

CHAPTER 6

Monitoring

The term monitoring has become today an extremely broad sense, practice environmental designating all actions and measures undertaken to describe:

1. prevailing environmental conditions and state of the environment through the use of standardized terms of reference (STAS);
2. the occurrence, distribution and intensity of pollution;
3. biocenoses state - often by referring (or focus) on elements of flora and fauna (bio-indicator species);
4. situation parameters or attributes in a comparative manner;

In the context of condition assessment approaches environmental monitoring is a process that seeks to find answers addressed by stakeholders in the development of projects related to environmental parameters. The current paradigm of sustainable development involves the construction projects taking into account the three directions of support: social pillar (project answers a pressing social) economic pillar (project ensures economic viability that allows long-term support), environmental pillar (project implementation does not lead to compromising environmental factors). Most often, the projects retain a profound socio-economic substantiation and justification of these views is extremely solid. But not always take full account of environmental compliance, being most often for projects aimed at short-term profitability. Either profitability in the medium term and especially long-term, can be achieved only if the environmental costs are included in the investment project and corresponding damages are reduced or even avoided.

Such environmental monitoring should provide as many answers to questions with a high relevance for all actors involved in the project. Such a set of possible topics includes targets such as:

- What are the parameters of the environment that undergo changes as a result of project implementation?
- Which biodiversity indices (pre-post-project)?
- Which habitats are of particular value (economic, environmental, scientific)?
- What is the carrying capacity of habitats subjected to impact?
- What is the carrying capacity of the Habitat to take ecological task?
- What are the management measures to facilitate the takeover of the ecological burden of adjacent habitats?
- Is it taken satisfactorily by the eco-Habitat pressure in order to avert imminent ecological collapse?
- Are they functional from ecologically managed habitats (self-regulation)?
- What is the responsibility of the proponentului? or how to be rebuilt?
- What is the size (scientific, economic, and ecological) of area re-built? It is at least superpozabil with its original state?
- Are there conditions met in order to declare the success of the process of re-construction?

Knowing that monitoring of projects from the perspective of socio-economic and environmental factors (e.g., water, soil) falls the responsibility of specialized institutions that provide consistent regulation through separate administrative routes (e.g. Bazinale, Administrations, Agricultural etc. Directions), environmental monitoring

arrangements should be targeted at elements of the living (biodiversity) that retains a capacity for response of high-fidelity and objectivity (bioindicator species).

6.1. Bioindicator species

Bioindicator species status is awarded to those taxa what are recognized to be particularly tolerant or sensitive to certain forms of pollution. One species (or group of taxa) bioindicator is all the more valuable as it meets a large number from the list of attributes.

- Species (taxonomic group) has a receptivity and a sufficiently high reactivity towards disruptive factors;
- Monitoring and manipulation of the species (taxonomic group) is easy and does not require laborious techniques, complicated;
- Species (taxonomic group) has a sufficiently high ecological plasticity so as to occupy habitats, biomes or even living environments as varied;
- Species (taxonomic group) falls into a taxonomic system known, devoid of doubts of employment, which provides the facility to identify with accuracy the taxa;
- Species (taxonomic group) benefit from a natural history well known to permit the completion of certain correlations over biology;
- Species (taxonomic group) has a wide enough spread of taxonomic group, at least at the national level, thereby facilitating comparative studies;
- Species (taxonomic group) lends itself to statistical studies;
- Species (taxonomic group) presenting a relevant economic, cultural, social, etc. ensuring a high degree of openness and tolerance on the part of local communities that may be involved in voluntary measures;

Based on these requirements, qualify among species (taxonomic groups) with value bioindicator plant species (flora), lepidoptere species of invertebrate and vertebrate beetles, and birds. In certainly, depending on the specifics of the projects can be selected taxonomic groups with particular ecological requirements and with a more accurate response capacity.

In the framework of the project, the development of a project microhidroenergetic, înlată the relevance of the species macronevertebrate bentice, ichtyofauna (for monitoring ripariene areas) as well as plant species (for evaluation/validation of impact mitigation measures applied in the aducțiunii area: the degree of closeness of plant and vegetation of areas impacted, the proportion and the dynamics of invasive species from entering , etc.).

6.2. Monitoring plan

In order to remain relevant, a monitoring program will have to be conducted on the basis of a predetermined Plan of work agreed with the regulatory authorities in the field and to ensure the provision of a higher number of responses to questions of the actors involved in the project, assisting the further rule-making and decision-making, appropriate measures to comply.

Through the monitoring plan will ensure compliance with the rules and national and European legislation (International) force specific environmental line, providing a connection to international practice in the field, so it recommends in a whole series of guides, manuals and proposals of good practice in the field of energy production. In this respect the instructions and recommendations of the European Bank for reconstruction and development (EBRD), the International Finance Corporation (IFC), the International Union for Conservation of Nature (IUCN), the milestones on which steps to follow to assess, and criteria of measurement to ensure the quality of their achievements, bringing all the action to satisfy fully the principles precauționare that underlie environmental policies.

So besides the works devoted to, upon which were built with monitoring plans a wide acceptance, a relevance to projects in the field of alternative energy exploitation/valorizării have:

- *Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts: US Dep. Of Interior – Fish and Wildlife Service, Washington DC, 2003;*
- *Sustainable Energy – without the hot air: Version 3.5.2., David JC MacKay, UIT Cambridge, England, 2008;*
- *Management and monitoring Plan, EDP Renewables, April 2010;*
- *Formularul documentului de descriere a proiectului tip; Implementare în comun, versiunea 01, în vigoare începând cu 15.06.2006 – Comitetul de Supervizare a Proiectelor JI; UNDP-UNFCCC*
- *The form of the description of the project; Joint implementation, version 01, force Supervisory Committee-15.06.2006 projects JI; UNDP-UNFCCC*
- *Developments in hydrobiology – the ecological status of European rivers – Evaluation and intercalibration of assessment methods: Furse Eds., Springer Books*
- *Service Interim Guidance on Avoiding and Minimizing Wildlife Impacts: U.S. DEP. Of Interior Fish and Wildlife Service, Washington DC, 2003;*

The monitoring plan is proposed to be carried out on the following sections:

- a. Actions directed in order to comply with the legislative requirements of the national environmental protection act, the EU requirements harmonized;
- b. Procedures for environmental assessment, with a focus on elements of biodiversity, connected to the fundamentals of good international practices in this field;
- c. Actions required to remedy the effects of the impact (including history) on biodiversity and the effects of the residual impacts and residual phases of construction;
- d. Actions directed towards raising the perimeter for biodiversity, with favoring those elements that raise risks, from the stage of operation and correct possible deficiencies.

The monitoring plan is presented in the form of a synthetic matrix that comprises sets of actions expected to be carried out for the purpose of tracking categories of impact, evaluation and validation of measures of mitigation of impacts.

6.2.1. Definition of a monitoring Plan

In the present context it becomes obvious that the work associated with the anthropic environment leads to a modified, sometimes profound, environment. Thus becomes evident the need to espouse approaches for assessing, quantifying and monitoring of environmental parameters, what changes occur as a result of the completion of such projects, the approaches being contained within schemas, plans and monitoring systems.

Such measures shall ensure the development of sets of images as lifelike, the quality of the environment as a whole, or regarding certain factors or attributes of their components, at some point. Duplication of information obtained at distinct moments allows observation or evolutionary Dynamics shaping or trends.

Environmental monitoring is intended both to components of the living (flora, fauna, interspecific relations, biocenoze, etc.) and elements of biotope (abiotic elements). In order to remain relevant over time and superpozabilitatea information and data gathered in the course of the monitoring is established a monitoring protocol that contains the working methodology, forms-type (standardized) and computer system, i.e. the statistical interpretation of the apel, all in accordance with the specific nature and characteristics of the project.

As a general rule, monitoring protocol underlying the monitoring programme includes elements defining and detailing aspects of:

The establishment of the area to be monitored

At the level of the area where the project is to achieve the delineated perimeters, target: amprenta ecologică proiect directly affected, the area of influence of the project (perimeters which extends the indirect impact), etc. At the level of each such areas shall be established in accordance monitoring protocols for each phase of the project (construction, operation, decommissioning).

Setting waypoints for monitoring

In order to give a response as relevant in terms of size the impact associated to the project in the area of implementation and/or the environment, monitoring results and milestones need to be quantified and put into relationship (compared) with the blank spots, of which the impact level (categories of impact) associated with the project, are missing.

Comparison of the results obtained will lead to individual project impacts associated size and thus to the establishment of environmental responsibility with a great accuracy.

Establishing standard monitoring protocols

For providing the superposition of the information, shall be determined by the monitoring protocols to be used, specifying and detailing the methodology and applied techniques, forms-type (standardized) and computer system, i.e. the statistical interpretation of the apel, for each of the perimeters of being monitored.

Filling out standard forms (type) for monitoring

Forms used within the framework of the monitoring programmes represent an essential component in their base to collect the data to be loaded into database-information systems-data and statistically analyzed so that the conclusions to be drawn as targets. In addition, they must be easy to use in the field of information recorded by operators, then it can be as easily moved to database systems, so tagging and transcription errors are minimal.

Establishing the species to be monitoring

The species to be monitored must be chosen carefully, choosing from among the species of flora and fauna on those taxonomic groups what keeps a special relevance to the project, being able to give an adequate response to situations related to project development projected for each of the phases (construction, operation, decommissioning). These species will become so called "key species" what keeps a particular relevance in the context of the project. Among the key species and species can be covered with the bioindicatoare value, thus increasing the degree of relevance of information.

Establish a programme of work

The duration of the palicare actions for data collection in the field constitute a determining factor in terms of the amount of information collected. Thus, the establishment of fixed lengths of time allocated to the data collection in the field, at similar times and possibly the weather-climate conditions comparable, will lead to the creation of sets of data that maintains objectivity and relevance.

Storing information

In the present Informatics component has become one of great importance, database systems, facilitating the interpretation of statistical accuracy or allowing the development of predictive models making use of GIS technologies. That's why database systems to use must keep a higher fluidity, allowing you to embed some larger palettes as well as information used by a wider range of users (institutions with responsibilities in the field, academic environment, investors, local communities, civil society, etc.), so the approach to take in addition to the attribute of objectivity and transparency.

Preparation of reports

On the basis of the information collected for monitoring Reports are drawn up which will necessarily encompasses two distinct sections: one section for the presentation of raw data and a section dedicated to the interpretation of the results obtained (GIS modeling, statistical interpretation, etc.). Depending on the specifics of the project and the objectives of monitoring reports shall be developed with a certain frequency, preset (weekly/monthly/yearly), so that duplication of information contained within them to facilitate the environmental assessment process.

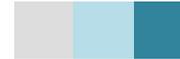
6.2.2. Proposing a Plan for monitoring BRUA project

Taking into account the elements project BRUA (the existence of a potential risk-see section 7.2.5; level of impact-see section 3.4.), it is considered of utmost relevance outlining a detailed Plan aimed at monitoring in particular elements of biodiversity.

To this end it was proposed a detailed Plan aimed at monitoring in particular elements of biodiversity. The proposal is presented in the form of tables no. 6 i., a time-scale on the implementation of the measures in the table no. 6. And a proposed Plan of synthetic management of biodiversity, in table no. 6. III.

Table no. 6. Detailed Programme Proposal for monitoring of biodiversity

No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
a. <i>Actions directed in order to comply with the legislative requirements of the national environmental, health and safety, harmonized at UE requirements and regulatory acts: STAGE of CONSTRUCTION</i>							
1.	Establishment of protocols form submissions and reporting	Development of a standardized system for monitoring and reporting.	Requirements contained in regulatory paperwork.	Expert body engaged	day 0 of the starting phase of construction	Number of agreed protocols, reporting stages.	
		To ensure transparency, objectivity in the interpretation of data, as well as superpozabilității.	The results will compare and interpret the situation by their spectra from a witness.				
2.	Fauna monitoring in construction stage.	Full consideration of the impact on fauna.	Requirements contained in regulatory paperwork.	Independent expert species of fauna.	Superimposed on the stages of construction.	Evaluation of the impact on the real land fauna.	
		Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	The results will compare and interpret the situation by their spectra from a witness.		Proposed 24 months.	A cross-check with the estimated impact. Identify the aspects that can be improved.	
							The development of protocols of observations.



No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
3.	Monitoring of species of flora and of dynamics and habitats in the construction stage (sequence of vegetation).	<p>Full consideration of the impact on flora.</p> <p>Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.</p>	<p>Requirements contained in regulatory paperwork.</p> <p>The results will compare and interpret the situation by their spectra from a witness.</p>	Independent expert species of fauna.	<p>Superimposed on the stages of construction.</p> <p>Proposed 24 months.</p>	<p>Making reports to the authorities, beneficiary and third-party entities.</p> <p>Evaluation of the impact on the real land fauna.</p> <p>A cross-check with the estimated impact.</p> <p>Identify the aspects that can be improved.</p> <p>The development of protocols of observations.</p> <p>Making reports to the authorities, beneficiary and third-party</p>	

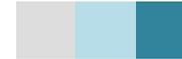
No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
4.	Invasive species monitoring and cenotice dynamics.	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Requirements contained in regulatory paperwork. The results will compare and interpret the situation by their spectra from a witness.	environmentalist expert	Superimposed on the stages of construction Proposed 24 months.	entities. A cross-check with the estimated impact. Identify the aspects that can be improved. The development of protocols of observations. Making reports to the authorities, beneficiary and third-party entities.	
<i>b. Procedures for environmental assessment, with a focus on elements of biodiversity, connected to the fundamentals of good international practices in the field.</i>							
OPERATING STAGE							
1.	Monitoring of terrestrial fauna / edafic.	Full consideration of the impact on the species of bioindicator fauna (Carabids; diurnal Lepidoptera). Coordination with existing information in	Good practices. Standards performance Guides and manuals.	2 zoology Experts	Operating stage. A minimum of 36 months, with potential extension in case it proves	A cross-check with the estimated impact. Identify the aspects that can be improved.	It will document the possible opportunity to achieve punctual projects of correction and ecological restoration.

No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
		order to establish compliance and relevance of impact mitigation measures proposed. A cross-check with the information from the monitoring reports by nationally/internationally.	The results will compare and interpret the situation in areas adjacent to the spectrums.			The development of protocols of observations. Making reports to the authorities, beneficiary and third-party entities.	
2.	Monitoring the species of bats.	Full consideration of the impact on the species of bioindicator fauna (Carabids; diurnal Lepidoptera). Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed. A cross-check with the information from the monitoring reports by	Good practices. Performance standards. Guides and manuals. The results will compare and interpret the situation of faunal species spectrums bats from the proximal areas.	zoology Expert	Operating stage. A minimum of 36 months, with potential extension in case it proves to be relevant.	A cross-check with the estimated impact. Identify the aspects that can be improved. The development of protocols of observations. Making reports to the authorities,	It will document the possible opportunity to achieve punctual projects of correction and ecological restoration.



No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
		nationally/internationally.				beneficiary and third-party entities.	
3.	Monitoring of species of birds.	<p>Full consideration of the impact on the species of bioindicatoare fauna (Carabids; diurnal Lepidoptera).</p> <p>Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.</p> <p>A cross-check with the information from the monitoring reports by nationally/internationally.</p>	<p>Good practices. Standards performance. Guides and manuals.</p> <p>The results will compare and interpret the situation of faunal species spectrums bats from the proximal areas.</p>	zoology Expert	<p>Operating stage.</p> <p>A minimum of 36 months, with potential extension in case it proves to be relevant.</p>	<p>A cross-check with the estimated impact.</p> <p>Identify the aspects that can be improved.</p> <p>The development of protocols of observations.</p> <p>Making reports to the authorities, beneficiary and third-party entities.</p>	It will document the possible opportunity to achieve punctual projects of correction and ecological restoration.
4.	Monitoring of species of flora and of dynamics and habitats at the stage of	<p>Full consideration of the impact on the species of bioindicatoare fauna (Carabids; diurnal Lepidoptera).</p>	<p>Good practices. Standards performance.</p>	botanist expert	<p>Operating stage.</p> <p>A minimum of 36 months,</p>	<p>Evaluation of the impact on the real ground flora.</p>	It will document the possible opportunity to achieve punctual projects of correction and ecological

No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
	operation (sequence of vegetation). Carrying capacity biogenesis as a result of the implementation of programmes of social responsibility (good neighbourhood).	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed. A cross-check with the information from the monitoring reports by nationally/internationally.	Guides and manuals.		with potential extension in case it proves to be relevant.	A cross-check with the estimated impact. Identify the aspects that can be improved. The development of protocols of observations. Making reports to the authorities, beneficiary and third-party entities.	restoration.
5.	Invasive species monitoring and cenotic dynamics.	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Good practices. Standards performance. Guides and manuals.	environmentalist expert	Operating stage. A minimum of 36 months, with potential extension in	Comparison with pre-project. Evaluation of the impact on the real ground flora. A cross-check with the	It will document the possible opportunity to achieve punctual projects of correction and ecological restoration.



No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
					case it proves to be relevant.	estimated impact. Identify the aspects that can be improved. The development of protocols of observations. Making reports to the authorities, beneficiary and third-party entities.	
6.	Monitoringul efectelor induse de câmpurile electromagnetice asociate traseelor conductei	Full consideration of the impact on the species of bioindicatoare fauna (Carabids; diurnal Lepidoptera). Coordination with existing information in order to establish	Good practices. Standards performance. Guides and manuals. The results will	environmentalist expert	Operating stage. A minimum of 36 months, with potential extension in case it proves to be relevant.	Comparison with pre-project. A cross-check with the estimated impact. Identify the aspects that can be improved.	It will document the possible opportunity to achieve punctual projects of correction and ecological restoration.

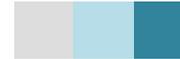


No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
		compliance and relevance of impact mitigation measures proposed. A cross-check with the information from the monitoring reports by nationally/internationally.	compare and interpret the situation of faunal species spectrums bats from the proximal areas.			The development of protocols of observations. Making reports to the authorities, beneficiary and third-party entities. Comparison with pre-project.	
<i>c. Actions necessary to remedy the effects of historical impact on biodiversity and the effects of the residual impacts and residual phases of construction.</i>							
1.	Brief assessment of the impact on flora by carrying out a study on the structure of an environmental assessment summary as having reporting component plants.	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Good practices. Standards performance. Guides and manuals. The results will compare and interpret the situation of faunal species spectrums bats from the proximal areas.	botanist expert	Precursory reception work.	A cross-check with the estimated impact. Making reports to the authorities, beneficiary and third-party entities. Comparison with pre-project.	The proposal, where appropriate remedial measures.

No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
2	Brief assessment of the impact on flora by carrying out a study on the structure of an environmental assessment summary as having reporting component plants.	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Requirements contained in regulatory paperwork. Good practices. Standards performance. Guides and manuals. The results will compare and interpret the situation of faunal species spectrums bats from the proximal areas.	zoology Expert	Precursory reception work.	A cross-check with the estimated impact. Making reports to the authorities, beneficiary and third-party entities. Comparison with pre-project.	The proposal, where appropriate remedial measures.
3.	Establish the necessary actions in order to extinguish the adverse effects	Completion of measures to reduce environmental impact.	Requirements contained in regulatory paperwork. Good practices. Standards performance	botanist expert	At the time of receipt of the work	On completion of the measures provided for	The proposal, where appropriate remedial measures.



No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
4.	on species of fauna and flora. Evaluation of the relevance of the measures applied to switching off adverse effects on flora and fauna.	Completion of measures to reduce environmental impact.	Guides and manuals. Good practices. Standards performance. Guides and manuals.	environmentalist expert	Annually for three years from the moment of putting into operation, on the basis of a standardized schema, making use of the distinct areas of the sample (at least 25 points).	Comparison with indices of biodiversity since pre-project.	In case will not be identified appropriate mitigation/compensation of negative effects, it will proceed to removing the causes, including up to stopping, relocation or decommissioning objectives.
<i>d. Actions aimed at raising the perimeter for biodiversity, with favoring those elements that raise risks, from the stage of operation.</i>							
1.	The calculation of the indices of biodiversity for the species of flora	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Good practices. Standards performance. Guides and manuals.	botanist expert	Annually for three years from the moment of putting into operation, on the basis of a standardized schema, making use of the distinct areas of the	Comparison with indices of biodiversity since pre-project	The proposal, where appropriate remedial measures



No. Crt.	Action	Risks/ environmental benefits	Reference Standard	Investment needs/Resources/Responsibility	Target date, deadlines	Performance indicators	Observations and comments
2.	The calculation of the indices of biodiversity for the species of fauna	Coordination with existing information in order to establish compliance and relevance of impact mitigation measures proposed.	Good practices. Standards performance. Guides and manuals.	zoology Expert	sample (at least 25 points). Annually for three years from the moment of putting into operation, on the basis of a standardized schema, making use of the distinct areas of the sample (at least 25 points).	Comparison with indices of biodiversity since pre-project	The proposal, where appropriate remedial measures
3.	Calculating the support capacity of the habitat.	A cross-check with the initial information to determine compliance and relevance of impact mitigation measures proposed.	Good practices. Standards performance. Guides and manuals.	environmentalist expert	Annually for three years from the moment of putting into operation, on the basis of a standardized schema, making use of the distinct areas of the	Comparison with indices of biodiversity since pre-project. Establishing relevance to the local community in terms of agricultural use.	The proposal, where appropriate remedial measures

No. Crt.	Action	Environmental risks/benefits	Standard of reference	Investment needs / Resources / Responsibility	Target date, deadlines	Performance indicators	Observations and comments
3.	Consolidation and systematization of traffic routes	To limit the impact on biodiversity	Good practices. Guides and manuals Compliance with regulatory laws	According To SF environmentalist expert	Overlaps with the stage of construction	The degree of compliance with the provisions of the technical documents. Number of temporary puddles formed. <i>Quantifying the presence of species Bombina bombina/ Bombina variegata</i>	Will be a cartograma of the systematic access. It will carry out a comparative balance sheet of the phases of the project (design, construction, implementation)
4.	Evaluation of the impact categories (and intensity) of residual	Comparison with the original diagnosis	Good practices Guides and manuals	environmentalist expert	Upon completion of the investment	The degree of compliance with the provisions of the technical documents	It will cycle through the array of Leopold for each sector of 10 km of the route
5.	Ecological restoration of temporary access roads	Maintaining biodiversity value indices	Good practices Guides and manuals	environmentalist expert	Upon completion of the investment	The degree of compliance with the provisions of the technical documents Comparison of road surfaces of pre-, post-implementation	It will achieve a balance of the situation compared to the pre-project status
6.	Ecological restoration of those organisations and	Installation site rehabilitation and encourage natural	Good practices Guides and manuals	environmentalist expert	Upon completion of the	The degree of compliance with the provisions of the	It will achieve a balance of the situation

No. Crt.	Action	Environmental risks/benefits	Standard of reference	Investment needs / Resources / Responsibility	Target date, deadlines	Performance indicators	Observations and comments
	schemes of pipe	succession of vegetation; restoring biostrata			investment	technical documents	compared to the pre-project status
7.	Organizing and strengthening access control	Menținerea valorii indicilor de biodiversitate	Good practices Guides and manuals	environmentalist expert	During construction and operation	Comparison of road surfaces of pre-, post-implementation The degree of compliance with the provisions of the technical documents Comparison of road surfaces of pre-, post-implementation	It will conclude a security protocol with the contractor and / or third company responsible for access control
8.	Making a register of accidents/incidente fauna	Calculating the direct impact on species and assess the effects on local populations	Good practices Guides and manuals	environmentalist expert	During construction and operation	Nivele de trafic înregistrate și grad de accesibilitate The degree of compliance with the provisions of technical documents Quantifying the number of accidents / incidents Making a technical report including mitigation solutions directly	Will develop a register of accidents / incidents with elements of biodiversity; completing register

No. Crt.	Action	Environmental risks/benefits	Standard of reference	Investment needs / Resources / Responsibility	Target date, deadlines	Performance indicators	Observations and comments
<i>a. Ecological reconstruction action</i>							
1.	Increase the capacity of the habitats for species non-risk	Maintaining biodiversity value indices Sustainable use of environmental resources by the local population	Good practices Guides and manuals	environmentalist expert	Upon completion of the investment	The degree of compliance with the provisions of the technical documents Comparison of road surfaces of pre-, post-implementation	Se va realiza pe baza calculului indicilor de biodiversitate
2.	Diversification of ecological niches	Maintaining biodiversity value indices	Good practices Guides and manuals	environmentalist expert	Upon completion of the investment	Productivity indicators The degree of compliance with the provisions of the technical documents Comparison of road surfaces of pre-, post-implementation Number of elements created microhabitat	t will conduct a comparative study based on indices of biodiversity in the pre-project that will compare the status of post-implementation

6.3. Proposal concerning environmental monitoring synthetic to BRUA

6.3.1. Monitoring during construction: 2016-2019

Given the dynamics of the project and its environmental monitoring extension goes through several stages as follows:

6.3.1.1. Pre-construction monitoring

In pre-construction phase, when the pichetării route and the preparation work BRUA liberation of the land, it will undertake an inspection of the perimeters to be subject to building works, comparing it with the situation described at the level of standard Sheets drawn up at the stage of preliminary studies (see annexes) to apply management prescriptions.

Any new situations arising due to the dynamics of bio-eco-cenotice, the emergence of species, etc., it will be approached in accordance with the Prescriptions of the proposed discharge Sheets drawn up at the level of each species in part (see annexes). Where a particular species of interest has not been treated conservatively (haven't been developed individualized discharge prescriptions, the proposed solutions will be adopted for the species (taxonomic or occupying the same ecological niche as appropriate.)

6.3.1.2. Monitoring during construction

During the construction of the main objectives (organisation of building sites, storage pipe) will perform the following analysis with a monthly frequency:

Pentru factorul de mediu apă:

- prelevarea și analiza unor probe de apă de la nivelul polderelor ce preiau apele pluviale de pe amplasamente, urmărindu-se următorii parametri: pH, Oxigen dizolvat, Produse petroliere și temperatură;

For environmental factor: water

- quarterly analysis of noise levels;

Maintaining the level of work will identify any areas with sensitive receptors, at the level of which will be carried out analyses of noise levels in stages of construction for maximum intensity. It will assess the adoption screening solutions, appropriate action will be taken or the programming of activities, so that any elements of discomfort to be removed.

Regular inspections will be carried out, without warning, aiming to comply with the measures proposed to reduce the impact.

For water environment factor

- any volumes used in the early stages of testing the tightness and resistance of pipeline sections, before the spill will be analyzed, aiming to the following parameters: pH, dissolved oxygen, temperature and oil products;

For environmental factor biodiversity

- the registration of incidents caused by interaction with BRUA fauna;
- documenting the dynamics elements according to translocate discharge prescriptions;

6.3.1.3. Post construction monitoring

In the next stage of reconstruction and application of organic reastaurare will track the following items compared with the situations found in pre-stage project:

Water environment factor

- the degree of restoration of habitats impacted at the time ripariene crossing;
- documentation of possible effects of erosive, crashes, etc.

Soil environment factor

- the level of recovery of the embattled working morphological (reset to its initial state);

Environmental factor biodiversity

- the degree of vegetal carpet;
- the extent to which the land has been rendered in natural/productive circuit;
- development and species dynamics, invasive ruderal, synanthrope, etc.

- to document the persistence of some adverse impacts (erosion, consolidation, etc.)

6.3.1.4. Monitoring at the stage of operation

Water environment factor

- analysis of physical-chemical parameters of water quality compliance with urmăridu-NTPA001 is NTPA002/(in the case of discharge into sewerage systems);

Air environmental factor

- will achieve annual analysis of the levels of noise and combustion gases.

6.3.1.5. Validation of measures of ecological restoration and the impact of extinction

It will document the dynamic elements of criterion (species and habitats) categories of biomes: agroecosystems, riparian forest, meadows, cliffs, anthropic environments. It will monitor the dynamics of invasive species.

A study will be made qualitatively and quantitatively compared, for each stage in the part, the key elements of biodiversity: flora, soil, Coleoptera, Lepidoptera, Chiroptera diurnal birds.

It will determine the carrying capacity of the Habitat on the route through expression in UVM BRUA.

The minimum frequency of monitoring for each sector (in) 5 km route BRUA:

- Winter (November-February) a cursory inventory. Goals: macrovertebrate fauna, bird species (sedentary/winter guests)/shelter Habitat niches;
- vernal period (March-April) an inventory with emphasis on species of flora, fauna, soil Coleoptera and Lepidoptera species to be diurnal to add comments on the dynamics of amphibians;
- summer period (June-September) 2 inventory sessions focusing on species of flora, fauna, soil, Coleoptera Chiroptera and diurnal lepidopteran species to be added to the observations on the dynamics of invasive species. It will carry out an assessment of the status of habitats, including those of the proximal, on a strip of 300 m (150 150 m part of the axis of the route realization BRUA);
- Autumn period (September-October) and an inventory with emphasis upon floristic species (productivity/support capacity of habitats), species of diurnal Lepidoptera and Coleoptera diversity.

The results of monitoring will be summarized and passed on in the form of an annual report to be submitted (DPA) with responsibilities in this area (NEPA/APM, ANAR-ABA, DS) and should be the basis for eventual reconsideration, updates or revisions of administrative regulations.

At the end of the 36 months on the basis of information provided by the results obtained in previous years, synthesized by the annual reports, in consultation with the authorities (NEPA/APM, ANAR-ABA, DS), will decide on the opportunity of continuing monitoring programme (possibly at the level of specific sectors) to establish on the basis of the results obtained, pursued further. It will be able to thus move to the validation of the results of previous monitoring.

The responsibility for monitoring the actions of environmental factors is for the beneficiary of the project.

A summary of the monitoring actions is shown in table no. 6. IV.

Table no.6.IV Synthesis monitoring actions

Environmental factor	Protocol	Frequency
Etapa pre-construcție		
Soil, water, biodiversity	Comparative analysis of the situation of the establishments on the basis of standard Sheets for each section of 5 km.	Before starting work
The construction phase		

Environmental factor	Protocol	Frequency
Water	Analysis: pH, dissolved oxygen, temperature and oil products Comparison with the NTPA	Quarterly
Air	Noise levels Comparison with STAS	Quarterly
Biodiversity	The registration of incidents caused by interaction with BRUA fauna; Documenting the dynamics elements according to translocate discharge prescriptions; Comparison with hints of local biodiversity.	Conform etapelor sezoniere
Post construction phase		
Water	The degree of restoration of habitats impacted at the time ripariene crossing; Documenting the possible effects of erosive, crashes, etc.	Quarterly
Soil	The level of recovery of the embattled working morphological (reset to its initial state);	Quarterly
Biodiversity	The degree of recovery of the plant. The degree to which the land has been rendered in natural/productive circuit; Ruderal species, development dynamics, invasive, fallow synanthrope, etc. Document the persistence of some adverse impacts (erosion, consolidation, etc.)	Quarterly
Operational phase		
Water	Compliance at NTPA001/NTPA002 Documenting the possible effects of erosive, crashes, etc.	Annual
Air	Noise level Level monitoring of emissions-gases	Annual