



METHODOLOGY

FOR MONITORING OF THE SOCIO-ECONOMIC IMPACT OF THE ACTIVITIES UNDER "PROCESS WATER TREATMENT UNIT FOR BETTER RIVER BASIN MANAGEMENT" PROJECT - LIFE WATEROIL

April, 2023



Table of Contents

Introduction.....	3
I. Types of impacts reviewed and assessed within the project.....	4
II. Assessment methods	4
III. Compliance and contribution to the implementation of main strategic documents for the development of Burgas Municipality.	5
IV. Indicators and parameters for monitoring and assessment.....	6
V. Schedule and milestones in the monitoring and assessment of the socio-economic impact.....	12
VI. Basic regulatory and strategic documents	12

Introduction

The current methodology for socio-economic impact monitoring has been developed within "Process Water Treatment Unit for Better River Basin Management" Project - LIFE WATEROIL.

The purpose of the impact assessment is to determine with the greatest accuracy possible the economic, environmental and social benefits of the implementation of the project activities.

The methodology summarizes all the decisive stages for the proper use and application of the monitoring system. It also determines some key principles and standards to be reflected in the analysis of the results obtained.

The consistent monitoring of the project impact allows the project management team to confirm the adequacy of the developed means for managing the specific problems and threats. At the end of the project, it will be possible to quantify the progress achieved in terms of environmental impact and realized benefits for the local economy and population.

The following is expected as a result of the project implementation:

1. Reduction of fresh water consumption from Mandra Lake, part of Mandra Poda protected area by almost 420 000 m³/year.
2. Reduction of the high concentrations of sulfide compounds and hydrocarbons in the wastewater from Electro-desalination Unit, which would also mean:
 - Reduction of the amount of toxic substances (pollutants) in wastewater by approximately 76 tons per year
 - Reduction of the amount of harmful substances released into the air: 9 kg/hour of hydrogen sulfide and 8.5 kg/hour of hydrocarbons
 - reduction of the number of complaints about the quality of the ambient air and odor nuisance related to the activity of LUKOIL Neftohim Burgas JSC (LNB) - by 60%
3. Minimization of the losses of resources (energy and fuel gas) 7500 MW/year (electric power) and 400 t/y of refinery gas, respectively 1200 t/y of saved CO₂ emissions
4. Increase of population's awareness of the activities aimed at protecting and improving the environment on the part of business, local administration, academic circles and non-governmental organizations. Multiplication of the good example of cooperation.

The methodology for monitoring and assessment of the socio-economic impact of "Process Water Treatment Unit for Better River Basin Management" Project - LIFE WATEROIL has been developed jointly by the project participants and its final version has been brought to the knowledge of each of them.

I. Types of impacts reviewed and assessed within the project

1. Ecological impact directly related to environmental protection

- Reduction of chemicals used;
- Reduction of water pollution;
- Reduction of atmospheric air pollution;
- Improvement of the environment for the life of various animal species;

2. Social impact leading to improvement of the quality of life in the region;

- Creation of better and safer conditions of work for the personnel of LNB;
- Creation of new jobs in connection with the improved environment
- Creation of opportunities for continuous training for LNB employees, students from local technical high schools and students from Prof. Dr. Asen Zlatarov University;
- Improvement of public health as a result of improved environmental conditions;
- Created partnership model, combining the efforts, knowledge and experience of local authorities, scientific circles and business;

3. Economic Impact

- Increase of the competitiveness of LNB;
- Reduction of operating costs;
- Minimizing the risk of sanctions;

II. Assessment methods

The main methods for the assessment of the socio-economic impact include the application of classic methods of sociological research, quantitative assessment (statistical data) and qualitative assessment (surveys, questionnaires, interviews, etc.).

- Collection and processing of data on received signals from citizens related to the spread of odor nuisance, taking into consideration all climate and meteorological factors relevant to the spread of odor;
- Analysis of air quality data obtained from Automated measurement station and Mobile Air Quality Control Laboratory.
- Analysis of the contribution to the implementation of the main strategic documents of Burgas Municipality;
- Distribution of questionnaires / surveys among residents of Burgas and interested parties and data analysis;

- Comparative analysis in relation to the base state and in relation to the achievement of the strategic goals of Burgas Municipality

Comparative analysis of the obtained data is one of the most popular and basic methods of analysis which includes determining certain characteristics of the object of research and comparing it according to such parameters with other objects or with itself, but in different periods of time.

For the needs of the LIFE Wateroil project, the approach of considering the future development by comparison with the starting position (initial situation) was chosen. Initial state data is usually gathered from official statistics, survey assessments and benchmarks which are derived from previous observations and assessments.

A report on the "existing condition" (baseline condition) will be developed in terms of the main indicators of the project based on historical data for the period 2021-2022. The situation described in the report will serve as a basis for comparison and determination of development trends after the start of the implementation of the technologies provided for in the Project.

III. Compliance and contribution to the implementation of main strategic documents for the development of Burgas Municipality.

The results of the project implementation contribute to a great extent to the achievement of the main and specific goals and priorities of strategic documents at the local, national and European level. It is therefore necessary to monitor and assess the impact of LIFE WATEROIL in the context of the following strategic documents:

- **Plan for integrated development of Burgas Municipality 2021 – 2027**

The implementation of LIFE WATEROIL project contributes to the implementation of the following priorities and measures in the main strategic document for the development of Burgas Municipality;

Priority 1: Burgas generates sustainable growth. Accelerated development of the local economic ecosystem

Measure 1.2. Improvement of the infrastructure to promote economic activity, transition to a circular economy and fair energy transition, where activities to increase energy efficiency and reduce greenhouse gas emissions of companies and promote the transition to a circular economy are foreseen.

Priority 6: Burgas implements green solutions. Sustainable management of urbanized ecosystems, where the implementation of measure 6.1 is foreseen. Improvement of Ambient Air Quality Monitoring, including modernization and upgrade of Mobile Ambient Air Quality (AAQ) Station; upgrade of the Information System for informing citizens about the AAQ with real-time data.

Appendix 4 Ecological and Chemical Condition of Underground Water Bodies to Integrated Development Plan of Burgas Municipality, reviews in detail the condition of Mandra Area - Uzungeren, and the following goals are set out to be achieved by 2027.

1. Prevention of the deterioration of the ecological condition;
2. Protection, improvement and restoration of the water body to achieve a good ecological condition;
3. Achievement of a good ecological condition in terms of biological elements - MZB and Phytoplankton;
4. Achievement of a good ecological condition by physicochemical elements – Electrical conductivity N-NH₄, P-PO₄, P_{total};
5. Achievement of a good chemical condition;
6. Prevention, progressive reduction and termination at once or by stages of the pollution from emissions, discharges and releases of priority and priority hazardous substances;

- **Sustainable Energy and Climate Strategy and Action Plan 2021-2030**

LIFE WATEROIL project is in compliance with and a contribution to the climate goals of Burgas Municipality, namely:

- To build/increase the resilience of the municipal territory to climate change;
- To adapt and integrate the urbanized territory and the environment to climate change;
- To build institutional capacity and increase the awareness of local communities on climate change adaptation.

IV. Indicators and parameters for monitoring and assessment

Monitoring is defined as systematic, continued/periodic and continuous collection, analysis and use of information for the purposes of management and decision-making regarding specific processes or interventions. Monitoring allows for progress to be assessed in order to make updates in case of circumstance change.

The assessment of the performance establishes the degree of achievement of the set goals.

The chosen monitoring and assessment approach is based on a set of indicators which can be monitored and measured through certain parameters.

An indicator provides information which simplifies reality, for example by extracting data on a specific matter or summarizing data on a number of different variables. In this way, the indicator can help reveal trends and simplify complex phenomena.

The knowledge we get from the indicators is used not only to reveal social, environmental or economic phenomena and to establish connections between them; they also provide a basis for influencing and controlling such phenomena.

From a functional point of view, indicators can be used either to describe a given situation or trend (descriptive indicators) or to assess progress in terms of established goals and objectives (performance indicators). Very often, descriptive indicators and performance indicators are used together: we can measure a phenomenon with the latter, while using the former to obtain additional explanation.

Indicators are useful as a way of representing reality, but the real world is too complex to be fully captured by a basic framework or system of indicators. The project team thinks that the system of indicators provided for in the current methodology is adequate and sufficient for the performance of monitoring and assessment of the impact of its implementation.

Each of the indicators is measured by different parameters of the environment, allowing a greater degree of analysis:

1. Spread of odor nuisance

The assessment according to the "spread of odor nuisance" indicator will be carried out based on the number of received signals and complaints from citizens. When reviewing the indicator, all climate and meteorological factors influencing the spread of odor, as well as the actual situation on the territory of the production site, will be taken into consideration.

2. Ambient air quality

The analysis and assessment of the ambient air quality in Burgas Municipality, in terms of the purity of the ambient air, is based on the actual measured concentrations in the automatic measuring stations in Burgas, Dolno Ezerovo Quarter, Kameno and the Mobile Air Quality Control Station to Burgas Municipality. In addition, the results are confirmed by data obtained from continuous measurement equipment installed at emission sources, assessments and reports on the implementation of main strategic documents. The assessment will be carried out against effective allowable emission norms (AEN, defined in a complex permit) and regulatorily defined maximum allowable concentrations (MAC);

3. Quality of treated wastewater

The assessment of the quality of treated wastewater will be based on the results of monitoring, the scope and frequency of which are approved by the provisions of the Complex Permit. Compliance will be assessed against the approved individual emission limits (EEC in the Complex Permit);

4. Development of ecological tourism

The improved quality of the environment combined with the communication activities related to the Project, including the support of BSPB and other environmental protection organizations in the region, will attract more tourists - bird lovers to the sites for their observation - Burgas Lakes. The indicator will be measured by counting the number of visits to the protected natural areas. Tourism is one of the priority areas of development of Burgas Municipality.

5. Increased revenue

The successful application of the technology with a proven economic, ecological and social effect provides an opportunity to increase the competitiveness of the company, transfer technologies and good practices.

6. Technology transfer, participation in joint projects

The potential impact of the Project is much greater than the Burgas region and the specific company. It is in the possibility to transfer the technologies used, to share and actively spread good practices.

7. Direct cost cuts

The frugal consumption of natural resources is one of the main indicators of business sustainability. The economy of water and electric power will have both ecological and financial effect. They are reported according to the material and financial reporting documentation of LUKOIL Neftohim Burgas JSC. An analysis is made to bring out the related trends proving the effect.

8. Opportunity for training

Prof. Dr. Asen Zlatarov University, Faculty of Technical Sciences is committed to organizing and holding a series of meetings and training events with students from the Vocational High School of Mechanical and Electrical Engineering and Electronics - Burgas and the Vocational High School of Construction, Architecture and Geodesy - Burgas (Construction and Architecture and Water Engineering sub-fields), as well as students from the University. Main topics - activities and innovations related to the reduction of water and air pollution;

The plan is for at least 150 pupils/students and employees of LUKOIL Neftohim Burgas JSC to be introduced to and trained in such subject matter.

Place of training - the specialized laboratories of Prof. Dr. Asen Zlatarov University - Burgas (FTS) and of the air and water treatment facilities on the territory of LUKOIL Neftohim Burgas JSC.

9. Improved compliance with EU policies in the field of labor protection and ecology

The assessment of the achieved improvement in terms of the compliance with EU policies in the field of labor protection and ecology will be carried out by controlling the following indicators:

- Established discrepancies (number) with the requirements regulated by the effective permit documents (Complex Permit, Safety Report, Permit for Greenhouse Gas Emissions). Source of information on established non-compliance with EU policies in the field of environmental protection are records/reports issued as a result of inspections carried out by state control bodies.

- Compliance of the issued permit documents with the current requirements for safe operation and best available techniques. Information about the adequacy of the effective permit documents will be proven by the fulfillment of the requirements of the competent authorities and by the issue of resolutions of the Executive Director of Executive Environment Agency

10. Increase of awareness through meetings, seminars, round tables with the participation of NGOs and local communities

The indicator shows the awareness and involvement of society in environmental problems. Increased awareness and participation will have a beneficial effect on the environmental awareness and culture of the community, a better understanding of the environmental measures implemented by the municipality and the companies, readiness for cooperation in the name of achieving environmental goals.

11. Examples of experience multiplication

The assessment of this indicator will show an increase of the capacity of NGOs for work with industrial companies for achievement of common environmental goals.

12. Number of interested parties which have requested/received a copy of the handbook

The value of this indicator will demonstrate the reproducibility of the model of interaction between local administration, industrial companies, NGOs and educational institutions. The interest in studying the experience gained during the implementation of the Project and the synergies obtained will confirm the success of this model of interaction.

13. Number of environmental projects implemented as a result of model reproducibility

The analysis of this indicator will show the real possibilities of reproducing the model in other municipalities and companies in order to solve environmental problems.

MATRIX OF MONITORING AND ASSESSMENT INDICATORS					
Indicator	Assessment parameter	Unit of measure	Source of information	Reporting period	Target value of the indicator
Improved living conditions and investments in Burgas region	Spread of odor nuisance	Number of complaints	Database of Burgas Municipality / Lukoil Neftohim Burgas	every 6 months, 2 times a year by 2027	Non-admission of complaints about the spread of odor nuisance as a result of the activity of Lukoil Neftohim Burgas

MATRIX OF MONITORING AND ASSESSMENT INDICATORS					
Indicator	Assessment parameter	Unit of measure	Source of information	Reporting period	Target value of the indicator
	Ambient air quality	Number of events of exceeded controlled pollutants of atmospheric air	Information from AMS; Data from Mobile Air Quality Control Laboratory; Program Implementation Report for	every 6 months, 2 times a year by 2027	No exceeding of the statutory norms
	Quality of treated wastewater	Number of events of exceeded individual emission limits of treated wastewater	Results of the implementation of a monitoring plan approved by the complex permit	every 6 months, 2 times a year by 2027	No exceeding of the statutory norms
	Development of ecological tourism	Number of visitors at Conservation Center Poda, Atanasovsko Lake, Vaya, etc.	Information about visitors from the relevant sites	Quarterly	
Improved competitiveness of LNB	Increased revenue	Euro	Annual financial statements	Annually	150 000
	Technology transfer, participation in joint projects	no.	Concluded contracts for technology transfer, cooperation and experience exchange agreements	Annually by 2027	3
	Direct cost cuts	Euro	Calculation of savings from resources, penalties, etc.	Annually to the end of the fiscal year	700 000
Improved work environment	Reduction of the exposure to harmful effects	As per ПБ-1-01-019 iss.08 of LNB Health and Safety Risk Assessment Methodology in LNB, ISO 45001 and Law on Healthy and Safe Conditions of Work	Documents on the fulfillment of the requirements of the Regulation on health and safety risk assessment in LNB, ISO 45001 and Law on Healthy and Safe Conditions of Work and the relevant regulations to it.	Quarterly report	Positive trends in odor exposure and associated risks
Reduced risks to the health of the population	Reduction of the exposure to harmful effects				

MATRIX OF MONITORING AND ASSESSMENT INDICATORS					
Indicator	Assessment parameter	Unit of measure	Source of information	Reporting period	Target value of the indicator
Training opportunities	Organized and conducted meetings and training events	Number of participants	Reports, attendance sheets, photos, presentations and other documents	every 3 months	150 by the end of the project
	Organized site visits in the Refinery	Number	Reports, attendance sheets, photos, presentations and other documents	every 3 months	min. 4
Improved compliance with EU policies in the field of labor protection and ecology	Discrepancies found	Number	Reports/Records of conducted control for compliance with the requirements of permit documentation	2 times a year by 2027	0
	Maintaining permit documentation in accordance with safety requirements and the best available techniques (BAT)	Number of effective permit documents	Resolutions for permit documentation issue/update	Once a year	3
Increase of the capacity of NGOs and local communities to change the attitude towards environmental protection issues. Multiplication of the model of cooperation between NGOs and companies	Increase of awareness through meetings, seminars, round tables with the participation of NGOs and local communities	Number of meetings	Lists of participants, photographs, reports, participant websites, feedback surveys, media publications and other documents	Every three months	6
		Number of participants in events organized by NGOs and Project participants			above 500
	Examples of experience multiplication	Number	Reports, publications and other documents	Every three months	2
Reproducibility of the public-private partnership model	Number of interested parties which have requested/received a copy of the handbook	number	Report, correspondence	Every 6 months to 3 years after the completion of the Project	30
	Number of environmental projects implemented as a result of model reproducibility	Number	Report, media publications, participant websites, correspondence, etc.	Every 6 months to 3 years after the completion of the Project	3

V. Schedule and milestones in the monitoring and assessment of the socio-economic impact

The monitoring of the socio-economic impact will be performed regularly in accordance with the above matrix until January 2027. Based on the results obtained, three reports will be prepared:

- Initial report, presenting the condition to 01.07.2023 based on historical data for 2021-2022;
- interim report, to 01.07.2025 – The purpose of the interim report is to present the progress achieved, identify deviations/problems from the target values of the parameters, outline corrective actions and a forecast for development;
- final report - to 31.12.2027. The final report on LIFE Wateroil Project will present the achieved results of its implementation with a forecast of the short-term and long-term impact on the socio-economic development of the region. The main findings and conclusions of the report on the socio-economic impact of the Project will be included in the so-called "Layman's Report".

VI. Basic regulatory and strategic documents

- Law on healthy and safe conditions of work – SG, issue 124 of 23.12.1997;
- Environment and Water Protection Act – SG, issue 91 of 25.09.2002;
- Complex Permit № 6-H2/2015 and its subsequent updates;
- Permit for greenhouse gas emissions № 38-H3/2019. and its subsequent updates;
- Resolution № 106-A3/2017 on the approval of an updated safety report;
- Ordinance № 5/11.05.1999 on the order, manner and periodicity of risk assessment;
- Ordinance № 7/23.09.1999 on the minimum requirements for healthy and safe conditions of work at workplaces and when using work equipment;
- Ordinance № 13/30.12.2003 on the protection of workers from risks related to exposure to chemical agents at work;
- Ordinance № 10/26.09.2003 on the protection of workers from risks related to exposure to carcinogens and mutagens at work;
- Ordinance № 3/25.01.2008 on the terms and conditions for carrying out the activities of occupational medicine services
- ISO 45001 Occupational health and safety management systems. Requirements with implementation guidelines.
- Plan for integrated development of Burgas Municipality 2021. – 2027.
- Sustainable Energy and Climate Strategy and Action Plan 2021-2030.
- ПрБ 1-02-514 - Regulations for reporting and analysis of work accidents and occupational diseases in LUKOIL Neftohim Burgas JSC

- ПБ-1-01-019 iss. 08 of LUKOIL Neftohim Burgas Methodology for health and safety risk assessment in LUKOIL Neftohim Burgas JSC
- Socio-economic analysis of the regions in the Republic of Bulgaria – stage 2 <https://www.eufunds.bg/bg/oprd/node/2816>
-