

Rules for the inventory and assessment of site resources for Green Infrastructure

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Introduction

As part of Task C.4. of the project 'Silesia. Blue Sky Restored', an inventory and preliminary assessment of problem sites was performed in 2022–2023. The areas were proposed by gminas for greening and development as public spaces. This work was carried out based on a method developed specifically for this purpose, including a quantified description of the area, criteria for its assessment, and a proposal for a further expert procedure for selecting the area for the implementation of a demonstrative investment. This document contains a full description of this method. Based on this method, the process of selecting areas for demonstrative investments is expected to be finalised by the end of 2023. This method may also prove useful for activities carried out outside the project 'Silesia. Blue Sky Restored'.

1. Purpose of the inventory and assessment of site resources for GI and potential benefits

A total of 104 areas were submitted by 60 gminas, representing all subregions of the voivodeship. The inventory and preliminary assessment had two objectives:

- to create a database of difficult (problem) areas suitable for greening, which are important for regional environmental policy, particularly for reducing the exposure of public space users to air pollution.
- to provide the information necessary for the appropriate selection of areas from four gminas (one in each subregion of the Silesian Voivodeship) for a demonstration investment in greenery. The desired effect of each investment is to reduce the impact of air pollution on users of public spaces.

The created database is intended for use not only in the project 'Silesia. Blue Sky Restored' but also for other activities by regional and local authorities, including those undertaken after the project's completion.

Note: It should be strongly emphasised that, as of mid-2023, the assessment of all areas included in the database is preliminary. It was carried out based on publicly available data and information, particularly Internet resources.

This assessment aimed to rationally limit the number of sites considered for the demonstrative investment.

For more than 30 sites, the assessment was deepened based on site visit results. In the second half of the year, during the selection process for demonstrative investment sites, the assessment of some sites will be re-verified and further deepened following discussions with a wider group of experts.

Beyond the scope of the project 'Silesia. Blue Sky Restored', the inventory and demonstration implementations will yield the following benefits:

- greater understanding of the challenges related to air quality in public spaces, as well as the opportunities and methods to address them;
- improved recognition – both in common parlance and in terms of indicators – of opportunities to enhance the situation for gmina residents regarding access to public green spaces;
- generation of information for use in, for example, the municipal Local Revitalisation Plan (LRP), environmental protection programme, and other operational programmes;
- generation of information shortening the path to applying for external funds (readily available material to be used at the appropriate moment);
- increasing the competence of the gmina's space managers regarding a cross-disciplinary (cross-sectoral) perspective on land use and municipal space management;
- obtaining specific information for use in the gmina's activities related to climate change adaptation;
- improved recognition of the local potential (resources) of areas for Green Infrastructure (GI);
- increased interest among residents in opportunities to participate in the gmina's spatial management, including green sites;

- increased interest among local businesses in providing better quality services in green public spaces;
- inter-municipal exchange of experiences and the creation of conditions for future joint GI projects;
- increased knowledge among regional authorities regarding potential GI projects that may be eligible for support due to their supra-local significance.

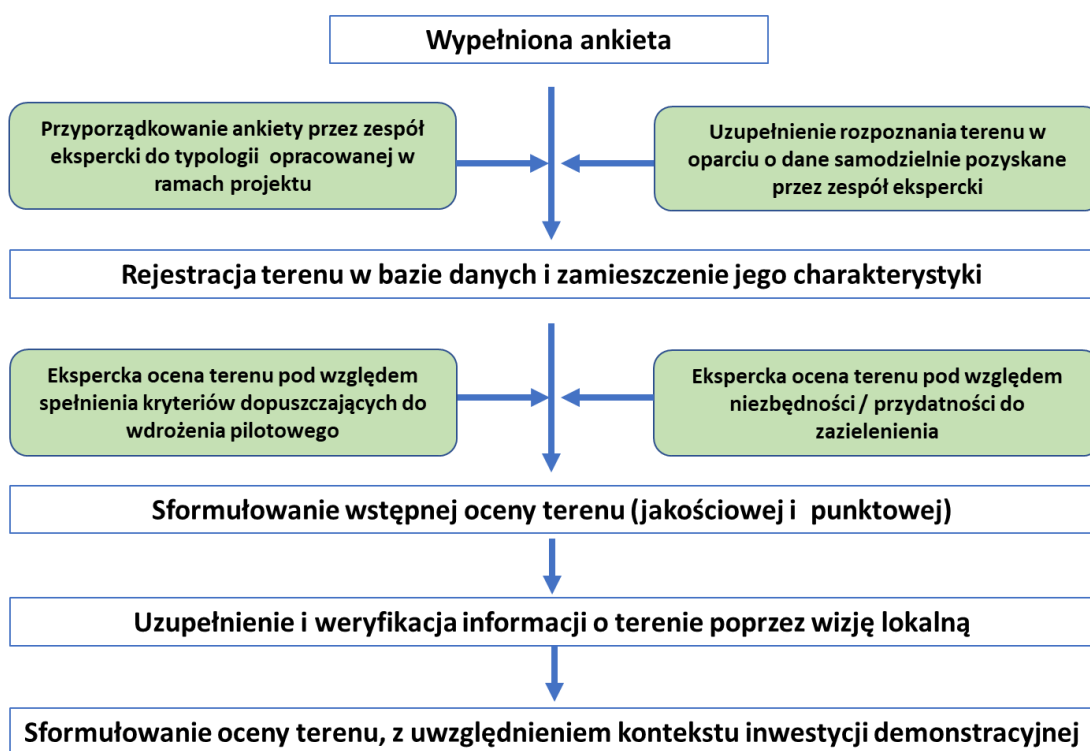
With a view to the further use of this database, it should be remembered that:

- the database, together with the preliminary assessment of the areas, will be periodically updated;
- whenever a decision is made regarding the implementation of projects, the areas under consideration will be subject to an in-depth expert assessment.

2. General outline of the inventory and assessment process for problem sites

The procedure for dealing with problem sites was the same in each case and began with a notification made by completing a questionnaire. The questionnaire was made available online to all gminas participating in the project 'Silesia. Blue Sky Restored' via a platform operated by the Voivodeship Centre for Geodetic and Cartographic Documentation in Katowice (WODGiK Katowice). The procedure for further processing of the submitted area was as follows (Fig. 1).

Fig. 1. Logical diagram of the analysis of the problem site submitted via the survey



All areas submitted by the gminas participating in the project were assessed in accordance with the presented logic. Due to the large number of submissions (104 areas from 61 gminas¹), a preliminary “desktop” selection was made (based on the questionnaires and maps sent in and data obtained from the Internet) of areas in the context of the demonstrative investments envisaged in the project, consisting in selecting, from among the areas registered in the database, 45 areas from gminas

¹ Central subregion – 61 areas from 36 gminas, Western subregion – 23 areas from 15 gminas, Northern subregion – 14 areas from 6 gminas, Southern subregion – 6 areas from 4 gminas.

representing all subregions, i.e. those that received a relatively high preliminary assessment in terms of expected benefits for air quality, as well as in broader categories of environmental and social benefits. Each of these areas is distinguished by sufficient suitability (lack of barriers) for the implementation of investments under the project 'Silesia. Blue Sky Restored', and the selected areas were also the object of this year's June and July site visits carried out with the participation of experts from the Silesian Botanical Garden (ŚOB), a representative of the project leader and representatives of the local government.

The results of the site visits will be taken into account in the process of selecting sites (one from each subregion) scheduled for the second half of 2023, while the remaining areas, i.e. those not covered by the site visits, will not be considered in the selection of demonstrative investment sites. This, however, does not diminish the value of these areas in the context of other activities outside the project 'Silesia. Blue Sky Restored'.

3. Considerations for identifying an area as a problem site in terms of air quality

An area problematic in terms of air quality is one that already functions as a public space or, based on planning documents and planned/proposed local government activities, is expected to acquire such a function in the near future (i.e. within a few years), and which simultaneously:

- is characterised by constant or recurring exceeded levels of particulate matter concentrations in the air;
- is affected by a permanent deficit of greenery, especially tall greenery (trees, shrubs) that can mitigate the problem of human exposure to excessive air pollution (see section 8.2);
- deserves to be enriched with greenery due to the expected social and environmental benefits (see section 8.3);
- is suitable for greening in a short time and for further maintenance at reasonable costs, due to its formal and legal status and local conditions (see section 8.4).

The considerations for concluding that an air quality problem exists in a given area are as follows:

- regional background pollution level (data from regional background measuring stations);
- urban background pollution level (data from urban background measuring stations);
- data from local monitoring stations;
- location in relation to municipal and residential emissions sources, fugitive emission sources, secondary emission sources, and road transport emission sources.

4. Typology of problem sites

The typology of areas included in the database is presented in detail in a document dated January 2023, entitled: 'Typology of problem sites in the Silesian Voivodeship, target types of green infrastructure areas and types of solutions'. Each area is described in terms of its:

- origin and current use
- geometry
- location.

The content of the application questionnaire is also the basis for specifying the target type of green site to be created.

According to the criteria of origin and current use, 10 types of problem sites were identified:

1. Public space in use, in the vicinity of a street with heavy motor vehicle traffic
2. Public space in use, not in the vicinity of a street with heavy motor vehicle traffic
- 3-10 Areas outside organised use, not functioning as public spaces:
3. Post-urbanised area
4. Post-transport area (former road, railway line)

5. Build-up land remaining after industrial or logistical activity (e.g. metallurgical, mining, transport base)
6. Surface excavation – unlevelled, unreclaimed
7. Former industrial/mining/municipal waste landfill
8. Abandoned areas of subsidence/sinkholes/post-mining floodplains
9. Post-agricultural wasteland
10. A strip of open, undeveloped urban/suburban space with natural soil, sodded, distant from the road network (e.g. vicinity of a watercourse/reservoir, former drainage ditch).

A given area (especially a small one) can be assigned to one of the above 10 types, or (especially a vast one) to several types at the same time.

According to the geometric criterion, the area belongs to one of three types:

- a/ Compact area larger than 0.2-0.3 ha
- b/ Linear area extending beyond the scale of a street accompanying a building quarter
- c/ Area not exceeding 0.2-0.3 ha.

According to the location criterion, the area belongs to one of three types:

- X – an area located within or on the edge of a densely built-up area
- Y – an area located among low-density buildings and structures or at their junction with extensive open space
- Z – an area located outside a built-up area, surrounded by open spaces.

An area's characteristics that determine its typological classification also strongly influence its:

- suitability for the creation of a specific type of green site
- suitability for the application of a specific set of nature-based solutions (NBS).

Five types of target green sites (green spaces) have been proposed:

- I: Greened, extensive public space for leisure/recreation
- II: Urban Green Acupuncture (UGA) – small green enclaves for human occupation, accompanying intensive development
- III: Greened ventilation corridor for the city
- IV: UGA – street canyon enriched with greenery
- V: Extensive green space that filters or absorbs pollution and CO₂, publicly accessible but without facilities for people to stay/move around.

Each area included in the database has been assigned one or more types of target green space.

The typology of areas is supplemented by a set of nature-based solutions (NBS) that are key to air quality. Recommendations for the application of a given NBS depend on the typological classification and the target type of green space; accordingly, each of the areas included in the database has been assigned several or a dozen or so recommended NBS.

Each type of site, each of the proposed types of target green spaces, and each of the proposed NBS appear at least once in the database. If in the future a proposal for a site that does not fit into the aforementioned typology is made, this will mean that the typology needs to be expanded.

5. Explanation of the contents of the application questionnaire on the problem site

The form of the application questionnaire is attached to this document. The scope of information and layout of the form have been designed to achieve three objectives:

- to clearly identify the location and boundaries of the site, its origins, current formal and legal status, and use
- to define investment plans for increasing greening and improving accessibility/comfort of use of the area as a public space
- not to burden respondents with requests to enter data/information about the area that can be obtained from publicly available sources.

6. Description of the database on problem sites and explanation of the rules for its use and updating

The database created as part of the project 'Silesia. Blue Sky Restored', which includes 104 records, contains descriptions of areas based on the content of the questionnaires, but expanded and reinterpreted based on:

- the typology of areas and the catalogue of solutions developed by the ŚOB Team at the initial stage of the project 'Silesia. Blue Sky Restored';
- the criteria for assessing areas developed by the ŚOB Team as part of the project 'Silesia. Blue Sky Restored', described in the next section.

The description of each area includes:

- location, surveying data and size;
- formal and legal status;
- origin and current use;
- classification of the area into a specific type based on its geometry and location in relation to buildings and structures;
- recommended type of target green site;
- assessment of the fulfilment of preconditions for including a given area in a greenery investment project with the contribution of public funds;
- quantitative (scoring according to specific criteria) and collective qualitative assessment of the expected benefits for air quality that may result from greening the area;
- quantitative (scoring according to specific criteria) and collective qualitative assessment of the overall expected environmental and social benefits that may result from greening the area;
- quantitative (scoring according to specific criteria) and collective qualitative assessment of circumstances facilitating and hindering the greening of the area;
- list of recommended nature-based solutions (NBS) that can bring particular benefits to air quality;
- elements of the area description taken from the application questionnaire;
- indication of other databases (e.g. OPI TPP) in which the area in question is included.

The database in question will be made publicly available on the Silesian ORSIP platform.

The contents of the database will be continuously updated in the coming years. There are several reasons why such updates will be necessary, e.g.:

- changes resulting from the implementation of demonstrative projects as part of the project 'Silesia. Blue Sky Restored';
- unforeseen changes in the status of certain previously submitted areas;
- new area submissions in connection with the implementation of a new, similar programme/project dedicated to green infrastructure, but with priorities extending beyond air quality issues;
- the need to adjust (extend) the scope of the NBS in connection with project priorities that go beyond air quality issues.

7. Explanation of the site assessment procedure using questionnaires, expert data and site visits (procedure diagram)

The site assessment procedure and detailed assessment criteria were developed to thoroughly identify potential opportunities, possible solutions, and any difficulties, barriers, and threats to the GI investment project intended for a given area. The qualitative and point-based assessment should therefore be interpreted as a recommendation (or lack thereof) for action in that area. Figure 2 presents a general procedure diagram.

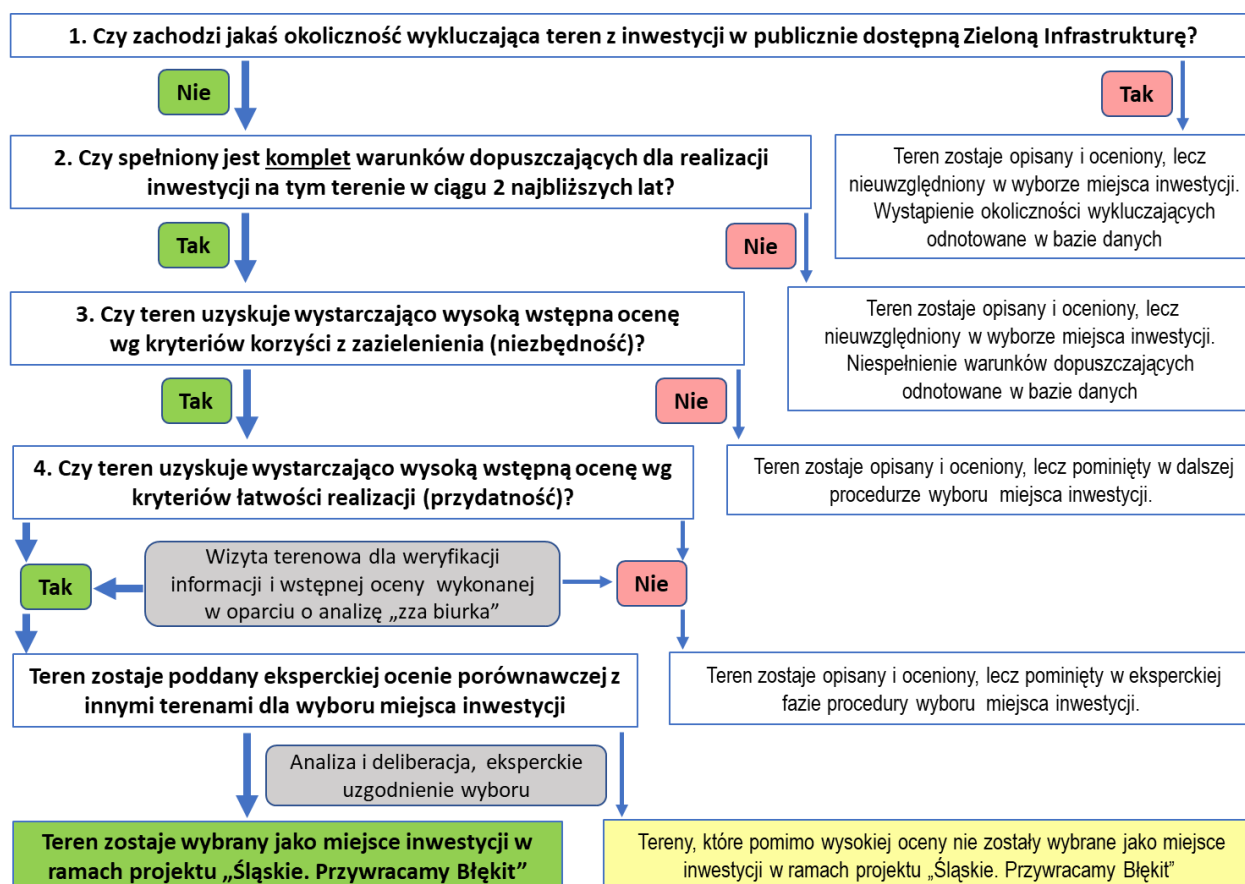
Exclusion circumstances, eligibility conditions, necessity and suitability criteria are described in the next subsection. The occurrence of any exclusion circumstance or the failure to meet even one eligibility condition means the undertaking cannot be implemented as part of the project 'Silesia. Blue Sky Restored'. However, this does not mean the scoring assessment will be abandoned or the area eliminated from the database. This is based on the simple assumption that information about areas collected in the database can also be used for other projects or programmes.

Fig. 2 General diagram of the site assessment process



The proposed assessment method can also provide useful information when it is necessary to choose from among areas that meet the eligibility criteria and are also characterised by a sufficiently high need (necessity) and suitability for greening. The logical path for selecting a demonstrative investment site in a given subregion of the Silesian Voivodeship is presented in Fig. 3.

Fig. 3. Logical path for selecting a demonstrative investment site from among the areas registered in the database



The procedure for selecting the sites for demonstrative investments in each of the four subregions will be finalised by the end of 2023. At the time of writing this document (July 2023), the scoring assessment of the areas is about to be completed. This assessment takes into account the results of the site visits.

8. Description of the criteria for assessing problem sites

8.1. Circumstances precluding investment implementation

Although a common set of assessment criteria applies to all site types, the point-based assessment for any given site must still consider the nuances related to its typological classification, its specific characteristics and surroundings, and the intended type of green space.

The following list details barriers, the presence of even one of which would render further consideration of an area unviable, at least for the next few years. None of these barriers have been identified in relation to the areas included in the database.

Barrier type	Barrier description
Barrier related to location or terrain shape	The social benefits of potential greening of the area will be insignificant due to the permanent difficulty of access and permanent physical limitations on use.
Legal barrier	Under Polish law, the area in question cannot be a publicly accessible space with tall greenery, so this function cannot be included in the local planning documents.

Technical barrier	The implementation of large-scale projects covering the area, which require the permanent removal of greenery, has been determined.
Ownership barrier	Potential greening will not bring direct social benefits, as the land will not be accessible to the public due to ownership/possession considerations.

8.2 Conditions necessary for project implementation

To be considered for implementation under the project 'Silesia. Blue Sky Restored', an area must be free of any excluding circumstances and also meet all the necessary conditions listed below. Verification of these conditions requires a combination of desk-based analysis and on-site fieldwork, particularly to confirm a deficit of suitable greenery, and to assess environmental safety and potential social or infrastructural conflicts.

Condition type	Condition description
Deficit of existing greenery	There is/will be a shortage of publicly accessible green spaces of adequate quality in the area and its immediate surroundings to mitigate the problem of human exposure to air pollution.
Legal status of the area	The legal status of the area is clear and the path to agreements/permits is known, enabling the pilot investment to be completed within 2 years.
Safety of land use	During the time allocated for the implementation of the pilot investment, it is feasible to develop the green site in such a way that safety requirements, including environmental requirements for public spaces, are met.
Compliance with planning documents	The pilot investment can be implemented without the need to initiate a procedure to amend the provisions of the city's/gmina's planning documents or programmes/projects concerning this area.
Public acceptance	There is no potentially significant risk of conflict with local stakeholders in connection with the possible greening of the area.
Infrastructure compatibility	There are no conflicts with existing or planned infrastructure that cannot be resolved within the timeframe of the pilot investment.
Compatibility with other projects	No projects are planned which, due to temporary occupation of the area, could prevent the demonstrative implementation within 2 years or maintenance of its effects during the project's lifetime.

8.3 Criteria for assessing the necessity of greening an area

Given the specific nature of the project 'Silesia. Blue Sky Restored', particular emphasis is placed on the 7 criteria for assessing benefits to air quality in public spaces. In the assessment of a specific area, this group of criteria is applied twice: first to determine the direct benefits for air quality, and subsequently as one component among several environmental, social, and economic benefits. The following list comprises a total of 17 specific criteria for assessing the overall benefits of greening an area.

Group of benefits	Assessed benefits (2 – strong; 1 – moderate; 0 – none or insignificant)
Benefit for air quality in public space	Anticipated effect in the form of reduced exposure of users of public spaces thanks to the creation of a barrier isolating/dispersing air pollution by particulate matter from road transport

Group of benefits	Assessed benefits (2 – strong; 1 – moderate; 0 – none or insignificant)
	Anticipated effect in the form of reduced exposure of users of public spaces thanks to the creation of a barrier isolating/dispersing air pollution by particulate matter from domestic and municipal sources
	Anticipated effect in the form of significant absorption of air pollution, including that originating from the urban/regional background, thanks to the vastness of the planned green zone
	Air quality issues are particularly acute in the immediate vicinity (background), and greening the area will significantly reduce exposure for people using public spaces
	Reduced exposure to air pollution from secondary emissions or rising soil particles, which is currently a significant problem
	Due to the size and location of the area, greening will significantly increase the transmission of cleaner air between neighbouring built-up areas.
	Anticipated reduction in local car travel thanks to greening of the area – convenient access by public transport, bicycle or on foot (also applies to linear areas)
Benefit for social integration	Mitigation of the shortage of space for leisure activities or space for building good neighbourly relations
	Creation/restoration of a positive identity for a place and its surroundings
	Enhanced visual appeal of a place
Benefit for spatial cohesion	Enhanced functional coherence across a network of different types of public spaces
	Increased number of residents with access to public green spaces within a 4-minute walk from their place of residence
	Strengthened network (grid) of green infrastructure in the city/gmina by increasing its functional continuity with existing or planned (under applicable planning or operational documents) blue-green spaces
Benefit for climate change adaptation and environmental safety	Improved rainwater management (local management/infiltration into the ground/local retention)
	Reduced water/soil contamination from substances historically deposited in the ground
	Reduced exposure of users of public spaces to the urban heat island effect or excessive insolation in open spaces
Benefit for the circular economy	Restoration of urban/municipal wasteland for use as public space

The assessment of benefits for any given criterion presupposes that the most appropriate project solutions will be adopted and flawlessly implemented. For instance, if it is anticipated that a significant benefit will be achieved in the form of a considerable reduction in the exposure of users of public spaces to the impact of air pollution by particulate matter from road transport, this means that:

- significant concentrations of pollution by particulate matter from road transport are present in the area;
- and that:
- the optimal solution for the specific area will be successfully implemented;
 - for example, a correctly positioned, complex barrier comprising a tall, dense hedge and a row of trees with appropriately shaped crowns (a combination of NBS No. 14 and NBS No. 9).
- As stated above, in the project 'Silesia. Blue Sky Restored', we attribute the greatest importance in terms of necessity to the benefits for air quality.

However, if we consider the same area database in connection with other programmes/projects (e.g. revitalisation measures, or measures aimed at the general improvement of the accessibility/continuity of the greenery system, or the integration of greenery management with rainwater management projects (e.g. revitalisation measures, or measures aimed at generally improving the accessibility/continuity of the greenery system, or at integrating greenery management with rainwater management, or at reducing the nuisance of the heat island phenomenon), other benefits may become more important, e.g. those related to social and/or spatial cohesion. Consequently, the scope of the proposed NBS may also differ, adapted to the specific nature of a given programme or project.

8.4 Criteria for assessing the SUITABILITY of an area for greening (ease of implementation and subsequent maintenance)

The characteristics of an area, its surroundings and the interactions between the area and its surroundings mean that circumstances may coexist that both facilitate and hinder the implementation of greenery investments. In order to ensure transparency of the assessment rules, a decision was made to create two separate lists: one presenting circumstances hindering the implementation of the investment and one presenting circumstances facilitating it. The conditions for project implementation are assessed collectively using 10 detailed criteria.

Unfavourable conditions (circumstances hindering the implementation of greenery investments):

Group of conditions	Assessed impact of conditions hindering the implementation of the investment or the maintenance of its effects: (0 – high; 1 – moderate; 2 – none or insignificant)
Technical conditions	Difficulties due to the specific nature of the site, increasing the labour intensity and cost of maintaining the effects of the pilot investment, ongoing maintenance, repairs and renovations
	Anticipated difficult/time-consuming construction, environmental or monument conservation approvals
	Costly or time-consuming preparatory/adaptation work prior to the introduction of greenery (e.g. involving the necessary changes to the terrain, disposal of deposited pollutants, removal or adaptation of old infrastructure, etc.)
	Terrain conditions resulting in high costs/technical difficulties in removing accessibility barriers for elderly people/people with children/people with disabilities
Spatial connections	Anticipated restrictions on the use of the area or restrictions on the comfort of stay resulting from incompatible surrounding areas (shopping centres, industry, logistics, administration, infrastructure corridors and wasteland)

Favourable conditions (circumstances facilitating the implementation of greenery investments):

Group of conditions	Assessed impact of conditions facilitating the implementation of the investment or the maintenance of its effects: (2 – high; 1 – moderate; 0 – none or insignificant)
Technical conditions	Complementarity with other projects planned/implemented in this area – greenery as added value

	The project will be 'off-the-shelf' or 'ready-made': desirable elements include, for example, a ready-made concept for land development with greenery, a feasibility study, and technical designs
	Assessment of the area in terms of environmental hazards, cultural/natural values, as well as linear and volumetric infrastructure ²
Spatial connections	Documented efforts to meet the expectations of the local community or confirmed acceptance by the community ³
	Anticipated creation of functional/spatial links with nearby compatible facilities (e.g. residential, recreational, sports, cultural and educational centres).

The project 'Silesia. Blue Sky Restored' has gathered information on areas that deserve greening but may not be straightforward to develop as public green spaces. Assessing a site for its suitability helps avoid potential pitfalls arising from unrecognised or underestimated implementation difficulties. However, the criteria of necessity and suitability should not be treated as equivalent. The necessity of the project should be considered the paramount criterion, provided the suitability assessment confirms it can be implemented effectively at a reasonable cost and within an acceptable timeframe. Conversely, selecting a site with a particularly high suitability rating but which offers only moderate benefits would be a 'safe' but suboptimal choice.

9 Description of sources of data on problem sites and methods used

A desktop analysis was conducted for each area, utilising all publicly available digital sources. Information on each of the 104 submitted areas was collected prior to the analysis and supplemented as new questions and concerns emerged. The approach to using this information is illustrated in the two tables below.

The same information sources used to identify barriers and eligibility conditions were also employed in the point-based assessment of each area's necessity and suitability for greening. These sources proved sufficient for the preliminary assessment, which aimed to select areas for field visits. For an in-depth analysis and to verify the scoring, site visits were supplemented with interviews with delegated officials (often eco-advisers). At this stage, environmental monitoring data was also used, including in particular air monitoring – both from the national system and local systems – as well as, where necessary, demographic data, information about the area available on social media, traffic intensity data, and data contained in detailed local nature assessments.

An in-depth analysis, based on the findings of the site visits, was carried out for 45 areas in 25 gminas, and the relevant information for each is available in the database. From among these areas, demonstrative implementation sites will be selected as part of the project 'Silesia. Blue Sky Restored'.

² Full assessment, no need for expert opinions: 2 points; additional assessment required, not requiring the involvement of external experts – 1 point; expert assessment of the site's problems required – 0 points

³ especially if the area is already being explored, people are already trying to green it in an unorganised manner and/or use it for recreational purposes

Sources of data on exclusion circumstances

Exclusion circumstance	National/regional reports	Local geographical information system	Study of conditions	Local plans	Investments based on special purpose acts, e.g. road/railway	Gmina survey	Site visit	Other data sources (specify)	Comments on prospective desktop analysis
Barrier related to location or terrain shape – The social benefits of potential greening of the area will be insignificant due to the permanent difficulty of access and permanent physical limitations on use.	yes	yes	yes	yes	Check on government websites (surrounding area)	Yes	When in doubt	Revitalisation programmes	Qualitative assessment by the SIBG team based on its own analysis of data from various sources
Legal barrier – Under Polish law, the area in question cannot be a publicly accessible space with tall greenery, so this function cannot be included in the local planning documents.	yes	yes	yes	yes	no	When in doubt	no	Documents/programmes concerning special infrastructure	Assessment based on whether a determination is found (whether there is a barrier)
Technical barrier – The implementation of large-scale projects covering the area, which require the permanent removal of greenery, has been determined.	no	no	yes	yes	Check on government websites	When in doubt	no	Documents/programmes concerning special infrastructure	Assessment based on whether a determination is found (whether there is a barrier)
Ownership barrier – Potential greening will not bring a direct social benefit, as the land will not be accessible to the public due to	yes	yes	no	no	no	When in doubt	no	Consultation with the area holder	Qualitative assessment by the SIBG team based on its own

ownership/possession considerations.									analysis of case studies
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Sources of data on fulfilment/non-fulfilment of necessary conditions – extension beyond the scope of the application questionnaire

Necessary conditions	National/regional geoportals	Local geographical information system	Study of conditions and directions for land	Local plans	Investments based on special purpose acts, e.g. road/railway	Gmina survey	Site visit	Other data sources (specify)	Comments on prospective desktop analysis
There is/will be a shortage of publicly accessible green spaces of adequate quality in the area and its immediate surroundings	yes	yes	yes	yes	Check on government websites (surrounding area)	When in doubt	When in doubt	no	Qualitative assessment by the SIBG team based on its own analysis of data from various sources
The legal status of the area is clear and the path to agreements/permits is known, enabling the pilot investment to be completed within 2 years.	yes	yes	yes	yes	Check on government websites (surrounding area)	Yes – regarding the approval path	no	no	Conclusion reached by the SIBG team – determinations in light of planning/legal documents
During the time allocated for the implementation of the pilot investment, it is feasible to develop	yes	yes	yes	yes	no	yes	no	Existing expert opinions concerning	Qualitative assessment by the SIBG team based on its own analysis of

Necessary conditions	National/regional geoportals	Local geographical information system	Study of conditions and directions for land	Local plans	Investments based on special purpose acts, e.g. road/railway	Gmina survey	Site visit	Other data sources (specify)	Comments on prospective desktop analysis
the green site in such a way that safety requirements, including environmental requirements for public spaces, are met ⁴ .								the area in question	data from various sources
The pilot investment can be implemented without the need to initiate a procedure to amend the provisions of the city's/gmina's planning documents or programmes/projects concerning this area.	yes	yes	yes	yes	no	no	no	no	Conclusion reached by the SIBG team – determinations in light of planning/legal documents
There is no potentially significant risk of conflict with local stakeholders	yes	yes	yes	yes	no	yes	yes	Findings of existing surveys, published information on conflicts	Qualitative assessment by the SIBG team based on its own analysis of data from various sources
There are no conflicts with existing or planned infrastructure that	yes	yes	yes	yes	Check on government	no	no	Planned infrastructure	Conclusion reached by the SIBG team –

⁴ e.g. soil stability, no significant secondary emissions of pollutants from the area after greening, no collisions with motor traffic, possibility of evacuation in case of emergency, etc.

Necessary conditions	National/regional geoportals	Local geographical information system	Study of conditions and directions for land	Local plans	Investments based on special purpose acts, e.g. road/railway	Gmina survey	Site visit	Other data sources (specify)	Comments on prospective desktop analysis
cannot be resolved within the timeframe of the pilot investment.					websites (surrounding area)			renovations/modernisations – information from the holders	determinations in light of planning/legal documents and consultations with infrastructure holders
No projects are planned which, due to temporary occupation of the area, could prevent the pilot investment within 2 years or maintenance of its effects during the project's lifetime.	no	no	no	yes	Check on government websites (surrounding area)	yes	no	Planned infrastructure renovations/modernisations – information from the holders	Conclusion reached by the SIBG team – determinations in light of planning/legal documents and consultations with infrastructure holders

10 Description of the proposed expert procedure for selecting investment sites, including comparative assessment (criteria weights, use of the McKinsey matrix)

Upon commencing work, the expert team must critically assess the quality and completeness of the data or processed information regarding the sites admitted to this stage of the procedure. After verifying sources and evaluating the available information, any missing documents should be obtained and the analysis deepened, if necessary.

The details of the site assessment previously made via desktop analysis, alongside the results of site visits, should not be approached uncritically; the scoring must be updated if necessary. The method for reaching a consensus on the assessment of a specific site is a matter for the expert team to decide.

For the purposes of the site selection procedure, rankings can be established according to the scores. However, it must be remembered that:

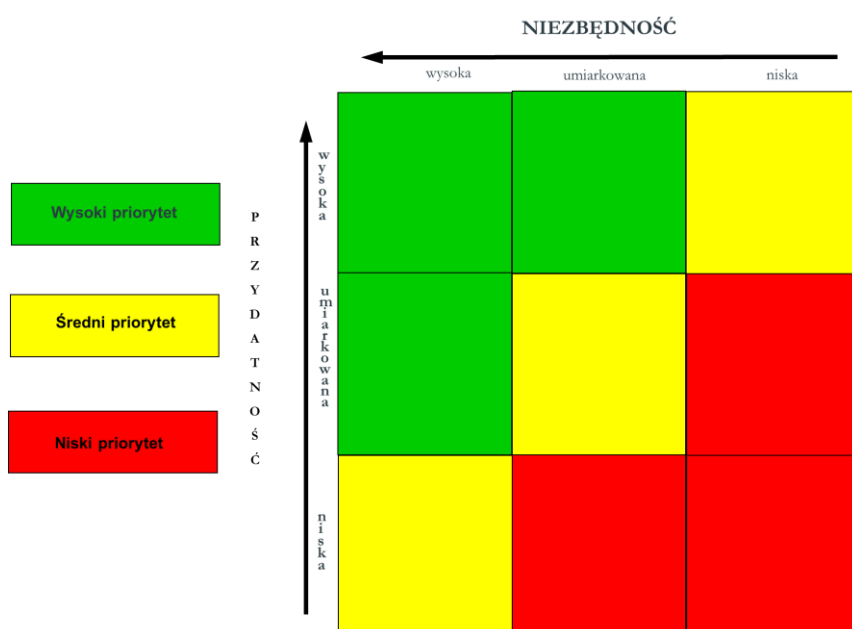
- the scoring is merely an aid in deciding which site to choose;
- simply aggregating the raw scores according to the criteria list can be a serious mistake. It is highly advisable to differentiate the weighting of criteria based on the specific nature and objectives of the project. For example, in the case of the 'Silesia. Blue Sky Restored' project, which is dedicated to improving air quality, particular importance should be attached to detailed criteria assessing the benefits of greening for air quality.
- the scoring system is discretionary to a certain extent, as the assignment of a particular score remains a matter of the experts' knowledge and sense of responsibility.

As evidenced by the above reservations, the expert team's role extends far beyond agreeing upon the assessment of individual sites. Within the scoring analysis, it is also extremely important to agree on the weights assigned to the individual assessment criteria.

To reduce the risk of making an incorrect choice from among several (or a dozen or so) sites, utilising the multi-criteria analysis method with the McKinsey matrix is worthwhile. However, it must be remembered that the procedure described below is intended to assist in reaching an expert consensus, not to replace it.

Each potential location for the demonstrative implementation is reflected by a score – represented as a point in the matrix – in the green, yellow, or red field. Assignment to the green field signifies a strong position on the candidate list for demonstrative implementation, whereas assignment to the red field should mean definitive rejection of the site.

Fig. 4. Selection of a demonstrative implementation site using the McKinsey matrix.



The threshold values may be set arbitrarily, resulting from the accepted needs or assumptions of the analysis. The threshold values for 'necessity' and 'usefulness' do not have to be identical. On the contrary, given the earlier

reservation that the assessment of necessity is, to some extent, superior to that of usefulness, it should be presumed that the threshold values for priorities according to necessity will be higher than those for priorities according to usefulness. Experts must strive to agree on which of the matrix's nine fields a given area should be placed.

The figures used to position sites on the McKinsey matrix must be based on a thoroughly considered and agreed-upon scoring system, structured according to necessity and usefulness criteria and accounting for the agreed weights. The method for preparing data for three hypothetical areas (A, B, C) is presented in detail in the two tables below.

Necessity. Maximum score: 60

The weights for the criteria in the air quality benefits group should add up to 15.

The weights in the rest of the table should add up to 15.

Group of benefits	weight	Assessed benefits (2 – strong; 1 – moderate; 0 – none or insignificant)	Individual score (0: 1: 2) x weight					
			Site A		Site B		Site C	
			score	score x weight	score	score x weight	score	score x weight
Benefit for air quality in public space (total weights: 15)		Anticipated effect in the form of reduced exposure of users of public spaces thanks to the creation of a barrier isolating/dispersing air pollution by particulate matter from road transport						
		Anticipated effect in the form of reduced exposure of users of public spaces thanks to the creation of a barrier isolating/dispersing air pollution by particulate matter from domestic and municipal sources						
		Anticipated effect in the form of significant absorption of air pollution, including that originating from the urban/regional background, thanks to the vastness of the planned green zone						
		Air quality issues are particularly acute in the immediate vicinity (background), and greening the area will significantly reduce exposure for people using public spaces						
		Reduced exposure to air pollution from secondary emissions or rising soil particles, which is currently a significant problem						
		Due to the size and location of the area, greening will significantly increase the transmission of cleaner air between neighbouring built-up areas.						
		Anticipated reduction in local car travel thanks to greening of the area – convenient access by public transport,						

Group of benefits	weight	Assessed benefits (2 – strong; 1 – moderate; 0 – none or insignificant)	Individual score (0: 1: 2) x weight					
			Site A		Site B		Site C	
			score	score x weight	score	score x weight	score	score x weight
		bicycle or on foot (also applies to linear areas)						
Benefit for social integration		Mitigation of the shortage of space for leisure activities or space for building good neighbourly relations						
		Creation/restoration of a positive identity for a place and its surroundings						
		Enhanced visual appeal of a place						
Benefit for spatial cohesion		Enhanced functional coherence across a network of different types of public spaces						
		Increased number of residents with access to public green spaces within a 4-minute walk from their place of residence						
		Strengthened network (grid) of green infrastructure in the city/gmina by increasing its functional continuity with existing or planned (under applicable planning or operational documents) blue-green spaces						
Benefit for climate change adaptation and environmental safety		Improved rainwater management (local management/infiltration into the ground/local retention)						
		Reduced water/soil contamination from substances historically deposited in the ground						
		Reduced exposure of users of public spaces to the urban heat island effect or excessive insolation in open spaces						
Benefit for the circular economy		Restoration of urban/municipal wasteland for use as public space						
Total weights: 15 in the air quality benefits criteria group, 15 in the rest of the table, 30 in total		Total (score x weight) for individual sites	Site A:		Site B:		Site C:	

Individual score for a given benefit: 2 – strong benefit; 1 – moderate benefit; 0 – no benefit or insignificant benefit.

The decision on the weighting of individual benefits is for the expert group to make. The specific characteristics (social, environmental and spatial) of a given subregion of the voivodeship should be taken into account.

A total weight of 30 was adopted for purely technical (calculation) reasons, i.e. to make the assessment as easy as possible.

Total score for a given site: $\sum$ (individual benefit weight x individual benefit score)

Maximum total score: 34 (total score for individual benefits), 60 (after considering weights)

Usefulness. Maximum score: 60

The weights for the criteria – favourable and unfavourable conditions – should add up to 30.

Group of conditions	Factor weight	Factor type	Favourable/unfavourable	Individual score (0: 1: 2) x weight					
				Site A		Site B		Site C	
				score	score x weight	score	score x weight	score	score x weight
Technical conditions		Difficulties due to the specific nature of the site, increasing the labour intensity and cost of maintaining the effects of the pilot investment, ongoing maintenance, repairs and renovations	unfavourable						
		Anticipated difficult/time-consuming construction, environmental or monument conservation approvals	unfavourable						
		Costly or time-consuming preparatory/adaptation work prior to the introduction of greenery (e.g. involving the necessary changes to the terrain, disposal of deposited pollutants, removal or adaptation of old infrastructure, etc.)	unfavourable						
		Terrain conditions resulting in high costs/technical difficulties in removing accessibility barriers for elderly people/people with children/people with disabilities	unfavourable						
Spatial connections		Anticipated restrictions on the use of the area or restrictions on the comfort of stay resulting from incompatible surrounding areas (shopping centres, industry, logistics, administration, infrastructure corridors and wasteland)	unfavourable						
Technical conditions		Complementarity with other projects planned/implemented in this area – greenery as added value	favourable						

Group of conditions	Factor weight	Factor type	Favourable/unfavourable	Individual score (0: 1: 2) x weight					
				Site A		Site B		Site C	
				score	score x weight	score	score x weight	score	score x weight
		The project will be 'off-the-shelf' or 'ready-made': desirable elements include, for example, a ready-made concept for land development with greenery, a feasibility study, and technical designs	favourable						
		Assessment of the area in terms of environmental hazards, cultural/natural values, as well as linear and volumetric infrastructure	favourable						
Spatial connections		Documented efforts to meet the expectations of the local community or confirmed acceptance by the community	favourable						
		Anticipated creation of functional/spatial links with nearby compatible facilities (e.g. residential, recreational, sports, cultural and educational centres).	favourable						
Total weights: 30		Total (score x weight) for individual sites		Site A:		Site B:		Site C:	

Individual score for the unfavourable factor: 2 – not present or its impact on the objectives is insignificant, 1 – moderate impact, 0 – strong impact

Individual score for the favourable factor: 2 – strong impact on the objectives, 1 – moderate impact, 0 – no impact or insignificant impact

The decision on the weighting of individual factors is for the expert group to make. The specific characteristics (social, environmental and spatial) of a given subregion of the voivodeship should be taken into account.

A total weight of 30 was adopted for purely technical (calculation) reasons, i.e. to make the assessment as easy as possible.

Total score for a given site: $\sum$ (individual factor weight x individual factor score)

Maximum total score: 20 (total score for individual factors), 60 (after considering weights)

In practice, it is rare for all relevant data available to experts concerning the analysed area and its surroundings to be complete, fully up to date and processed into information that is understandable to non-experts. Therefore, minor or major doubts as to the validity of the details of the site assessment are inevitable. Any identified gaps in data and information should be described in the documentation of the expert team's work. This will make it easier to expand or verify the analysis in the future. Furthermore, if necessary, it will be easier to present additional arguments justifying the scoring of the sites and the selection of demonstrative sites.

11 Annexes

11.1 Application questionnaire template

'Silesia. Blue Sky Restored' – Survey on sites to be greened (task C.4 of the project)

Date of completing the form:

first completion – date	Supplementation/modification – date	Supplementation/modification – date

Gmina/City	Contact phone*
Site identifier: TERYT	Surveying section and numbers of registered plots

Proper name of the site (e.g. common name) or a brief description to define the site

Site address:

Locality	Gmina	Powiat	Postal code	street, no.

Attached map: outline of the site boundaries (please tick yes/no in the column on the right)

Do the boundaries of the site fully match the boundaries of the registered plots?	YES/NO
Is an SHP file showing the site coverage attached to the description?	YES/NO
Is a raster outline of the site, including the coordinates of the extreme points, attached to the description?	YES/NO

Note: The attachment is only necessary if the boundaries of the site do not fully match the boundaries of the registered plots.

The most desirable form of attachment is vector format as an SHP or a DXF file.

If it is not possible to provide such a file, please send:

- a raster file (topographic map at a scale of 1:10,000 or a base map with a cadastral map overlay showing the boundaries of the site), and
- coordinates for the points of the site furthest in the N, E, S, W directions (along with the definition of the coordinate system).

Please send compressed attachments (*.zip) to: l.trzaski@sibg.org.pl

Site ownership structure:

Form of ownership	Percentage share of site area or registered plot numbers
state treasury	

local government unit (at gmina, powiat or voivodeship level)	
central or local government legal persons	
other legal persons	
natural persons	
Name of the institution controlling the site and form of control (perpetual usufruct, permanent administration, lease, loan for use, etc.)	

Is the legal status of the site permanently regulated (please select one answer)?

Yes	No	The legal status is problematic (briefly describe the problem)

Current site use status

Use status	% of total site area or registered plot numbers
The site already functions as a public space, and future greening is expected to improve air quality	
The site does not function as a public space, and its future greening is intended to create such a function	

Type of site according to its origin and current use (multiple types can be indicated)

Site type	% of total site area or registered plot numbers
urban public space adjacent to a street with heavy motor vehicle traffic (supra-local traffic)	
urban public space adjacent to local roads (low motor vehicle traffic level)	
a strip of undeveloped urban/suburban space away from the road network (e.g. vicinity of a watercourse/reservoir, former drainage ditch)	
post-mining, post-industrial, post-transport, post-urbanised wasteland	
surface excavation – unlevelled, unreclaimed	
former industrial/mining/municipal landfill	
devastated, unused site affected by subsidence/sinkholes/post-mining flooding	
post-agricultural wasteland	
other (specify)	

Type of vegetation cover and its share in permanent site cover

Form of vegetation	% share of total site area
trees and/or shrubs	
sodded site (lawns, meadows, herbaceous vegetation) without trees or shrubs	
no permanent vegetation cover	

Main functionalities to be created by greening the site (multiple options can be selected):

a greened, extensive public space for leisure/recreation (park, green area, urban forest, botanical garden) outside built-up areas	YES/NO
a greened space for people to stay, accompanying buildings (multi-family residential, commercial, educational and industrial)	YES/NO
a greened, separate route for walking/cycling/wheelchair users (e.g. green cycling path, cycling and walking path, linear park)	YES/NO
a street canyon enriched with greenery to disperse pollution and separate pedestrians from the roadway	YES/NO
an extensive green space that filters or absorbs pollution and CO ₂ , publicly accessible but without facilities for people to stay/move around	YES/NO

Is there any waste stored on the site that needs to be disposed of due to risks it poses to human health or the environment? (please select one answer)

Yes	No	No information is available, but there are indications that contamination may be present (specify)

What types of substances cause site contamination?

Note: Please tick all types of substances/emissions that you consider relevant.

Type of contaminant or emission	yes	no	no expert reports, but contamination highly probable
metals			
organic compounds (other than pesticides)			
pesticides			
gas emissions			
particulate matter emissions			
runoff			
other (specify)			

Estimated scope of technical reclamation necessary to prepare the site for the introduction of greenery

Type of work	% of site area
Demolition of volumetric structures	
Removal of below-grade elements of technical infrastructure networks	
Removal of at-grade or above-grade elements of technical infrastructure networks	
Site surface leakage	
Change of shape of the terrain (e.g. levelling)	
Removal of unwanted soil or deposited waste	
Creation of soil substrate for plants	

Status of reclamation activities (select one option)

Completed	In progress	Approved for implementation	Planned, project in preparation	Not required

Other administrative provisions relating to land reclamation (specify)
--

There are plans to build an access road for technical maintenance and a rollerblading route in the area in question, which will require appropriate administrative decisions/permits/notifications of works.
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Additional important information about the site – brief description (e.g. slopes exceeding 15%, ponds, ditches, shallow underground cavities, quicksand, underground reservoirs, car parks, storage yards, garages, wild animals, etc.)

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11.2 Site visit report template

....., date: 2023

REPORT

**on the inspection of the site with code carried out as part of task C4
of the integrated project 'SILESIA. BLUE SKY RESTORED' in connection with the
assessment of site eligibility for a pilot investment**

Persons participating in the inspection:

1.
2.
3.
4.
5.
6.

Findings:

On 2023, an inspection was carried out of the site with the code located in in the region to consider the decision on the possible eligibility of the site for pilot implementation under Measure C.4 of the integrated project 'Silesia. Blue Sky Restored'. The inspection was conducted in the context of the proposed criteria for assessing the site in terms of the expected benefits of creating a green public space and the expected favourable/unfavourable conditions for implementing the project.

Following the inspection, the following findings were made:

1. Compared to the description provided in the 2022 application survey, the conditions of the analysed site or its vicinity **have changed significantly/have not changed significantly** (*delete as appropriate*) in terms of the site's eligibility for a pilot investment.

Description of changes (if any) or additional observations regarding site conditions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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2. If a pilot investment is implemented:

a/ Description of the main benefits for air quality understood as a reduction in human exposure to pollution:

Comments on the scope and significance of the benefits for air quality (e.g. how extensive or significant the changes are, what they may depend on, etc.)

b/ Comments on other expected environmental and social benefits

c/ Observations on possible obstacles/limitations/threats to the implementation or maintenance of the effects of implementation

3. Other comments

Photographic documentation was prepared.

The report has been completed and signed.

Signatures of persons participating in the inspection:

1.
2.
3.
4.
5.
6.
7.