

THE DEFINITION OF ENVIRONMENTAL MONITORING – A LEGISLATIVE APPROACH. PART I

C.M. SALCĂ-ROTARU¹ **C. DRĂGHICI**²

Abstract: *Environmental monitoring, together with environmental assessment, and inspection, is one of the most used methods in environmental protection, in terms of pollution prevention and the subsequent evaluation of the effects of the actions taken. Environmental monitoring actions can be carried out by entities whose activities have a potential impact on the environment, as well as by state institutions with duties and responsibilities in this regard. The first part of this study aims to highlight the gaps in the definition of environmental monitoring, both from a legislative perspective and from the perspective of its delimitation from environmental review, analysis or inspection.*

Key words: *environmental legislation, environmental monitoring, environmental review, environmental analysis, environmental inspection.*

1. Introduction

Since 1987, The Brundtland Report has brought about the recognition of the importance of environmental monitoring by introducing Environmental Standards and Monitoring among the legal principles proposed by the Group of Experts of the World Commission on Environment and Development (WCED) on environmental law, for environmental protection and sustainable development (WCED, 1987).

The importance of the legal definition is given by its use in the specific situations of control and assessment of compliance carried out by state institutions with attributions in this regard.

The parallel evolution, over time, of the terms (environmental monitoring, environmental review, environmental analysis, and environmental inspection), determined overlaps of the meanings found in legal or doctrinal definitions as well as different interpretations of them.

The first part of this study aims to highlight the gaps in the definition of environmental

¹ Faculty of Law, *Transilvania* University of Braşov

² Faculty of Product Design and Environment, *Transilvania* University of Braşov, c.draghici@unitbv.ro, corresponding author

monitoring, both from the perspective of its delimitation from environmental review/ analysis and environmental inspection and from a legislative perspective.

2. Methodology

The following objectives were proposed, in order to identify the elements necessary for an adequate definition of environmental monitoring:

- to make delimitation of the terms environmental review, analysis and environmental inspection versus the term of environmental monitoring, through comparative interpretation;
- to analyse the environmental monitoring definitions, by using specific methods of legal interpretation.

In order to establish the current status of the definition given to the environmental monitoring, a research of the environmental legislation was carried out: (i) the international and the European Union regulations in general; (ii) and in particular, the Romanian ones.

3. Delimitation of Terms

3.1. Environmental review, analysis and assessment versus environmental monitoring

From a legislative point of view, Regulation no. 1221 of 2009 on the voluntary participation of organizations in a community eco-management and audit scheme (EMAS) (Regulation, 2009) defines *environmental review* as an initial comprehensive analysis of environmental aspects, environmental impacts and environmental performance related to an organisation's activities, products and services.

Annex I to the EMAS Regulation (Environmental Review) and Decision 2463 of 2023 on the publication of the user's guide setting out the steps needed to participate in the EU eco-management and audit scheme (Decision, 2023), provides and details the aspects to be considered when performing a menu analysis. It is important to note that the English term used is "*environmental review*", but this term is not adopted by specialist literature.

We can give examples (a selection) of other forms of this expression, which represent official translations, within the linguistic variants of the EU legislation: "*analisi ambientale*" (Italian), "*análisis medioambiental*" (Spanish), "*ambientetiki ανασκόπηση*" (Greek), "*analyse environnementale*" (French), "*analiza prívni na odloš*" (Croatian).

Closer to "*environmental review*" would be the term *environmental assessment*, which is taken over in the official translations in Bulgarian, Czech, German, Estonian, Irish, Latvian, Hungarian, Maltese (www.eur-lex.europa.eu).

However, in the specialized literature it is shown that „*The concept of environmental assessment was introduced in the 1970s to meet several challenges, i.e. integrate the environmental component in decision making processes, provide analysis on the state of the environment thanks to deeper and more formalized knowledge, and finally, increase citizens' awareness on environmental issues*” (Lerond, 2003; Loiseau, 2012). It can thus

be observed that in this opinion equality is placed between environmental analysis and environmental assessment, because the purpose of environmental assessment is to provide an environmental analysis.

When the specialized literature approaches environmental analysis, it usually considers the technical aspects of the procedure. But, when environmental analysis is associated with the *Plan Do Check Act* (PDCA), a specific mechanism of the management systems, we find opinions showing that environmental monitoring places *environmental analysis* at the basis of the environmental monitoring hierarchy (Mihăilescu, 2014).

On the other hand, the *environmental analysis* term is also used to describe the measurement activity, as part of a monitoring program. In this respect, *environmental analysis* involves acquiring representative samples from complex environmental matrices, sample preparation, using analytical methods and techniques to identify and quantify the trace pollutants in the environment (as parts per million to parts per quadrillion levels). The analytical results are compared with the requirements for regulatory compliance in monitoring (for drinking water, wastewater, ambient/ emission air, and solid/ hazardous wastes) (Zang, 2009; Patnaik, 2018)

3.2. Environmental Inspection versus environmental monitoring

Directive 75 of 2010 on industrial emissions (Integrated Pollution Prevention and Control – IPPC) defines *environmental inspection* as „all actions, including site visits, monitoring of emissions and checks of internal reports and follow-up documents, verification of self-monitoring, checking of the techniques used and adequacy of the environment management of the installation, undertaken by or on behalf of the competent authority to check and promote compliance of installations with their permit conditions and, where necessary, to monitor their environmental impact” (Directive 2010, pc.22).

It may be noted that emission monitoring activities are included here, which may create confusion as to the appropriate use of the term environmental monitoring.

This prompts the question, is monitoring part of the *environmental inspection*? The answer is no, and we find it:

- in the Directive 75 of 2010, art. 21 pcs. 2 which, in the procedure of reconsidering permit conditions, requires the competent authorities to take into account any information resulting from monitoring or inspections;
- as well as in the provisions of the Recommendation 2001/331 establishing minimum criteria for environmental inspections in the Member States, which were developed „in order to assist Member States in carrying out inspection tasks, thereby reducing the currently-existing wide disparity among Member States' inspections” (Recommendation, 2001, pc.2).

The provisions of the Recommendation refer to (i) the activity of monitoring the impact of the activity on the environment and to (ii) the results of the monitoring, and in the latter, only to determine the need for some „further inspection or enforcement action (including issuing, modification or revocation of any authorisation, permit or licence)”.

The importance of *environmental inspection* is highlighted in the 7th environmental action program (EAP7), both from an organizational - institutional aspect (environmental inspections) and from a procedural aspect in the actual performance of environmental inspections (Decision, 2013). It is shown that „*Environmental inspection is a key element in the law enforcement toolbox, not least given its preventative dimension in assisting in efforts to minimise instances of non-compliance arising.*” (Hedemann-Robinson, 2017).

Although the term "*environmental inspection*" benefits from some definitions in the specific legislation, as the minimum inspection criteria have been developed in the form of a recommendation, the result has been an uneven interpretation and application of the legislation.

This is clearly stated in the Commission Communication 707 of 2007, which, in point 2.2. Clarification of the definitions, shows that „*The reports have shown that some terms used in the Recommendation are interpreted in different ways by Member States. This has led to differences in the implementation of the Recommendation in Member States and in the information reported by the Member States.*” (Commission, 2007).

4. Definitions of Environmental Monitoring used in Environmental Legislation

The study of the definitions of monitoring in environmental legislation was mainly carried out on EU legislation, due to its effect on member state legislation. Those international normative acts that, cumulatively, are incidental to the research and were ratified by the European Union were also analysed. Compared to national legislations, there are references only to Romanian legislation.

4.1. Definitions of environmental monitoring in international and EU regulations

There is no exact definition of environmental monitoring in either key international or European legislation. Even the document of the United Nations Conference on the Environment in Stockholm (1972) does not provide a definition of monitoring, but only a reference to the need to monitor changes (Convention, 1972).

Although the Espoo Convention has emerged as a result of the awareness of the need and importance of „*anticipatory and preventive policy development, mitigation and monitoring of any significant negative impact on the environment in general and in particular in a cross-border context*” (Convention, 1991), neither it nor the Protocol on Strategic Environmental Assessment to the Convention (Protocol, 2003), ever define monitoring. Even if monitoring is not defined, the object, the effects and the results of monitoring are identified.

In the preamble to Decision 338 of 1985 on the establishment of a Commission Work Program on an experimental project to collect, coordinate and ensure consistency of information on the state of the environment and natural resources in the Community (Decision, 1985), we do not find a definition of environmental monitoring either.

Analyzing the provisions of Regulation no. 1367 of 2006 on the application of the provisions of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters to community

institutions and bodies (Regulation, 2006; Convention, 1998), we note that the environmental information that must be available and communicated includes data obtained in the context of monitoring activities that affect or are likely to affect the environment.

The normative act has no other details or references regarding environmental monitoring. We found the same situation in Directive 4/2003 on public access to environmental information (Directive, 2003).

Directive No. 56 of 2008 establishing a framework for community action in the field of marine environmental policy (Directive, 2008) requires Member States to establish and implement coordinated monitoring programs for the ongoing assessment of the environmental status of their marine waters on the basis of the indicative lists of elements.

Annex V- *Monitoring programmes*, referred to in Article 11 (1) and Article 24 of the Directive, invokes, in order to impose and develop those programs, the need to:

- develop technical specifications and standardized methods for monitoring at Community level, so as to allow comparability of information (point 9 of the Annex);
- ensure, as far as possible, compatibility with existing programs developed at regional and international levels with a view to fostering consistency between these programs and avoiding duplication of effort, making use of those monitoring guidelines that are the most relevant for the marine region or subregions concerned (point 10 of the Annex).

Article 11 states that "*Monitoring programmes shall be compatible within marine regions or subregions and shall build upon, and be compatible with, relevant provisions for assessment and monitoring laid down by Community legislation, including the Habitats and Birds Directives, or under international agreements.*" (Directive, 2008).

As in the previous examples, neither this, nor the urban waste water treatment directive (Directive, 1991), although aimed at imposing monitoring programs, provide for definitions or details of the monitoring action or the monitoring program.

More recently, Regulation 741/2020 on the minimum requirements for water reuse (Regulation, 2020) although it still does not give a definition of environmental monitoring, it refers to environmental monitoring systems in environmental risk management (Annex 2, pc. 8) and details aspects of reclaimed water monitoring, classifying it as monitoring of routine and validation monitoring (Annex 1).

Directive 75 of 2010 on industrial emissions (Directive, 2010) provides for the importance and necessity of monitoring emissions into the environment, of monitoring measures and, of exchange of information related to monitoring and the techniques used. There is no definition of monitoring, which is an important element of the authorizations required by the Directive 75 of 2010.

From the technical requirements specified by the Directive 75 of 2010, we can deduce that monitoring is a measurement activity, carried out according to a particular methodology and with a certain frequency. A problem arises when the definition is extended to include the "assessment procedure" requirement, as definitions with different meanings may result.

In a first view, the *assessment procedure* can refer to the results of measurements and

thus it can be said that monitoring means: a measurement activity, carried out according to a certain methodology and with a certain frequency, the results of which are evaluated according to a certain procedure.

The normative act contains references to "monitoring results" or to an "evaluation of monitoring results" (art. 38 and 48). Corroborating the provisions of articles 38 (4) and 48, which provide that "*All monitoring results will be recorded, processed and presented in such a way as to allow the competent authority to verify compliance with the operating conditions and emission limit values that are included in the authorization*".

For the purpose of the Directive, namely that it "*establishes rules on the prevention and integrated control of pollution resulting from industrial activities*" (Article 1), we arrive at a different interpretation of the meaning of the assessment procedure.

Thus, in the second view, the *assessment procedure* can refer to the effect of the measured elements on the environment and it can be stated that monitoring means: a measurement activity, carried out according to a certain methodology and with a certain frequency to evaluate the effects of the measured elements on the environment.

Looking at the legal definitions established by Directive 75/2010 let's not forget that things can be even more complicated if we consider the definition of *environmental inspection*, already analyzed in the section dedicated to the comparison of environmental monitoring with environmental inspection.

Decision 2017/848 of the Commission establishes methodological criteria and standards regarding the good environmental status of marine waters and specifications and standardized methods for monitoring and evaluation (Decision, 2017).

Point 7 of the preamble states that: "*To ensure a greater consistency and comparability at the Union level of Member States' determinations of good environmental status and to avoid unnecessary overlaps, it is appropriate to take into account relevant existing standards and methods of monitoring and evaluation provided for by Union legislation.*"

In fact, the entire document considers "*standardized methods of monitoring and evaluation*", but without specifying whether environmental evaluation is considered as a different monitoring tool or as an evaluation of monitoring results.

The examples continue with Directive 65 of 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) (Directive, 2011). The position of the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) on some aspects of environmental legislation is relevant. Analyzing the provisions and applicability of the Directive 65 of 2011, IMPEL shows in a document that: "*The RoHS Directive does not contain a provision explicitly and specifically related to Member States' obligations for inspection and monitoring. However, Member States are obliged to take the measures necessary to ensure that the Directive is fully effective, even if not mentioned in the Directive itself explicitly.*" (European Commission, 2011, p.62).

4.2. Definitions of environmental monitoring in Romanian regulations

At national level, in Romania, environment monitoring is regulated only starting with

the Environmental Protection Law no. 137 of 1995 (Law, 1995). The previous act that this law repealed, Law No. 9 of 1973 (Law, 1973) did not refer to environmental monitoring actions.

At present, as a general normative act on environmental protection, the Government Emergency Ordinance No. 195 of 2005 on environmental protection (Emergency Ordinance, 2005), under Article 2, legally defines environmental monitoring as: *monitoring, forecasting, warning and intervention for the systematic evaluation of the dynamics of the qualitative characteristics of the environmental elements in order to know the quality status and their environmental significance, the evolution and the social implications of the produced changes, followed by the necessary measures.*

The following criticisms can be brought to this definition:

- it includes the intervention term as specific to a monitoring activity;
- it includes the obligation to take the necessary measures, which could only be a mediated result of the monitoring, but without being very clear who and what measures should be taken.

In conclusion, from the given legal definition we identify:

- monitoring as the systematic assessment of the dynamics of the qualitative characteristics of environmental elements,
- an immediate purpose of the monitoring, namely knowing the quality state of the environmental elements and,
- a mediated purpose of monitoring, namely taking the necessary measures, following the interpretation of the ecological significance and their identified and forecasted evolution.

The other normative acts, at national level, that refer to monitoring have the same constant approach as the ones previously presented, namely the regulation of domains or punctual monitoring elements.

5. Conclusions

Environmental monitoring has become a must-do at all levels - international, regional, national, local - involving various actors - governmental, local - in various forms - ministries, departments, specialized agencies, non-governmental organizations, accredited laboratories. All forms and methods of monitoring must be and are regulated, because only the force of a normative act can demand a specific result. That is why the synergy of normative acts and specialized literature is important when addressing the complex issue of environmental monitoring.

We start from the premise that if the legislation is not clear in defining and using the terms, it is necessary to take steps to emphasize these aspects in order to obtain a real protection of the environment.

An important first step would be the joint action of specialists in the various fields involved in environmental monitoring with a view to establishing a unitary vision of environmental monitoring as a basic foundation to be taken up and applied in specific legislation. If monitoring is the essence of specialists in predominantly technical areas, understanding the meaning of it in relation to and within the institutions involved and

sometimes before the courts is the core task incumbent upon law specialists.

Acknowledgements: to the project “Environmental Education – OERs for Rural Citizens (EnvEdu – OERs)” funded with support from the Education, Scholarships, Apprenticeships and Youth Entrepreneurship Programme (ESAYEP), EEA Grants 2014-2021

References

- Commission (2007). Commission Staff Working Paper - *Report on the implementation of Recommendation 2001/331/EC providing for minimum criteria for environmental inspections Annex to the Communication from the Commission to the Council, European Parliament, Committee of the Regions and Economic and Social Committee on the review of Recommendation 2001/331/EC providing for minimum criteria for environmental inspections*, COM (2007) 707 final. <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519331305120&uri=CELEX:52007SC1493>.
- Convention (1972). *United Nations Convention on the Human Environment*, Stockholm. <https://documents.un.org/doc/undoc/gen/nl7/300/05/pdf/nl730005.pdf?token=D2M3LWkdf0cf00Tbmb&fe=true>.
- Convention (1991). *United Nations Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)*, https://unece.org/fileadmin/DAM/env/eia/documents/legaltexts/Espoo_Convention_authentic_ENG.pdf.
- Convention (1998). *UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)* <https://unece.org/environment-policy/public-participation/aarhus-convention/text>.
- Decision (1985). Council Decision of 27 June 1985 on the adoption of the Commission work programme concerning an experimental project for gathering, coordinating and ensuring the consistency of information on the state of the environment and natural resources in the Community. published in *JO L* 176, 6.7.1985, p. 18-21.
- Decision (2013). Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 ‘Living well, within the limits of our planet’. Published in *OJ L* 354, 28.12.2013, p. 171–200, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013D1386>.
- Decision (2017). Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, Published in *OJ L* 125, 18.5.2017, p. 43–74, <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519328487476&uri=CELEX:32017D0848>.
- Decision (2023). Commission Decision (EU) 2023/2463 of 3 November 2023 on the publication of the user’s guide setting out the steps needed to participate in the EU eco-management and audit scheme (EMAS) pursuant to Regulation (EC) No 1221/2009 of the European Parliament and of the Council. Published in *OJ L*, 2023/2463, 10.11.2023, <http://data.europa.eu/eli/dec/2023/2463/oj>.

- Directive (1991). Council Directive 91/271/EEC of 21 May 1991 concerning urban wastewater treatment. Published in *OJ L 135*, 30.5.1991, p. 40–52, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31991L0271>.
- Directive (2003). Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC. Published in *OJ L 41*, 14.2.2003, pp. 26-32.
- Directive (2008). 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 (Marine Strategy Framework Directive). Published in *OJ L 164*, 25.6.2008, p. 19–40, <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519297368660&uri=CELEX:32008L0056>.
- Directive (2010). Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control). Published in *OJ L 334*, 17.12.2010, p. 17–119, <https://eur-lex.europa.eu/eli/dir/2010/75/oj>.
- Directive (2011). Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment. *OJ L 174*, 1.7.2011, p. 88–110, <http://eur-lex.europa.eu/legalcontent/EN/TXT/?qid=1519329451875&uri=CELEX:32011L0065>.
- Emergency Ordinance (2005). *Ordonanță de urgență nr. 195 din 22 decembrie 2005*, M.Of. nr. 1196/30 dec. 2005, <https://legislatie.just.ro/Public/DetaliiDocument/67634>.
- European Commission (2011). *Practical manual on permitting and inspection of waste management operations*. Final version 22 December 2011, Services to support Member States' enforcement actions and inspections concerning the application of EU waste legislation 07030/2010/576173/SER/C2, p. 62, <https://ec.europa.eu/environment/pdf/waste/framework/Practical%20manual%20on%20permitting%20and%20inspection.pdf>.
- Hedemann-Robinson, M. (2017). Environmental inspections and the EU: Securing an effective role for a supranational union legal framework. *Transnational Environmental Law*, 6(1), 31-58.
- Law, (1973). Legea 9 din 1973 privind protecția mediului înconjurător. *B.Of.* nr. 91/23 iun. 1973, <https://legislatie.just.ro/Public/DetaliiDocument/311#>.
- Law (1995). Legea 137 din 1995, Legea protecției mediului. *Monitorul Of.* nr. 304/30 dec. 1995, <https://legislatie.just.ro/Public/DetaliiDocument/6385>.
- Lerond, M., Larrue, C., Michel, P., Roudier, B., Sanson, C. (2003). *L'évaluation environnementale des politiques, plans et programmes: objectifs, méthodologies et cas pratiques*. Ed. Tec & Doc-Lavoisier.
- Lindenmayer, D.B., Likens, G.E. (2009). Adaptive monitoring: a new paradigm for long-term research and monitoring. *Trends in Ecology and Evolution*, 24(9), 482-486.
- Loiseau, E., Junqua, G., Roux, P., Bellon-Maurel, V. (2012). Environmental assessment of a territory: An overview of existing tools and methods. *Journal of environmental management*, 112, 213-225.
- Mihăescu, R. (2014). *Monitoringul integrat de mediu* [Integrated Environmental Monitoring]. Cluj Napoca: www.enviro.ubbcluj.ro/studenti/

[cursuri%20suport/Carte_Monitoring_Radu_SITE.pdf](#).

Patnaik, P. (2018). Environmental Analysis: An Overview. In Patnaik P. (Ed.), *Handbook of Environmental Analysis Chemical Pollutants in Air, Water, Soil, and Solid Wastes*. Third Edition. Boca Raton, FL.: Taylor & Francis Group.

Protocol (2003). Protocol on Strategic Environmental Assessment (Protocol on SEA) to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), https://unece.org/sites/default/files/2022-05/UNECE_SEA_English.pdf.

Recommendation (2001). Recommendation 2001/331/ EC establishing minimum criteria for environmental inspections in the Member States. Published in *JO L 118, 27.4.2001*, p. 41-53, <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519331035315&uri=CELEX:32001H0331>.

Regulation (2006). Regulation (EC) No 1367/2006 of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decisionmaking and Access to Justice in Environmental Matters to Community institutions and bodies, Published in *OJ L 264, 25.9.2006*, p. 13–19, <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519296722202&uri=CELEX:32006R1367>.

Regulation (2009). Regulation no. 1221 of 2009 on the voluntary participation of organizations in a Community eco-management and audit scheme (EMAS), Published in *JO L 342, 22.12.2009*, p. 1-45, <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1519331814111&uri=CELEX:32009R1221>.

Regulation (2020). Regulation (EU) 2020/741 of the European Parliament and of the Council of 25 May 2020 on minimum requirements for water reuse. Published in *OJ L 177, 5.6.2020*, p. 32–55, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0741>.

WCED (1987). Report of the World Commission on Environment and Development: Our Common Future, Annex 1 Summary of Proposed Legal Principles for Environmental Protection and Sustainable Development, Adopted by the WCED Experts Group on Environmental Law, <http://www.un-documents.net/our-common-future.pdf>

www.eur-lex.europa.eu.

Zhang, C. 2009. *Encyclopedia of Life Support Systems (EOLSS)*, UNESCO – EOLSS ENVIRONMENTAL MONITORING – Environmental Analytical Chemistry – <https://eolss.net/sample-chapters/c09/E6-38-14.pdf>.