

A BRIEF OVERVIEW OF BENCHMARKING AS A MANAGEMENT TECHNIQUE IN THE FIELD OF WATER IN ROMANIA

Aniko KUNTZ, Cristina DRIHA

Doctoral School of Economic Sciences, Faculty of Economic Sciences, University of
Oradea, Romania

ancsaktz@gmail.com

cristina.driha@gmail.com

Abstract: *Given the public and permanent nature, of the public utility services, as a continuous operation, coupled with the dynamics of changes in technology, communication, labor market and last but not least the many changes in recent years of legislation and tax regulations in Romania, lead to increased pressure on decision-makers in the field of public utility services with an impact on housing. This topic was chosen in the context of the economic realities in Romania in the field of public utility services with an impact on housing, an area that reflects the ongoing concerns for a development that will ensure technological reform and integration into European financial structures. It is of real interest for any entity in the field of public utility services with an impact on housing concerned about the need to implement a decision-making and financial mechanism that provides a clear and relevant picture of the performance of services provided. In this context, the opinion of the International Water Association Group of Specialists that "benchmarking is a tool for improving performance through systematic research and best practice" has motivated many water companies to introduce benchmarking as a method of management. This article provides an overview of benchmarking as a water management technique for European Benchmarking Co-operation (EBC) compared to the national benchmarking exercise called H2Obenchmark. Due to the fact that both are based on the methodology developed by the International Water Association (IWA), the most important advantage of these benchmarking techniques is that they ensure comparability at any time with any water company in the world that uses the same system. By ensuring the opportunity for knowledge transfer, operators are able to identify and implement best practices and innovative solutions to the realities they face in the field of management, operations and investment projects. The brief diagnosis of water benchmarking in Romania highlights the fact that H2OBenchmark is a mature benchmarking exercise, with experience gained and maintained both in the water sector (ARA, CEB, OR, ANRSC, etc.) and partner consultants.*

Keywords: *benchmarking, management tehniquie, public utility services, public utility system*

JEL classification: *L32, L97, C38; M11; H50*

1.Intoducere

Benchmarking is a management technique designed to help improve performance by systematically researching and adapting best practices in the marketplace. The water and wastewater sector has become interested in the implementation of this management technique in the last two decades, in order to improve the performance of companies in the sector. Benchmarking is the process by which a company compares and improves its performance by learning from the best in a group. The process involves identifying and successfully adopting the methods and processes used by benchmarking partners. A well-managed operator must cover the operating costs and sources of financing required for capital investments. Non-compliance with the critical level of financing leads to underestimation of investments in assets in the field, respectively operating services in the field of utilities at an unsatisfactory level both in terms of quality and environmental requirements, as well as in terms of customer satisfaction index. From this point of view, it is particularly important that the ratio between operating expenses (excluding depreciation and royalty expenses) and operating income (excluding grants received) is superimposed.

By implementing benchmarking in the field of water in Romania, the premises were created to benefit from its proven and time-tested ability to offer solutions to solve challenges, obtain improvements and innovations in operation / services, and increase transparency in domain. The benchmarking methodology in Romania is well structured, in line with international best practices, based on IWA variables and performance indicators, with clear, well-defined definitions. The very complex and detailed methodology aims at the graphical representation of the result, by comparison with an average, or simply with the level obtained by the other regional operators, so that the interpretation and evaluation, as well as the elaboration of action / improvement plans is done. very easily by specialists in the field.

The Romanian benchmarking exercise has all the necessary elements to ensure efficiency and sustainability:

- well-structured, clear methodology, with definitions in line with IWA and best practices in the field of benchmarking;
- functional online platform, with various graphical options, with multiple filtering possibilities. Transparency and permanent access to historical data of all participants;
- written and known procedures, both for the functioning of the CEB and for all stages of the benchmarking exercise, including the Action Plans for improving the performance of the RO;
- the Romanian benchmarking system is self-financed by the contribution of the participating regional operators, so that the financial sustainability is ensured through their own forces;
- large number of participants from Romania, thus facilitating the finding of similar ORs in size or development (peer);

- the ownership of the database is internal and managed by CEB - ARA. (Report on the comparative analysis of the benchmarking system in Romania with international benchmarking systems (EBC), Variant 2 - 03.07.2019).

2. Benchmarking as a tool for comparing water performance internationally

The notion of benchmarking was introduced by Robert C. Camp in his book: *Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance* (1989).

With the introduction of new regulations in the UK on the water and wastewater sector in 1989, benchmarking was chosen by the Water Services Regulatory Authority as a regulatory tool in the form of a yardstick competition to compare the performance of different water companies and compensate for the lack of competition in the sector, thus causing companies to improve their performance. After these beginnings of benchmarking in the water and wastewater sector, it began to be used in the form of benchmarking programs developed by water associations in several countries, governments in collaboration with universities, the World Bank (IBNET) but also as regulatory instrument in Germany and the United Kingdom.

The International Water Association (IWA) is a global network of water professionals, aiming to exchange scientific and professional experiences of academics and water industry managers, covering all aspects of the water circuit. The International Water Association's Benchmarking Group recommends abandoning the use of the terms "metric benchmarking" and "process benchmarking" and recommends an approach based on two consecutive components: "performance evaluation" and "performance improvement".

According to the benchmarking methodology, the benchmarking exercises compare the regional operators based on five performance areas (the 5 pillars model):

- Service security through performance indicators that measure the continuity of services without interruption.
- Quality of service through indicators that measure the quality of service from the consumer's perspective;
- Sustainability with indicators that address the "Triple Bottom Line", measuring environmental, social and economic parameters;
- Finance and efficiency through indicators that measure economic and financial performance;
- Water quality through performance indicators that measure compliance with water quality standards.

To these areas of performance is added contextual information that provides the inherent characteristics of the operator and through which the differences between systems and common points are identified, helping operators to compare performance.

Benchmarking facilitates the continuous process of improving efficiency and transparency for companies by: analizarea pozitiei în care se afla în prezent;

- oferirea unei platforme pentru schimbul celor mai bune practici de management și operare, gasind pe cineva care are performante masurabil mai bune;
- schimbul de cunostinte și experienta în benchmarking, invatand de la acestia ce fac exact pentru a atinge un anumit nivel de performanta (networking);
- adaptarea practicilor și proceselor acestora, care va avea ca rezultat invatarea și implementarea schimbarilor relevante, ce va duce la performante imbunatatite în cadrul companiei.

Benchmarking consists of two consecutive phases



Figure 1: Benchmarking phases

Source: Report on the comparative analysis of the benchmarking system in Romania with international benchmarking systems (EBC), Variant 2 - 03.07.2019

Performance evaluation generally does not take more than 6 months, while performance improvement can take considerably longer. Any benchmarking project can be framed in the two phases depending on the objectives pursued, the techniques used and also, taking into account the level of detail. Benchmarking techniques must always aim for continuous improvement, following the concept of PDCA (Plan, Do, Check, Act / plan, do, check, act). It is usually organized into projects ("exercises") with start and end dates and should be integrated into the (annual) business planning cycle, to connect it to the strategic objectives of the company, avoiding its transformation into a stand-alone project.

3. Brief diagnosis of benchmarking in the field of water in Romania

To assess the performance of water operators on the basis of comparable data, the World Bank launched the International Benchmarking Network in 1996.

IBNET was the first benchmarking study in which operators from the water supply and sewerage services sector in Romania participated.

The main objective of the project was to improve the performance level of the water supply and sewerage system, allowing comparisons between operators. The Bench Water System provided:

- The possibility for the company's management to compare its own performance with the performance of other operators, in order to identify areas that need improvement and to define a set of good practices for the parties involved;
- The possibility of the company's management to evaluate its own level of service efficiency, in relation to the other participating ORs;
- Possibility of monitoring by funding institutions and those responsible for sectoral policies, progress in improving performance in the water sector and compliance with the general objectives of the sector;
- The possibility of accessing the annual reports on the performance of the operators by the users and the general public.

The project proposed operational, managerial, financial and asset management benchmarking activities, taking into account the specific situation of the Romanian water and wastewater sector.

The online platform has been hosted and managed by the Romanian Water Association (ARA) since 2009, in accordance with the protocol established with the Ministry of Environment.

The functionality of the platform has been reduced due to limitations on data usage and transparency, with operators preferring to keep the data provided confidential. These aspects reduced the interest and motivation of the participating companies, and the responsibility for filling in the necessary data was transferred to the Romanian Water Association (ARA), the administrator of Apa Bench. ARA has issued annual reports based on Bench Water results.

The benchmarking exercises within Apa Bench focused on two areas of company performance, namely the operational performance and the managerial performance of the participating operators. The Romanian Water Association, considering the role, collected and compiled data annually, through the training center of the association, ensuring a basic quality through the control and management of data. The main categories of indicators used for the analysis of water supply and wastewater systems are: service coverage, quality of services, water consumption and water production, billing and collection, loss level, financial performance, metering methods, assets, the performance of pipelines, the affordability of services, wage costs and the level of employment, process indicators.

The resulting indicators are generated in the form of a graph, but the program does not allow a detailed individual or comparative analysis, which is a limitation for users. The data is processed in Excel format, and the company names are written in letters to keep the data confidential. The performance evaluation shows the evolution of the maximum and minimum values for the calculated indicators and the calculated average trend for all participating regional operators. These reports, by the way in which the information is presented and by maintaining the confidentiality of the data, do not allow a comparative analysis at company level or an easy identification of good practices.

According to the Romanian Water Association, issues such as lack of management and software development, inadequacy of the program for easy use, the difficulty of

improving the platform have led to the closure of this system. Thus, the latest report of the Romanian Water Association (ARA) based on the indicators from ApaBench covers the activity from 2012.

We conclude that the impact of ApaBench on improving the performance of companies takes the form of experience in collecting and transmitting data, giving companies a different perspective on comparing performance. This experience proved useful, including when it was decided to make transparent the data obtained from benchmarking exercises, which proved to be of major importance for the success and usefulness of the benchmarking exercise conducted in the coming years in Romania.

3.1 National benchmarking system (H2Obenchmark)

Currently, the benchmarking exercise of the Romanian water sector is organized and coordinated by the Center of Excellence for Benchmarking (CEB) within the Romanian Water Association. The Center of Excellence for Benchmarking aims to organize the benchmarking process annually, so that it is carried out with all regional operators in Romania. In order to properly implement the benchmarking system through the Center of Excellence for Benchmarking, the Steering Committee for Benchmarking (having a strategic role) was set up.

The benchmarking methodology used is built on the methodology developed by the World Water Association (IWA), ensuring compatibility and comparability with other operators using the IWA methodology.

In the Romanian benchmarking methodology, the stages of the benchmarking process used by regional operators are:

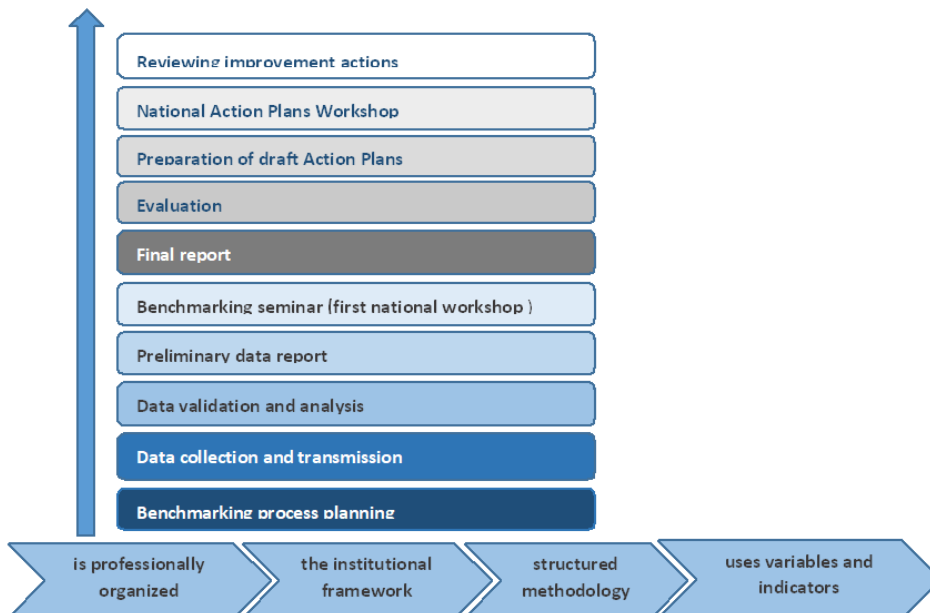


Figure 1: Stages of the benchmarking process

Source: Authors elaboration

A well-functioning, well-structured online platform, www.h2obenchmark.org, has been developed. All help files have been developed and updated, the methodology being described using IWA standards. The online benchmarking platform is developed on the web domain www.H2OBenchmark.org and hosted on the cloud server; the maintenance of the IT platform being ensured from the previous Benchmarking Program, carried out under the aegis of the EBRD. Data on regional operators from 2012 to the present are currently stored on the H2OBenchmark benchmarking platform. This database is a solid basis for evaluating performance and an effective means of drawing up performance improvement plans. Existing data are accessed by regional operators, but also by Intercommunity Development Associations, the latter having access to a predefined set of performance indicators. Benchmarking techniques in Romania follow the PDCA concept (Plan, Do, Check, Act / plan, do, verify, act) and materialize in the H2OBenchmark benchmarking exercise, by organizing a national workshop focused exclusively on presentations of good practices and part of the Action Plans to increase performance. H2OBenchmark has the advantage that preliminary reports are available around June, with the workshop usually taking place in mid-June, giving regional operators the opportunity to implement in a timely manner.

3.2 European Benchmarking Co-operation (EBC)

EBC's stated mission is to facilitate water services in the ongoing process of helping and innovating water services and to increase transparency by providing an international water services assessment program, providing a platform for the exchange of good management practices and management. operations and the exchange of benchmarking knowledge and experiences.. (www.waterbenchmark.org).

EBC was initiated in 2005 by the national water utilities associations of the Netherlands and the Nordic countries (DANVA, FIWA, Norsk Vann, Svenskt Vatten, Vewin) and several utilities of the Group of 6 cities (Copenhagen Energi, Helsinki Water, Oslo commune VAV, Stockholm Vatten).

The EBC benchmarking program is fully aligned with the IWA / AWWA (American Water Works Association) methodology and consists of two consecutive stages: performance evaluation and performance improvement.

The EBC (Western Europe) benchmarking exercise takes place between 1 May and 31 December and is structured in seven consecutive steps. EBC process planning steps:

- Preparation of the exercise (registration / registration of participants and orientation and training workshop) = February - April;
- Data collection = May - July;
- Data analysis and validation = July - September;
- Preliminary draft = end of September;
- Workshop (workshop) for disseminating results, good practices = November;

- Final report = December. This step, as in the case of H2OBenchmark, is preceded by the reopening of the data correction platform, if required;
- End of the exercise, completed with a public report = December 31.

The public report shows average values and spreads of key indicators for drinking water and sewerage services. Regarding drinking water, the report contains indicators such as the quality of water supplied, damage per 100 km, claims per property, share of water bill, electricity consumption per m³ of water produced, climate footprint per m³ of drinking water, coverage rate of costs and the age of the networks. Regarding wastewater indicators: compliance of treated wastewater, sewer blockages, share of sewage bill, energy consumption of treatment plants, total cost coverage rate and average costs per connected property.

The EBC benchmarking exercise is conducted in English, which requires that the staff involved have advanced knowledge of English. This is an important limitation of participation for water companies, respectively regional operators.

Another limitation of the EBC benchmarking exercise concerns the level of transparency and confidentiality, which is in line with the level accepted by the EBC participants. In the case of EBC, this aspect is difficult to manage because the participating companies come from many countries, with different approaches from one country to another but also from one company to another. The balance between ensuring a secure learning environment and requiring participants in transparency is ensured by the CBC by applying a confidentiality protocol accepted by all involved.

4. Similarities between the national benchmarking system (H2Obenchmark) and EBC

Both benchmarking exercises apply the IWA methodology.

We also find similarities in the stages of the benchmarking process, so that both contain the stages of: preparation / planning of the exercise, Data collection and transmission; Data analysis and validation, Preliminary data reporting; Benchmarking seminar / Workshop and final report.

Also, both exercises use the same IWA model for evaluating and improving performance, respectively benchmarking can be applied at the utility level (water company, comparing data at the level of the whole entity) or as benchmarking at process level (comparing achievements at the level of operation of water networks, sewage treatment plants, pumping stations, etc.).

Another similarity refers to the fact that the exercises perform a complete benchmarking cycle, ie evaluate and then aim to improve performance.

Both H2Obenchmark and EBC both use the same key areas of performance, namely: water quality, reliability, quality of service, sustainability, financial and efficiency.

Both benchmarking exercises use high-performance online platforms.

Differences between national benchmarking system (H2Obenchmark) and EBC

- A significant difference between the EBC and the national benchmarking system concerns the H2Obenchmark's concern for improving performance, by including in the stages of the benchmarking exercise the following

processes: Analysis of preliminary data, data history of participating companies, individually;

- Ensuring the necessary support in data analysis and then the preparation of Action Plans to improve performance;
- National workshop dedicated to Action Plans, in which the best practices are discussed and the debates on the presented topics are encouraged;
- Monitoring and evaluating the fulfillment of the measures included in the Action Plans of the RO.

Table 1: Differences between the two benchmarking exercises

SYSTEM OF VARIABLES AND PERFORMANCE INDICATORS	
EBC	H2OBenchmark
VARIABLES	
Number of variables: basic + standard + advanced = 430	Number of variables = 326
INDICATORI DE PERFORMANȚĂ	
Number of indicators: basic + standard + advanced = aprox. 350	Number of indicators = 206
VARIABLE ADJUSTMENTS	
<p>In some cases IWA parameters are adjusted or parameters are added to better fit the EBC model.</p> <p>New parameters can be distinguished from existing IWA parameters by the following:</p> <p>When an existing parameter is split into several new parameters, the new parameters consist of the standard IWA code followed by: "a", "b", "c", etc.</p> <p>When a new parameter that resembles an existing one is entered, the parameter code from which the new parameter is derived is prefixed with a "z".</p> <p>completely new variables or performance indicators are coded with the original prefix (eg WA) and contain the code "EBC".</p>	<p>Sometimes the indicators for the Romanian specific are customized either because:</p> <ul style="list-style-type: none"> • contain a modified variable, but the calculation is done as in the case of IWA; • either because they have a different unit of measurement or represent a different version of the original IWA indicator. <p>When an existing variable is divided into several sub-variables or has a different unit of measure but is related to the same type of variable, the new variable is derived from the IWA and is followed by "a", "b", "c", etc. and contains "RO" in the code.</p> <p>The variables for other activities were derived from the variables for water, and the codes have the prefix "o" and also contain "RO".</p> <p>Certain operational data are required for wastewater activity in the largest city. These variables and indicators are derived from the general variables and indicators for water, and the codes have the prefix "l" and also contain "RO". A number of variables and indicators are specific to the whole company. These are derived from the</p>

	IWA variables for water and the codes have the prefix “t”, and also contain “RO”
TRANSPARENCY	
EBC	H2OBenchmark
Partial internal	Total internal
LANGUAGE	
EBC	H2OBenchmark
English	Romanian
PARTICIPATION COSTS AND FINANCING	
EBC	H2OBenchmark
EXPENSIVE for most potential OR participants in Romania	CHEAP (Sustainable from participants)
KNOW - HOW	
EBC	H2OBenchmark
Advanced, with more experience in conducting cross-border benchmarking exercises.	Advanced, with more experience on the specifics of Romania and the Romanian water sector. The CEB staff selection procedure ensures a permanent retention of know-how within the ARA
ONLINE PLATFORM	
EBC	H2OBenchmark
Only 1 user account is provided	5 user accounts are provided. Usually: General Manager, Economic Director, Technical Director, Benchmarking Manager, ADI representative
Multiple possibilities for online generation of type graphics: linear, horizontal or vertical bar, spyder, circle, polka dots, etc. Great flexibility in setting up custom graphics: the years you want, who to compare with, graphics, filters, etc. At the moment the flexibility is greater in the case of EBC	Multiple possibilities for online generation of type graphics: linear, horizontal or vertical bar, spyder, circle, polka dots, etc. Great flexibility in setting up custom graphics: filters, years you want, who to compare with, graphics, etc.
OTHER DIFFERENCES	
EBC	H2OBenchmark
25-30 participating companies, without interruption. There are companies that participate for only 1 year, 2 or 3. There are companies that participate for 1 year and take a break for a few years, etc.	43 ORs permanent participants, without interruption. It is much easier to find a "peer" (relevant operator to compare with).
Award the cup and diploma annually to the best benchmarking manager	
Grants EBC certification, mentioned above, for uninterrupted participation in EBC	

Use "cards" that capture the essence, totals of the EBC exercise as a whole	
For companies participating in the advanced part, there is a section dedicated to "Climate Foot Print" - Greenhouse Gas Footprint.	
It starts and ends late. This is also due to the fact that not all companies open the fiscal year on January 1st.	
Participates developed companies, financially powerful. The average EBC (Western Europe) may represent a target or reference for the Romanian water sector in some more relevant indicators.	

Source: Report on the comparative analysis of the Romanian benchmarking system with international benchmarking systems (EBC), Variant 2 - 03.07.2019

5. Conclusion

Lack of unitary provisions regarding the management of managed assets, specific and relevant to public utility services with an impact on housing, allowing the extraction of real and comparable information, oriented in the future, taking into account qualitative requirements, thus emphasizing the need for a decision-making mechanism and financially based on the possibility of evaluating the performance of the service starting from the financial sustainability, as a pillar of the sustainable development in the field. The implementation and use of modern management methods, unitary at branch level, field of activity, creates the premises for achieving the objectives assumed by Romania through the Treaty of Accession to the European Union, both in terms of environmental and quality requirements, as well as the fact that meeting the client's requirements and needs is essential in the field of public utility services with an impact on housing.

The technical and operational performance of water and wastewater systems is a key element in ensuring quality services and sustainable development of water and wastewater operators. Asset management and long-term planning is the key to the development of water and wastewater infrastructure in the service area of the regional operator. Knowing the state (degree of wear and tear) of assets allows the efficient allocation of investment, the preparation of realistic capital investment plans, increasing the life of assets, ensuring the level of service and understanding long-term financial needs. The calculation of performance indicators through unitary formulas of benchmarking exercises ensures the comparability of the data obtained and provides relevant information to regional operators in the field of water and wastewater, thus contributing to the role of benchmarking as a management tool.

We also consider that although there are requirements (especially of a socio-economic, qualitative and environmental nature) regarding the review of the

benchmarking methodology, this must be done in the light of the existing database on the online platform, so as not to distort any future results.

We reiterate the opportunity to prioritize the existing variables and performance indicators in the H2OBenchmarking exercise when choosing the relevant indicators for ANRSC, ARA, ministries, ADIs.

We believe that partnerships should also be encouraged with other relevant benchmarking systems or organizations in the European and international water sector.

Last but not least, given the proven usefulness of this management technique, we consider that it would be appropriate to implement in other areas of public services with an impact on housing.

References

1. Bedrup, H., (1995) Background for performance management for A. Rolstadås "Performance management – A business process benchmark approach", Chapman and Hall, London.
2. Boloş, M.I., Otgon, C.I., Orţan T.V., (1989) M-Macbeth Method versus Traditional Scoring Method used in the Optimization of Public Expenditure Management, 11th International Conference Financial and Monetary Stability in Emerging Countries, December 10-11, 2010
3. Camp, C.R., Benchmarking: The Search for Industry Best Practices that Lead to Superior Performance.
4. D'Inverno, G., Carosi, L., Romano, G., (2020) Environmental Sustainability and Service Quality Beyond Economic and Financial Indicators: A Performance Evaluation of Italian Water Utilities, Socio-Economic Planning Sciences.
5. Hutton, G., (2019) Monitoring "affordability" of water and sanitation services after 2015: Review of global indicator options, A paper submitted to the UN office of the high commissioner for human rights, 20 march retrieved from: WHO & UNICEF, JMP website, <https://washdata.org>.
6. Jabeur, B.S., (2017) Bankruptcy prediction using Partial Least Squares Logistic Regression, Journal of Retailing and Consumer Services, 36, pp197-202.
7. Activity report 2019 of the National Regulatory Authority for Community Services of Public Utilities
8. Activity report 2020 of the National Regulatory Authority for Community Services of Public Utilities
9. Project co-financed by the European Social Fund through the Sectoral Operational Program, Human Resources Development 2007-2013, SOP HRD - Priority Axis 3 "Increasing the adaptability of workers and enterprises", SOP HRD - Major field of intervention 3.1 "Promoting entrepreneurial culture", Borlea, S., N, Financial performance and enterprise risk analysis, Module 1
10. Report on the comparative analysis of the benchmarking system in Romania with the international benchmarking systems (EBC) - Option 2 - 03.07.2019, Ministry of European Funds, Romania, Project "Technical assistance for the consolidation of the water and wastewater sector in Romania"
11. Report on the sectoral investigation launched by Order no. 82 of 15.02.2017, issued by the President of the Competition Council, on the market of public water supply and sewerage

services in the county seat municipalities and the Romanian Intercommunity Development Associations

12. Project co-financed by the European Social Fund through the Sectoral Operational Program, Human Resources Development 2007-2013, SOP HRD - Priority Axis 3 "Increasing the adaptability of workers and enterprises", SOP HRD - Major field of intervention 3.1 "Promoting entrepreneurial culture", Borlea ., S., N, Financial performance and enterprise risk analysis, Module 1,

13. [http://www.integratedreporting.org/Raportare integrata RO-FINAL.pdf](http://www.integratedreporting.org/Raportare_integrata_RO-FINAL.pdf)

14. <http://www.h2obenchmark.org/>