by VIEP, monitoring of background air pollution at the “Puszcza Borecka” station will be performed by the IEP–NRI and commissioned by CIEP.</p> <p>The results of the measurements from the years 2015–2019 will serve to prepare annual air pollution assessments at the rural-background level.</p>		
Task implementation		
Measurements	Databases	Supervision and assessment
VIEP CIEP (IEP-NRI at the “Puszcza Borecka” station)	VIEP – a voivodship database of monitoring stations CAS (central data acquisition unit collecting data from monitoring stations) CIEP and VIEP – JPOAT2.0 air quality database supplied with data from VIEP CAS databases	CIEP

Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
<p>VIIEP/IEP-NRI</p> <p>VIIEP (CAS)</p> <p>VIIEP/IEP-NRI</p>	<p>- the results of measurements from the stations included in the measurement program, metadata and information about the quality of the measurements (in the CAS air quality database)</p> <p>- the results of measurements of the stations included in the measurement program, metadata on measurements – automated transmission</p> <p>- the metadata on stations and measurements</p>	<p>- IEP-NRI according to arrangements with VIIEP (without undue delay)</p> <p>- according to the regulation of the Minister of the Environment on the Scope and Method of Reporting on Air Pollution</p> <p>- on a current basis, depending on availability of the data</p>	<p>VIIEP (CAS) – according to location</p> <p>CIEP (JPOAT2.0)</p> <p>CIEP (JPOAT2.0)</p>
<p>VIIEP/IEP-NRI</p> <p>CIEP</p> <p>CIEP through IEP-NRI</p>	<p>- the report on the air quality measurements done at rural-background stations</p> <p>- the verified measurement data from the measurement program stations – in XML files in accordance to decision of the Commission 2011/850/EU and guidelines to decision 2011/850/EU</p> <p>- the selected results of measurements from the rural-background stations in the Warmińsko-Mazurskie and Kujawsko-Pomorskie Voivodship and ultimately from the station in the Dolnośląskie Voivodship – a file in the EMEP database format</p>	<p>- once a year by 15 May</p> <p>- data for the previous year – once a year</p> <p>- once a year</p>	<p>CIEP</p> <p>EC, EEA</p> <p>Chemical Coordinating Centre EMEP (Oslo)</p>
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information(min.)	Addressee of final information
CIEP	<p>- the online service on air quality in Poland on the CIEP website presenting:</p> <p>- the information on the location and characteristics of rural-background stations under the measurement programme;</p> <p>- monitoring results from stations under the measurement programme</p> <p>- the air pollution assessments at the rural-background level</p>	<p>- on a current basis, in case of changes in the location and surroundings of the monitoring site</p> <p>- according to the regulation of the Minister of the Environment on the Scope and Method of Reporting on Air Pollution</p> <p>- every year</p>	central and local government administration, universities, schools, libraries, society

CIEP	- thematic / EML publications	- optionally	
VIEP	- VIEP websites (measurements from stations included in the measurement programme)	- ranging from an hourly basis to an annual basis	

Task: The monitoring of ozone precursors

The obligation to measure ozone precursors at 1 station at minimum in Poland is based on Article 10 paragraph 6 and Annex X of the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.

The purpose is to identify and analyse the concentrations of ozone precursors in the atmosphere. Monitoring of ozone precursors will be conducted at 1 rural-background station in Poland with a high degree of representativeness located in Kujawsko-Pomorskie Voivodship. The task will be implemented by the Voivodship Inspectorate of Environmental Protection in Bydgoszcz.

The data from the monitoring of ozone precursors will be collected in the Kujawsko-Pomorskie Voivodship CAS database and the JPOAT2.0 database of air quality monitoring operating under the SI EKOINFONET. Moreover, in accordance with reporting requirements, they will be submitted to the European database (AIRBASE+).

Task: The monitoring of air pollution background at the stations of Łeba, Jarczew, Puszcza Borecka and Śnieżka in compliance with the programmes EMEP, GAW/WMO and COMBINE/HELCOM

The aim of the task is to measure the atmospheric pollution background concentrations. The measurement programmes at the stations participating in the task were planned so as to meet the requirements of the Protocol on EMEP (European Monitoring and Evaluation Programme) signed by Poland to the 1979 Convention on Long-range Transboundary Air Pollution (Journal of Laws of 1988, No 40, item 313), known as the Geneva Convention. Programme similarities enable simultaneous participation of background stations in the GAW/WMO programme and the fulfilment of the requirements of the Helsinki Convention (HELCOM) concerning air quality measurements in the Baltic Sea Region (the station in Łeba).

The task is the follow-up of the monitoring conducted to date, and it will be implemented on the basis of the national network of three IMWM–NRI stations in: Łeba (Pomorskie Voivodship), Jarczew (Lubelskie Voivodship) and Śnieżka (Dolnośląskie Voivodship) and one station of the Institute of Environmental Protection in Puszcza Borecka (Warmińsko-Mazurskie Voivodship).

The results of monitoring of pollution background will be used to fulfil the reporting obligations under the Convention on Long-range Transboundary Air Pollution and the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Journal of Laws of 2000, No 28, item 346), known as the Helsinki Convention. The data from Poland will be used at the European level to estimate transboundary transport, concentration and deposition of pollutants in Europe and, consequently, to specify the scope and assess the effectiveness of emission reduction programmes implemented by specific countries in accordance with the protocols to the Geneva Convention. The results of atmospheric pollution background monitoring will be applied by the Helsinki Commission in order to provide information on air pollution in coastal areas for the purposes of the COMBINE/HELCOM programme of the Baltic Sea monitoring (implemented under the Helsinki Convention) as

well as by the centre of the global atmospheric observation programme of the World Meteorological Organisation (GAW/WMO) in order to analyse the concentrations of pollutants in the air on a global scale.

The results of monitoring of background air pollution will supply the VIEP voivodship systems of air quality assessment and the JPOAT2.0 air quality monitoring database operating within the SI EKOINFONET. In addition, the data will be submitted to the European database (Airbase +) and the EMEP and GAW/WMO databases in accordance with the reporting requirements.

Table 3.1.4. The monitoring of air pollution background at the stations of Łeba, Jarczew, Puszcza Borecka and Śnieżka in compliance with the EMEP, GAW/WMO and COMBINE/HELCOM programmes

		Task
The air quality monitoring		The monitoring of air pollution background at the stations of Łeba, Jarczew, Puszcza Borecka and Śnieżka in compliance with the EMEP, GAW/WMO and COMBINE/HELCOM programmes
Legislative acts		<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - the Protocol to the Convention on Long-range Transboundary Air Pollution of 1979 on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) (Journal of Laws of 1988, No 40, item 313); - The Baltic Sea monitoring programme (COMBINE) under the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Journal of Laws of 2000, No 28, item 346); - Global Atmosphere Watch (GAW) Programme of the World Meteorological Organisation (WMO)
Objective scope		
<p>The measurement programme is established by the EMEP Steering Body. For the purposes of EMEP, four national network stations (Śnieżka, Jarczew, Łeba, Puszcza Borecka) will continue measurements of:</p> <ul style="list-style-type: none"> - gaseous SO₂, NO₂, O₃; -in aerosol: SO₄²⁻, NO₃⁻, NH₄⁺, Cl⁻; gases + aerosols: HNO₃ + NO₃⁻, NH₃ + NH₄⁺; - in precipitation: SO₄²⁻, NO₃⁻, NH₄⁺, Cl⁻, Na⁺, Ca²⁺, Mg²⁺, K⁺; - electrolytic conductivity, pH. <p>Moreover, measurements of heavy metals in precipitation will be conducted at stations in Łeba and Puszcza Borecka. Measurements of CO₂, Hg, measurements of PM10 and heavy metals and PAHs in PM10, PAH total deposition, measurements of PM2.5 and its composition will be conducted at the station in Puszcza Borecka (programme described in the task “The monitoring of composition of PM10 and PM2.5, as well as mercury, heavy metals and polycyclic aromatic hydrocarbons deposition at rural-background monitoring stations”).</p>		
Task implementation		
Measurements	Databases	Supervision and assessment
CIEP (IMWM-NRI stations in Łeba, Jarczew, on Śnieżka; IEP-NRI station in the Puszcza Borecka)	<p>VIEP – a voivodship database of monitoring stations CAS (central data acquisition unit collecting data from monitoring stations) in respect of data under annual air quality assessment</p> <p>CIEP – JPOAT2.0 air quality database – for all data covered by the measurement programme</p>	CIEP in cooperation with IMWM–NRI and IEP-NRI Chemical Coordinating Centre EMEP

Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
IMWM-NRI IEP-NRI	- the results of automated measurements and selected manual measurements of pollutants covered by the annual air quality assessment, metadata and the information about the quality of the measurements (in the CAS air quality database)	- according to arrangements with VIEP (without undue delay)	VIEP (CAS) – according to location
VIEP (CAS)	- the results of automated measurements and selected manual measurements of pollutants covered by the annual air quality assessment, metadata – automated transmission	- on a current basis, depending on the availability of data	CIEP (JPOAT2.0)
IMWM-NRI IEP-NRI	- the measurements of pollutants not covered by the annual air quality assessment	- once a year	CIEP (JPOAT2.0)
IMWM-NRI IEP-NRI	- the compilation of measurement results along with the analysis and assessment in the form of a report	- once a year	CIEP
IMWM-NRI IEP-NRI	- the synthesis report	- once a year	CIEP
CIEP (IMWM-NRI and IEP-NRI)	- the aggregate measurement data in table form	- once a year in accordance with the Statistical Research Programme	CSO
IMWM-NRI IEP-NRI	- the measurement data – files in the form of EMEP database	- once a year	Chemical Coordinating Centre EMEP (Oslo)
IMWM-NRI IEP-NRI	- the measurement data – file in the GAW/WMO/WDCGG database format	- once a month	GAW (Japan)
CIEP	- the verified data of automated measurements and selected manual measurements from stations covered by the measurement programme – in the form of XML files in accordance with Decision 2011/850/EU and guidelines to Decision 2011/850/EU	- data for the previous year - once a year	EC, EEA

Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	<ul style="list-style-type: none"> - the online service on air quality in Poland on the CIEP website presenting: - the information on the location and characteristics of rural-background stations under the measurement programme; - the measurement results from stations under the measurement programme - the synthesis report 	<ul style="list-style-type: none"> - on a current basis, in case of changes in the location and surroundings of the measurement station - on a current basis, depending on the availability of data - every year 	central and local government administration, universities, schools, libraries, society
CIEP	<ul style="list-style-type: none"> - thematic / EML publications 	<ul style="list-style-type: none"> - optionally 	

Task: The monitoring of the chemical composition of precipitation and the assessment of deposition of pollutants into the soil

The aim of the task is to provide the data on the loads of acidifiers, nutrients and heavy metals deposited into the soil with precipitation. These data help to track trends and, consequently, to assess the efficiency of the programmes aiming to reduce the emission of pollutants into the air. Moreover, they can be used to balance eutrophying compounds within the framework of measures taken to protect waters against pollutants from agricultural sources.

The results of the monitoring of the chemical composition of precipitation will be used to analyse the effects of reducing emissions of pollutants into the air resulting, among others, from the implementation of Directive of the European Parliament and of the Council 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17.12.2010, pp 17–119) and the new draft Directive of the European Parliament and of the Council on the reduction of national emissions of certain air pollutants on the deposition of pollutants to the ground. In addition, the results of the monitoring of the chemical composition of precipitation will be used in water management.

The results of the chemical composition of precipitation monitoring and the assessments of pollutant deposition into the soil provided by the national network will be once a year submitted to all VIEP. In order to improve the resolution of data VIEP may conduct analogical monitoring programmes basing on regional networks.

The results of the monitoring of the chemical composition of precipitation will be ultimately collected in the JPOAT2.0 air quality monitoring database operating under the SI EKOINFONET.

Table 3.1.5. The monitoring of the chemical composition of precipitation and the assessment of deposition of pollutants into the soil

Subsystem		Task	
The air quality monitoring		The monitoring of the chemical composition of precipitation and the assessment of deposition of pollutants into the soil	
Legislative acts		Lack of specific legal regulations	
Objective scope			
<p>The task is the follow-up of the monitoring conducted to date, and it will be implemented basing on the national network comprising of 22 monitoring stations measuring chemical composition of precipitation along with approx. 162 stations providing the data on the levels and origin of precipitation, which enables data extrapolation to the whole country by means of statistical methods.</p> <p>The task will investigate concentrations in precipitation of:</p> <ul style="list-style-type: none"> - anions: SO_4^{2-}, NO_x^-, Cl^-, - cations: NH_4^+, Na^+, Ca^{2+}, Mg^{2+}, K^+, - heavy metals (Zn, Cu, Pb, Ni, Cd, Cr), - total nitrogen and total phosphorus <p>and measurements of pH and electrolytic conductivity will be carried out.</p> <p>The samples of wet-only precipitation will be collected using automated precipitation collectors at IMWM-NRI weather stations. The analyses will be conducted at VIEP laboratories. The estimation of monthly and annual depositions and assessments in connection with the vulnerability of receptors (soils, soil and forest ecosystems, surface waters) will be conducted by the IMWM-NRI supervising content-related aspects of the programme. The presentation of the results of the monitoring in the GIS system by administrative units and hydrographical units.</p> <p>A parallel programme may be implemented basing on a denser regional network within the framework of the voivodship environmental monitoring programme.</p>			
Task implementation			
Measurements		Databases	Supervision and assessment
CIEP (IMWM-NRI - sample collection) VIEP – laboratory analyses of samples		CIEP – measurement results in spreadsheet, ultimately in JPOAT2.0 air quality monitoring database	CIEP in cooperation with IMWM-NRI branch in Wrocław)
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP	- the results of analyses of precipitation samples	- every month	IMWM-NRI branch in Wrocław
IMWM-NRI branch in Wrocław	- the compiled results of concentration measurements and the results of deposition calculations in the form of tables and maps for the entire country;	- once a year	CIEP (ultimately in JPOAT2.0 air quality monitoring database)
IMWM-NRI branch in Wrocław	- the compiled results of concentration measurements and the results of deposition calculations in the form of tables and maps for a given voivodship	- once a year	VIEP – all

Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- the online service on air quality in Poland on the CIEP website	- on a current basis, depending on the availability of data	central and local government administration, universities, schools, libraries, society

Task: The monitoring of the ozone layer over Poland and the UV-B radiation intensity measurements

The aim of the task is to provide information which allows to assess the effectiveness of the activities to protect the ozone layer undertaken by international society basing on the protocols to the Vienna Convention for the Protection of the Ozone Layer (Journal of Laws of 1992, No 98, item 488), which establish the scope and schedules of the elimination of the substances damaging the ozone layer.

At national level, the monitoring programme will be implemented by the Institute of Geophysics of the Polish Academy of Sciences, IMWM-NRI branch in Warsaw and IMWM-NRI branch in Kraków and will be a follow-up of the existing work.

The monitoring results will serve to specify the state of the ozone layer and UV-B radiation intensity over Poland and fulfil the reporting obligations arising from the Vienna Convention for the Protection of the Ozone Layer.

Table 3.1.6. The monitoring of the ozone layer over Poland and the UV-B radiation intensity measurements

Task	
The air quality monitoring	The monitoring of the ozone layer over Poland and the UV-B radiation intensity measurements
Legislative acts	Vienna Convention for the Protection of the Ozone Layer (Journal of Laws of 1992, No 98, item 488).
Objective scope	
<p>The measurements are conducted basing on the national network constituting an element of the Global Ozone Observing System (GO₃OS) and they include:</p> <ul style="list-style-type: none"> a) daily measurements of total ozone contents in the atmosphere by means of the Dobson and Brewer spectrophotometer and on cloudless days – by Umkehr vertical ozone profile measurements at the Belsk station, b) the measurements of ozone profiles using the probe method once a week at Legionowo station, c) the determination of total ozone contents fields over Europe by means of satellite observations, d) the measurements of UV-B radiation intensity, e) UV index forecasts in summer. <p>Basing on the obtained data, the state of the ozone layer and UV-B radiation for Poland is assessed in connection with the assessment of the state of the ozone layer at global level.</p>	

Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP (Implementing entities: IMWM-NRI, branch in Warsaw (b, d, e); Institute of Geophysics of the Polish Academy of Sciences (a, d); IMWM-NRI, branch in Kraków)	CIEP / IMWM-NRI, branch in Warsaw and branch in Kraków, Institute of Geophysics of the Polish Academy of Sciences – results in spreadsheet	CIEP (in cooperation with the Institutes)	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
IG PAS	- The total ozone measurement results	- every day	Atomic and Nuclear Physics Laboratory, University of Thessaloniki, Greece; World Ozone and Ultraviolet Radiation Data Centre – Toronto, Canada
IG PAS	- the ozone profile (Umkehr)	- once a year	World Ozone and Ultraviolet Radiation Data Centre (WOUDC) – Toronto, Canada
IG PAS	- the measurements of UV-B radiation intensity, - the total ozone measurement results,	- every month	CIEP
IG PAS	- the compilation of measurements results along with the analysis and assessment,	- once a year	CIEP
IG PAS	- the compiled results of the total the ozone content in the atmosphere of the long-term trend and monthly UV-B statistics in table form	- once a year in accordance with the Statistical Research Programme	CSO
IMWM-NRI	- the profiles of ozone soundings	- once a week immediately after measurement - once a year	Norwegian Institute for Air Protection (NILU), CIEP and IG PAS World Ozone and Ultraviolet Radiation Data Centre (WOUDC) – Toronto, Canada Network for the Detection of Atmospheric Composition Change (NDACC), USA
IMWM-NRI	- the satellite maps of the total ozone content in the atmosphere over Central Europe	- two times a year	CIEP
IMWM-NRI	- the compiled results of UV-B measurements from broadband sensors, profiles of ozone soundings, satellite maps of the total ozone content in the atmosphere over Central Europe	- once a year	CIEP

IMWM-NRI	- the monthly statistics of UV-B radiation and ozone content in the atmosphere over Legionowo in table form	- once a year in accordance with the Statistical Research Programme	CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- CIEP website	annual update	central and local government administration, universities, schools, libraries, society
IG PAS	- IG PAS website	- monthly	
IMWM-NRI	- IMWM-NRI website: pogodynka.pl - CIEP website	- from May to September every day (UV index forecast)	
IMWM-NRI	- IMWM-NRI website: pogodynka.pl - CIEP website	- update every 5 minutes – current results of UV measurement from four stations IMWM-NRI (Łeba, Legionowo, Katowice, Zakopane)	

Task: Acquisition of information on the sources and loads of substances released into air for the purposes of air quality monitoring

The task involves collecting by both VIEP and CIEP data on the sources and volume of pollutants emissions covered by air quality assessment. Collecting the data is done for the purposes of annual air quality assessments, including supporting air quality assessments with mathematical modelling methods (task: “The monitoring and assessment of ambient air quality in zones” and task: “The support of the annual air quality assessments system with mathematical modelling methods”), assessments for determining the appropriate method of air quality assessment (task: “The five-year air quality assessment to establish the appropriate manner of conducting annual air quality assessments”), and long- and short-term projections and forecasts (task: “The long-term projections on PM10 and PM2.5 concentration and determining pollution background” and task: “The short-term forecasts on air pollution”).

It is assumed that in the years 2016–2020, inventories of emissions of air pollutants will be performed at national level, commissioned by CIEP and will be verified and complemented by voivodship inspectorates of environmental protection, e.g. based on data collected in the course of control. Ultimately, it is assumed that the task of maintaining the database on emissions of pollutants into the air for the purposes of air quality modelling will be carried out by the National Centre for Emissions Management, located in the Institute of Environmental Protection – NRI. Until the full implementation of support of annual air quality assessments with mathematical modelling methods at national level, voivodship inspectorates of environmental protection maintaining the voivodship databases on pollutants emissions into the air for the purposes of air quality modelling, will continue the implementation of this task. Data collected in voivodship databases will be used to update the national database.

A free access by CIEP and VIEP to the resources of the databases on the emissions of greenhouse gases and other substances, located in the National Centre for Emissions Management (NCEM) is assumed.

3.2. The water quality monitoring subsystem

In accordance with Article 26 of the Environmental Protection Act, the water quality monitoring subsystem functions to obtain the information and data on the quality of inland waters, surface waters, groundwater and marine waters. The water quality monitoring subsystem includes:

- the monitoring of surface waters – inland waters, transitional waters and coastal waters;
- groundwater quality monitoring;
- the Baltic Sea Monitoring.

3.2.1. The monitoring of surface waters – inland waters, transitional waters and coastal waters;

The obligation to measure and assess the quality of surface waters within the framework of the State Environmental Monitoring arises from Article 155a paragraph 2 of the Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) hereinafter referred to as the Water Law Act. Article 155a Paragraph 3 specifies that surface water quality monitoring with respect to physicochemical, chemical and biological elements fall within the competence of a voivodship inspector of environmental protection.

The aim of monitoring is to provide the knowledge on the status of waters, which is necessary to undertake measures to improve the status of waters and to protect waters against pollution. The measures should serve to protect waters against eutrophication caused by the influences of the household and municipal sector and agriculture as well as against industrial pollutants, including salinity and the substances particularly hazardous to water environment. Monitoring and activities planned and implemented in accordance with the six-year cycle of water management plans, arising from the provisions of national law transposing the requirements of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, pp 1–73, OJ Special edition in Polish, Chapter 15, Volume 5, pp 275–346), known as the Water Framework Directive. During the Programme, the third cycle of water management plans (2016–2021) will be obligatory.

The scope and manner of measurements and the criteria for the assessment of the status of waters are specified by the regulations to the Water Law Act:

- Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and Groundwater Bodies of (Journal of Laws of 2011, No 258, item 1550);
- Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, No 258, item 1558);
- Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482);
- Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549);
- Regulation of the Minister of the Environment of 23 December 2002 on the Criteria to Determine the Waters Vulnerable to Pollution with Nitrogen Compounds from Agricultural Sources (Journal of Laws of 2002, No 241, item 2093);

Except for the implementation of the basic objective specified above, the results of the work and monitoring will be used by Poland in the years 2016–2020 to fulfil reporting obligations towards the European Commission (the reports referred to in the Water Framework Directive 2000/60/EC and Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources). Moreover, within the framework of the subsystem, Poland will perform its duties towards to the Helsinki Commission and the European Environment Agency consisting in, among others, the submission of national data on the quality of river waters, lake waters, transitional waters and coastal waters.

Based on the work carried out within the framework of a dedicated task, a gradual implementation of the additional requirements laid down by Directive of the European Parliament and of the Council 2013/39/EU of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC on priority substances in the field of water policy (OJ L 226, 24.8.2013, p.1) is expected.

The tasks to be implemented within the framework of the surface water quality monitoring subsystem in the years 2016–2020 will include:

- ✓ the monitoring and assessment of the status of rivers, including dam reservoirs,
- ✓ the monitoring and assessment of the status of lakes,
- ✓ the monitoring and assessment of the quality of sediments in rivers and lakes
- ✓ the monitoring and assessment of the status of transitional and coastal waters
- ✓ the observations and assessment of the status of hydromorphological elements for the purpose of ecological status assessment,
- ✓ implementation of Directive of the European Parliament and of the Council 2013/39/EU of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy.

Assessments of the status of waters of all categories conducted by the voivodship inspectorates of environmental protection, after being aggregated by CIEP, will be submitted to the National Water Management Authority and, through it, to the regional water management authorities. The monitoring programme will be implemented under surveillance monitoring (rivers, including dam reservoirs, lakes, transitional waters and coastal waters and water bodies in the areas of protection of habitats and species), operational monitoring (rivers, including dam reservoirs, lakes and transitional waters and coastal waters), investigative monitoring and for all categories of waters – monitoring of protected areas. Monitoring of protected areas will be conducted in water bodies (WB) in areas:

- at risk of eutrophication from municipal sources,
- intended for recreational use, including bathing,
- used for supply of the public with drinking water,
- located in Natura 2000 sites and other protected areas, whose status depends on the quality of surface waters,
- areas exposed to pollution with nitrogen compounds from agricultural sources (in accordance with guidelines provided by the National Water Management Authority will be subject to monitoring only in 2016).

Monitoring sites will be located on the basis of the lists of the waters, updated characteristics of water bodies, as well as the lists of emissions referred to in Article 113 of the Water Law Act, provided by the National Water Management Authority (NWMA) to the Chief Inspectorate of Environmental Protection, with regard to VIEP own data on emissions to water.

The decision to begin investigative monitoring of a given water body, aimed primarily at determining the magnitude and impact of accidental pollution, may be taken during the

implementation of the voivodship environmental monitoring programmes. The launching of investigative monitoring does not require approval of the Chief Inspector of Environmental Protection and annexing of the voivodship environmental monitoring programmes. When preparing a report on the activities of the Inspection of Environmental Protection, it is necessary to describe the purpose, timing and scope of measurements conducted under such additional investigative monitoring.

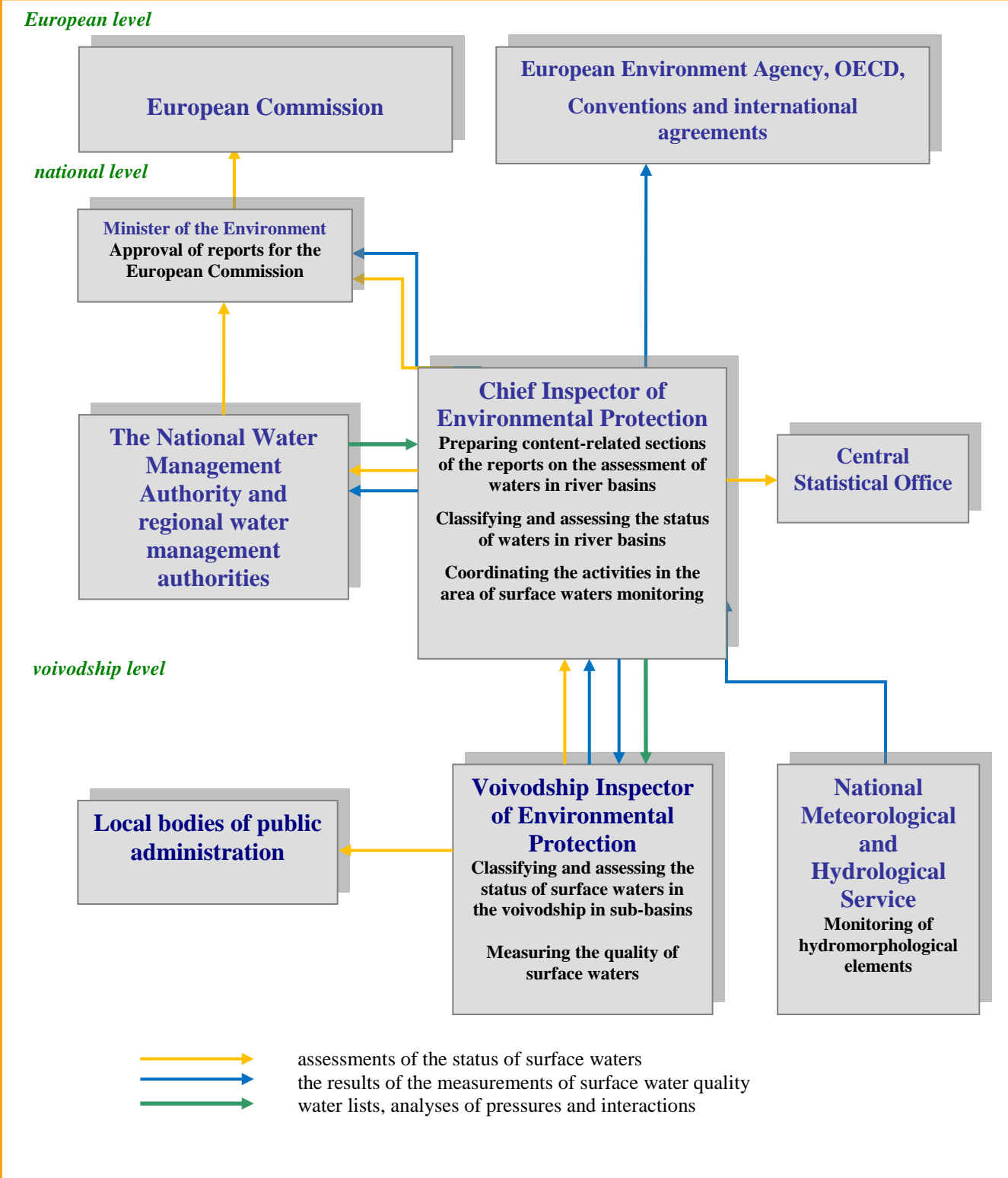


Fig. 3.2.1. The flow of the information concerning surface water quality under State Environment Monitoring Programme

Task: The monitoring and assessment of the status of rivers, including dam reservoirs

The purpose is to provide information about the status of river waters and dam reservoirs designated as water bodies.

In the years 2016–2020 a monitoring carried out under the third cycle of water management from 2016 to 2021 will take place.

In the period covered by the Programme, surveillance, operational and investigative monitoring as well as monitoring of protected areas will be conducted. The frequency and scope of measurements will vary and will depend on the type of monitoring sites and the purpose for which the site has been designated, whereas measurement will cover all representative sites of monitoring of the ecological potential or status and chemical status of surface waters covered by surveillance or operational monitoring (twice in the water cycle) and all points sites on the water bodies designated as protected areas in at least one full year of study.

A special role will be given to monitoring sites with the planned implementation of investigative intense monitoring located in areas defined in the Regulation of the Minister of the Environment of 15 November 2011 On the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550). These will be the monitoring sites serving to investigate heavy metals, nutrients and the indicators characterising oxygenation conditions. The measurements will be conducted at least 12 times a year (normally one sample per month). The results of the regular research programme implemented at these sites will serve, e.g. to assess the loads of nutrients and heavy metals carried by Polish rivers into the Baltic Sea.

Monitoring of harmful substances to the aquatic environment, in particular, of the priority substances is carried out every year on water bodies where the sources of the release of these substances are or used to be located or for which exceedances of the limit values for these substances were found in previous years. These measurements are conducted at a site which is representative for a water body under the operational monitoring. If the results obtained during the first full annual monitoring cycle indicate that the concentration of the substance does not exceed the limit values, the monitoring frequency may be reduced to a minimum of 4 measurements per year (every 3 months). However, if all the results obtained for the water body in the previous year indicate that the substance does not exist or measures to improve water status have not been undertaken, monitoring of such substance may be discontinued.

If necessary, investigative monitoring will be established locally. The scope, frequency of measurements and period of investigative monitoring will be established on a case basis, according to the reasons of its establishment, with the exception of monitoring sites of intense monitoring of flowing surface water bodies, for which the scope and frequency of measurements is defined in the Regulation of the Minister of the Environment of 15 November 2011 On the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550) as amended by Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation On the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, item 1558).

Every year, assessment of the status of water bodies being monitored in the previous year will be conducted, which will be verified by the Chief Inspector of Environmental Protection. Assessment of the status of water bodies will be conducted within the scope resulting from an monitoring programme executed in a given year (assessment of ecological

status, or, in the case of artificial and heavily modified water bodies, ecological potential and / or assessment of the chemical status), taking into account the principle of inheritance of the indicator classification allowing assessment based on the newest available monitoring results. The results of the classification of biological elements being subject to inheritance for six years, with the exception of the indicators used in operational monitoring to assess the degree of the impact of pressure, whose classification results may be inherited only during a period of three years.

In 2016, CIEP will prepare collective summary of the assessment of ecological status (or ecological potential) and the chemical status of river water bodies covered by monitoring in the years 2010–2015. This assessment will be developed based on the analysis of measurements carried out in the years 2010–2015 and will help to determine the degree of fulfilment of the environmental objectives by water bodies by the end of 2015.

In 2019, a collective summary of the assessment of ecological status (or ecological potential) and the chemical status of river water bodies included in monitoring in the years 2013–2018 will be prepared by CIEP. The 2019–2020 monitoring data will be used for the update of the collective summary, which is planned in 2022.

The assessments will be carried out by voivodship inspectorates of environmental protection in river basins on the basis on the standards provided for in the regulations of the Minister of the Environment to the Water Law Act, in particular in the Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482) and methodologies and guidelines developed by CIEP. Chief Inspector of Environmental Protection will verify and cumulate the assessment results for river basin.

In addition, assessments of water bodies on which monitoring site for the monitoring of protected areas have been located, will be conducted according to the schedule resulting from relevant regulations and directives.

In response to the needs of recipients at voivodship level, VIEP will present the results of the assessments summarised according to administrative borders of voivodship.

Data from the monitoring of rivers and dam reservoirs will be entered to and stored in the JWODA database developed under the SI EKOIFONET after implementation of its operational version. The system will store both the results of measurements, information on the conditions occurring during sampling, sample preservation conditions, examination techniques and methods, and the results of classification and assessment of river water bodies (including dam reservoirs). The basic purpose of the system will be to provide multi-level data control both at the level of VIEP laboratories, VIEP departments of environmental monitoring, CIEP and external experts. In subsequent years, after the implemented version will have been verified as correct, further develop the JWODA database is expected, in particular, the development of modules for recording of results of biological elements monitoring in river water bodies and calculating indices for them.

Every year, in the period consistent with the guidelines of the European Environment Agency, the report Water Information System for Europe – State of Environment will be developed, which will contain the results of measurements conducted in the previous calendar year.

Table 3.2.1.1. The monitoring and assessment of the status of rivers, including dam reservoirs

Subsystem	Task
<p>Monitoring of the quality of waters</p>	<p>The monitoring and assessment of the status of rivers, including dam reservoirs</p>
<p>Legislative acts</p>	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 38a paragraphs 2 and 3, Article 47, Article 155a, Article 155b - Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549); - Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550); - Regulation of the Minister of the Environment of 21 November 2013 amending Regulation on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, No 258, item 1558); - Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for priority substances (Journal of Laws of 2014, item 1482); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485); - Regulation of the Minister of the Environment of 23 December 2002 on the Criteria to Determine the Waters Vulnerable to Pollution with Nitrogen Compounds from Agricultural Sources (Journal of Laws of 2002, No 241, item 2093);
<p>Objective scope</p>	
<p>The measurements will be conducted at approximately 2500 monitoring site (MS) located on rivers and dam reservoirs. The scope and frequency of measurements will be selected in accordance with the regulations referred to above and will depend on a given program assigned to the MS. However, in the case of MS covered by operational monitoring, the measurements will include at least one selected biological element, indicators characterising the physical condition, including thermal conditions, indicators characterising oxygen conditions and salinity, pH, nutrients and substances harmful to the aquatic environment, in particular, priority substances if the source of the release of these substances occur or used to occur in the past in the water bodies under measurements or exceedances of the limit values for these substances have been found.</p> <p>Year 2016: Measurements of the quality of rivers will be conducted according to the programme including surveillance monitoring, operational monitoring, investigative monitoring and monitoring of protected areas. The assessment of the status of river water bodies (including dam reservoirs) for the year 2015 in accordance with the inheritance of classification principle, as well as compiled assessment of the ecological status (or ecological potential) and the chemical status of river water bodies will be prepared (including dam reservoirs) covered with monitoring in the years 2010–2015. The assessment will be prepared on the basis of analysis of measurement results in the years 2010–2015.</p> <p>Year 2017: Measurements of the quality of rivers will be conducted according to the programme including surveillance monitoring, operational monitoring, investigative monitoring and monitoring of protected areas. On the basis of measurement results in 2016, an update of the assessment of the status of river water bodies (including dam reservoirs) will be conducted taking into account the inheritance of classification principle.</p> <p>Year 2018: Measurements of the quality of rivers will be conducted according to the programme including surveillance monitoring, operational monitoring, investigative monitoring and monitoring of protected areas. On the basis of measurement results in 2017, an update of the assessment of the status of river water bodies (including dam reservoirs) will be conducted taking into account the inheritance of classification principle.</p> <p>Year 2019: Measurements of the quality of rivers will be conducted according to the programme including surveillance monitoring, operational monitoring, investigative monitoring and monitoring of protected areas.</p>	

On the basis of measurement results in 2018, an update of the assessment of the status of river water bodies (including dam reservoirs) will be conducted taking into account the inheritance of classification principle. On the basis of data from the years 2013–2018, CIEP will prepare a compiled assessment of the status of river water bodies (including dam reservoirs).

Year 2020: Measurements of the quality of rivers will be conducted according to the programme including surveillance monitoring, operational monitoring, investigative monitoring and monitoring of protected areas. On the basis of measurement results in 2019, an update of the assessment of the status of river water bodies (including dam reservoirs) will be conducted taking into account the inheritance of classification principle.

Surveillance monitoring will cover more than 900 representative monitoring sites corresponding to the same number of river water bodies (including dam reservoirs). The network of representative monitoring sites determined for surveillance monitoring has been planned so as to enable coherent and comprehensive review of the status of waters in along the entire river basin, taking into account diversity of river water bodies for abiotic typology.

The operational monitoring programme will cover flowing water bodies, including dam reservoirs at risk of failing to comply with environmental objectives, according to the list prepared by the President of National Water Management Authority. The location of the monitoring sites and a detailed scope and the frequency of determined parameters will be specified in voivodship environmental monitoring programmes approved by CIEP.

The programme of monitoring of protected areas will cover the water bodies being in the protected areas or associated with protected areas referred to in Article 113 of the Water Law Act.

The programme of investigative monitoring at intense monitoring sites will cover Baltic Sea and Kaliningrad Oblast river mouths. The measurements will include nitrogen and phosphorus compounds, heavy metals (zinc, copper, cadmium, lead, nickel and mercury), petroleum hydrocarbon – mineral oil index and BOD₅. The measurement frequency will be 24 or 12 times a year.

The investigative monitoring programme will cover all measurements arising from international commitments.

The data obtained in the operational monitoring in the years 2019–2020 will be used for the purposes of assessment of compliance with environmental objectives by water bodies at risk of failing to comply with environmental objectives, which is planned for the year 2022.

Task implementation			
Measurements	Databases	Supervision and assessment	
VIEP (also CIEP in justified cases)	CIEP – JWODA database of surface waters monitoring.	CIEP – at national level, in river basins VIEP – voivodship	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP	- The results of measurements, information about conditions during sample collection, conditions of sample preservation, measurement techniques and methods used	- immediately after marking of the collected samples, at the latest by 31 March at the end of the calendar year in which the measurement were conducted	CIEP – JWODA
VIEP	- the assessment of water status in the voivodship (at monitoring sites and in water bodies)	- once a year, at the latest by 30 April for water bodies at the end of the calendar year in which the measurements were conducted.	CIEP – JWODA
CIEP	- the aggregate results of measurements and the assessment of ecological and chemical status (or ecological potential) in river basins, in the form to be arranged	- once a year, at the latest by 30 September for the previous calendar year	NWMA, VIEP
CIEP	- the compilation of the results from monitoring site for protected areas monitoring	- in accordance with relevant provisions	NWMA, VIEP
CIEP	- the aggregate measurement results in table form	- once a year in accordance with the Statistical Research Programme	CSO

CIEP	- the measurements results, statistics in the form of files required by EEA (WISE, SoE);	- once a year	EEA
CIEP	- WISE-SoE report	- once a year	EEA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
VIEP	- the thematic reports	- optionally, after implementation of the monitoring programme (for the years 2016–2018 and 2019–2020)	central and local government administration, universities, schools, libraries, society
VIEP	- VIEP websites	- annual update	
CIEP	- CIEP website	- annual update	

Task: Monitoring and assessment of the status of lakes

The major aim of the task is to provide knowledge on the ecological status or potential and chemical status of surface water bodies of Polish lakes, which is necessary to manage waters in river basins.

In the years 2016–2020, surface lake bodies will be monitored for the purposes of the third cycle of water management in the years 2016–2021, under measurement programmes of surveillance monitoring, operational monitoring and the monitoring of protected areas. If necessary, investigative monitoring will be established locally. Its scope, duration and the frequency of examinations will be arranged each time individually depending on the reasons behind its launch.

Lake water bodies occurring in the protected area dedicated to the conservation of habitats or species for which the maintenance or improvement of water status is an important factor in their protection (Article 113 paragraph. 4 Section 6 of the Act of 18 July 2001 – Water Law) will be monitored according to both program of protected areas monitoring, as well as the program of surveillance monitoring, and if these waters are determined to be at risk of failing to achieve the environmental objectives – also with the program of operational monitoring.

Surveillance monitoring will be carried out in significant for water management lake water bodies. Selection of lakes for surveillance monitoring should be representative sample of all types, and their number should reflect the abiotic diversity of lakes in individual voivodship.

A special type of surveillance monitoring, benchmark monitoring is carried out in 22 lake water bodies identified as benchmark lakes. They represent the most common types of lakes in Poland and a full range of water quality. These studies will be conducted every year, and the frequency of testing of physicochemical elements will be increased to at least 6 times in each annual cycle. This is to provide data about the dynamics of status changes of the lakes (including the scale of variability of water quality from year to year) under different anthropogenic pressure conditions, which should facilitate the interpretation of the examination results of the lakes monitored less frequently.

The group of benchmark lakes included those specified in the Regulation of the Minister of the Environment of 15 November 2011 On the Form and Method of Monitoring

of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550), located in 9 voivodship:

- the Zachodniopomorskie Voivodship: Wielkie Dąbie and Morzycko lakes;
- the Pomorskie Voivodship: Sumińskie, Jasień Południowy and Jasień Północny lakes;
- the Warmińsko-Mazurskie Voivodship: Płaskie (near the Jeziorak lake), Wuksniki, Mikołajskie, Jegocin and Kortowskie lakes;
- the Podlaskie Voivodship: Długie Wigierskie and Gremzdel lakes;
- the Lubuskie Voivodship: Tarnowskie Duże and Głębokie lakes;
- the Wielkopolskie Voivodship: Mąkolno, Śremskie and Krępsko Długie lakes;
- the Kujawsko-Pomorskie Voivodship: Borzymowskie, Chełmżyńskie and Stelchno lakes;
- the Mazowieckie Voivodship: - Białe lake (near Gostynin);
- the Lubelskie Voivodship: the Białe Włodawskie lake.

The operational monitoring programme will be carried out in lake water bodies identified as being at risk of failing to meet their environmental objectives, according to the list prepared by the President of National Water Management Authority, for the purposes of river basin water management plans. These measurements are conducted for the purposes of water management in the years 2016–2021 with a minimum frequency of every 3 years. In the years 2016–2018 the monitoring will be included in at least one full annual measurement cycle. Another annual measurement cycle must be conducted in three subsequent years. The range of indicators examined under operational monitoring will include at least one biological element that is representative of the assessment of the impact of specific pressures on the SWB status (along with the physicochemical indicators supporting the assessment) as well as the indicators of pollution emitted to the monitored basin. If a certain pressure results in an increase in the trophic level of a lake, phytoplankton is the biological element appropriate for monitoring. The selection of lake surface water bodies and the scope of operational monitoring, in conjunction with the manner of economic exploitation of water will be determined by VIEP in consultation with CIEP through the voivodship environmental monitoring programme.

Annual monitoring of substances that are particularly harmful to the aquatic environment, in particular, of priority substances, is carried out under the operational monitoring. The monitoring is carried out in lake water bodies, which has or had located a source of the pollution with the potential for discharge of these substances in its catchment, or for which the results of surveillance monitoring indicated the presence in an amount exceeding the limit values. If the results obtained during the first full annual monitoring cycle indicate that the concentration of the substance does not exceed the limit values, the monitoring frequency may be reduced to a minimum of 4 measurements per year (every 3 months). However, if all the results obtained for the water body in the previous year indicate that the substance does not exist or measures to improve water status have not been undertaken, monitoring of such substance may be discontinued.

Water bodies relevant for monitoring will be determined on the basis of the plans of management of water in river basins, and the scope and frequency of monitoring will comply with the provisions of the Regulation of the Minister of the Environment of on the Forms and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550) as amended by Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation on the Forms and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, item 1558).

Every year, assessment of the status of lake water bodies being monitored in the previous year will be conducted, which will be verified by the Chief Inspector of

Environmental Protection. This assessment will be made using the inheritance principle for the classification of indicators, enabling evaluation based on the newest available monitoring results. The results of the classification of biological elements being subject to inheritance for six years, with the exception of the indicators used in operational monitoring to assess the level of the impact of pressure, whose classification results may be inherited only during a period of three years.

In 2016 and 2019, CIEP will prepare collective summary of the assessment of ecological status (or ecological potential) and the chemical status of lake water bodies covered by monitoring in the years 2010–2015 and 2013–2018. In 2017, a review of the threshold values determined for a macrosoobenthos assessment of lakes (LMI index) will be conducted. The work will be carried out at the request of CIEP using VIEP measurement data from the years 2010–2015.

The classification of the ecological status or potential, the chemical status and the assessment of the status of lake water bodies will be carried out by VIEP under the administrative system, based on the standards established by the regulations of the Minister of the Environment to the Water Law Act and methodologies developed by CIEP. The Chief Inspector of Environmental Protection will verify and cumulate the assessment results for river basins.

Data from the monitoring of lakes will be entered in the JWODA database developed under the SI EKOIFONET after implementation of its operational version. The system will store both the results of measurements, information on the conditions occurring during sampling, sample preservation conditions, examination techniques and methods, and the results of classification and assessment of lake water bodies. The basic purpose of the system will be to provide multi-level data control both at the level of VIEP laboratories, VIEP departments of environmental monitoring, CIEP and external experts. In subsequent years, after the implemented version will have been verified as correct, further development of the JWODA database is expected, in particular, the development of modules for recording results of biological elements monitoring in lake water bodies and calculating indices for them.

Every year, in the period consistent with the guidelines of the European Environment Agency, the report Water Information System for Europe – State of Environment will be developed, which will contain the results of measurements conducted in the previous calendar year.

Table 3.2.1.2. Monitoring and assessment of the status of lakes

Subsystem	Task
Monitoring of the quality of waters	Monitoring and assessment of the status of lakes
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 38a paragraphs 2 and 3, Article 47, Article 155a, Article 155b; - Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550); - Regulation of the Minister of the Environment of 21 November 2013 amending Regulation on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, No 258, item 1558);

	<ul style="list-style-type: none"> - Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482); - Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No. 227, item 1485); - Regulation of the Minister of the Environment of 23 December 2002 on the Criteria to Determine the Waters Vulnerable to Pollution with Nitrogen Compounds from Agricultural Sources (Journal of Laws of 2002, No 241, item 2093);
Objective scope	
<p>The measurements to assess the status of lakes in representative monitoring sites located on approximately 530 lakes are planned. The scope and frequency of measurements will be established on the basis of the regulations referred to above. In the case of lakes covered by surveillance monitoring or operational monitoring, the measurement programme will cover each time at least one biological element – under operational monitoring, or all of the biological elements – under surveillance monitoring, as well as indicators characterising the physicochemical status. The basic surveillance programme of benchmark lakes will be an exception, as in addition to indicators supporting the biological elements, it will only include the study of phytoplankton. Other biological elements in benchmark lakes are monitored every three years, and indicators of the chemical status – every six years.</p> <p>The operational monitoring programme will be carried out in lakes at risk of failing to comply with environmental objectives, according to the list prepared by the President of National Water Management Authority.</p> <p>Year 2016: Measurements of lake water bodies according to the monitoring programme:</p> <ul style="list-style-type: none"> - surveillance monitoring (including monitoring of benchmark lakes), - operational monitoring, - investigative monitoring, - of lake water bodies in protected areas. <p>Assessment of the status of lake water bodies prepared on the basis of measurement results in 2015 according to the inheritance of classification principle.</p> <p>Collective assessment of the ecological status (or ecological potential) and the chemical status of lake water bodies covered with monitoring in the years 2010–2015 will be prepared on the basis of the analysis of measurement results conducted in the years 2010–2015.</p> <p>Year 2017: Measurements of lake water bodies according to the monitoring programme:</p> <ul style="list-style-type: none"> - surveillance monitoring (including monitoring of benchmark lakes), - operational monitoring, - investigative monitoring, - of lake water bodies in protected areas. <p>Assessment of the status of lake water bodies prepared on the basis of measurement results in 2016 according to the inheritance of classification principle.</p> <p>Year 2018: Measurements of lake water bodies according to the monitoring programme:</p> <ul style="list-style-type: none"> - surveillance monitoring (including monitoring of benchmark lakes), - operational monitoring, - investigative monitoring, - of lake water bodies in protected areas. <p>Assessment of the status of lake water bodies prepared on the basis of measurement results in 2017 according to the inheritance of classification principle.</p> <p>Year 2019: Measurements of lake water bodies according to the monitoring programme:</p> <ul style="list-style-type: none"> - surveillance monitoring (including monitoring of benchmark lakes), - operational monitoring, - investigative monitoring, - of lake water bodies in protected areas. <p>Assessment of the status of lake water bodies prepared on the basis of measurement results in 2018 according to the inheritance of classification principle.</p> <p>Collective assessment of the ecological status (or ecological potential) and the chemical status of lake water bodies covered with monitoring in the years 2013–2018 will be prepared on the basis of the analysis of aggregate measurement results conducted in the years 2013–2018.</p>	

<p>Year 2020: Measurements of lake water bodies according to the monitoring programme:</p> <ul style="list-style-type: none"> - surveillance monitoring (including monitoring of benchmark lakes), - operational monitoring, - investigative monitoring, - of lake water bodies in protected areas. <p>Assessment of the status of lake water bodies prepared on the basis of measurement results in 2019 according to the inheritance of classification principle.</p> <p>A list of lakes planned to be covered by monitoring and a detailed scope and the frequency of determined parameters will be specified in voivodship environmental programmes approved by CIEP.</p>			
Task implementation			
Measurements	Databases	Supervision and assessment	
VIEP (also CIEP in justified cases)	CIEP – JWODA (database of surface waters monitoring)	CIEP – at national level, in river basins VIEP - voivodship	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP	- The results of measurements, information about conditions during sample collection, conditions of sample preservation, measurement techniques and methods used	- immediately after marking of the collected samples, at the latest by 31 March at the end of the calendar year in which the measurement were conducted	CIEP – JWODA
VIEP	- the assessment of water status in the voivodship (at monitoring sites and in water bodies)	- once a year, at the latest by 31 March at the end of the calendar year in which the measurement were conducted	CIEP – JWODA
CIEP	- the aggregate results of measurements and the assessment of ecological and chemical status (or ecological potential) in river basins districts	- once a year, at the latest by 30 September for the previous calendar year	NWMA, VIEP
CIEP	- the compilation from monitoring site for protected areas monitoring	- in accordance with relevant provisions	NWMA, VIEP
CIEP	- the aggregate measurement results in table form	- once a year in accordance with the Statistical Research Programme	CSO
CIEP	- WISE-SoE report	- once a year	EEA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
VIEP	- thematic reports	- optionally, after implementation of the monitoring programme (for the years 2016–2018 and 2019–2020)	central and local government administration, universities, schools, libraries, society
VIEP	- VIEP website	- annual update	
CIEP	- CIEP website	- annual update	

Task: The monitoring and assessment of the status of transitional and coastal waters

In the years 2016–2020, transitional and coastal water bodies will be examined in accordance with the surveillance and operational monitoring programme (surveillance monitoring – in the years 2016–2020) with respect to biological elements, physicochemical and chemical indicators. The programme will be implemented at the monitoring sites and stations located at all coastal and transitional water bodies.

Monitoring of harmful substances to the aquatic environment, in particular, of the priority substances is carried out every year on water bodies where the sources of the release of these substances are, or used to be located or for which exceedances of the limit values for these substances were found in previous years. These studies are conducted at the site which is representative for a water body under the operational monitoring.

In 2016, the assessment of the ecological status (or ecological potential) and the chemical status of transitional and coastal water bodies covered with monitoring in the years 2010–2015 will be conducted. Monitoring data for the years 2013–2018 will serve the assessment of transitional and coastal waters planned for 2019, which will be used to upgrade water management plans for the years 2022–2027.

Assessment of the status of transitional and coastal waters will be conducted every year, to the extent resulting from a surveillance and operational programme executed in a given year (ecological status assessment, or, in the case of artificial and heavily modified water bodies, ecological potential and / or assessment of the chemical status) taking into account the principle of assessment inheritance. The results of the classification of biological elements being subject to inheritance for six years, with the exception of the indicators used in operational monitoring to assess the degree of the impact of pressure, whose classification results may be inherited only during a period of three years.

The classification of the ecological status and the assessment concerning the status of transitional and coastal water bodies will be performed by the voivodship inspectors of environmental protection in accordance with the standards specified in the Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482) and basing on the methodologies developed by CIEP. The Chief Inspector of Environmental Protection will verify the results.

The results of monitoring of transitional and coastal waters will be applied in the work associated with the implementation of the task “The monitoring and assessment of the quality of marine environment of the Baltic Sea.”

Table 3.2.1.3. The monitoring and assessment of the status of transitional and coastal waters

Subsystem	Task
<p>Monitoring of the quality of waters</p>	<p>The monitoring and assessment of the status of transitional and coastal waters</p>
	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 38a paragraphs 2 and 3, Article 47, Article 155a, Article 155b; - Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and

Legislative acts	<p>Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550);</p> <ul style="list-style-type: none"> - Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation on the Form and Method of Monitoring Surface Water and Groundwater Water Bodies (Journal of Laws of 2013, No 258, item 1558); - Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549); - Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485).
Objective scope	
<p>The monitoring will be conducted at 19 representative monitoring sites, and 29 monitoring sites. The scope and frequency of measurements will be selected in accordance with the regulations referred to above and will depend on a programme assigned to a given site.</p> <p>Representative monitoring sites will be covered by surveillance monitoring (measurements will include all the biological elements) or operational monitoring under which one of the selected biological elements will be measured, as well as indicators characterising the physical condition, including thermal conditions, oxygen and salinity conditions, pH and nutrients, as well as the specific synthetic and non-synthetic pollutants and priority substances in the field of water management policy. Monitoring sites will be covered by operational monitoring or intense investigative monitoring, under which one of selected biological elements will be measured, as well as indicators characterising the physical condition, including thermal conditions, oxygen and salinity conditions, pH and nutrients.</p> <p>Intense investigative monitoring will be carried out on the water bodies, which will be excluded from surveillance or operational monitoring in a given year.</p> <p>Monitoring for the assessment of chemical status involves the study of 45 priority substances, 11 of which will be measured in a biological matrix, i.e. fish and shellfish.</p> <p>The location of monitoring sites and a detailed corresponding programme of measurements will be specified in voivodship environmental monitoring programmes.</p> <p>Year 2016: The monitoring programme will cover all coastal and transitional water bodies. The surveillance monitoring will include the measurements of physicochemical conditions (thermal, oxygenation, salinity, acidification and nutrient conditions), chemical conditions (priority substances and other pollutants) and the observations of biological elements (phytoplankton, macro-phytobenthos, benthic macroinvertebrates, ichthyofauna), while the operational monitoring, examinations of biological elements will be determined individually for each monitoring site depending on the existing anthropogenic pressure.</p> <p>In 2016, the collective assessment of the ecological status (or ecological potential) and the chemical status of transitional and coastal water bodies covered with monitoring in the years 2010–2015 will be conducted.</p> <p>Year 2017: The surveillance and operational monitoring programme of all coastal and transitional water bodies will be continued. The scope of measurement will be similar as in 2016. Water bodies covered by monitoring in 2016 will be assessed.</p> <p>Year 2018: The surveillance monitoring, operational monitoring and investigative monitoring will be conducted in reference to all coastal and transitional water bodies. Water bodies covered by monitoring in 2017 will be assessed.</p> <p>Year 2019: The operational monitoring and investigative monitoring will be conducted in reference to all coastal and transitional water bodies. Water bodies covered by monitoring in 2018 will be assessed.</p> <p>Year 2020: The operational monitoring and investigative monitoring will be conducted in reference to all coastal and transitional water bodies. Water bodies covered by monitoring in 2019 will be assessed.</p> <p>Monitoring data for the years 2013–2018 will be used for the cumulative assessment of transitional and coastal waters planned for 2019.</p>	

Task implementation			
Measurements	Databases	Supervision and assessment	
VIEP (also CIEP in justified cases)	CIEP – GLONY database VIEP – measurement result according to an agreed data format	CIEP – at national level, in river basins VIEP – voivodship, in sub-basins	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP (other entities)	- The measurement results in accordance with a fixed database format with a description of the conditions of samples preservation, the techniques and measurement methods used	- once a year, immediately after marking of the collected samples, at the latest by 31 March at the end of the calendar year in which the measurements were conducted	CIEP
VIEP (other entities)	- the assessment of the status of transitional and coastal waters	- once a year, at the latest by 30 April for water bodies at the end of the calendar year in which the measurements were conducted.	CIEP
CIEP	- the aggregate results of measurements and the assessment in the form to be arranged	- once a year, at the latest by 30 September for the previous calendar year	NWMA, VIEP
CIEP	- the aggregate measurement results in table form	- once a year in accordance with the Statistical Research Programme	CSO
CIEP	- the measurements results, statistics in the form of files required by EEA (WISE, SoE);	- once a year	EEA
CIEP	- the results of monitoring in an electronic form in the format required by HELCOM	- once a year	HELCOM via ICES
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
VIEP	- the thematic reports	optionally, after implementation of the monitoring programme (for the years 2010–2015 and 2013–2018)	central and local government administration, universities, schools, libraries, society.
VIEP	- VIEP websites	- annual update	
CIEP	- CIEP website	- annual update	

Task: The monitoring and assessment of hydromorphological elements of all surface waters.

Monitoring and observations of hydromorphological elements are one of the elements of assessment of ecological status and ecological potential of surface waters. Its aim is to monitor the changes occurring in the water environment, which determine the habitat conditions for living organisms.

In accordance with the statutory obligation provided for in Article 155a of the Water Law Act, the status of hydromorphological elements will be monitored by the National

Hydrological and Meteorological Service. Moreover, observations of hydromorphological elements will be conducted by VIEP while collecting biological samples to fill in field reports and to assess the status of these elements. The results of the monitoring of hydrological and morphological elements and of observations of hydromorphological elements will be used to verify the assessment of ecological status in cases where the assessment of the biological and physicochemical elements indicates a very good ecological status, and to verify the assessment of ecological potential.

Table 3.2.1.4. The monitoring and assessment of hydromorphological elements of all surface waters.

Subsystem	Task	
Monitoring of the quality of waters	The monitoring and assessment of hydromorphological elements of all surface waters	
Legislative acts	<ul style="list-style-type: none"> - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 155a, Article 155b; - Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482); - Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, No 258, item 1558); - Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485). 	
Objective scope		
<p>Monitoring will focus on all surface water categories (rivers, lakes, coastal and transitional waters, including artificial or heavily modified water bodies).</p> <p>Observations of the volume, velocity, flow intensity and tidal regime, to the extent relevant for ecological and chemical status and ecological potential, are conducted by hydrological and meteorological service which performs systematic measurements and observations using hydrological and meteorological measuring and observation system. The measurements and observations are performed in a continuous manner, and the results are transmitted within agreed deadlines to the Chief Inspectorate of Environmental Protection.</p> <p>In 2016, monitoring will be carried out in the terms of morphological conditions, morphometric parameters, variation of depth, wind speed and direction and the quantitative and qualitative structure of the bottom, including sediments in the area of transitional and coastal water bodies.</p> <p>In addition to the tests performed by NHMS, VIEP will conduct observations of hydromorphological elements supporting the biological elements during examination of biological elements in rivers and lakes.</p>		
Task implementation		
Measurements	Databases	Supervision and assessment
NHMS (monitoring of hydrological and morphological elements) VIEP (observations of hydrological and morphological elements)	NHMS	IMWM-NRI CIEP, in reference to the observations of hydrological and morphological elements for the purposes of assessment of the ecological status

Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
IMWM-NRI	- the results of the observations of quantity and dynamics of flow and tidal regime, assessments of hydromorphological elements	- once a year	CIEP
CIEP	- the results of the observations of quantity and dynamics of flow and tidal regime, assessments of hydromorphological elements	- once a year	VIIEP
CIEP	- the measurement results, statistics in the form of files required by EEA (WISE, SoE);	- once a year	EEA
CIEP	- part of reports for the European Commission in accordance with the WFD and so-called implementing directives	- in accordance with the Directives	NWMA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP/IMWM-NRI	- CIEP website	- annual update	central and local government administration, universities, schools, libraries, society

Task: The monitoring and quality assessment of sediments in rivers and lakes

The purpose of monitoring of sediments of rivers and lakes is to analyse the long-term trends in the concentrations of the priority substances and other pollutants being subject to accumulation, and to control the concentrations of heavy metals and persistent organic pollutants undergoing accumulation in sediments.

The results of the laboratory analyses allow to assess the state of pollution of sediments in rivers and lakes. To do so, geochemical and ecotoxicological criteria are currently utilised. The assessment of geochemical quality of sediments takes into account the principle that the anomalous value of an element in the environment is its concentration higher than the sum of the average content of this element and two standard deviations defined for the population under examination. On the other hand, in order to assess the harmful impact of trace elements, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and organochlorine pesticides accumulated in sediments on aquatic organisms probable effect concentration value (PEC – the concentration above which it is possible to observe harmful effects) is used. At the same time, a novel method is going to be developed, which application is expected to assess the chemical status of sediments in the upcoming years.

The sediment monitoring programme will include the sediment sampling sites, based on the locations of the surveillance monitoring sites of rivers and lakes. Simultaneously, the sediment monitoring programme will be updated, adapting to the requirements of the Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy and guidance documents delivered by the European Commission.

The results of sediment monitoring will be collected in the “OSADY” database operating under the SI EKOINFONET. It is expected that the data collected in the database will be updated and the database will be modified to ensure an increase in its functionality.

Table 3.2.1.5. The monitoring and quality assessment of sediments in rivers and lakes

Subsystem		Task	
Monitoring of the quality of waters		The monitoring and quality assessment of sediments in rivers and lakes	
Legislative acts		<ul style="list-style-type: none"> - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 155a, Article 155b; - Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482); - Regulation of the Minister of the Environment of 21 November 2013 Amending Regulation on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2013, item 1558); - Regulation of the Minister of the Environment of 9 November 2011 concerning the Classification of the Ecological Status, Ecological Potential and Chemical Status of Surface Water Bodies (Journal of Laws of 2011, No 258, item 1549). 	
Objective scope			
<p>In the years 2016–2020, monitoring of river sediments is planned at approximately 150 annual monitoring sites, and at around 300 sites within the three-year cycle (approximately 100 per annum).</p> <p>In lake water bodies, sediments will be measured in about 120 lakes annually, within the five-year cycle. 22 benchmark lakes are to be included in monitoring every two years.</p> <p>It is expected that the range of designation will include the following elements: As, Ba, Cd, Co, C_{org}, Cr, Cu, Hg, Mo, Ni, Pb, V, Zn.</p> <p>In addition, at selected monitoring sites, designation of harmful substances is planned: aldrin, anthracene, AOX - adsorbable organohalogenes, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, brominated diphenyl, chlorfenvinphos, chloroalkanes C10-C13, DDT, dieldrin, endosulfan, endrin, fluoranthene, fluorides phthalate, di-2-ethylhexyl phthalate (DEPH), hexachlorobenzene (HCB), hexachlorobutadiene (HCBd), hexachlorocyclohexane (HCH), γ-HCH, indeno(1,2,3-c,d)pyrene, isodrin, naphthalene, pentachlorobenzene, trichlorobenzene (TCB), polychlorinated biphenyls (congeners: PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180), tributyltin compounds (tributyltin-cation).</p> <p>Network of monitoring sites and the scope of laboratory analyses performed are subject to change in order to adapt them to new requirements of European law.</p>			
Task implementation			
Measurements		Databases	Supervision and assessment
CIEP		CIEP – “OSADY” database	CIEP
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the measurements of sediments	- once a year by 30 September – data for the previous year	CIEP – “OSADY” database
CIEP	- providing access to the “OSADY” database	- on a current basis	VIEP

CIEP	- the measurements of sediments; format to be arranged	- once a year	NWMA
CIEP	- the statistical compilation of the monitoring results in table form	- once a year in accordance with the Statistical Research Programme	CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- the EML publication "The results of the monitoring of Poland's sediments";	- every three years	central and local government administration, universities, schools, libraries, society
CIEP	- CIEP website	- annual update	

Task: Implementation of Directive 2013/39/EU of the European Parliament and of the Council of 12 August 2013 amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy

Already in its preamble, Directive of the European Parliament and of the Council 2013/39/EU of 12 August 2013 states that "chemical pollution of surface waters poses a threat to the aquatic environment, with effects such as acute and chronic toxicity in aquatic organisms, accumulation of pollutants in the ecosystem and loss of habitats and biodiversity, and also poses a threat to human health."

Therefore, the aim of this task is to provide knowledge on priority substances in surface waters, which is necessary for proper water management, including taking appropriate programme of measures where the diagnosis of pollution with these substances indicates a risk to human health and aquatic ecosystems.

The task includes: measurement of new priority substances, measurement of 7 priority substances (anthracene, brominated diphenylethers, fluoranthene, lead and its compounds, naphthalene, nickel and its compounds, polycyclic aromatic hydrocarbons – PAHs), for which the existing environmental quality standards (EQS) have been increased and implementation of new monitoring requirements contained in Directive 2013/39/EU. The measurements will be carried out in two matrices: water and biota. The measurements applies to all categories of waters, i.e.: rivers, lakes, transitional and coastal waters.

The task will be carried out both by CIEP and VIEP.

In the years 2016–2020, CIEP will carry out the following work:

- "Central analysis of samples on selected priority substances in biota in surface waters, according to the requirements of Directive 2013/39/EU, collected as part of the surveillance monitoring in the years 2016–2017". According to Article 3 paragraph 2 of Directive 2013/39/EU the programme of analysis involves the study of 11 priority substances in biota: brominated diphenylethers; fluoranthene; hexachlorobenzene; hexachlorobutadiene; mercury and its compounds; polycyclic aromatic hydrocarbons: benzo(a)pyrene; dicofol; perfluorooctane sulfonic acid and its derivatives (PFOS); dioxins and dioxin-like compounds; hexabromocyclododecane (HBCDD); heptachlor and heptachlor epoxide. CIEP will carry out these tests (collecting samples and their analysis) in 2016–2017, and cyclically, in the following years as the central task.

- “Measurement of priority substances listed on the watch list according to the requirements of Directive 2013/39/EU in the years 2015–2017”. According to Article 8b of Directive 2013/39/EU the first watch list contains 10 substances. The watch list of substances being particularly harmful to the aquatic environment is established every two years, by way of a decision of the European Commission. The first measurements of 10 substances in the so-called watch list published in March 2015 will be carried out at at least 15 representative monitoring sites selected from the water categories in 2016. These tasks are planned to be continued by CIEP.
- “Monitoring of “new” priority substances in surface waters according to Directive 2013/39/EU.” Sampling of 7 “new” priority substances (quinoxifen, aclonifen, bifenoxy, cybutryne, cypermethrin, dichlorvos, terbutryn) will be performed by all VIEP. Analyses of the priority substances mentioned above will be carried out by four selected and VIEP laboratories that will be upgraded in terms of laboratory equipment.

In the years 2016–2020, all VIEP will continue the monitoring of 27 priority substances with numbers ranging from 1 to 33 (as listed in Annex I of Directive 2013/39/EU), which are not covered by the programme of analyses of priority substances in biota and improve the completeness of the previous measurements.

3.2.2. Groundwater quality monitoring

Groundwater quality monitoring aims to provide information on the chemical status of groundwater, track its changes and indicate dangers at national level in order to manage groundwater and assess the effectiveness of taken protective measures.

Due to the change in the distribution of groundwater bodies, in 2016, 172 groundwater bodies covering the whole country will be subject to monitoring.

The results of measurements and assessments performed as part of groundwater monitoring will be used to optimise the activities related to the protection and management of groundwater resources, in order to maintain or achieve good groundwater status; they will also be used for the purpose of reporting obligations to the European Commission under Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (i.e. the Water Framework Directive) (OJ L 327, 22.12.2000, p. 1), Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (i.e. the Groundwater Directive) (OJ L 372, 27.12.2006, p.19) and Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (i.e. the Nitrates Directive) (OJ L 375, 31.12.1991, p.1).

The obligation to examine and assess the groundwater quality under SEM arises from Article 155a paragraph 2 of the Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended). The scope and method of monitoring and assessment criteria for groundwater status are defined by regulations to the Water Law Act: Regulation of the Minister of the Environment of 23 July 2008 on the Criteria and Method of Assessment of Groundwater Status (Journal of Laws of 2008, No 143, item 896) and Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550).

Task: The monitoring and assessment of the chemical status of groundwater bodies

The measurements of the chemical status of 172 groundwater bodies will be conducted under:

- surveillance monitoring encompassing all groundwater bodies,
- operational monitoring which will cover the groundwater bodies at risk of failing to achieve environmental objectives established for the groundwater bodies;
- investigative monitoring, established if necessary, with the scope and frequency set each time depending on the reasons behind its launch.

Monitoring will be conducted basing on the verified and broadened (up to 1200 sites) network of monitoring sites (drilled wells, piezometers) meeting the criteria complying with WFD requirements. The monitoring sites will include: the majority of sites already operating in the monitoring system, new sites selected out of existing hydrogeological holes (with a focus on used drinking water intakes) and newly established monitoring sites within the network maintained by the Polish Hydrogeological Service whose role is performed by PGI-NRI. Each of the sites will be assigned a specific measurement scope which complies with the requirements of EU directives.

The majority of monitoring sites will include shallow aquifers occurring mostly in the quaternary groundwater horizon, which is the most popular in the country, while the remaining monitoring sites will encompass deeper aquifers occurring in older hydrological structures.

In 2017, a comprehensive assessment of the status (chemical and quantitative) of groundwater bodies will be developed in accordance with the Regulation of the Minister of the Environment of 23 July 2008 On the Criteria and Method of Assessment of Groundwater Status and the use of the guidelines contained in the study “Adaptation of methodologies in the EU guidance for the assessment of chemical and quantitative status of groundwater; development of procedures and “macros” for analyses, calculations and assessments” which was prepared by the PGI-NRI at the request of CIEP taking into account the requirements of the Water Framework Directive, Groundwater Directive and EU guidance and in particular guidance No. 18 “Guidance on groundwater status and trend assessment”. The assessment procedure of groundwater status includes classification 9 tests (5 of these tests are used to assess the chemical status, and 4 tests are used to assess the quantitative status) and in addition to their chemical composition, water balance and changes in groundwater level, also includes the impact of their condition on water intended for human consumption, on surface waters in direct contact with groundwater, on protected land ecosystems dependent on groundwater, and on the process of saline and other intrusion.

Development of the next comprehensive assessment of the groundwater status is expected in 2020.

The comprehensive assessment of the chemical and quantitative status of groundwater bodies will mainly rely on monitoring of the chemical status of groundwater conducted under SEM (mainly the results of surveillance monitoring of 2016 and 2019 respectively), and the information obtained outside SEM: data on available resources and consumption of water in groundwater bodies and observations of water level fluctuations in groundwater bodies, which are necessary to determine the quantitative characteristics and conceptual models of groundwater bodies as well as data about the pressure an impact on groundwater.

In addition, each year, (based on the results of operational monitoring) the assessment of the chemical status of 39 groundwater bodies being at risk of failing to achieve environmental objectives in the plans of river basin management for the years 2016–2021 will be developed.

In addition to monitoring at national level, where appropriate, VIEP will conduct further measurements of groundwater in terms of physicochemical elements. Voivodship environmental monitoring programmes taking into account the requirements of the Water Framework Directive, Groundwater Directive and Nitrates Directive will form the basis for their implementation.

Table 3.2.2.1. The monitoring and assessment of the chemical status of groundwater bodies

Subsystem	Task
Monitoring of the quality of waters	The monitoring and assessment of the chemical status of groundwater bodies
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 38a paragraphs 1 and 3, Article 47, Article 155a, Article 155b; - Regulation of the Minister of the Environment of 23 July 2008 on the Criteria and Method of Assessment of Groundwater Status (Journal of Laws of 2008, No 143, item 896); - Regulation of the Minister of the Environment of 15 November 2011 on the Form and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485).
Objective scope	
<p>The monitoring of the chemical status of 172 groundwater bodies will be conducted within the framework of surveillance, operational and possibly investigative monitoring based on a measurement network consisting of 1200 monitoring sites.</p> <p>The schedule of monitoring:</p> <p>2016 – surveillance monitoring at approx. 1200 monitoring sites (1 x a year); 2017 – operational monitoring at approx. 380 monitoring sites (2 x a year). 2018 – operational monitoring at approx. 380 monitoring sites (2 x a year), 2019 – surveillance monitoring at approx. 1200 monitoring sites (1 x a year); 2020 – operational monitoring at approx. 380 monitoring sites (2 x a year).</p> <p>The measurements within the framework of surveillance monitoring will focus on the following physicochemical elements:</p> <ul style="list-style-type: none"> - general elements: reaction, temperature, electrolytic conductivity, dissolved oxygen, total organic carbon; - non-organic elements: ammonia, antimony, arsenic, nitrates, nitrites, boron, chlorides, chromium, cyanides, fluorides, phosphates, aluminium, cadmium, magnesium, manganese, copper, nickel, lead, potassium, mercury, selenium, sulphates, sodium, silver, calcium, bicarbonates, iron and in addition not on the list of mandatory indicators: barium, beryllium, tin, zinc, cobalt, molybdenum, thallium, titanium, uranium, vanadium. <p>Organic indicators will also be designated: pesticides, trichlorethylene, tetrachloroethene, polycyclic aromatic hydrocarbons (PAH), phenol index primarily at measurement sites where water samples have not been collected to designate organic substances and/or where the threshold value of good chemical groundwater status was exceeded.</p> <p>The scope of monitoring may be extended to include physicochemical elements characterising the type of anthropogenic impact on investigated groundwater bodies.</p> <p>The scope of monitoring may be extended to include physicochemical elements characterising the type of anthropogenic impact on investigated groundwater bodies and physicochemical elements whose values determined based on surveillance monitoring exceeded the threshold values for good chemical status of groundwater. Selected sampling sites will also designate organic indicators: pesticides, trichlorethylene, tetrachloroethene, polycyclic aromatic hydrocarbons (PAH), phenol index.</p>	

Based on the results of nitrate content in groundwater, the assessment of the degree of contamination of groundwater with nitrates will be developed annually. In turn, in 2016, a four-year report covering the years 2012–2015 will be developed, which will refer to the assessment of the degree of contamination of groundwater with nitrogen compounds.

Monitoring of nitrate content will be conducted on the basis of the national groundwater quality monitoring network in cooperation with VIEP, mainly based on their regional groundwater monitoring network.

Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP/PHS – implementing entity, measurement at national level	PGI-NRI – national groundwater monitoring database (in terms of chemical data)	CIEP (in cooperation with PGI-NRI)	
CIEP and other entities – measurement at the regional (voivodship) level (optionally)	VIEP – voivodship databases (optionally)	VIEP (optionally)	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
PGI-NRI	- - the annual compilation of measurements results along with the analysis and assessment with maps	- once a year	CIEP
PGI-NRI	- providing access to the database	- on a current basis	CIEP
CIEP/PGI-NRI	- the results of measurements and assessment in voivodship and water regions in the form of summary tables and maps	- once a year	VIEP, NWMA
CIEP	- the aggregate measurement results in table form	- once a year according to the Statistical Research Programme	CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- EML publication “The status of groundwater bodies”	- at least every 6 years	central and local government administration, universities, schools, libraries, society
CIEP	- CIEP website	- annual update	
VIEP	- the thematic reports	- optionally every 3 years	
VIEP	- VIEP website	- annual update	

3.2.3. The Baltic Sea Monitoring

The aim of monitoring is to establish the basis for the activities serving to improve the state of the Baltic Sea ecosystem and to protect it against pollution. Since 2013, the scope and methods of monitoring, and the manner of assessing the status of the Baltic Sea has been defined by the provisions of the Water Law Act and the monitoring program of marine waters adopted by the Council of Ministers, which implements the requirements of Article 11 of Directive of the European Parliament and of the Council 2008/56/EC of 17 June 2008, establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.06.2008, pp 19–40), taking into

account the New Convention “On the Protection of the Marine Environment of the Baltic Sea Area” of 9 April 1992 (Journal of Laws of 2000, No 28, item 346).

In the years 2016–2020, the monitoring programme of marine waters commenced in 2014 and submitted for adoption by the Council of Ministers, will be continued.

Work on the implementation of the new system of assessment of the status of the marine environment based on indicators of the status and pressures in Annex I of Directive of the European Parliament and of the Council 2008/56/EU of 17 June 2008 establishing a framework for community action in the field of marine environmental policy and the revision of Annex III and European Commission decision 2010/477/EU of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (OJ L 232, 02.09.2010, p. 14) will be used to develop the second holistic assessment of the Baltic Sea within the framework of the Helsinki Commission and to update the initial assessment of marine waters, together with compiled characteristics of a good environmental status of marine waters in 2018.

The data obtained and stored under monitoring of the Baltic Sea will be supplied by the results of monitoring of transitional and coastal waters (item 4.2.1, task of “Monitoring and assessment of transitional and coastal waters”), the results of monitoring of wintering seabirds and the abundance of seabirds during the breeding season (item 3.3. of the nature monitoring subsystem, task: Monitoring of birds including Natura 2000 special protection areas) and the results of monitoring of marine species and habitats (item 3.3. The nature monitoring subsystem, task: Monitoring of Polish marine species and habitats).

Task: The monitoring and assessment of the quality of the marine environment of the Baltic Sea

Regular measurements of the marine environment of the Baltic Sea have been conducted since 1979, and under the State Environmental Monitoring – since 1991. They constitute the fulfilment of Poland’s obligations arising from the Convention on the protection of the marine environment of the Baltic Sea area, and since 15 July 2014, of Article 11 of Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (the Marine Strategy Framework Directive) (OJ L 164, 25.06.2008, pp 19–40). Simultaneously, the assessment of the quality of Baltic Sea waters as the reservoir receiving pollutants discharged from its sub-basin district is used to manage and evaluate the effectiveness of the measures to protect water resources implemented in accordance the Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended).

The measurement programme in the years 2016–2020 will be implemented to the extent specified by the “Marine Waters Monitoring Programme” adopted by the Council of Ministers in 2015. The programme, which was developed in 2014, has been supplemented with the requirements of Article 11 of Directive of the European Parliament and of the Council 2008/56/ EC of 17 June 2008 Establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.06.2008, pp 19–40) in relation to the existing COMBINE Integrated Monitoring Programme of the Baltic Sea.

The measurement results will be collected in the oceanographic database and the CIEP database, and will be submitted gradually to the HELCOM database and reported to the European Commission in accordance with the schedule established by the reporting provisions of the framework directive on marine strategy.

Table 3.2.3.1. The monitoring and assessment of the quality of the marine environment of the Baltic Sea

Subsystem	Task
Monitoring of the quality of waters	The monitoring and assessment of the quality of the marine environment of the Baltic Sea
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Water Law Act of 18 July 2001 (Journal of Laws of 2015, item 469, as amended) – Article 155a paragraph 1 item 2; - The Convention of 9 April 1992 on the protection of the marine environment of the Baltic Sea area (Journal of Laws of 2000, No 28, item 346).
Objective scope	
<p>The monitoring of the marine waters of Polish zone of the Baltic Sea includes the monitoring of a deep-sea zone (measurement stations in the area of the Gotland Basin, the Bornholm Deep and the Gdansk Deep) and the programme consisting in the monitoring of the coastal area, bays and reservoirs (the Gdansk Bay, the Pomerania Bay, Vistula and Szczecin Lagoons at the sites excluded from monitoring within the framework of the task “The monitoring and assessment of transitional and coastal waters”) and supplementing the programme implemented under the subsystem “The monitoring of surface water quality”.</p> <p>The detailed scope and location of measurements of marine waters have been described in the “Marine Waters Monitoring Programme” adopted by the Council of Ministers in 2015.</p> <p>Year 2016: The monitoring programme will consist in the measurements of physicochemical conditions, i.e. temperature, salinity, oxygen concentration, Secchi depth, the contents of nutrients, heavy metals and persistent organic compounds. Moreover, biological elements of the marine environment will be observed, i.e.: phytoplankton, zooplankton, phytobenthos, zoobenthos and the level of hazardous substances in water and marine organisms as well radionuclide contents in water and sediments. The fish fauna and optionally microbiology will also be examined. Monitoring of hydrographic conditions, of litter in the marine environment and underwater noise will be continued. In relation to the measurement of the marine environment conducted to date, the monitoring program will be extended by the monitoring of marine species and habitats.</p> <p>The scope and frequency of measurements will differ depending on a given parameter and it will be established separately for each station. Each year, there will be the total of approx. 10000 determinations.</p> <p>Based on the data obtained, current assessment of the status of marine waters environment will be conducted based on a set of characteristics for good status adopted by the Council of Ministers in 2014 pursuant to Article 8 of the framework directive on marine strategy.</p> <p>Year 2017: The marine waters monitoring programme will be continued. The scope of measurement will be similar as in 2016. Current assessment of the status of marine waters environment included in the monitoring in 2016 will be conducted.</p> <p>Year 2018: The marine waters monitoring programme will be continued. The scope of measurement will be similar as in 2016. Current assessment of the status of marine waters environment included in the monitoring in 2016 will be conducted. Based on data from the years 2012–2017, an update of the initial assessment of marine waters, along with a set of characteristics for good environmental status will be developed.</p> <p>Year 2019: The marine waters monitoring programme will be continued. The scope of measurement will be similar as in 2016. Current assessment of the status of marine waters environment included in the monitoring in 2018 will be conducted.</p> <p>Year 2020: The marine waters monitoring programme will be continued. The scope of measurement will be similar as in 2016. Current assessment of the status of marine waters environment included in the monitoring in 2019 will be conducted. In 2020, the marine waters monitoring programme will be updated in accordance with the provisions of the framework directive on marine strategy and arrangements of the Helsinki Commission. It is expected that both the scope of the parameters and the frequency of their measurements as well as location of monitoring stations may change.</p>	

Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP CLRP (radionuclides in sediments and organisms) - optionally	IMWM-NRI branch in Gdynia – Oceanographic Database CIEP – “ICHTIOFAUNA” database	CIEP	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the results of marine waters in the form of an electronic database copy	- once a year	CIEP
Contractor	- the results of monitoring of fish fauna	- once a year	CIEP – “ICHTIOFAUNA” database
CIEP	- the results of monitoring in an electronic form in the format required by CSO	- once a year in accordance with the Statistical Research Programme	CSO
CIEP	- the results of monitoring in an electronic form in the format required by HELCOM	- once a year	HELCOM via ICES
CIEP (or via HELCOM data bank)	- the results of monitoring in an electronic form in the format required by EEA	- once a year	EC, EEA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- CIEP website	- annual update	central and local government administration, universities, schools, libraries, society
CIEP	- CRUISE reports on CIEP website	- after every cruise	

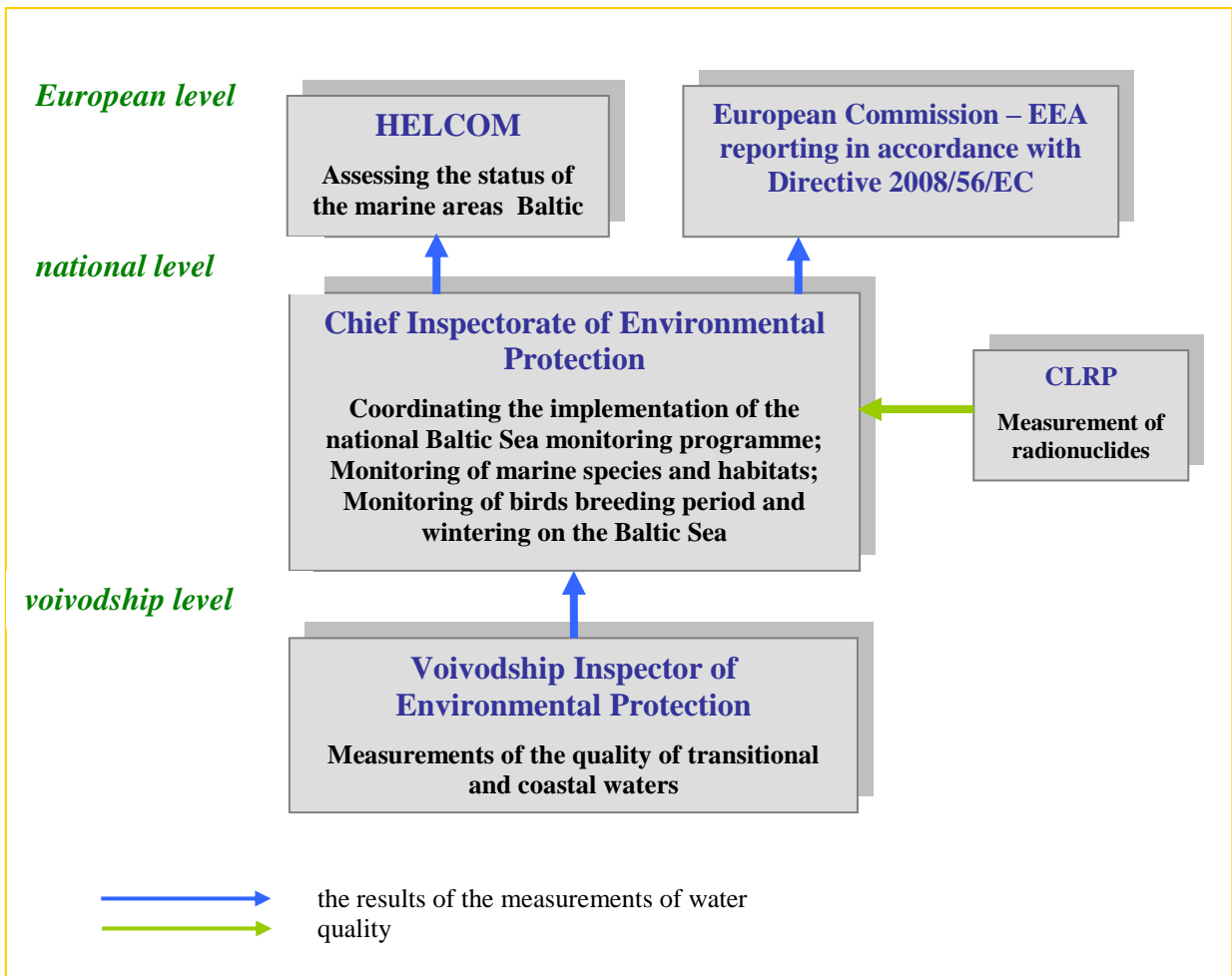


Fig.3.2.2. The flow of the information on the quality of the marine waters of the Baltic Sea

3.3. The soil and land quality monitoring subsystem

The task is carried out under the provisions of Article 26 of the Environmental Protection Act. The assessment criteria are defined in the Regulation of the Minister of the Environment of 9 September 2002 concerning Soil and Land Quality Standards (Journal of Laws of 2002, No 165, item 1359). Monitoring of the chemistry of Polish arable soils will be implemented as a nationwide task and optionally, the soils and land will be monitored by VIEP, according to the specific needs in the region.

In the years 2016–2020, the scope of the tasks under the subsystem may be changed in connection with the new legal requirements, both national and European ones. Work is underway on a new regulation scheduled for release on the basis of Article 101a paragraph 5 of the Environmental Protection Act, which will replace the existing regulation (Regulation of the Minister of the Environment of 9 September 2002 concerning Soil and Land Quality Standards (Journal of Laws of 2002, No 165, item 1359). After entry into force of the new regulations, assessment of the soil will be performed in two ways, according to both the existing and new regulations. The European Commission is also working on new directives: Soil Framework Directive and the new directive on the reduction of national emissions of certain air pollutants.

Task: The monitoring of the chemistry of Poland's arable soils

The aim of the task is to track the changes in various characteristics of the soils used for agricultural purposes, particularly, their chemical properties, occurring in specific periods under the influence of agricultural and non-agricultural human activity.

2015 saw launching of the fourth cycle of monitoring (conducted every 5 years). The measurements were conducted in accordance with the current programme (extended by measurement of pesticides in soil) as part of the national network consisting of 216 monitoring sites located on the arable soils within the territory of the entire country. The completion of the work, including the assessment and visualisation of measurement results requires a 3-year implementation period. In 2020, soil samples for laboratory tests will be re-collected for the next monitoring cycle.

Assessment of soil pollution with heavy metals, sulphur, polycyclic aromatic hydrocarbons and pesticides will be carried out in accordance with the Regulation of the Minister of the Environment concerning Soil and Land Quality Standards (Journal of Laws of 2002, No 165, item 1359). Simultaneously, the assessment of soil pollution with heavy metals, sulphur, polycyclic aromatic hydrocarbons will be conducted according to the method developed by the Institute of Soil Science and Plant Cultivation – National Research Institute for agricultural soils.

The data obtained from monitoring of the chemistry of Polish arable soils will be stored in the national database for soil chemistry monitoring (SCM) operating under the SIEKOINFONET. In the case of legal changes requiring additions or changes in the SCM database, work on the updating of the database is envisaged.

The results of the measurements and the assessment concerning the quality of soils used for agricultural purposes as well as the analysis of the trends of observed changes will be applied, among others, to implement the Thematic Strategy for Soil Protection in Europe, and if necessary, in the process of consultations concerning a drafted Soil Framework Directive. The results may also be used to assess the content of persistent organic compounds in soils under the Stockholm Convention on Persistent Organic Pollutants, and to a limited extent, to

perform assessments required by the new Directive of the European Parliament and of the Council on the reduction of national emissions of certain air pollutants.

Table 3.3.1. The monitoring of the chemistry of Poland's arable soils

Subsystem	Task		
The soil and land quality monitoring	The monitoring of the chemistry of Poland's arable soils		
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Regulation of the Minister of the Environment of 9 September 2002 concerning Soil and Land Quality Standards (Journal of Laws of 2002, No 165, item 1359). 		
Objective scope			
<p>According to the adopted rule of 5-year cycle soil monitoring, in 2015, another 5-year measuring cycle begun. The monitoring covered the soils at selected, permanent 216 monitoring sites, located on agricultural soils throughout the country.</p> <p>year 2016</p> <p>Approx. 40 physicochemical parameters will be determined. The following parameters will be determined in the samples collected at designated soil profile sites: grain-size composition (8 fractions), % of humus, % of CaCO₃, pH, hydrolytic acidity, exchangeable acidity, the contents of plant-assimilable forms of phosphorous (P₂O₅), potassium (K₂O), magnesium (Mg) and sulphur (S-SO₄²⁻), the contents of: total nitrogen, organic carbon, polycyclic aromatic hydrocarbons, pesticides including organochlorine pesticides, exchangeable calcium, potassium, magnesium and sodium, electric conductivity and radioactivity. Moreover, calculated parameters will include: the C:N ratio, soil salinity, cation exchange capacity, the sum of exchangeable bases and the degree of base saturation. Additionally, the following parameters will be measured: the contents of soluble (i.e. complete or the so called “complete”) forms of: calcium, magnesium, potassium, sodium, aluminium, iron, phosphorous, manganese, cadmium, copper, chromium, nickel, lead, zinc, cobalt, vanadium, lithium, beryllium, boron, strontium and lanthanum.</p> <p>the years 2017-2018</p> <p>The results of the 5th monitoring cycle will be available at the turn of 2017 and 2018. In the years 2016–2020, within the framework of voivodship environmental protection programmes, voivodship inspectors of environmental protection may conduct soil monitoring depending on specific regional needs.</p> <p>year 2020</p> <p>Beginning of the 6th monitoring cycle.</p>			
Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP	CIEP – database of soil chemistry monitoring (SCM)	CIEP	
VIEP – optionally	VIEP – optionally	VIEP – optionally	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the measurement results and other information related to the monitoring site	- every 5 years - until 31 December 2016 – data for the previous year	CIEP – database of soil chemistry monitoring (SCM)
Contractor	- the compiled results of measurements along with analysis and assessment in the form of a report and map form	- once in 5 years	CIEP
CIEP	- the compiled measurements results with assessment by voivodship	- once in 5 years	VIEP

CIEP	- the compiled measurements results with assessment by voivodship	- once in 5 years	CSO
VIEP	- the information and measurement results from regional networks implemented optionally - depending on the needs of CIEP	- according to arrangements with CIEP	CIEP
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information on results
CIEP	- CIEP website	- data from the last monitoring cycle	central and local government administration,
CIEP	- EML publications	- data from the last monitoring cycle	universities, schools, libraries, society

3.4. The nature monitoring subsystem

In accordance with Article 26 of the Environmental Protection Act, the purpose of the nature monitoring subsystem is to obtain information on the status of environmental resources, including forests.

The nature monitoring subsystem includes:

- monitoring of species and natural habitats;
- monitoring of birds;
- monitoring of forests;
- Integrated Monitoring of the Natural Environment.

Monitoring of natural biodiversity and landscape, including the Natura 2000 network under the State Environmental Monitoring is an obligation arising from Article 112 of the Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2013, item 627, as amended) which implements the provisions of Directive 92/43/EEC of 21 May 1992 on conservation of natural habitats and of wild fauna and flora (i.e. the Habitats Directive) (OJ L 206, 22.07.1992, p. 7 and L 305, 11.8.1997, p.42), and Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (i.e. the Birds Directive) (OJ L 103, 25.04.1979, p.1; L 319, 11.07.1979, p.3; L 115, 08.05.1991, p.41 and L 164, 30.06.1994, p. 9).

Moreover, the tasks implemented within the framework of the monitoring of species, natural habitats and birds result from other legal acts: The Convention on Biological Diversity, the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Journal of Laws of 1978, No 7, item 24) called the Ramsar Convention, the Convention on the Conservation of European Wildlife and Natural Habitats (Journal of Laws of 1996, No 58, item 236) called the Bern Convention, the Convention on the Conservation of Migratory Species of Wild Animals (Journal of Laws of 2003, No 2, item 17) called the Bonn Convention.

Forests monitoring is conducted basing on the regulations specified in the Act of 28 September 1991 on Forests (Journal of Laws of 2014, item 1153, as amended). The programme of forests monitoring is implemented in compliance with the methodological principles specified in the ICP Forests (operating under the Convention on Long-range Transboundary Air Pollution) and it will take into account the FutMon project implemented under the LIFE + Regulation of the European Parliament and of the Council of Europe.

These activities will be a follow-up and extension of the work performed in previous years. In the case of the monitoring of species and habitats continued will be the start of a new cycle of field observations for the species and habitats monitored in the previous stages, using previously developed methodologies; simultaneously, methodical work and field observations will include new species of plants, taking into account requirements of Polish and EU legislation and international conventions.

As part of the nature monitoring subsystem the following tasks will be implemented:

- ✓ monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation;
- ✓ monitoring of species and habitats of Polish marine areas;
- ✓ birds monitoring, including monitoring of Natura 2000 special protection areas;
- ✓ monitoring of forests;
- ✓ Integrated Monitoring of the Natural Environmental.

Task: Monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation

The major aim of the task is to obtain information on the maintenance of selected wild flora and fauna species (except for birds) and natural habitats at the levels of the biogeographical region and the whole country.

The obligation to conduct monitoring and use its results to assess maintenance status (called also conservation status) arises from the provisions of Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the so-called Habitats Directive) (OJ L 206, 22.07.1992, p. 7 and L 305, 08.11.1997, p.42) and applicable decisions of the European Commission Habitats Committee concerning the form of the report to be submitted to the European Commission. Pursuant to these provisions, conservation status should be determined on the basis of the values and the assessment of its parameters such: the range and population dynamics of the species, the size and quality of its habitat and its conservation prospects – for a species as well as parameters such as: the area occupied by the species, its range, specific structure and functions as well as conservation prospects – for a natural habitat. Investigative monitoring system which is common to all species and natural habitats has been adapted to the requirements of the Directive. Also monitoring examinations of the natural habitat of a given species are mostly repeated every six years

The 2015–2018 examination period is the fourth stage of monitoring, which was launched in 2006. The work will be the first or second repetition of the monitoring of the species of plants, animals and natural habitat types conducted under previous stages, and in some cases with the extension of work with new stations plant species and habitat types. As well as most of the animal species listed in the Annexes to the Directive will not be the only objects of monitoring, but also other endangered species and habitats in the country will be included in the monitoring.

Monitoring will be carried out on sample areas (i.e. stations) throughout the country with special emphasis on Natura 2000 special areas of conservation.

In 2019, available data, i.e. the results of the examinations conducted in the years 2006–2018 as well as historical data, will serve to prepare a draft of part of the report to be submitted to the European Commission concerning the implementation of the Habitats Directive in the field of monitoring, including the monitoring of the conservation status of species and natural habitats at the level of the biogeographical region.

The natural habitats and species selected for monitoring will include the species and habitats particularly dependent on water and occurring in wetlands. The requirement to monitor these areas results also from the Ramsar Convention. In addition, it is also planned to launch new monitoring of wolves and lynx based on the revised method which, apart from tracking, takes into account the analysis of genetic material.

The scale and complexity of the programme referred to above, consisting in e.g. providing necessary information and developing examination methodologies based on acquired experience, especially the inclusion in the monitoring of many areas of occurrence of the species and natural habitat and ensuring the preparation, within the deadline, of a report to be submitted to the European Commission, make it necessary for the task to be implemented within a 3–4 year period.

In the years 2019–2020, within the next 5th stage of monitoring of species and habitats, examinations possibly extended by new species of plants and complementary stations is being considered.

Table 3.4.1. Monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation

Subsystem	Task
The nature monitoring	Monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation
Legislative acts	<ul style="list-style-type: none"> - The Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - The Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2013, item 627, as amended) – Article 112; - Regulation of the Minister of the Environment Regulation of 13 April 2010 on the Natural Habitats and Species of Community Interest, and Criteria for Selection of Areas Eligible for Recognition or Designation as Natura 2000 sites (Journal of Laws of 2014, item 1713); - The Convention on Biological Diversity (Article 7); - The Bern Convention (Journal of Laws of 1996, No 58, item 26, as amended) – Articles 2-7; - The Bonn Convention (Journal of Laws of 2003, No 12, item 17) – Articles 2 and 5; - The Ramsar Convention (Journal of Laws of 1978, No 7, item 24, as amended) – Articles 3 and 4.
Objective scope	
<p>Monitoring of species and habitats, with particular emphasis on Natura 2000 special areas of conservation <i>in respect of natural habitats</i></p> <p>Monitoring will be based on sample areas (i.e. stations), designated primarily on special areas of habitat protection Natura 2000 and will include 67 types of natural habitats at minimum on a total of approx. 4,000 stations across the entire country. That will be the repetition of the examinations performed since 2006. Monitoring will be carried out in accordance with the methodology developed and published by CIEP. At the level of stations, indicators that have been specially selected according to the biology and ecology of different types of natural habitats will be assessed, and the current influences and projected threats will be identified and assessed. This will serve to assess parameters of the natural habitat conservation status, i.e. surface, specific structure and functions taking into account the typical species and protection perspective. The assessments at stations will serve to estimate the assessment of the aforementioned parameters and mostly on this basis conservation status at the levels of the biogeographical region and also in the cases when it comprises a sufficient number of representative monitoring stations at the level of the Natura 2000 area. Based primarily on the results of monitoring, but also other available materials a draft report for the European Commission for all types of natural habitats occurring in Poland in part on their conservation status will be developed.</p> <p>The project will also include information on alien species found during monitoring of various types of habitats.</p> <p>In 2019, it is planned to start next, 5th four-years monitoring stage from 2019 to 2022, which will repeat observations of the next group of natural habitat types.</p> <p>Monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation <i>in respect of plant species</i></p> <p>Monitoring will be based on sample areas (i.e. stations), designated primarily on special areas of habitat protection Natura 2000 and will include 62 species or types of plants or liverworts on a total of 517 stations across the entire country. The monitoring will repeat the examinations performed since 2006, except for 15 endangered plant species which will be monitored for the first time and for which research methodologies will be developed.</p> <p>At the level of stations, indicators that have been specially selected according to the biology and autecology of individual species will be assessed, and the current influences and projected threats will be identified and assessed. This will serve to assess the parameters of the conservation status of the species, population, habitat of the species and protection perspectives. The assessments at stations will serve to estimate the assessment of the aforementioned parameters and conservation status at the levels of the biogeographical region and also in</p>	

the cases when it comprises a sufficient number of representative monitoring stations at the level of the Natura 2000 area.

Based primarily on the results of monitoring, but also other available materials a draft report for the European Commission for all plant species occurring in Poland in part on their conservation status will be developed.

The project will also include information on alien species found during monitoring of various species.

In 2019, it is planned to start next, 5th four-years monitoring stage from 2019 to 2022, which will repeat observations of the next group of species and a possible extension of observations by new endangered species not included in the Annexes to the Directive.

Monitoring of species and natural habitats, with particular emphasis on Natura 2000 special areas of conservation in respect of animal species

Monitoring will be based on sample areas (i.e. stations), designated primarily on special areas of habitat protection Natura 2000 75 animal species at a total of 1648 stations at minimum across the entire country. The monitoring will repeat the examinations of selected species performed since 2006.

Monitoring examinations will be carried out in accordance with the methodology developed and published by CIEP. At the level of stations, indicators that have been specially selected according to the biology and autecology of individual species will be assessed, and the current influences and projected threats will be identified and assessed. This will serve to assess the parameters of the conservation status of the species, i.e. population, habitat of the species and protection perspectives. The assessments at stations will serve to estimate the assessment of the aforementioned parameters and conservation status at the levels of the biogeographical region and also in the cases when it comprises a sufficient number of representative monitoring stations also at the level of the Natura 2000 area.

Based primarily on the results of monitoring, but also other available materials a draft report for the European Commission for all animal species mentioned in Habitat Directive and occurring in Poland in part on their conservation status will be developed.

The project will also include information on alien species found during monitoring of individual species.

In 2019, it is planned to start next, 5th four-years monitoring stage from 2019 to 2022, which will repeat observations of the next group of species.

Task implementation			
Observations	Databases	Supervision and assessment	
CIEP	CIEP - monitoring of species and natural habitats database (SNHM)	CIEP	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the raw data in arranged format	- by 30 September for the previous year	CIEP (ultimately – SNHM database)
Contractor	- the results in arranged formats, including assessments of indicators and parameters of the status of conservation of each species and natural habitat types and the development of results	- once a year	CIEP
CIEP	- the results in arranged formats, including assessments of indicators and parameters of the status of conservation of each species and natural habitat types – spatial data	- once a year	GDEP, RDEP, national parks, ME, GDSF, VIEP
CIEP	- the percentage of individual assessments of their conservation status of species of plants, animal species and natural habitat types (number of species / habitat types) in a given biogeographical region	- once during the project period by 30 September 2019.	CSO

CIEP	- the information on endangered species according to OECD/EUROSTAT Joint Questionnaires	- every year	OECD
Dissemination of results			
Disseminating entity	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- Nature Monitoring Newsletter	- two times during the programme period	central and local government administration, NP, GDSF, EML publications, research institutes, non-governmental organisations, society
CIEP	- CIEP website – processed results of the monitoring and assessment	- once a year	
CIEP	- CIEP website – assessment of the status of conservation parameters of species and habitats according to the draft report for the European Commission for the year 2019	- 2019	

Task: Monitoring of Polish marine species and habitats

The obligation to implement the monitoring of marine species and habitats in the years 2015–2018 in the Polish areas of marine waters and the continuation of these studies in the coming years, arises from both Article 112 of the Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2013, item 627, as amended) and the Act of 4 January 2013 Amending the Water Law Act and Certain Other Acts (Journal of Laws of 2013, item 165)⁴.

Implementation of the monitoring of Polish marine species and habitats is to meet the requirements of Polish and pan-European legislation, so that the results of monitoring of marine species and habitats are used to track the effectiveness of protective measures. It will also allow to meet the reporting obligations under Council Directive 92/43/EEC on 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.07.1992, page 7 and L 305, 11.8.1997, p.42) and Directive of the European Parliament and of the Council 2008/56/EC of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.06.2008, pp 19–40).

The scope of monitoring will primarily include the requirements in this regard contained in the Habitats Directive, i.e. the extent, population and habitat for the species and its range, area, structure and functions of marine habitats.

Monitoring of Polish marine species and habitats will include species and habitats associated with marine areas – which have not been previously monitored under State Environmental Monitoring, and which are listed in the Regulation of the Minister of the Environment of 13 April 2010 On the Natural Habitats and Species of Community Interest, as well as Criteria for the Selection of Areas Eligible for Recognition or Designation as Natura 2000 sites (Journal of Laws of 2014, item 1713).

As part of the task, a website will be developed with a database to collect and disseminate data for government and non-government bodies interested in the results, as well as for the European Commission and HELCOM working groups.

⁴ The Act transposes Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (the Marine Strategy Framework Directive).

Task: Monitoring of birds including Natura 2000 special protection areas

The aim of the task is to collect information on the population of selected bird species in Poland for the purposes connected with assessing protective methods and to collect the data necessary to fulfil the reporting obligations arising from Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 25.04.1979, p.1; L 319, 07.11.1979, p.3; L 115, 08.05.1991, p.41 and L 164, 30.06.1994, p. 9) hereinafter referred to as the Birds Directive.

The examinations conducted within the monitoring cycle in the years 2016–2018 will be the follow-up of the work under the I, II, III and IV stage of the task: “Monitoring of birds, including monitoring of Natura 2000 special protection areas”. In addition, monitoring will cover birds under the new sub-programmes (from 2-8 depending on demand), including:

- selected species requiring special protection in the EU territory, indicated in Article 4(1) of the Birds Directive and listed in Annex I of the Birds Directive; 72 species from this list nest in Poland,
- selected migrating species with wetland habitats requiring special protection and indicated in Article 4(2) of the Birds Directive; 40 such species nest in Poland,
- selected species whose hunting is permitted within the territory of the EU, indicated in Article 7 of the Birds Directive and listed in Annex II/1 or II/2 of the Birds Directive; 55 species from this group nest in the country,
- the species characteristic for the agricultural landscape whose number is reflected in the Farmland Bird Index (FBI), which was approved by the European Commission in October 2004 as one of official structural indicators; the values of this indicator are published every year by specific countries and accessible in the Eurostat database.

The monitoring will encompass the territory of the whole country, particularly Natura 2000 special protection areas, and it will be conducted in compliance with agreed observation methods.

PBM is conducted on the basis of standardised methodologies approved by CIEP which are tested in pilot monitoring (during 1 monitoring season) before being implemented to PBM. These monitoring, after being verified and accepted by CIEP, become the base year (reference year) for a given group or individual species of birds.

The collected data will serve to assess the status of the populations of selected bird species in Poland and part of the report prepared for the European Commission in accordance with the requirements of the Birds Directive. In justified cases, assessments will be based on the data from other State Environmental Monitoring subsystems.

Table 3.4.2. Monitoring of birds including Natura 2000 special protection areas

Subsystem	Task
The nature monitoring	Monitoring of birds including Natura 2000 special protection areas
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - the Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2013 item 627, as amended) – Article 112; - Regulation of the Minister of the Environment of 12 January 2011 on Special Protection Areas for Birds (Journal of Laws of 2011, No 25, item. 133); - The Convention on Biological Diversity (Article 7);

	<ul style="list-style-type: none"> - The Ramsar Convention (Journal of Laws of 1978, No 7, item 24, as amended) – Articles 3 and 4; - The Bern Convention (Journal of Laws of 1996, No 58, item 263, as amended) – Articles 2–7; - The Bonn Convention (Journal of Laws of 2003, No 12, item 17) – Articles 2 and 5.
Objective scope	
<p>Birds monitoring consists of four leading programmes: Popular Species Monitoring (PSM), Fairly Numerous Species Monitoring (FNSM), Migratory Species Monitoring (MSM) and Rare Species Monitoring (RSM) and includes such parameters as: the number, acreage, trends, protection status.</p> <p>a) <i>Popular Species Monitoring (PSM) encompassing Common Breeding Birds Monitoring (CBBM).</i></p> <p>FNSM is the follow-up of the monitoring conducted in the years 2000–2015. The programme aims to monitor the most popular breeding birds providing all the data necessary to calculate the index showing the number of birds in a given year, the index showing the distribution of species in a given year and the <i>Farmland Bird Index</i>. There are plans to gradually develop the programme by including sample areas also within the Natura 2000 special bird protection areas. This will help to conduct comparative assessment of the population in special protection areas (treated jointly) and outside them. The analysed parameters will include also the measurements focusing on species richness of breeding colonies. The predicted number of sample areas is approx. 500-600 1x1-kilometer squares.</p> <p>b) <i>Fairly Numerous Species Monitoring (FNSM) includes six sub-programmes: Bird Flagship Species Monitoring (BFSM), Wetland Birds Monitoring (WBM), Birds-of-Prey Monitoring (BPM), Breeding Forest Owl Monitoring (BFOM), Wintering Aquatic Birds Monitoring (WABM) and Wintering Marine Birds Monitoring (WMBM).</i></p> <ul style="list-style-type: none"> - <i>Bird Flagship Species Monitoring (BFSM)</i> The programme consists in the monitoring of twelve bird species characterised as so-called <i>flagship species</i>, including: the Mute Swan, Red-necked Grebe, Black-necked Grebe, Great Bittern, Grey Heron, White Stork, Marsh Harrier, Crane, Black-headed Gull, Common Tern, Black Tern, Rook. The planned number of sample areas is approx. 40 10x10-kilometer squares. - <i>Wetland Birds Monitoring (WBM)</i> Monitoring will be conducted with respect to approx. 30 bird species occurring on the so called wetlands. The predicted number of sample areas amounts to approx. 8 1x1-kilometer squares within 40 10x10-kilometer squares. - <i>Birds-of-Prey Monitoring (BPM)</i> The programme will consist in the monitoring of 11 species of birds-of-prey and 1 wading species: the Honey Buzzard, Red Kite, Black Kite, White-tailed Eagle, Northern Goshawk, Common Buzzard, Marsh Harrier, Montagu's Harrier, Lesser Spotted Eagle, Common Kestrel, Eurasian Hobby and Black Stork. The predicted number of sample areas is approx. 40 10x10-kilometer squares. - <i>Breeding Forest Owl Monitoring (BFOM)</i> BFOM will consist in the monitoring of 6 species: the Tawny Owl, Ural Owl, Eurasian Pygmy Owl, Boreal Owl, Long-eared Owl, Great Eagle Owl. The predicted number of sample areas is approx. 30 5x5-kilometer squares (possibly 10x10-kilometer squares). - <i>Wintering Aquatic Birds Monitoring (WABM)</i> The programme will include the monitoring of fairly numerous and numerous species of the Anseriformes, i.e. basic species (Great Crested Grebe, Cormorant, Gray Heron, Mute Swan, Whooper Swan, Mallard, Common Pochard, Tufted Duck, Greater Scaup, Common Goldeneye, Smew, Red-breasted Merganser, Goosander and Eurasian Coot) and additional species (Herring Gull, Backed Gull, Common Gull, Black-headed Gull, Little Grebe, Bean Goose, White-fronted Goose, Greylag Goose, Widgeon, Teal, Pintail, Shoveler, Moorhen, White-tailed Eagle and Harriers). Number of sample areas approx. 350: sections of rivers and selected parts of the Baltic Sea coast 10 km wide, and single lakes, ponds and lagoons as whole objects. - <i>Wintering Marine Birds Monitoring (WMBM)</i> The programme will include the monitoring of fairly numerous and numerous species of the Anseriformes wintering in Polish Baltic area, i.e. basic species (Red-throated Loon, Black-throated Loon, Horned Grebe, Red-necked Grebe, Long-tailed Duck, Uhl, Common Scoter, Plunger, Auk and Guillemot) and additional species (Great Crested Grebe, Herring Gull, Black-backed Gull, Common Gull and Black-headed Gull). The total number of the transects for territorial waters will be approx. 48, and 14 for the economic zone waters. The total length of the transects will be approx. 750 kilometres. 	

- *Breeding Marine Birds Monitoring (BMBM)*
Pilot monitoring of breeding species of marine birds in 15-km coastline and waters included in the assessment under Directive 2008/56/EC on marine strategy for the following species: White-tailed Eagle (approx. 85 nests), Cormorant (approx. 70-80 colonies), Sandwich tern (number of control surfaces will be determined at the methodological work stage) and possibly accompanying species.
- *Migratory Species Monitoring (MSM) includes two sub-programmes: Crane Roost Site Monitoring (CRSM) and Geese Roost Site Monitoring (GRSM)*
 - *Crane Roost Site Monitoring (CRSM)*
The programme will monitor cranes grouped during autumn migration at approx. 100 most significant roost sites in the country focusing more than 100 individuals.
 - *Geese Roost Site Monitoring (GRSM)*
The program will be monitored 2 most abundant goose species: White-fronted Goose and Bean Goose with additional species identified. Monitoring will be conducted at approximately 100 key roost sites in the country focusing more than 1000 individuals.
- c) *Rare Species Monitoring consists of five sub-programmes: Birds-of-Prey Monitoring (BPM), Rare Woodpecker Monitoring (RWM), Rare Species Monitoring (RSM1 and RSM2), Rare Species Monitoring (RSM3)*
 - *Rare Woodpecker Monitoring (RWM)*
The programme includes monitoring of changes in the number of 2 species of woodpeckers listed in Annex I of the Birds Directive and the Polish Red Book of Animals (PRBA): White-backed Woodpecker on approx. 50 sample areas and Three-toed Woodpecker on approx. 130 sample areas, inscribed in squares of 2 x 2 km.
 - *Rare Species Monitoring (RSM1 and RSM2)*
The programme consists in the monitoring of the 7 bird species indicated in Annex I to the Birds Directive. These include 2 globally endangered species (the Greater Spotted Eagle and Ferruginous Duck) and 1 species (*Calidris Alpina Schinzii*). Monitoring will be conducted with respect to the following species: the Golden Eagle, Greater Spotted Eagle and Osprey (RSM1); the Whooper Swan, Ferruginous Duck, *Calidris Alpina* and Mediterranean Gull (RSM2). The number of sample areas – approx. 350. The monitored areas include all known breeding sites for the species referred to above in the previous years (2000–2006) in 10x10-kilometer squares
 - *Rare Species Monitoring (RSM3)*
The programme aims to trace the changes in the number of 4 bird species indicated in Annex I to the Birds Directive, including 1 species Poland is particularly responsible for in the EU (the Great Snipe and Aquatic Warbler). The remaining species: European Roller and Black-crowned Night Heron are referred to both in Annex I to the Birds Directive and the Polish Red Data Book. Monitoring encompasses total breeding acreage areas of the species in the country or areas subject to sampling with a high density of the species. In the case of each species, monitoring will be conducted with respect to all breeding sites in the previous years (approx. 1985–2006) in 10x10-kilometer squares or within 1-kilometer transects (aquatic warbler) The number of sample areas – approx. 250.
Number of sample areas depends on the financing of the tasks from the National Fund for Environmental Protection and Water Management.

Task implementation			
Measurements	Databases		Supervision and assessment
CIEP	CIEP – The Polish Birds Monitoring Database		CIEP
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- The raw data, processed data, csv files	- by 30 September data for the previous year	CIEP – The Polish Birds Monitoring Database
Contractor	- the metadata; examination results	- 1 to 2 times a year	CIEP
CIEP	- the results of examinations conducted in the voivodship, national park	- once a year through the Polish Birds Monitoring Database and Polish Birds Monitoring Website (downloadable data)	GDEP, RDEP, GDSF, national parks

CIEP	- the statistics – in the form of aggregate tables	- gradually, by 30 September, according to the stages of monitoring	CSO
CIEP	- part of the report for the European Commission on compliance with the provisions of the Birds Directive in the field of monitoring	- 2019	GDEP
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- PBM result monograph	- once during task period	central and local government administration, forest administration, research institutes, libraries, non-governmental organisations, society
CIEP	- EML publications	- once/two times during task period	
CIEP	- CIEP website (PBM website)	- once or two times a year	

Task: The monitoring of forests

The aim of forests monitoring is to provide the data on the state of forests and the processes leading to deformations in their structure or disturbances in their functioning for the purposes associated with developing a forest policy and managing forest ecosystems in order to improve the quality of the natural environment in the country.

Forests monitoring is conducted basing on the regulations specified in the Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) and the Act of 28 September 1991 on Forests (Journal of Laws of 2014, item 1153, as amended). The programme of forests monitoring is implemented in compliance with the methodological principles specified in the ICP Forests operating under the Convention on Long-range Transboundary Air Pollution.

Test results of monitoring and assessments of the health status of forests will be used by the government institutions responsible for the formulation and implementation of policies for the protection of the environment and forest policy of the country, for the optimisation of activities related to forest management and conservation actions to prevent or minimise the effects of adverse impact on forest ecosystems. The data on the health status of forests obtained under the monitoring of forests will be submitted annually for the purposes of the International Coordinating Programme ICP Forests, and will be used to develop annual reports on the status of forests in Europe.

The programme of forest monitoring is carried out jointly by the three institutions: Chief Inspectorate of Environmental Protection, The General Directorate of State Forests and the Ministry of the Environment.

Table 3.4.3. Monitoring of forests

Subsystem		Task	
The nature monitoring		Monitoring of forests	
Legislative acts		<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended); - Act of 28 September 1991 on Forests (Journal of Laws of 2014, item 1153, as amended); - Convention on Long-range Transboundary Air Pollution 	
Objective scope			
<p>The monitoring and assessment of forest health condition will be conducted in the years 2016–2020 basing on the national network of permanent observation plots (POPs) located in a regular 8x8-kilometer measuring grid (at national level) and a 16x16-kilometer measuring grid (at European level) and integrated with the large-scale inventory of the state of forests. The observation network consists of 2294 Level I permanent observation plots, including 282 plots awaiting to be examined in connection with their age, (as of 2014), and thus, annually, approx. 2010 Level I POP will be used to conduct examinations and observations. Total area from year to year may fluctuate because of changes in forest area, management treatments and age of the stands. Monitoring will cover the stands of all forest-forming species below 20 years old in the forests of all ownership categories.</p> <p>The research programme on Level I POP in the years 2016–2020 will include annual surveys of:</p> <ul style="list-style-type: none"> - morphological features of sample trees crowns (mainly defoliation and discoloration of trees assimilation apparatus), - trees damage symptoms, - diameter of breast height trees. <p>Except for Level I permanent observation plots, there are 148 Level II permanent observation plots where, beside the observations consisted with the work performed on Level I observation plots, the following surveys will also be conducted:</p> <ul style="list-style-type: none"> - chemical composition of the assimilatory apparatus of trees, - biological diversity and natural regenerations, - tree volume and stand volume increment, - soil chemistry. <p>On 12 selected Level II plots, known as intense monitoring permanent observation plots (POP IM) a program extended with the following surveys will be conducted:</p> <ul style="list-style-type: none"> - air pollution, - precipitation chemistry, - throughfall chemistry and stemflow chemistry, - solutions, - meteorology. 			
Task implementation			
Measurements		Databases	Supervision and assessment
CIEP (Contractor - The Forestry Research Institute)		The Forestry Research Institute – national database of forest monitoring contains the results of monitoring and assessments of the health status of forests	CIEP (in cooperation with GDSF and ME)
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
The Forestry Research Institute	- the reports on the status of forest damage	- once a year	CIEP, ME, GDSF, RDSF
The Forestry Research Institute	- providing access to the forest monitoring database	- on a current basis	CIEP

The Forestry Research Institute	- the data on the health condition of stands from approx. 370 Level I POP and 12 IM POP (submitted for the purposes of the international ICP Forest programme)	- once a year	Thunen Institute of Forest Ecosystems,
The Forestry Research Institute	- the data on the health condition of stands – presented in tables	- once a year in accordance with the Statistical Research Programme	CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- EML publications: - “The level of forest damage in Poland on the basis of monitoring” - “Health condition of Polish forests” (synthesis in Polish and English)	- depending on available funds	central and local government administration, forest administration universities, libraries, society
CIEP	- CIEP website	- annual update	

Task: The Integrated Monitoring of the Natural Environment

The Integrated Monitoring of the Natural Environment (IMNE) aims to provide the data on the state of representative Poland’s geo-ecosystems (taking into account their geodiversity and biodiversity), the mechanisms of their functioning, the trends in the changes occurring in them as a result of climatic changes and human activity, the type and character of threats to geo-ecosystems.

IMNE is holistic in character, treating the natural environment as a system composed both of biotic and abiotic components ecologically related with one another. The object of monitoring includes selected geo-ecosystems representative for Polish landscape structures.

The IMNE measurement programme is implemented basing on the three aspects:

- the balance of energy and matter in a river and/or lake catchment,
- the flow of the matter in the atmosphere-plant-soil profile-groundwater,
- the monitoring (bioindication) of selected biological elements of the geo-ecosystem sensitive to changes in energy balance, biogenes and toxic elements.

In terms of the stated objectives, the organisation of the measurement system and methods of the IMNE programme refers to the European programme of Integrated Monitoring (International Co-operative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems), which supports the implementation of the Convention on Long-range Transboundary Air Pollution.

The data obtained under IMNE will be employed in the activities aiming to maintain the landscape structure of the country and for the purposes of local and regional spatial management. Identification of the sources of environmental hazards to the areas monitored under the IMNE programme is particularly important in the context of protective measures under the European Ecological Network NATURA 2000. The vast majority of base stations and research catchment operating under the IMNE measurement network is located within or near the areas included in the NATURA 2000 network.

Table 3.4.4. The Integrated Monitoring of the Natural Environment

Subsystem		Task	
The nature monitoring		The Integrated Monitoring of the Natural Environment	
Legislative acts		No specific regulations; the task is parallel with the European <i>Integrated Monitoring</i> programme operating as an optional programme under the Convention on Long-Range Transboundary Air Pollution.	
Objective scope			
<p>In the years 2016–2020, IMNE will consist in monitoring and assessing the state of the natural environment of selected Poland's geo-ecosystems. The survey will be conducted based on the national network comprising eleven base stations within representative river and/or lake catchments. The surveyed research catchments include: the catchment of the upper Parsęta River (the Storkowo Base Station), Czarna Hańcza (the Wigry Base Station), the Łękuć Lake (the Puszcza Borecka Base Station), Struga Toruńska (the Koniczynka Base Station), the catchment of the Olszowiecki Canal (the Pożary Base Station), the agricultural and forest catchment in the Świętokrzyskie Mountains (the Św. Krzyż Base Station), the catchment of Bystrzanka (the Szymbark Base Station), the catchment of the Gardno Lake (the Wolin Base Station), the catchment of Świerszcza (the Roztocze Base Station), the catchment of Wrzosówka (the Karkonosze Base Station), the catchment of Różany Strumień (the Różany Strumień Base Station). IMNE will be implemented in accordance with a reviewed measurement programme focusing on the monitoring of the most significant biotic and abiotic parameters specifying the state and functioning of selected geo-ecosystems.</p> <p>The programme covers:</p> <p>measurement programmes: meteorology, air pollution, precipitation chemistry, throughfall and stemfall chemistry, soil solutions chemistry, soils, groundwater, organic precipitation, surface water – rivers, surface water – lakes, damages to trees and tree stands, epigeic fauna, heavy metals and sulphur in thallus, the structure and changes of flora and plants (permanent plots), monitoring of invasive species of foreign origin (plants), hydrobiology of rivers – macrophytes and the hydromorphological assessment of riverbed;</p> <p>analytical programmes: extreme events, changes in land cover and land use, geocosystem services, modelling of changes in water and biogeochemical balance in IMNE representative catchments, functioning of the geocosystems of IMNE research catchment using geo- and bio-indicators.</p>			
Task implementation			
Measurements	Databases		Supervision and assessment
CIEP (IMNE Base Stations and relevant VIEP Stations)	IMNE Base Stations and relevant VIEP Stations – local databases containing monitoring results and assessment of the geocosystem status conducted by a given base station IMNE Centre at Adam Mickiewicz University in Poznań – national database containing monitoring results and assessment of the geocosystem status at eleven base station		CIEP (in cooperation with IMNE Centre at Adam Mickiewicz University in Poznań)
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
IMNE Base Stations via the IMNE Centre at Adam Mickiewicz University in Poznań	- the compiled monitoring results along with an assessment of the geocosystem status in the form of a report – printout, file	- once a year (data for the previous year)	CIEP VIEP according to the location of base stations
IMNE Centre at Adam Mickiewicz University in Poznań	- providing access to the database	- on a current basis	CIEP

Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- website	- annual update	central and local government administration, universities, schools, libraries, society
CIEP, IMNE Centre at Adam Mickiewicz University in Poznań	- nationwide IMNE symposium	- every 2–3 years	
CIEP, IMNE Centre at Adam Mickiewicz University in Poznań	- EML publications, academic publications	- optionally, depending on the availability of funds	

3.5. The noise monitoring subsystem

The aim of the subsystem is to provide information for the purposes of protection against noise by means of spatial planning tools and environmental protection tools such as strategic noise maps and action plans focusing on protection against noise as well as technological source-oriented solutions or technological impact-minimising solutions.

The subsystem takes into account the legal status arising from the requirements of Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (OJ L 189, 18.07.2002, p. 12) introduced to the Environmental Protection Act of 27 April 2001.

In accordance with Article 117 paragraph 1 of the Environmental Protection Act, the assessment of the acoustic state of the environment and the observations of its changes under the State Environmental Monitoring are based on the results of noise level measurements applying the noise level indicators L_{DEN} ⁵ and L_N ⁶, taking into account the additional data, particularly demographical data and the data on land management and use. Additional data from the measurements and assessments based on other indicators, such as L_{AeqD} ⁷, L_{AeqN} ⁸, L_{AE} ⁹ is also used in the national noise assessment. Some of the indicators may be used to determine the value of L_{DEN} and L_N or be used for additional detailed assessments, including the calibration of computational model analysis to develop acoustic maps.

In accordance with the provisions of Article 118 of the Environmental Protection Act, in order to assess the acoustic state of the environment, the staroste makes and approves noise maps for a given agglomeration. Moreover, the entity administering a road, railway or an airport is also obliged to draw up strategic noise maps if the use of the road, railway and the airport has a negative acoustic impact on the environment.

Pursuant to the Environmental Protection Act, the staroste is responsible for preparing strategic noise maps for agglomerations; while the competent authorities managing major roads, major railways and major airports are responsible for noise mapping of them. The competent authorities for strategic noise mapping submit these maps to relevant VIEP in accordance with Article 120 of the Environmental Protection Act. In turn, the Voivodship Inspectorate of Environmental Protection includes the information contained in the strategic noise maps in the assessment of the acoustic climate in the voivodship.

In the remaining areas where no obligation to prepare strategic noise maps applies, the acoustic state of the environment is assessed by the Voivodship Inspectorate of Environmental Protection which develops local noise maps for cities with the population under 100 thousands, especially in the surrounding of roads.

Pursuant to the provisions of Directive 2002/49/EC, the third round of noise mapping should be completed by 30 June 2017, in which strategic noise maps for agglomerations with over 100 and 250 thousand inhabitants, all the major roads which have more than three million vehicle passages a year, the major railways which handle more than 30 000 train passages a year and the major airports which handle more than 50 thousand movements per year should be ensured. Strategic noise maps show the status in the previous calendar year, i.e. they use the input data which is valid in the year before their development. The information from the strategic noise maps converted to the format specified by the European Commission (EC) and the European Environment Agency (EEA) are to be reported

⁵ L_{DEN} - Day-evening-night equivalent level : A-weighted, Leq. sound level, measured over the 24 hour period.

⁶ L_N - Night equivalent level : A-weighted, Leq. sound Level, measured over the 24 hour period.

⁷ L_{AeqD} - A-weighted, equivalent sound level, for 16 hour period during the day

⁸ L_{AeqN} - A-weighted, equivalent sound level, for 8 hour period during the night

⁹ L_{AE} - Sound Exposure Level

to the EC / EEA by 31 December 2017. The execution of this task is entrusted by the Minister of the Environment to the Chief Inspectorate of Environmental Protection.

After the Directive of the European Commission establishing common noise assessment methods in accordance with Directive 2002/49/EC, amending certain Annexes to Directive 2002/49/EC, comes into force, the system of measurements and assessments of noise monitoring will be adapted to the requirements contained in the document, subject to availability of funds.

Task: The monitoring and assessment of the acoustic state of the environment

The task includes the measurements and assessments of the noise emitted by the following sources:

- industrial sources and
- transportation sources (roads, railways, tramways, sea ports and airports).

The assessment consists of the determination of an equivalent noise level and non-acoustic conditions. Moreover, for the purposes associated with the implementation a long-term policy focusing on protection against noise, the values of the indicators L_{DEN} and L_N will be determined taking into consideration meteorological data.

Due to the specific characteristic of noise management, the organisation of monitoring has been decentralised. Pursuant to the Environmental Protection Act, the lowest administrative level where the acoustic climate is assessed is the poviats. The starostes or the entities managing roads, railways and airports are responsible for conducting assessments in the form of strategic noise maps based on calculation methods which, inter alia use the results of noise measurements.

The Voivodship Inspector of Environmental Protection is statutorily obliged to assess the acoustic state of the environment in the areas where no obligation of noise mapping applies, by developing local noise maps if possible. During the 5-year period of this State Environmental Monitoring, at least two local noise maps for cities with populations of less than 100 thousand inhabitants will be conducted in the voivodship. Deadlines for the development of the local noise maps will be set out in the voivodship environmental monitoring programmes. These maps will be developed based on simplified methods (according to the instructions contained in the methodological guidelines).

Strategic noise maps approved by competent authorities for all agglomerations, all major roads, all major railways and major airports must be submitted to the VIEP, as the voivodship inspector is responsible for collecting the data from strategic noise maps (in accordance with Article 120 of the Environmental Protection Act) and storing them in a register (Article 120a) the EHAŁAS database maintained both at voivodship and national level.

If needed, the EHAŁAS database will be developed, so that it collects all the data associated with the measurements and assessments of the acoustic state of the environment which are obliged in the SEM, including information necessary to fulfil the national and international reporting obligations.

The VIEP takes measurements or does assessments on areas, depending on whether the location is within the strategic noise mapping or is located where no obligation to prepare strategic noise maps applies.

In the years 2016–2020, Voivodship Inspectorates of Environmental Protection will conduct compulsory monitoring of road and industrial noise in the areas where strategic noise maps are not prepared.

The measured indicators of industrial noise levels are L_{AeqD} and L_{AeqN} , whose values are used to set and control the conditions of using the acoustic environment.

In the course of road noise measurements, the measured road (street) noise indicators are L_{AeqD} and L_{AeqN} or the exposure levels L_{AE} and the statistical level L_{A95} (if necessary). Ultimately, the values of long-term levels L_{DEN} and L_N are determined at selected sites. In the years 2016–2020, the measurements of long-term levels will be carried out as defined in Table 3.5.1.

Table 3.5.1. The monitoring and assessment of the acoustic state of the environment

Subsystem	Task
The noise monitoring	The monitoring and assessment of the acoustic state of the environment
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26, Article 112b, Article 113, Article 117, Article 118a, Article 120, Article 120a, Article 148, Article 149, Article 176, Article 177 and Article 179; - Regulation of the Minister of the Environment of 10 November 2010 on the Establishment of a Noise Indicator L_{DEN} (Journal of Laws of 2010, No 215, item 1414); - Regulation of the Minister of the Environment of 14 June 2007 on Acceptable Noise Levels in the Environment (Journal of Laws of 2014, item 112); - Regulation of the Minister of the Environment of 1 October 2007 concerning the Detailed Scope of the Data in Strategic Noise Maps, their Distribution and Presentation (Journal of Laws of 2007, No 187, item 1340); - Regulation of the Minister of the Environment of 25 April 2008 concerning the Detailed Requirements concerning the Register Containing the Data on the Acoustic State of the Environment (Journal of Laws of 2008, No 82, item 500); - Regulation of the Minister of the Environment of 2014 on the Requirements concerning Measurement of Emission Volume and the Amount of Water Drawn (Journal of Laws of 2014, item 1542); - Regulation of the Minister of the Environment dated 19 November 2008 on Types of Measurement Results Conducted in Connection with the Operation of a System or Device and Other data and Deadlines and the Method of their Presentation (Journal of Laws 2008, No 215, item 1366); - Regulation of the Minister of the Environment of 16 June 2011 on the Requirements concerning Measurement of Levels of Substances and Energy in the Environment by Managers of Roads, Railroad, Tram Road, Airport or Port (Journal of laws of 2011, No 140, item 824, as amended); - Regulation of the Minister of the Environment of 17 January 2003 concerning the Types of the Results of Measurements Conducted in connection with the Use of Roads, Railways, Tramways, Airports and Ports which should be Submitted to the Competent Environmental Protection Authorities as well as the Dates and Manner of their Presentation (Journal of Laws of 2003, No 18, item 164) – by the time of the passing of a new regulation pursuant to Article 177 of the Environmental Protection Act; - Regulation of the Minister of the Environment of 14 December 2006 concerning the Roads, Railways and Airports whose Use may have a Negative Acoustic Impact on Large Areas where the Preparation of

	<p>Strategic Noise Maps is Required and the Ways to Determine the Borders of the Areas Covered by these Maps (Journal of Laws of 2007, No 1, item 8);</p> <p>- Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485).</p>
Objective scope	
<p>In the years 2016–2020, under the task, VIEP will perform measurements and collect measurement results of the equivalent continuous A-weighted sound pressure level the day and night for industrial, road, railway and airport noise, equivalent continuous A-weighted ambient noise level, meteorological conditions, the assessment of the acoustic climate and the observation of changes, from other entities obliged by law to submit such measurement results.</p> <p>In the case of selected areas, the determination of the average values for noise indicators such as L_{DEN} and L_N, is based on the results of noise measurements in specific seasons of the year and taking into consideration diverse activity of noise sources or meteorological conditions in a given year.</p> <p>Road noise measurements</p> <p>The measurements of road noise will be performed mainly in the areas where development of strategic noise maps is not obligatory.</p> <p>Measurements of road noise will be carried out annually in three different areas¹⁰ in the voivodship. The obligatory measurement range will include:</p> <ul style="list-style-type: none"> - in the voivodship in which Voivodship Inspectorate of Environmental Protection without delegations operates or in which Voivodship Inspectorate of Environmental Protection with one delegation operates – one measuring site for measuring: L_{DEN} and L_N (a total of 3 sites in all areas) and 6 monitoring sites for measuring L_{AeqD} and L_{AeqN} levels (an average of 2 sites in a given area); - in the voivodship in which Voivodship Inspectorate of Environmental Protection with two or a greater number of delegations operates – one measuring site for measuring: L_{DEN} and L_N (a total of 3 sites in all areas) and 12 monitoring sites for measuring L_{AeqD} and L_{AeqN} levels (an average of 4 sites in a given area). <p>In the case of continuous measurements to determine the long-term indicators – the minimum duration of measurements in a given area – is a total of 8 days of measurement, including:</p> <ul style="list-style-type: none"> – two 24-hour periods on weekdays and one 24-hour period on weekends, in spring, – two 24-hour periods on weekdays and one 24-hour period on weekends, in autumn-winter, – one 24-hour period on weekdays, in summer, – one 24-hour period on weekends, in summer, <p>It is assumed that the length of periods is:</p> <ul style="list-style-type: none"> – spring period: March – June, – summer period: July – August, – autumn-winter period: September – February. <p>Measurement periods must be correlated with appropriate atmospheric conditions which determine propagation of acoustic waves (e.g. the “favourable” and “neutral” conditions, in conjunction with ISO 1996-2: 2007 Acoustics – Description, measurement and assessment of environmental noise – Part 2 : Determination of environmental noise levels, which will be discussed in detailed in the methodological annexes attached to the guidelines).</p> <p>During the 5-year period, monitoring of 15 areas at maximum in the voivodship is planned. Due to the cumulative assessments of environmental noise, measurements performed during the 5-year period are treated as the measurements made at the same time. Provided that at that time, there were no significant changes in land use, or in the number and operation of sources, which has a significant impact on the acoustic climate change. Measurements in a given area may be repeated, if necessary. It should be assumed that these repetitions should not refer to more than 7 areas for the duration of SEM in the years 2016–2020.</p> <p>The noise measurements should also include the non-acoustic values required with the reference methods mentioned above.</p> <p>In addition, L_{AeqD} and L_{AeqN} measurements will be used to calibrate the computational model to draw up local noise maps, therefore it is advisable to pay special attention to the location of monitoring sites. The results of noise measurements in individual areas will be also presented in graphical form within the range of noise (in accordance with the methodological instructions contained in the guidelines). In order to optimise the cost of noise measurements in the environment, application of modelling based on computational methods is</p>	

¹⁰ the concept of area will be clarified in detailed in individual methodological annexes attached to the guidelines

anticipated.

The measurement results will also be used to prepare the annual reports to the CSO.

Railway noise measurements

The measurements will refer to sections of railway lines not included in strategic noise maps. The measured values are L_{AE} exposure levels in accordance with the reference methodology (Journal of Laws of 2011, No 140, item 824, as amended). The exposure levels will serve to determine L_{AeqD} and L_{AeqN} levels.

The scope of railway noise measurement will include:

- in the voivodship where the Voivodship Inspectorate of Environmental Protection without delegations operates, the measurements will be conducted in 2-3 measurement cross-sections yearly;
- in the voivodship where the Voivodship Inspectorate of Environmental Protection operates with one or two delegations, the measurements will be conducted in 3-4 measurement cross-sections yearly;
- in the voivodship where the Voivodship Inspectorate of Environmental Protection operates with two or a greater number of delegations, the measurements will be conducted in 4-6 measurement cross-sections yearly.

Airport noise measurement

In the case of airports and/or landing sites (including helicopter landing sites) measurements of airport noise will be conducted; in reference to not less than two objects within 5 years.

The measured values are L_{AE} exposure levels in accordance with the reference methodology (Journal of Laws of 2011, No 140, item 824, as amended). Based on the measurements, assessments of the impact of noise emissions from the airports (landing sites) to the environment will be conducted in relation to the areas protected against noise under Article 113 of the Environmental Protection Act.

Industrial noise measurement

Industrial noise measurements will be associated with control measurements. The industrial noise measurements will determine the value of equivalent sound levels L_{AeqD} and L_{AeqN} in accordance with the reference methodologies (Journal of Laws of 2014, item 1542).

Under the monitoring of industrial noise, measurement results will be collected in the EHAŁAS database, which will serve to prepare the following:

- assessments of industrial noise around the major sources of industrial noise (larger plants, installations e.g. those obliged to carry out periodic noise measurements);
- calibration of computational models used to draw up noise maps.

The measurement results will also be used to prepare the annual reports to the CSO.

The EHAŁAS database will collect data on road noise, railway and airport noise and industrial noise, and the measurements conducted as part of own work, as well as data obtained from third parties obliged under the law to submit data to VIEP and data from strategic noise maps.

Assessments

Apart from the measurements referred to above, in accordance with the general tasks of the State Environmental Monitoring, assessments of the acoustic state of the environment in the voivodship will be conducted.

The Voivodship Inspector of Environmental Protection determines the extent of own research under the voivodship environmental monitoring programme, as well as the scope of measurements conducted by other entities obliged by law to perform noise measurements, necessary to carry out assessments of the acoustic climate in the voivodship:

- annually (may be part of the voivodship reports on various aspects of the environment);
- a report on the assessment of the acoustic climate status in the voivodship on the basis of strategic noise maps (collection of strategic noise maps in 2017, preparation of the report – II quarter of 2018); to prepare a report, the following data should be used:
 - immission layers of the strategic noise map,
 - layer of the noise sensitivity map,
 - layer of the map of the areas at risk of noise;
- the 2012–2016 report on the assessment of the status of noise climate in the voivodship summarising the 5-year noise monitoring cycle developed on the basis of all the data collected, both VIEP own data, as well as data obtained from other entities.

In order to ensure consistency of measurements and assessments of environmental noise, CIEP will continue training, organise comparative measurements, and conduct methodical work. In justified cases, CIEP will also conduct complementary or specialised measurement cycles.

Periodically, CIEP will assess the acoustic status of the environment in the country, including, among others, analysis of trends with respect to individual categories of noise sources.

Task implementation			
Measurements	Databases		Supervision and assessment
road, railway, sea port, airport managers, staroste	VIEP – EHAŁAS database		CIEP
VIEP (including control measurements) CIEP – optionally	VIEP – EHAŁAS database		CIEP
	VIEP – EHAŁAS database		CIEP
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
staroste	- strategic noise maps - own measurement results	- 2017 and 2018 - gradually, as the results are obtained	VIEP
road, railway, sea port, airport managers	- own measurement results, in particular, periodic measurement results - strategic noise maps	- gradually, as the results are obtained - 2017 and 2018	VIEP VIEP
VIEP	- own measurement results and the measurement results of other entities included in the voivodship environmental monitoring programme	- on a current basis, by 31 March data for the previous year	VIEP – EHAŁAS database
VIEP	- own measurement results	- gradually, as the results are obtained	staroste and other environmental protection bodies relevant for a given source (e.g. marshal of the voivodship, RDEP)
CIEP	- the aggregate measurement results in table form	- once a year according to the Statistical Research Programme	CSO
CIEP	- strategic noise maps data	2017 and 2018	ME, EC, EEA
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP	- CIEP website	on a current basis, depending on available data	central and local government administration, universities, schools, libraries, society
CIEP	- EML publications: “Pollution of the environment with noise in the light of VIEP monitoring”	- every 2 years, depending on available funds	
CIEP	- the thematic reports	- optionally	
VIEP	- the thematic reports	- optionally	
VIEP	- website	on a current basis, depending on available data	

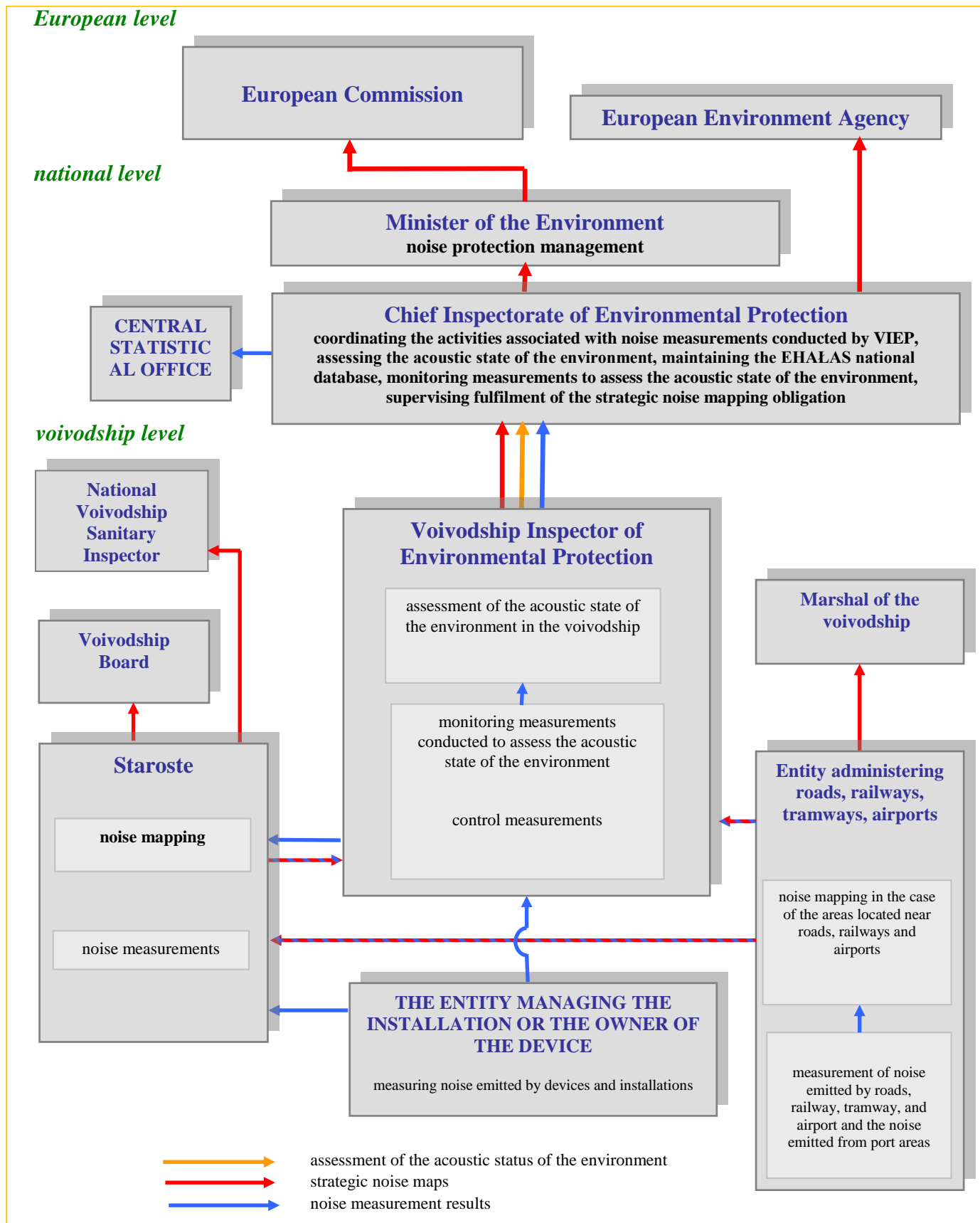


Fig.3.5.1. The flow of the information on the acoustic state of the environment

3.6. The electromagnetic field monitoring subsystem

The levels of electromagnetic fields in the environment are assessed within the framework of the State Environmental Monitoring pursuant to Article 123 of the Environmental Protection Act of 27 April 2001 (Journal of Laws of 2013, item 1232, as amended). In accordance with the act, electromagnetic fields (EMFs) are electrical, magnetic and electromagnetic fields at the frequencies ranging from 0 Hz to 300 GHz, constituting non-ionizing electromagnetic radiation.

The work under the electromagnetic field monitoring subsystem planned to be continued in the years 2016–2020 will consist in the measurements of the levels of artificially generated electromagnetic fields in the environment, taking into account the changes occurring in the years when the monitoring is conducted. The basic assumption behind the observations is to protect people against the increase of electromagnetic field levels above the limit values set for the areas designated for residential development and the areas accessible to general public in the Regulation of the Minister of the Environment of 30 October 2003 concerning the Limit Values of Electromagnetic Fields in the Environment and the Ways to Comply with these Limits (Journal of Laws of 2003, No 192, item 1883).

Task: Acquisition of information about electromagnetic field sources

Pursuant to Regulation of the Council of Ministers of 9 November 2010 on Projects Likely to Have Significant Effects on the Environment (Journal of Laws of 2010, No 213, item 1397) projects likely to significantly affect the environment in the context of electromagnetic fields include:

- electricity power stations or overhead electricity power lines with the rated voltage of at least 110 kV;
- radio communication, radio navigation and radiolocation installations, except for radiolines, emitting electromagnetic fields with the frequencies of 30 kHz-300 GHz, whose effective isotropic radiated power for one aerial is at least 15 W,

Voivodship Inspectorates of Environmental Protection will gradually obtain the information about the devices and installations emitting electromagnetic radiation in the course of the monitoring.

An additional source of information, including stations and power lines may be:

- inspection activity of the Inspectorate of Environmental Protection,
- staroste,
- database of radio licenses issued by the Office of Electronic Communications,
- information from the Polish Power System Operator S.A (PSE S.A.).

The information about the sources of electromagnetic fields will be successively collected in JELMAG central database of electromagnetic fields and may be used e.g. to prepare and analyse of the assessments of the electromagnetic field levels in the environment.

Task: The monitoring and assessment of electromagnetic field levels in the environment

EMF measurements for assessment purposes are conducted by the Voivodship Inspectorate of Environmental Protection. The scope and method of carrying out the measurements are defined in the Regulation of the Minister of the Environment of 12 November 2007 on the Scope and Method of Conducting Periodic Measurements of Levels of Electromagnetic Fields in the Environment (Journal of Laws of 2007, No 221, item 1645).

The aim of the task is to monitor the values of the parameters characterising electromagnetic fields generated and emitted into the environment in an artificial way by the sources of electromagnetic fields present in our surroundings, i.e. mostly: radio-communication facilities, including: radio and television transmitting stations and GSM base transceiver stations.

A detailed programme of electromagnetic field monitoring measurements and the location of measuring sites are specified by the voivodship inspector of environmental protection under the voivodship environmental monitoring programme in accordance with the Regulation concerning the Scope and Method of Periodic Measurements of Electromagnetic Field Levels in the Environment. The regulation specifies the scope of the measurements of electromagnetic field levels in the environment by means of the measurements of the intensity of the electric component of electromagnetic field at the frequency ranging from at least 3 MHz to 3000 MHz.

In each voivodship, the measurements will be conducted at 135 monitoring sites within a three-year measurement cycle, at 45 monitoring sites for every year. 15 monitoring sites are located in three types of areas accessible to general public, i.e. central districts or housing estates in the cities with more than 50 thousand inhabitants, in the remaining cities and rural areas. The measurements at designated sites are repeated every three years.

The measurement results obtained under voivodship EMF monitoring programmes, along with the information on the installations and devices emitting electromagnetic radiation, will be entered to the JELMAG electromagnetic fields database at the level of each voivodship. CIEP is responsible for verification of the data entered to the database and for approving them at national level. Based on the data collected in the JELMAG, annual and three-year electromagnetic field monitoring reports will be generated.

Periodic assessment of the levels of electromagnetic fields in the environment (annual and three-year assessments) for the entire country are performed by CIEP and published on CIEP website. The Three-year assessments will be conducted in 2017 and 2020.

Based on the monitoring results conducted by VIEP since 2008 and the measurements carried out at the request of CIEP in selected Polish cities with a population over 250,000 inhabitants, CIEP will analyse trends in the levels of electromagnetic fields, which will allow to consider possible changes in the scope and method of conducting periodic measurements of the levels of electromagnetic field in the environment.

In the event of legal changes requiring additions or the necessity to introduce new functionalities to the database, further development of the JELMAG database is contemplated.

Table 3.6.1. The monitoring and assessment of electromagnetic field levels in the environment

Subsystem	Task
The electromagnetic field monitoring	The monitoring and assessment of electromagnetic field levels in the environment
Legislative acts	<ul style="list-style-type: none"> - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26 and Article 123; - Regulation of the Minister of the Environment of 30 October 2003 concerning the Limit Values of Electromagnetic Fields in the Environment and the Ways to Comply with these Limits (Journal of Laws of 2003, No 192, item 1883); - Regulation of the Minister of the Environment of 12 November 2007 concerning the Scope and Method of Periodic Measurements of

	<p>Electromagnetic Field Levels in the Environment (Journal of Laws of 2007, No 221, item 1645);</p> <ul style="list-style-type: none"> - Regulation of the Minister of the Environment of 9 November 2010 on Types of Projects Likely to have Significant Effects on the Environment (Journal of Laws No 213, item 1397); - Regulation of the Minister of the Environment of 23 November 2010 on the Way and the Frequency of Updating Information on the Environment (Journal of Laws of 2010, No 227, item 1485). 		
Objective scope			
<p>In the years 2016–2020, VIEP will continue the monitoring of electromagnetic field levels in the environment by measuring the intensity of the electric component of the electromagnetic field at the frequency ranging from at least 3 MHz to 3000 MHz for the areas accessible to general public in accordance with the Regulation of the Minister of the Environment concerning the Scope and Method of Periodic Measurements of Electromagnetic Field Levels in the Environment of 12 November 2007.</p> <p>Detailed measurement programme along with the location of monitoring sites will be specified in voivodship environmental monitoring programmes. In each voivodship, the measurements will be conducted at 135 monitoring sites within a three-year measurement cycle (45 sites a year) for three types of areas accessible to general public, i.e. central districts or housing estates in the cities with more than 50 thousand inhabitants, in the remaining cities and rural areas.</p> <p>All the data obtained during measurements of electromagnetic fields conducted by VIEP, along with the information on the installations and devices emitting electromagnetic radiation, will be entered to the JELMAG electromagnetic fields database at the level of each voivodship.</p> <p>Based on the measurements, CIEP will develop cyclical assessments of the levels of electromagnetic fields in the environment (annual and three-year assessments) for the entire country. The Three-year assessments, which summarise the three-year measurement cycles, will be conducted in 2017 and 2020.</p>			
Task implementation			
Measurements	Databases		Supervision and assessment
VIEP CIEP - optionally	CIEP – JELMAG electronic database, data of electromagnetic field measurements in environment, information on electromagnetic field sources		CIEP
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
VIEP – entering results to JELMAG database CIEP	<ul style="list-style-type: none"> - The data set along with calculation results, data of electromagnetic field measurements in environment, information on electromagnetic field sources - the data set in table form 	<ul style="list-style-type: none"> - by 31 March data for the previous year - once a year according to the Statistical Research Programme 	CIEP –JELMAG database CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
VIEP CIEP	<ul style="list-style-type: none"> - VIEP website - CIEP website 	<ul style="list-style-type: none"> - on a current basis, depending on available data - on a current basis, depending on available data 	central and local government administration, universities, schools, libraries, society

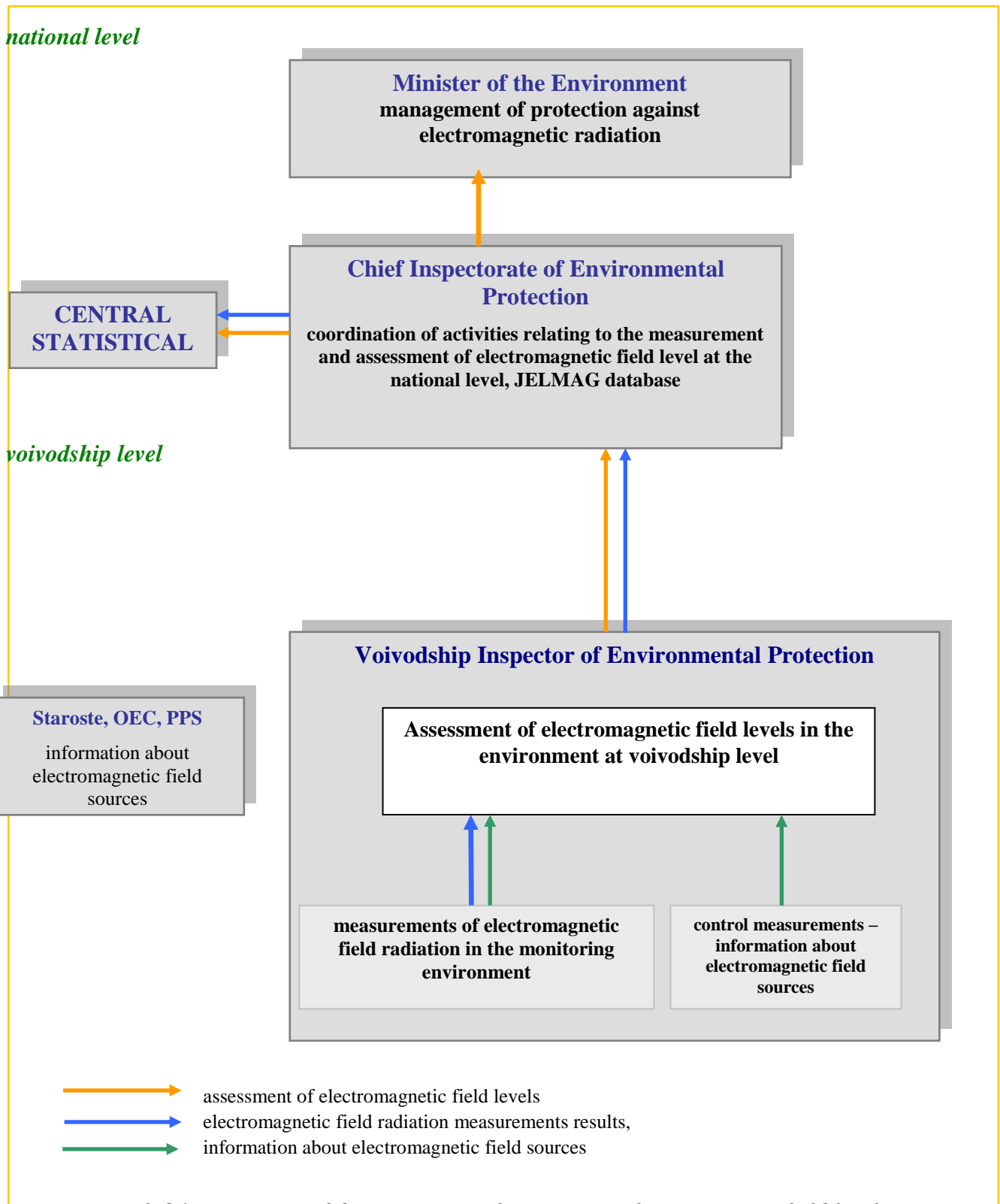


Fig.3.6.1. Frequency of disseminating information on electromagnetic field levels

3.7. The ionizing radiation monitoring subsystem

The purpose of the ionizing radiation monitoring subsystem is to assess, on an ongoing basis, the degree of radioactive contamination of the atmosphere, to track changes in the radiation of rivers and lakes and to assess deposition of ^{137}Cs for the surface layer of soil for the entire country. The provisions of Article 26 of the Environmental Protection Act determine the scope information on ionizing radiation under SEM. The monitoring of radioactive contamination in the environment is implemented in accordance with the recommendations of the European Commission specified in the Commission Recommendation of 8 June 2000 on the application of Article 35 of the Euratom Treaty concerning the monitoring of the levels of radioactivity in the environment for the purpose of assessing the exposure of the population as a whole. These recommendations require each Member State to provide the facilities necessary to carry out continuous monitoring of the level of radioactivity in the air, water and soil. In accordance with the Act of 29 November 2000 – Atomic Law (Journal of Laws of 2014, item 1512, as amended) the systematic assessment of radiation in the country falls within the competence of the National Atomic Energy Agency. Therefore, a detailed measurement programme and measurement methodology are approved by the NAEA President. The list of the entities conducting radioactive measurements is specified in the Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2030).

The ionizing radiation monitoring subsystem will encompass the following tasks:

- ✓ measurement of radioactive contamination at early detection stations;
- ✓ monitoring of ^{137}Cs concentration in soil;
- ✓ monitoring of radioactive contamination concentrations in surface waters and sediments.

The measurement programme of ionizing radiation monitoring subsystem is implemented only at national level, based on the national network.

Task: **Measurement of radioactive contamination at early detection stations**

The aim of the project is to conduct 24-hour measurements of gamma radiation and the radioactivity of aerosols and total precipitation in the network of early detection of radioactive contamination of the Institute of Meteorology and Water Management – National Research Institute in order to assess the radiation situation in Poland.

The network of the Institute of Meteorology and Water Management (IMWM-NRI) for early detection of radioactive contamination comprises of 9 measurement stations and forms part of the system for assessing radiation in the country coordinated by the President of the National Atomic Energy Agency in accordance with the Act of 29 November 2000 – Atomic Law (Journal of Laws of 2014, item 1512, as amended).

The measurement results will be used for the ongoing assessment of radioactive contamination of the atmosphere in the country and early warning of the public against radiation risk.

Table 3.7.1. The measurements conducted by IMWM-NRI stations for early detection of radioactive contamination

Subsystem		Task	
The ionizing radiation monitoring		Measurement of radioactive contamination at early detection stations	
Legislative acts		<ul style="list-style-type: none"> - Act of 29 November 2000 – Atomic Law (Journal of Laws of 2014, item 1512, as amended); - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2030); - Commission Recommendation of 8 June 2000 on the Application of Article 35 of the Euratom Treaty concerning the Monitoring of the Levels of Radioactivity in the Environment for the Purpose of Assessing the Exposure of the Population as a Whole 	
Objective scope			
<p>the years 2016–2020</p> <p>The task is implemented at 9 IMWM-NRI measurement stations in Warsaw, Gdynia, Włodawa, Świnoujście, Gorzów Wielkopolski, Lesko, Zakopane, Legnica and Mikołajki which form part of the national early detection network entirely managed by the National Atomic Energy Agency. In the years 2016–2020, the measurement programme will include the following measurements:</p> <ul style="list-style-type: none"> - continuous measurements of gamma radiation dose rates at 1 meter from the ground and the registration of mean one- and twenty-four-hour values; - continuous measurement of air aerosol radioactivity conducted by 7 stations within the network agreed by the parties, and the registration of mean values of one- and twenty-four-hour activity of alpha and beta-radioactive emitters as well as the activity of artificial beta-radioactive artificial in air aerosols; - the measurements of global beta activity in twenty-four-hour and monthly total precipitation samples at 9 stations; - spectrometric measurements of ¹³⁷Cs activity and selected natural gamma-radioactive isotopes in aggregate monthly total precipitation samples; - radiochemical analysis of ⁹⁰Sr in aggregate total monthly precipitation samples. 			
Task implementation			
Measurements		Databases	Supervision and assessment
CIEP/IMWM-NRI		CIEP – collections of data in spreadsheets The Radiation Emergency Centre of the NAEA	CIEP in cooperation with the National Atomic Energy Agency
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
IMWM-NRI	- the dose rate and activity of atmospheric aerosols	- once every 24 hours	NAEA
IMWM-NRI	- total precipitation	- four times a year	NAEA
IMWM-NRI	- the compilation, analysis and assessment in the form of a report on implemented work	- two times a year	CIEP, NAEA
NAEA	- the aggregate results of measurements	- in accordance with the Statistical Research Programme	CSO

Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP/NAEA	- CIEP website	- twice a year, communications – if necessary	central and local government administration, universities, schools, libraries, society

Task: The monitoring of ^{137}Cs concentration in soil

The aim of the project is to continue the systematic monitoring of the surface layer of soil in Poland in terms of the content of the most important radionuclides. The data obtained enable assessment of the radiological status of that element of the environment and the extent of potential exposure of the population and the environment to ionizing radiation from that source.

The measurement programme under this task consists in spectrometric measurements of the soil samples collected at the sites located at IMWM-NRI stations and posts.

The measurements of ^{137}Cs (optionally – natural radioactive isotopes) will be conducted in compliance with the tasks of specialised units (the Regulation of the Council of Ministers of 23 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2033). The measurement programme, the frequency and place of sample collection will be approved by the NAEA President.

^{137}Cs measurements in a surface soil layer will serve to draw up Poland's updated radiological maps.

Table 4.7.2. The monitoring of ^{137}Cs concentration in soil

Subsystem	Task
The ionizing radiation monitoring	The monitoring of ^{137}Cs concentration in soil
Legislative acts	<ul style="list-style-type: none"> - Act of 29 November 2000 – Atomic Law (Journal of Laws of 2014, item 1512, as amended); - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2030); - Commission Recommendation of 8 June 2000 on the - Application of Article 36 of the Euratom Treaty concerning the Monitoring of the Levels of Radioactivity in the Environment for the Purpose of Assessing the Exposure of the Population as a Whole.

Objective scope			
the years 2016–2020			
The measurement programme under this task consists in the collection of soil samples at the sites located at the IMWM-NRI stations and posts from a 0–10-centimeter surface layer and from a 0–25-centimeter layer (the samples will be collected in 2016, 2018 and 2020). Gradually, after initial sample processing, ¹³⁷ Cs contents (optionally – the contents of natural radioactive isotopes) will be measured by means of gamma-ray spectrometry using semiconductor detectors. The measurements will serve to draw up Poland's current radiological maps. A detailed measurement programme, the frequency and place of sample collection will be approved by the NAEA President.			
Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP	CIEP – collections of data in spreadsheets	CIEP in cooperation with the National Atomic Energy Agency	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the aggregate results of measurements in the form of tables and radiological maps along with the analysis and assessment	- once every two years	CIEP
CIEP	- the aggregate results of measurements in the form of tables and radiological maps along with the analysis and assessment	- once every two years	NAEA
CIEP	- the aggregate results of measurements	- in accordance with the Statistical Research Programme	CSO
Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP/NAEA	- CIEP website	- update after the next cycle of monitoring	central and local government administration, universities, schools, libraries, society

Task: The monitoring of radioactive contamination of surface waters and sediments

The purpose of the measurement programme is to continue the monitoring of radioactivity of water in rivers and lakes by systematic control of the concentrations of ¹³⁷Cs and ⁹⁰Sr in rivers and lakes and of ¹³⁷Cs, ²³⁸Pu and ^{239,240}Pu in sediments.

The measurement programme includes the monitoring of water environment with respect to the contents of the most significant radionuclides: the measurements will be conducted in compliance with the tasks of specialised units (the Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2030).

Table 3.7.3. The monitoring of radioactive contamination of surface waters and sediments

Subsystem	Task		
The ionizing radiation monitoring	The monitoring of radioactive contamination of surface waters and bottom sediments		
Legislative acts	<ul style="list-style-type: none"> - Act of 29 November 2000 – Atomic Law (Journal of Laws of 2014, item 1512, as amended); - Act of 27 April 2001 – Environmental Protection Law (Journal of Laws of 2013, item 1232, as amended) – Article 26; - Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws of 2002, No 239, item 2030); - Commission Recommendation of 8 June 2000 on the application of Article 36 of the Euratom Treaty concerning the Monitoring of the Levels of Radioactivity in the Environment for the Purpose of Assessing the Exposure of the Population as a Whole. 		
Objective scope			
<p>the years 2016-2020</p> <p>The programme consists in determining the following radioactive isotopes:</p> <ul style="list-style-type: none"> - in rivers and lakes: ^{137}Cs i ^{90}Sr; - in sediments: ^{137}Cs, ^{238}Pu, $^{239,240}\text{Pu}$; <p>while:</p> <ul style="list-style-type: none"> - ^{137}Cs and ^{90}Sr will be determined by means of radiochemical methods and the final measurements will be carried out with respect to beta activity; - ^{238}Pu, $^{239,240}\text{Pu}$ in sediments will be also determined by means of the radiochemical method and the final measurements will focus on alpha radiation using the spectrometric method; - ^{137}Cs in sediments will be measured by means of the gamma-ray spectrometry method. <p>A detailed measurement programme, the frequency and place of sample collection will be approved by the NAEA President.</p>			
Task implementation			
Measurements	Databases	Supervision and assessment	
CIEP	CIEP – collections of data in spreadsheets	CIEP in cooperation with the National Atomic Energy Agency	
Submission of measurements/assessment results			
Entity submitting results	Type and form of submitted monitoring results	Frequency of submitting monitoring results (min.)	Place to submit monitoring results
Contractor	- the compiled results of measurements in the form of tables along with the analysis and assessment report	- once a year	CIEP
CIEP	- the compiled results of measurements in the form of tables along with the analysis and assessment report	- once a year	NAEA
CIEP	- the aggregate results of measurements	- in accordance with the Statistical Research Programme	CSO

Dissemination of results			
Entity disseminating results	Form of disseminated final information	Frequency of disseminating final information (min.)	Addressee of final information
CIEP/NAEA	- CIEP website	- update after the next cycle of monitoring	central and local government administration, universities, schools, libraries, society

4. Integrated assessments of the state of environment

All information obtained by The Inspection of Environmental Protection, both during measurements under SEM and during control, require appropriate processing in order to prepare a legible information which meets the needs of the two main groups of users: the decision-makers and the society. The information may then support knowledge-based environmental management, so that it is possible to implement policy of socio-economic development in line with the green economy and to ensure the quality of life and sustainability of ecosystems in the long run.

Environmental information that is reliable, adequate, adapted to current needs and delivered in a timely manner is an important element in the implementation of environmental policy and of the management of natural resources. The information on the environment is developed and aggregated in several stages which involve generating of the information, and its final use. This reflects by the MDIAK reporting chain developed by the European Environment Agency (Fig. 4.1.). Ultimately, all stages of aggregating of the information should lead to ensure full insight into the processes occurring in the environment, the possibility of managing them and developing alternative measures to be taken by policy-makers at various levels.

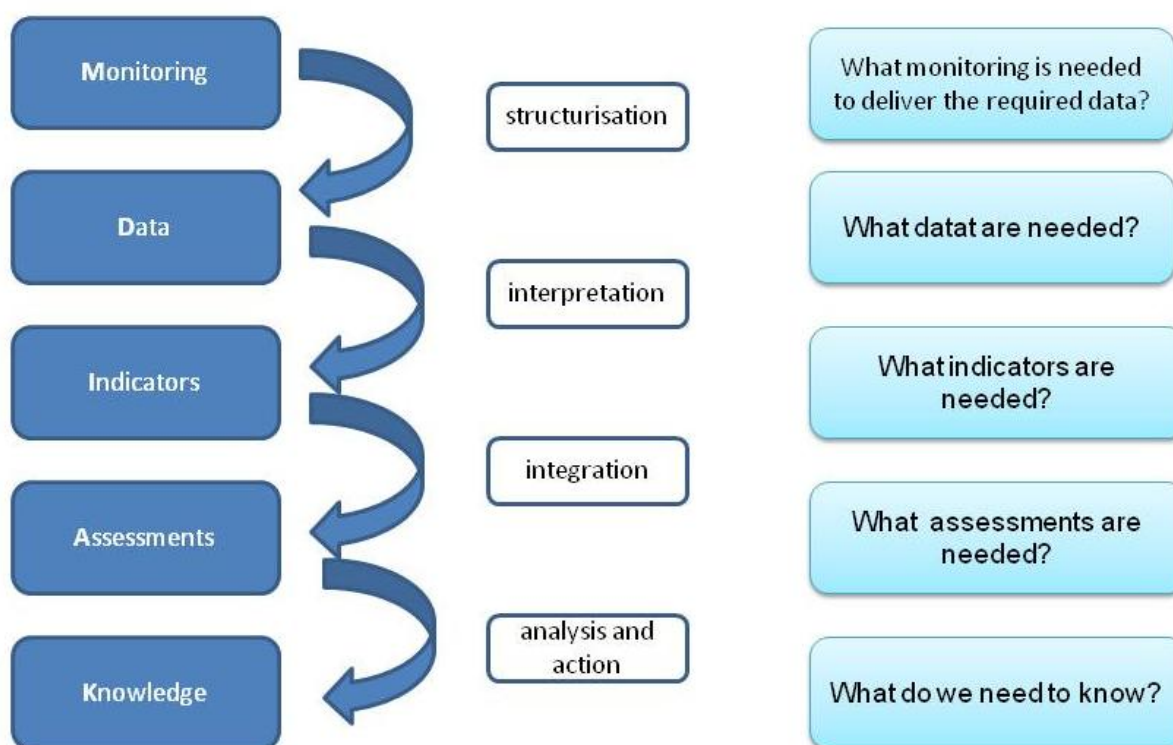


Fig. 4.1. MDIAK reporting chain (based on EEA)

Under SEM structure, a separate block **integrated assessments of the state of environment**, has been isolated, under which the following will be performed:

- analyses and assessments of the status of specific elements of the environment in connection with the pressures;
- analyses and assessments of specific problems and phenomena occurring in the environment;

- outlooks of the course of the phenomena, mainly based on the analysis of trends, gradually, using modelling,
- analyses and assessments of linkages between changes in the environment and the socio-economic processes that determine them, in connection with good quality of life as well.

Analyses and assessments both at the national and at voivodship level will be carried out using the D-P-S-I-R (Driving Forces – Pressures – State – Impact – Response) model. These analyses and assessments will use experience of the European Environment Agency and the Organisation for Economic Cooperation and Development (OECD) that apply the D-P-S-I-R model to develop integrated environmental assessments and to evaluation of environmental policies respectively, also in the context of green development. This model allows not only to diagnose but also to identify the causes of the existing status, thus indicating possible corrective measures. According to this scheme, development of the information on the effectiveness of the legislation in different components of the environment and of the information on the effectiveness of the development strategy of the country is envisaged.

Generating of the information referred to above will require both the use of the information collected under State Environmental Monitoring as well as information and data, in particular referring to the driving forces and pressures, obtained from other sources, e.g. from the public statistics system or individual ministerial systems managed by public authorities.

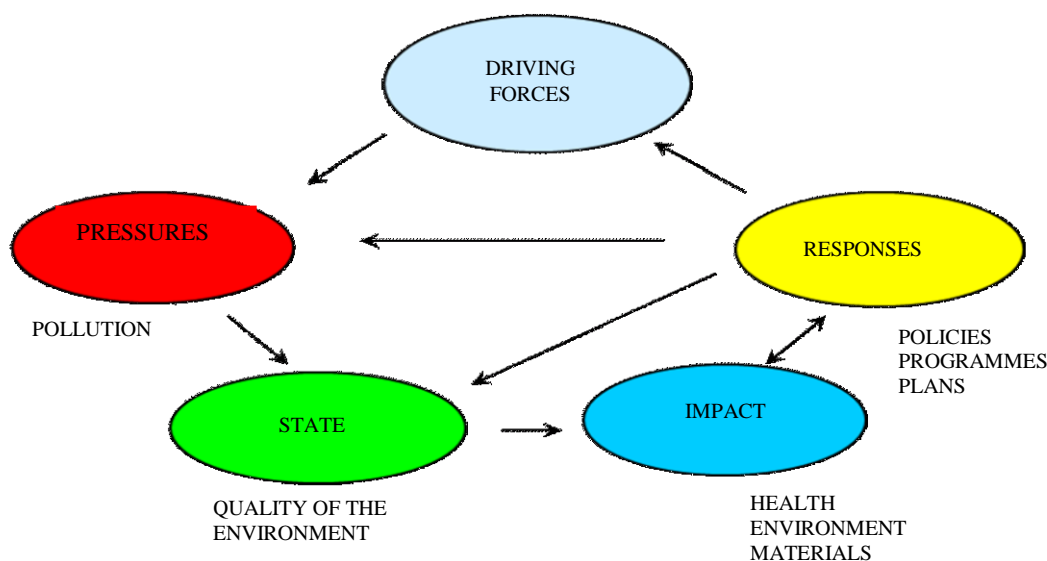


Fig. 4.2. Integration of the SEM Programme with the environment management system according to DPSIR model

Assessments will be developed with the use of environmental indicators which are selected from the international sets, in particular, from the core set of indicators CSI (Core Set of Indicators) managed by the European Environment Agency and key and base indicators of the OECD – CEI (Core Environmental Indicators) and KEI (Key Environmental Indicators). It will be also important to consider in the assessments the issues of: of green economy, resource efficiency, good quality of life and the resilience of the basic ecosystem functions. Activities in this respect will be oriented on the widest possible use of the experience of the OECD, EEA and Eurostat on the use of indicators and developing assessments in the area of green economy, taking into account the objectives of “Europe 2020” and priorities of the

Seventh Programme of Action for the Environment of the European Union or the OECD Green Growth Strategy.

The integrated assessments and analyses may be focused on both specific elements of the environment and ecological problems identified in the national strategic documents, primarily the Strategy “Energy Security and Environment – perspective until 2020”, international conventions and programmes (such as e.g. Programmes dedicated to the impact of air pollution on health and ecosystems), and regional and local programmes. The analyses may also focus on sectors of the economy, selected vulnerable areas (e.g. urban environment, mountain areas, border areas), the issue of sustainable use of resources, functions and vulnerability/resilience of ecosystems.

The Inspection of Environmental Protection will deal with both the cross-cutting and sectorial information and reports on the state and protection of the environment.

Assessment results will be the basis for the development of national and regional reports on the state of the environment, as well as thematic and problem reports. The state of environment reports prepared by the Inspection of Environmental Protection present a detailed assessment of the state of the environment and aggregated information about the environment in a clear and accessible manner. The reports are based on the available results of the monitoring programmes and assessments developed for specific components, complementing them. The information presented in the reports is referring to the objectives and priorities established in the strategic documents in a more integrated manner and in a long-term perspective.

In 2018, the Chief Inspector of Environmental Protection will publish the report “State of the Environment in Poland. Report 2018” fulfilling the obligation arising from Article 25b of the Act of 20 July 1991 on the Inspection of Environmental Protection (Journal of Laws of 2013, item 686, as amended). It will present comprehensive assessment of the state of the environment and the trends based on a set of indicators according to the D-P-S-I-R scheme in relation to the objectives of national and EU environmental policy.

In addition, it is planned that in 2016 and 2020 the Chief Inspectorate of Environmental Protection will prepare a synthetic indicator reports presenting trends in selected major environmental problems based on an agreed set of indicators.

It is assumed that in addition to paper publications, interactive electronic versions of the report and multimedia presentations will be prepared (depending on availability of funds). Elements of the reports referred to above on the status of the environment will be integrated into the European system SERIS (State of the Environment Reporting Information System) maintained by the European Environment Agency.

Voivodship Inspectors of Environmental Protection will develop analysis and assessments in the form of:

- comprehensive reports on the state of the environment in the voivodship, using the P-S-R indicators (Pressures – State – Response),
- thematic studies and reports on the state of specific elements of the environment and the interactions or problem reports.

The frequency and selection of issues covered by the reports will be determined by the voivodship inspectors, taking into account current environmental problems and the needs and expectations of regional recipients. Comprehensive reports on the state of the environment in the voivodship should be prepared at least once every three years.

The results of assessments, analyses and outlooks, including the above reports will be made available in print and/or on the websites of CIEP and VIEP.

5. The quality assurance/quality control system under SEM; laboratories and measurement networks

The aim of the quality assurance/quality control (AQ/AC) system under SEM is primarily to assure proper quality of environmental data both in terms of measurement results and assessments.

The data on the state of environment are generated mostly on the basis of laboratory analysis or in automated monitoring networks. Bearing in mind the role of monitoring data in decision-making processes or national and international reporting, one of the most important SEM tasks is to assure the high quality of laboratory measurement, analysis, and assessment results.

The system of accreditation of research laboratories existing in Poland helps to supervise the laboratories applying or implementing ISO/IEC 17025 quality assurance system. The implementation and maintaining of the ISO/IEC 17025 quality system in laboratories and measurement networks operating under SEM is to assure reliable and credible monitoring results. In the 2020 perspective, a very important element in ensuring the required quality of results is their usefulness in relation to the legal requirements that determine the quality parameters of measurements and the required completeness of data. If these parameters are not met, the use of the results from laboratories engaged in the monitoring of the quality of environment for the purpose of assessing the state of the environment, will not be possible.

CIEP will support further implementation and maintenance of AQ/AC through organising specialised trainings, proficiency testing and inter-laboratory comparison exercises for laboratories and measurement networks. These activities will be addressed mostly to VIEP, but also, depending on available funds, to other institutions conducting analysis and measurements under SEM.

Simultaneously in order to improve the analytic capacity of VIEP laboratories that are necessary to implement new requirements, especially as regards waters monitoring, CIEP will continue to implement the projects aiming to technologically support laboratories and by purchasing analytical equipment, which will be done mostly under the Operational Programme “Infrastructure and Environment”.

5.1. The quality assurance/quality control system in air quality monitoring

In accordance with the requirements of the Directive of the European Parliament and of the Council 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe (OJ L 152, 11.06.2008, p.1) and the Act on the Inspection of Environmental Protection, the National Reference Laboratory (NRL) based in Krakow, and established in 2011 in the Chief Inspectorate of Environmental protection, is responsible for ensuring the correct operation of the AQ/QC in air quality monitoring networks, the approval of measurement systems, and the coordination of quality assurance programmes in Poland.

In the years 2016–2020, in order to ensure proper quality of air measurements and the measurement traceability chain, NRL will organise the following:

- annual proficiency testing of gas analysers (SO₂, NO-NO₂, CO, O₃, C₆H₆) – obligatory participation of each of the network of air quality monitoring is planned for a two-year periods, unless a given network obtains unsatisfactory comparison results, participation in comparisons in the following year will be necessary;

- every two years, proficiency testing or inter-laboratory comparisons for samplers of PM10 and PM2.5, if necessary these comparisons will be extended by analysis of heavy metals and PAH in PM10;
- once in three or four years calibration /checking of the analysers and of the sampling systems at each monitoring station.

During inspection of air quality monitoring network carried out by CIEP, locations of individual measurement stations will be verified and the AQ/AC management system documentation established and maintained by each measurement network will be checked.

Under routine activities, NRL will provide air quality measurement stations with the possibility of calibration of individual analysers, e.g. after malfunction, checks of the gas mixture containers, checks of calibrators and mass flow controllers.

NRL will organise training for VIEP, aimed at enhancing knowledge of best practices in air quality measurement and the latest solutions used in air quality monitoring.

In order to confirm their expertise and to improve knowledge about the latest monitoring systems, NRL will participate in international intercomparisons and meetings of the National Reference Laboratories associated in the AQUILA European Network ¹¹

CIEP will undertake measures to standardise, on a national scale, measurement methods, participate in the introduction of new measurement and analytic methods, propagate knowledge about the new standards for measuring air quality.

In connection with the ongoing work on the draft of the new Commission Directive amending several annexes to Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council laying down the rules concerning reference methods, data validation and location of sampling points for the assessment of ambient air quality, with the entry into force of the proposed directive, its provisions will be implemented in the system of air quality measurements in Poland, both at national and voivodship level. NRL will conduct training aimed at promoting knowledge of the issues covered by the draft Directive, including those related to the implementation of new standards. After the entry into force of the new Directive, VIEP will adapt regional systems for air quality monitoring to its requirements.

In order to strengthen the capacity of NRL, in the years 2016–2018, under the Operational Programme “Infrastructure and Environment”, it is planned to modernise and expand the calibration and testing infrastructure by purchasing calibration benches, calibration lines for the purpose of calibration and intercomparisons of analysers for measurements of gaseous pollutants in the air and purchase of specialist equipment including for the weighing room.

The tasks of individual air quality monitoring networks will include the maintenance of the AQ/AC system, participation in proficiency testing, inter-laboratory comparisons and actions organised by NRL, and above all, ensuring proper quality of data and assessments generated under the State Environmental Monitoring.

5.2. The quality system in waters monitoring

In order to ensure the quality of data on the state of the environment, it is necessary to ensure the reliability of measurement results. This applies to both the criteria for assessing the chemical status, as well as all three groups of elements of the assessment of the status or

¹¹ AQUILA - the European network of National Reference Laboratories operating under the JRC (Joint Research Centre) of the European Commission.

ecological potential. One of the ways to achieve this objective will be measures taken to establish the national reference laboratory for waters monitoring.

In the case of chemical monitoring of waters, the guidelines to ensure the quality of data are contained in Directive 2009/90/EC establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of waters. The Directive was transposed into Polish law, however, for the quality of measurement results of the chemical status of waters, provisions contained in the two regulations of the Minister of the Environment are the most important:

- on the Forms and Method of Monitoring of Surface Water and Groundwater Bodies (Journal of Laws of 2011, No 258, item 1550, as amended), known as the Monitoring Regulation,
- concerning the Manner to Classify the Status of Surface Water Bodies and Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482), known as the Classification Regulation.

The Monitoring Regulation in § 18 contains two provisions determining the quality of determinations in the chemical monitoring of water:

- a) support – for all methods of analysis in the field of chemical and physicochemical parameters – the minimum criteria in terms of results with the uncertainty of measurement equal to 50% or less ($k = 2$) estimated at the level of relevant environmental quality standards,
- b) ensuring that the limit of quantification does not exceed 30% of the relevant environmental quality standards.

Measurements carried out under chemical monitoring of waters must take into account the requirements contained in the Classification Regulation, in particular, in Annex 6 on the limit values of indicators of water quality from a group of substances that are particularly harmful to the aquatic environment and Annex 9 on environmental quality standards for priority substances and other pollutants, and the environmental quality standards contained in them are an essential point of reference for validation of examination procedures.

Therefore, the selection of the examination methodology has to be based on the assumption that the above quality requirements are met. To perform individual examinations, it is recommended to choose methods from those given in the Monitoring Regulation in Annex 5 (Reference methodology of measurements and analysis under the monitoring of surface water and groundwater bodies). The standardised method given in the Annex should not be used without confirmation that the conditions laid down in the Regulation are met. The use of non-reference methodologies is permitted where it is shown that this method is equivalent to the reference methodology meeting the requirements of the Regulation, however, it should be proven that the method meets the conditions specified in the reference method.

Non-adherence to the principle of obtaining the quantification limit of not more than 30% of the environmental quality standard is possible, e.g. for the determination of individual congeners, and the environmental quality standard refers to the sum of congeners. Then the standard should be divided by the number of congeners, and in extreme cases where it is not possible to obtain 30%, or individual congeners, it is possible to apply the principle laid down in the Monitoring Regulation in § 18 paragraph 6, saying that it is possible to: *in a situation where the best available research techniques do not ensure compliance with the requirements, to allow that the limit of quantification exceeds 30% of the relevant environmental quality standards, under condition that it is not higher than the most stringent environmental quality standard specified for the parameter in the regulations issued pursuant to Article 38a*

paragraph. 1 and 3, Article 47 paragraph 8 Section 1, Article 50 paragraph 1 and Article 50 paragraph 3 Section 1 of the Water Law Act of 18 July 2001..

When determining the limit of quantification for individual congeners, it should be always borne in mind that the limit of quantification of congeners has to be adjusted, so that their sum does not exceed the acceptable environmental standards specified in the Regulation for the sum of congeners.

Simultaneously, it is necessary to ensure the quality and comparability of analytical results in accordance with internationally accepted management system practice set out in PN-EN ISO/IEC-17025, and the requirement to implement, by the laboratories carrying out monitoring of water bodies or entities operating on behalf of those laboratories, the management system quality in accordance with PN-EN ISO/IEC-17025.

Confirmation of the implementation of management system PN-EN ISO/IEC-17025 in chemical monitoring of waters with the accreditation certificate is recommended, but not required.

For the purpose of ensuring reliability of the assessment of ecological status and ecological potential, the European Commission established the Ecostat working group. Poland is represented by the representatives of the Chief Inspectorate of Environmental Protection, as a leading expert and the National Water Management Authority, as a supporting expert. The activities of the group focus primarily on coordinating inter-calibration exercises of biological methodologies for assessing the ecological status of waters. The 2016–2020 period will be devoted to the continuation of the inter-calibration of methodologies which have not been inter-calibrated, as well as complementing the range of applicability and adjustments of already inter-calibrated methodologies. In the first place, by the end of 2016, the inter-calibration exercise will include methodology for the assessment of the status of macroinvertebrates, phytoplankton and fish fauna in very large rivers, fish fauna in lakes and biological indicators in coastal and transitional waters. In this period, self-inter-calibration of methodologies for the assessment of the status of fish fauna in other types of rivers is planned. Later, self-inter-calibration of methodologies for the assessment of the status of macroinvertebrates in lakes is planned.

In addition to the inter-calibration of methodologies which have not been subject to that process, it is necessary to verify the methodologies which have been previously inter-calibrated, as some of them have been developed only for basic types of surface waters, so their reliability is low for atypical waters (e.g. High mountain waters being under the influence of marine waters, disharmonic lakes such as dystrophic and lobelia). Furthermore, European standards concerning the methodologies for monitoring and assessment of biological and hydromorphological elements of the quality of waters are periodically updated and incorporated into Community law, entailing the need to include these changes in law and practice. Some types of surface waters are also natural habitats subject to nature monitoring, which proves that the mutual harmonisation of their monitoring and assessment is justified. It is also necessary to integrate the requirements of the Water Framework Directive with the requirements of the Marine Strategy Framework Directive. In the period 2016–2020, under SEM, work will be carried out to update the biological assessment methodologies of ecological status associated with the problems referred to above.

Apart from inter-calibration of the assessment of biological elements of ecological status, as a result of the initiatives of Ecostat, under the SEM programme, a need may arise to harmonise the assessment of waters in terms of physicochemical and hydromorphological elements. In addition, representatives of the Inspection of Environmental Protection will take part in the work of regional groups, e.g. the International Commission on the Protection of the Odra River against Pollution. The findings of these groups in terms of ensuring the quality of

waters monitoring, according to the availability of funds and organisational capabilities will be implemented under SEM and coordinated by CIEP.

In order to ensure the quality of the classification of biological elements of assessment for the years 2016–2017, inter-laboratory comparisons of the collection and designation of biological elements of assessment surface water status will be conducted. The reports of these comparisons will include an assessment of the performance of laboratories of voivodship environmental inspectorates involved in the comparison and the proposal for estimating the level of confidence and accuracy of measurements of a biological element, performed by VIEP laboratories referred to in the Regulation of the Minister of the Environment of 22 October 2014 concerning the Manner to Classify the Status of Surface Waters Bodies and Environmental Quality Standards for Priority Substances. To maintain proficiency of VIEP employees, regular training will be needed in applying the methodologies and conducting assessments on the basis of the methodologies.

5.3. The quality system in nature monitoring

The quality of data produced under the monitoring of birds and monitoring of species and natural habitats depends in particular on appropriate examination methods and the expert competence of the implementing entities.

The quality of data obtained under the monitoring of birds and species and natural habitats will be ensured by a three-level system of monitoring:

- the coordinating institution, including the institution coordinating all the work, which appoints appropriate expert coordinators, and local experts reporting to them in respect of each species/natural habitat or sub-programmes of birds monitoring, developing instructions to complete field reports, and ensuring operation of the database;
- coordinators engaged in supervision and coordination of the substantive work of local experts, verifying and approving the annual reports received from the local experts, including the results of monitoring, preparing reports, including analysing results at the level of species, natural habitat or sub-programmes of birds monitoring;
- local experts conducting field examinations.

5.3.1. Monitoring of species and habitats

Monitoring of species and habitats is based the indicators selected on the basis of autoecology of species and ecological conditions of the natural habitat, whose task is to provide early information about the deterioration of the protection status. Specific requirements in reference to the entities implementing the examinations involve not only the knowledge of the examination methodology, but also general knowledge of biology and ecology, as well as the ability to recognise the monitored species/natural habitat and the natural habitat of the species. The basic condition for ensuring the reliability of data is therefore employing trained or instructed experts with background in biological studies to conduct monitoring, and in some cases, experts in specified species or natural habitats.

In order to standardise the approach and improve the quality of examinations, CIEP develops methodologies for the monitoring of individual species/habitats. The methodologies developed are first tested and verified under the first monitoring cycle, reviewed and then published. During subsequent cycles of monitoring, methodologies may be verified on the

basis of experience and new knowledge about the biology of the species/natural habitat, particularly in the case of the parameters that have not been monitored prior to the entry into force of the Habitats Directive. The exact description of the methodologies and valorisation of assessments published by CIEP in the methodological guides enables application of uniform examination methodologies across the country. Methodologies are available on the CIEP website. In the years 2015–2019, methodologies will be developed for subsequent endangered species of plants which are no longer included in the Annexes of the Habitats Directive.

5.3.2. Monitoring of Polish Birds

The basic parameters obtained under Polish birds monitoring system (PBM) include: dissemination, number indicator, the change trends and indicators of the effect of breeding for selected species of birds. The quality of data obtained and proper selection of field observers, national and regional coordinators is ensured by the implementing entity performing examinations for CIEP, who is aided by the three-level coordination of the work and the appropriate examination methodologies required by CIEP.

Polish birds monitoring is conducted in accordance with the methodologies that have been tested in the field under pilot studies and approved by CIEP. These studies are tested one season before the implementation of the monitoring of a given group of birds or a single species of birds. As a result of these activities, 2009 saw the development of “Breeding Birds Monitoring - Teaching guidelines for the species protected under the Birds Directive” which will be updated and supplemented with the experience gained in the field in the five-year period covered by SEM, in 2015. The guidelines were submitted to nature conservation services, State Forests, where it is a helpful tool in the planning of birds monitoring, in creating Plan of Protection Tasks (PPT) for the Areas of Special Protection of Birds (SPAs).

5.4. The quality system in noise monitoring

The activities planned to be continued in the years 2016–2020 will aim at assuring the quality of noise monitoring by means of intercalibration examinations organised for the people responsible for carrying out measurements from all VIEP. The programme of intercalibration exercises will be organised once in two years and the programme of testing these exercises will be in accordance with PN-EN ISO/IEC 17043:2011 “Conformity assessment - General requirements for proficiency testing”. The key objective in the case of these exercises will be to help the measurement teams from the Voivodship Inspectorates of Environmental Protection conducting routine field noise measurements, to test their skills and knowledge as well as the operation of their own measuring equipment under real topographical and atmospheric conditions for various levels of noise emission and immersion.

5.5. The quality system in electromagnetic field monitoring

In order to maintain high quality of the EMF measurements in the environment, assure the reliability of measurement results and, ultimately, of the assessments and outlooks concerning changes in electromagnetic field levels in the environment, in the years 2016–2020, the laboratories engaged in EMF must continue to implement the quality management system in line with PN-EN ISO/IEC-17025, as well as provide the VIEP laboratories with central calibration of instruments for measuring electromagnetic fields in the environment, depending on the availability of funds.

Confirmation of the implementation of the management system PN-EN ISO/IEC 17025 for the monitoring of electromagnetic fields with an accreditation certificate is recommended, but not required.

Another very important element in maintaining the quality of measurements of electromagnetic fields in the environment will be the cycles of inter-laboratory comparative examinations and training for the employees of voivodship inspectorates in the field of measuring electromagnetic fields in the environment and analysing results, which will be continued in the years 2016 - 2020.

5.6. The quality system in ionizing radiation monitoring

The quality of the measurements carried out within the framework of the ionizing radiation monitoring subsystem will be assured by implementing the provisions of the Act of 29 November 2000 – the Atomic Law (Journal of Laws of 2014, item 1512, as amended) and the Regulation of the Council of Ministers of 17 December 2002 on the Station for Early Detection of Radioactive Contamination and on the Units that Conduct Measurements of Radioactive Contamination (Journal of Laws No 239, item 2030). Pursuant to the Atomic Law, the President of the National Atomic Energy Agency approves measurement techniques, measurement programmes and organisation of measurements. Simultaneously, in accordance with the regulations referred to above, the units conducting measurements within the framework of ionizing radiation monitoring are obliged to take part in comparison measurement campaigns organised by the President of the Agency at least once every two years.

6. Presentation of environmental data

One of the main tasks of the State Environmental Monitoring for the years 2016–2020 is to continue efforts to provide data and information on the state of the environment. The scope of information collected under SEM will determine the manner and form of presentation of the environmental data.

Under SEM, access to information on the environment, including its condition, will be provided, e.g. via constantly updated thematic websites, news sites and further developed online services. As far as possible, work will be undertaken to standardise the structure of SEM thematic websites and to unify the design where possible. The main activities in the field of thematic websites include Air Quality, Polish Birds Monitoring, as well as the CIEP Inspire Geoportal and will focus on their maintenance and development. Access to information on the environment will also be provided by: Reports on the state of the environment (national and regional), reports developed on the specific environmental components, technical publications and studies, and in particular cases, comments or statements. These reports will be published as part of the publishing series of the Environmental Monitoring Library online. Selected reports will be published in print, according to the availability of funds. The reports on the state of the environment in Poland developed by CIEP, and reports on the state of the environment in the voivodship developed by the voivodship inspectorates of environmental protection will be primarily published in the framework of the EML

For the purpose of providing access to information on the environment, CIEP will primarily maintain and develop systems for collecting, storing and processing of data, including spatial data obtained under SEM. The activities will focus on consolidating and modernising of the existing systems, as well as improving the quality of data, which determine the quality of the presented and disseminated information and data.

In frame of CIEP information resources, data will be collect data, both as ready-made GIS data sets, as well as databases allowing to directly or indirectly generate and process geographic information. These data will be used for the presentation and visualisation of environmental information.

Presentation of information on the state of the environment will be made in accordance with law being in force and, as far as possible, in the form following technological trends and targeted to needs of different stakeholders. Visualisation of information and spatial data will be carried out with the use of geographic information systems, in particular through the tools for ensuring access to spatial data services.

A challenge will be posed by the follow-up of the process of harmonisation and interoperability of SEM in accordance with the Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an infrastructure for spatial information in the European Community (INSPIRE) (OJ L 108, 25.04.2007, p.1). Achieving the goal of harmonising of the collected resources will require preparation of spatial data and metadata, as well as a significant amount of work and funds in order to adapt the existing databases to the changing requirements of the INSPIRE Directive, in particular those relating to specific issues identified in the Directive and the Act on spatial information infrastructure (Act on the SII).

In the years 2016–2020, depending on the financial capacity and changing legislation, it is planned to undertake actions to maintain and develop the spatial information infrastructure under CIEP competences. CIEP, being the competent authority under the Act on the SII, is continuously responsible for creating, maintaining and developing the spatial information infrastructure and for the fulfilment of the reporting obligations under the Directive as regards

the theme of “environmental monitoring facilities”, which is why work will be continued to further adjust the scope of spatial data resources to the requirements of the INSPIRE Directive and the Act on the SII in this regard. This will be done in frame of the spatial information infrastructure node operating in CIEP. The work will focus mainly on providing: metadata, interoperability spatial data sets and services, network services and sharing resources.

Where possible, CIEP information resources presented on the CIEP Inspire Geoportal will also include data collected, in particular under monitoring projects, including the results of measurements or observations of an environmental parameter, assessments, indicators, etc.

Presentation of information and spatial data collected and generated under SEM will be ensured by means of the node referred to above, including browsing and downloading services at the following address <http://inspire.gios.gov.pl/portal/> .

An important action of CIEP will also be dissemination and sharing of the national database: Corine Land Cover 2012, Corine Land Cover 2006-2012 changes and revised Corine Land Cover 2006 developed as a result of activities of the European Environment Agency in frame of the Copernicus GIO Land Monitoring programme, financed by the European Union. The entity responsible for the implementation of the Corine Land Cover 2012 project in Poland, under the programme referred to above, was the Institute of Geodesy and Cartography, acting as one of the National Reference Centres for EIONET land cover (NRC Land Cover). The owner of the data produced in frame of the project is the European Union, and the entity responsible for the dissemination of national data is the Chief Inspectorate of Environmental Protection, where the National Contact Point for the cooperation with the EEA under EIONET and National Reference Centre for EIONET on land cover (NRC Land Cover) is located.

CIEP will also continue to disseminate and share the previous national databases Corine Land Cover.

7. Financial aspects of the implementation of the SEM programme

Implementation of the SEM Programme in the years 2016-2020 is conditioned by the availability of funds to the voivodship inspectorates of environmental protection and to the Chief Inspectorate of Environmental Protection. Timely and full coverage of the costs of the tasks is even more important, as the SEM tasks, as a rule, are continuous or cyclical, and failure to execute the tasks within the scheduled deadline results in the lack of monitoring data. This in turn results in problems with planning and operational management of the environment and, for most of the subsystems, negatively influences the quality and completeness of the information about the state of the environment reported to the European Commission.

The costs of implementing the State Environmental Monitoring tasks include costs expended at national level by CIEP and the costs expended at voivodship level by VIEP.

Implementation of tasks in the subsystems of **air quality, water quality, noise and electromagnetic fields** monitoring is financed largely at voivodship level and includes the costs expended by VIEP in the following categories:

- servicing of the automated air monitoring network, sampling and performance of laboratory analyses in the field of air and water pollution, noise and electromagnetic radiation measurements, the implementation of new elements of systems for assessing the quality of specific environmental elements, planning and launching of new measurement sites, maintenance of management system according to ISO/IEC 17025 standard, drawing up noise maps for cities with population of less than 100,000 inhabitants;
- maintaining of databases, data processing and the assessment of specific components of the environment at voivodship and local level, analyses and transfer to CIEP and other recipients of the data and reports for national and Community reporting, providing information to public administration authorities and the public about the state of the environment using a variety of communication channels;
- performing of tasks necessary for proper implementation of the SEM at the voivodship level, including tasks to ensure the quality of measurements and assessment of air quality, water and noise and electromagnetic radiation, purchasing measurement and laboratory equipment and consumables, ensuring remote connection to measurement stations and the transportation of samples and insurance of measurement stations and their current functioning;
- participation of VIEP employees in expert trainings, inter-calibrations, equivalence programmes and performance checks organised by CIEP, research institutes and other entities engaged in the implementation of SEM.

Tasks performed within the subsystem of **soil quality, nature and ionizing radiation** monitoring are entirely financed at national level. Apart from funding of the implementation of tasks under the abovementioned subsystems, the costs of CIEP cover also:

- planning and supervision of the implementation of the SEM tasks performed by VIEP and other units working under SEM;
- implementation of specialised national research programmes, primarily for the Community and other international obligations of Poland and the implementation of new monitoring elements in SEM;
- performance of national assessment of specific elements of the environment, development of comprehensive reports on the state of the environment and the

development of sets of data and information for national, Community and international reporting;

- development of concepts, guidelines and methodologies for conducting new or updating the existing monitoring programmes and assessment of specific components of the environment;
- functioning of the system of quality assurance and quality control, including those related to the functioning of the National Reference Laboratory (NRL);
- modernisation and development of national databases and processing of monitoring data;
- generating and analysing information, including spatial information and providing information to the public about the state of the environment using various forms of communication;
- purchasing of measurement and laboratory equipment for the NRL and VIEP,
- organisation of expert trainings, conferences and seminars related to the implementation of the SEM programme and dissemination of its results.

In the perspective until 2020, the average annual cost of the full range of legal tasks of the Inspection of Environmental Protection in terms of the State Environmental Monitoring is forecasted to be approximately PLN 190 million, including the annual costs of the SEM tasks implemented by VIEP at the level of PLN 134.8 million. Bearing in mind the fact that for many years, funds received from the state budget have been insufficient for the SEM tasks, it is assumed that in the future the situation will not change significantly and the funding sources of the SEM tasks will be the following:

*in the case of the **Chief Inspectorate of Environmental Protection***

- budgetary funds, including wage costs and their derivatives – the forecast of mean annual cost is approximately PLN 4.5 million (including the costs of wages and their derivatives of approximately PLN 3.8 million)
- NFEPWM funds provided since 2011 through the state budget provision- the forecast of mean annual cost is approximately PLN 37 million,
- funds of the “Infrastructure and Environment 2014-2020” Operational Programme – the total cost of the projects planned is approximately PLN 64 million.

*in the case of the **Voivodship Inspectorate of Environmental Protection***

- budgetary funds of voivodship inspectorates of environmental protection which are at the disposal of the voivod as the superior, including the costs of wages and their derivatives – forecast of mean annual cost is approx. PLN 110.4 million (including the costs of wages and their derivatives approx. PLN 64.4 million).
- funds of the voivodship funds for environmental protection provided from 2011 through the state budgetary reserve– the forecast of the mean annual cost is approximately PLN 24.4 million.

Voivodship Funds for Environmental Protection and Water Management and the National Fund for Environmental Protection and Water Management remain the key source of funding for SEM. It is planned that funds from NFEPWM and VFEPWM will still cover the costs of current monitoring activities, incl. laboratory analyses and field measurements as well as external expertise, carried out for the specific components of the environment, and investment projects to strengthen the laboratory and measurement infrastructure of voivodship inspectorates of environmental protection.

Lack of an adequate level of financing for the tasks under the State Environmental Monitoring System from the State Budget has been resulting in the need to apply by CIEP and VIEP for earmarked funds and to search for additional sources of financing. Bearing in mind the signals from voivodship inspectorates of environmental protection about the real threat to the proper and full implementation of the tasks under the State Environmental Monitoring due to lack of financial resources, funds acquired from NFEPWM and VFEPWM remain the only way to guarantee continuous realisation of the statutory SEM tasks.

Solving the problem of financing of SEM has already been emphasised by the Supreme Chamber of Control in the summary of results of its comprehensive control of SEM realisation carried out in 2008, which indicates that ***“the existing system of financing for the implementation of SEM, requiring the annual application (with an uncertain effect) for funds did not provide timely and full coverage of the SEM costs and posed a threat to the continuity of monitoring which should be its inherent characteristic.”***

At the same time, the SEM programme for the years 2016–2020 is in line with the timeframes and priorities of the new EU financial perspective, which allows to schedule the support of the implementation of the SEM tasks from the Cohesion Fund and other aid funds. With this in mind, under the Infrastructure and Environment Operational Programme for 2014–2020, the following projects have been scheduled for implementation by CIEP:

- surface water quality monitoring, including, in particular, the implementation of Directive 2013/39/EU regarding the watch list of priority substances - “Strengthening of water monitoring in terms of procedures for quality assurance and quality control of measurements and assessment of the surface water quality as well as analytical, measurement and IT infrastructure” under which a specialised measurement and analytical equipment will be purchased, which will improve the scope and quality of measurements. The project will also cover the purchase of hardware and specialised software and geoinformation layers for spatial analysis in order to verify the measurement networks and assess the quality of water. Expert and analytical work will be conducted among other things: for the purpose of planning and updating of the measurement networks, quality indicators for the assessment of ecological and chemical status, for the purpose of quality assurance of the system of classification and evaluation of water status,
- nature monitoring - “Pilot monitoring of wolf and lynx in Poland, carried out under the State Environmental Monitoring” which will implement monitoring of wolf and lynx based on a revised methodology, taking into account the real possibilities of its implementation at selected sample plots,
- air quality monitoring – “Modernisation and development of the calibration infrastructure of the National Reference and Calibration Laboratory for atmospheric air measurements”, under which the laboratory infrastructure of the National Reference and Calibration Laboratory will be developed (e.g. calibration bench and the other components of the laboratory).

Additionally, in the years 2017-2020, it is planned to continue to strengthen air quality assessment system, especially in the field of mathematical modelling of air quality, both from the Infrastructure and Environment Operational Programme for the years 2014-2020 and the EEA Financial Mechanism or the Norwegian Financial Mechanism.

The SEM Programme for the years 2016–2020 will be implemented on the basis of task budget. The SEM has been included in the task budget for 2016 in function 12 “Environment”, task “Protection of the environment and information on the environment” and

activity “State Environmental Monitoring”. The number of environmental assessment reports is, and should remain, the indicator determining the degree of implementation of the SEM tasks at national level, while at voivodship level, it is the number of measurements and analyses. The degree of realisation of the tasks mentioned in the SEM Programme 2016–2020 will depend on the availability of financial resources and the ability to obtain them in a timely manner, so that it is possible to carry out monitoring according to a required timetable.

Appendix 1

The list of abbreviations

ANEA	-	areas exposed to pollution by nitrates from agricultural sources
BOD ₅	-	5-day biochemical oxygen demand
CIEP	-	Chief Inspectorate of Environmental Protection
CLC	-	CORINE Land Cover
COMBINE	-	Cooperative Monitoring in the Baltic Marine Environment
CSI	-	Chief Sanitary Inspectorate or Core Set of Indicators
CSO	-	Central Statistical Office
EC	-	European Commission
EEA	-	European Environment Agency
EMEP	-	European Monitoring and Evaluation Programme (EMEP)
EMF	-	electromagnetic field
EML	-	Environmental Monitoring Library
EU	-	European Union
EUROSTAT	-	European Statistical Office
FRI	-	Forestry Research Institute
FWD	-	Framework Water Directive
GAW	-	Global Atmosphere Watch
GDEP	-	General Directorate for Environmental Protection
GDSF	-	General Directorate of State Forests
GO ₃ OS	-	Global Ozone Observing System
HELCOM	-	Baltic Marine Environment Protection Commission - Helsinki Commission
IEP-NRI	-	Institute of Environmental Protection – National Research Institute
IG PAS	-	Institute of Geophysics, Polish Academy of Sciences
IMNE	-	Integrated Monitoring of the Natural Environment
IMWM-NRI	-	Institute of Meteorology and Water Management – National Research Institute
INSPIRE	-	Infrastructure for Spatial Information in Europe
ME	-	Ministry of the Environment
MS	-	monitoring site
NAEA	-	National Atomic Energy Agency
NAEI	-	National Average Exposure Indicator
NCEM	-	National Centre for Emissions Management
NFEPWM	-	National Fund for Environmental Protection and Water Management
NHMS	-	National Meteorological and Hydrological Service
NWMA	-	National Water Management Authority
OECD	-	Organisation for Economic Cooperation and Development
PAH	-	polycyclic aromatic hydrocarbons
PBM	-	Polish birds monitoring
PGI-NRI	-	Polish Geological Institute – National Research Institute
PGS	-	Polish Geological Survey
PM10	-	particulate matter up to 10 micrometers in size
PM2,5	-	particulate matter up to 2,5 micrometers in size
POP	-	permanent observation plot
PPT	-	Plan of Protection Tasks
PRDBA	-	Polish Red Data Book of Animals
RDEP	-	Regional Directorate for Environmental Protection
RDSF	-	Regional Directorate of State Forests
RWMA	-	Regional Water Management Authority
SAC	-	special area of conservation
SEM	-	State Environmental Monitoring
SI EKOINFONET	-	EKOINFONET IT System
SPA	-	special protection area

SWB	-	surface water body
VFEPWM	-	Voivodship Fund for Environmental Protection and Water Management
VIEP	-	Voivodship Inspectorate of Environmental Protection
VSO	-	Voivodship Statistical Office
WB	-	water body
WMO	-	World Meteorological Organisation

Appendix 2

The scope of reporting obligations arising from the Community law planned to be implemented under the State Environmental Monitoring in the years 2016–2020

The results of tasks implemented as part of SEM serve as a basis to prepare reports on Poland's fulfilment of Community requirements in the area of the environment submitted to the European Commission. As the body collecting the data on environmental quality at national level, CIEP is a unit responsible for drawing up complete reports on the state of selected environmental components or providing and handing over such information to other bodies preparing reports for the European Commission. The reports or their parts are drawn up basing on:

- the outcome of the measurements and assessments conducted by voivodship inspectorates of environmental protection;
- the results of the measurements and information generated by other entities obliged to do it by virtue of law;
- or the results of expert's work commissioned by CIEP.

The scope of the reporting obligations fulfilled under the State Environmental Monitoring in the years 2016–2020 will encompass:

I. Drawing up a complete report to the European Commission concerning the implementation of:

- 1) Directive **2008/50/EC** of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (OJ L 152, 11.6.2008, pp 1–44) and Directive **2004/107/EC** of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (OJ L 23, 26.01.2005, pp 3–16)
 - in terms of the results of annual air quality assessment for the previous calendar year: distribution of zones, assessment system, assessment methods, measurements and modelling results, assessment results (classification of zones and exceedances)
 - *reporting in the format defined by European Commission Implementing Decision 2011/850/EC laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, pp 86–106).*
reporting frequency - every year, reporting deadline: 30 September
 - in terms of the planned air quality assessment system in the next calendar year: distribution of zones, assessment system, assessment methods
 - *reporting in the format defined by European Commission Implementing Decision 2011/850/EC laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, pp 86–106).*
reporting frequency - every year, reporting deadline: 31 December
- 2) Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (OJ L 189,

18.07.2002, pp 12– 25; OJ Special edition in Polish, Chapter 15, Volume 7, pp 101–115)

- concerning the data from strategic noise maps prepared for the urban areas with over 100 thousand inhabitants, the major roads used by over 3 million vehicles per year, the major railroads which have more than 30 000 train passages per year

reporting frequency: every five years, the next reporting deadline: 31.12.2017

- concerning the data from strategic noise maps prepared for the urban areas with over 250 thousand inhabitants, the major roads used by over 6 million vehicles per year, the major railroads which have more than 60 000 train passages per year, the major airports.

reporting frequency: every five years, the next reporting deadline: 31.12.2017

- 3) Directive of the European Parliament and of the Council **2008/56/EC** of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.06.2008, pp 19–40)

- providing EC an update of an initial assessment of the status of marine waters, together with a set of characteristics for good environmental status of marine waters under Directive 2007/2/EC

reporting frequency: every six years, the next reporting deadline: 15.10.2018

- providing EC an update of the monitoring program of marine waters under Directive 2007/2/EC

reporting frequency: every six years, the next reporting deadline: 15.10.2020

II. Ensuring the part on the quality of the environment to the report for the European Commission concerning the implementation of:

- 1) Directive of the European Parliament and of the Council **2000/60/EC** of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, pp 1–73, OJ EU special edition in Polish, chapter 15, volume 5, pp 275–346)

reporting frequency: every six years, the next reporting deadline 22.12.2021

- 2) Directive of the European Parliament and of the Council **2008/105/EC** of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directive 82/176/EEC, 83/513/EEC, 84/156 /EEC, 84/491/EEC, 86/280 / EEC and amending Directive 2000/60 /EC of the European Parliament and of the Council (OJ L 348, 24.12.2008, p. 84)

reporting frequency: every six years, the next reporting deadline 22.12.2021

- 3) Directive of the European Parliament and of the Council **2013/39/EC** of 12 August 2013 amending Directive 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy (OJ L 226, 08.24.2013, p. 1)

reporting frequency: every six years, the next reporting deadline 22.12.2021

reporting frequency – every year from December 2016

- 4) Council Directive **91/676/EEC** of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.1991, pp 1–8; OJ Special edition in Polish, Chapter 15, Volume 2, pp 68–77)

reporting frequency – every four years, the next reporting deadline 30.06.2016

- 5) Directive **2006/118/EC** of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (OJ L 372, 27.12.2006, pp 19–31)

reporting frequency – every six years, the next reporting deadline 22.03.2016

- 6) Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 04.25.1979, pp 1–18; OJ special edition in Polish, Chapter 15, Volume 1, pp 98–117)

reporting frequency and the reporting date – every six years, the next reporting deadline- the year 2019

- 7) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.07.1992, pp 7–50; OJ special edition in Polish Chapter 15, Volume 2, pp 102–145)

reporting frequency – every six years, the next reporting deadline – the year 2019

III. Ensuring the part on the monitoring and reporting as regards INSPIRE “environment monitoring devices” to the report for the European Commission concerning the implementation of:

- 1) Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) (OJ L 108, 25.04.2007, p.1).

- 2) Commission Decision of 5 June 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting (OJ L 148, 11.6.2009, p.18).

monitoring frequency the list of spatial data sets and spatial data services - annually, implementation deadline: by May 15

frequency of the reports referred to in Article 21 paragraph 3 of Directive 2007/2/EC, covers three calendar years preceding the year of the report – the next report for the period 2013 -2015: 15 May 2016, for the period 2016-2018: 15 May 2019.

VI. Reporting of primary data on air quality in on-line mode to the European Commission which implements:

- 1) Commission Implementing Decision **2011/850/EC** laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (OJ L 335, 17.12.2011, pp 86–106).