



Project co-financed by the European Union under the LIFE Program
and the National Fund for Environmental Protection and Water Management



LIFE14 CCA/PL/000101

RadoKlima

LIFERADOMKLIMA-PL

AFTER LIFE PLAN

Adaptation to climate change through sustainable management of water of the urban area in Radom City

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Radom 2022

Table of contents

Table of contents	3
1. Project information	4
1.1. Project data	4
1.2. Introduction	5
1.3. Objectives and assumptions of the Project	5
1.4. Actions and results	8
2. Situation Analysis	11
2.1. SWOT analysis	11
3. Development methodology	12
3.1. After LIFE activities	12
3.2. Actions resulting from strategic documents	13
3.3. Action needs reported by NGOs	15
4. After LIFE Action Plan	15
4.1. After LIFE activities	15
4.2. Actions resulting from strategic documents	18
5. Action needs proposed by NGOs	20
5.1. Actions proposed by NGOs	20
6. Summary	22

1. Project information

1.1. Project data

Project No.: LIFE14CCA/PL/000101

Title: Adaptation to climate change through sustainable management of water of the urban area in Radom City.

Acronym: LIFERADOMKLIMA-PL

Applicant and Coordinating Beneficiary:

Municipality of the City of Radom

Co-beneficiaries:

Municipal Waterworks in Radom Ltd.

University of Łódź

FPP Enviro Ltd.

Project location:

Municipality of the City of Radom, Masovian Province, Poland

Project implementation period:

16/07/2015 – 31/12/2022

Project budget: PLN 24 291 746

Co-financing from the European Commission: 12 207 760 PLN

Co-financing from the National Fund for Environmental Protection and Water Management : 6 494 305 PLN



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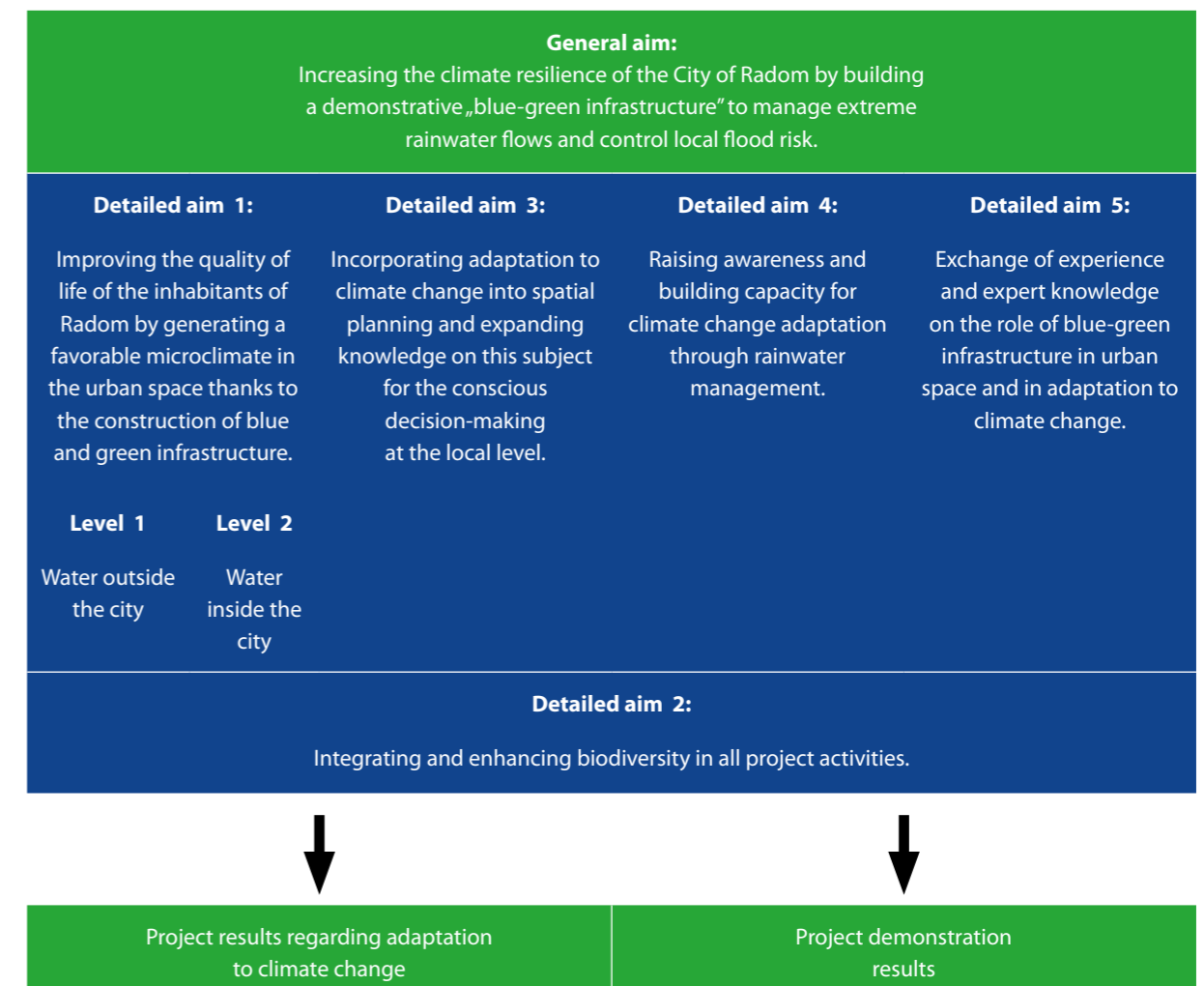
1.2. Introduction

The LIFERADOMKLIMA-PL project started on July 16, 2015. The agreement with the European Commission represented by the Executive Agency for Small and Medium-sized Enterprises (EASME) was signed on November 26, 2015. The agreement with the National Fund for Environmental Protection and Water Management was signed on December 10, 2015.

The Applicant and the Project Coordinating Beneficiary was the Municipality of the City of Radom, which has extensive experience in implementing projects co-financed by the European Commission. In the years 2004-2014, the Municipality developed and obtained co-financing on its own and in partnerships for 137 investment projects for the co-financing amount of PLN 563,871,180.64. The role of the Municipality of the City of Radom in the LIFERADOMKLIMA-PL project consisted in coordinating and closely cooperating with co-beneficiaries and stakeholders of the project and promoting the activities carried out among other entities, including local government units. This is the first demonstration project in Poland implementing adaptation measures comprehensively, systematically and on a city-wide scale.

The Municipality of the City of Radom is a dynamically developing one in accordance with the slogan „Radom - strength in precision“. Radom is one of the first cities in Poland to comprehensively implement solutions in the field of integrated water management and blue-green infrastructure as a method of adapting to climate change.

1.3. Objectives and assumptions of the Project





Floodplain on the Cerekwianka River and Climabox at Kindergarten No. 4.

The project developed and implemented a demonstrative blue-green infrastructure at two levels of the city: at the catchment level of the rivers on the outskirts of the city (large blue-green infrastructure (large BGI)) where the retention capacity of river valleys was increased to mitigate extreme flows while creating habitats for biodiversity and in central areas of the city (small blue-green infrastructure (small BGI), where rainwater was retained and managed to mitigate flooding from sealed areas of the city, thus mitigating the effects of urban drought.

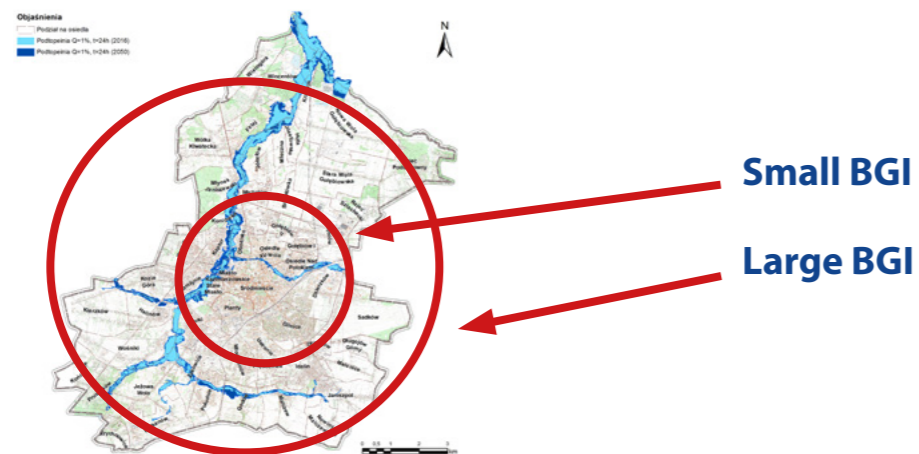


Fig. 1. Areas of implementing large and small blue-green infrastructure (BGI).

Another priority activity under the project was the integration and increase of biodiversity through activities for the construction and restoration of habitats in urban water reservoirs and the creation of microspherization in the city's adaptive infrastructure.

It was also assumed that climate change adaptation measures would be included in the mainstream of city spatial planning, and that knowledge on conscious decision-making at the local level would be increased by, e.g. working groups with a wide range of stakeholder participation.

Raising awareness and building capacity in terms of adaptation to climate change was implemented through awareness-raising activities to better understand the impact of climate change on the city's economic, health, social and environmental performance, as well as the importance of cost-effective adaptation options.

This objective was also pursued through the exchange of experiences in adaptation to climate change through green-blue infrastructure and a multi-level approach to territorial adaptation. The project's solutions offer great replication capabilities. Such products as vulnerability assessment, a comprehensive approach to multi-level territorial rainwater management, GIS tools and a demonstrative blue-green infrastructure are made available to other stakeholders.



ECOCITY conference and „Feel the atmosphere” festival.

1.4. Actions and results

Thanks to the blue-green infrastructure solutions implemented under the project, it improves the quality of water flowing into the city and mitigates the negative effects of heavy rainfall, easing flood waves occurring on the main Radom rivers. As part of the project, a number of investment tasks were carried out in the field of the so-called large and small blue-green infrastructure, which applied an innovative combination of engineering technical solutions and ecological nature-based ones. In this way, a unique restoration of the Mleczna River bed (meandering) was realized in the urban space near the boulevards, as well as the reconstruction of the Borki reservoir and colmatation ponds, construction of a floodplain on Cerekwianka and adaptation of the floodplain on Potok Północny into a multifunctional area adapting the city to climate change. The above solutions include in their design the use of sequential sedimentation and biofiltration systems, using natural processes related to surface water purification. The above solutions, implemented in river systems, holistically demonstrate the approach related to the management of rainwater, which would reach the city center in excessive amounts after heavy rainfall, causing numerous floodings and destruction. The implemented solutions currently limit flood waves and slow down the outflow of water from the city in accordance with the principle of retaining water where it appears.

On the other hand, implementations in the project in the field of small blue-green infrastructure, such as: climapond, absorptive basins, rain gardens, green roofs or permeable surfaces, contribute to increasing landscape water retention in urban space by slowing down the outflow of water from its paved parts, thus increasing biodiversity by creating/restoring various habitats in the places of project activities, based on nature-based solutions.

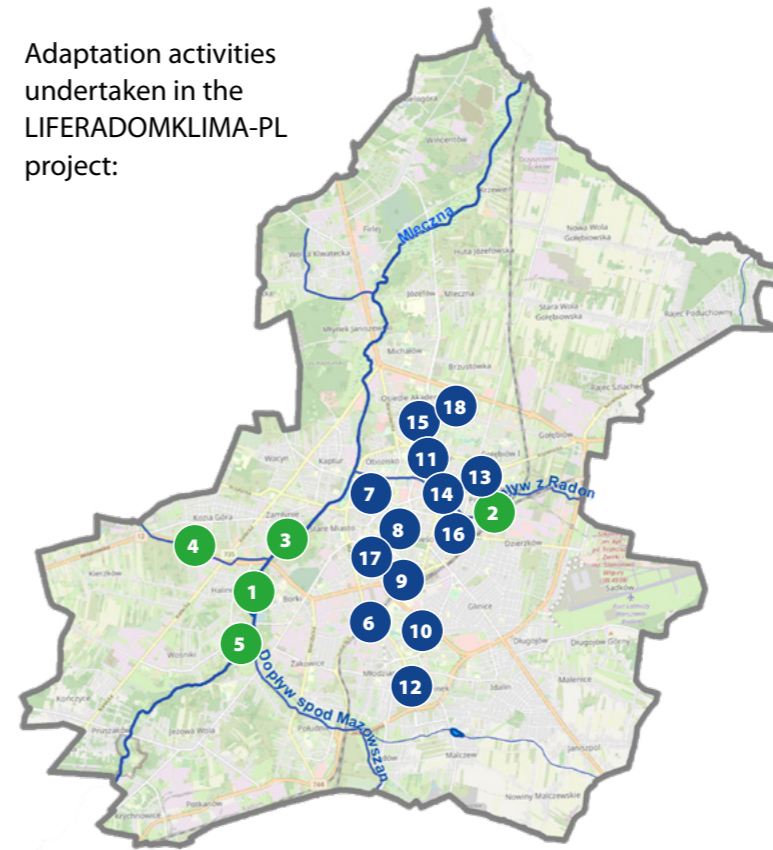


Climabox and Climapond - examples of small BGI.



Restoration of the Mleczna river and plantings at the mouth of the A0 canal - examples of large BGI.

Adaptation activities undertaken in the LIFERADOMKLIMA-PL project:



Map source: OpenStreetMap.org

Fig. 2. Location of completed blue-green infrastructure (BGI) installations

Large BGI (blue-green infrastructure):

1. Adaptation of the Borki reservoir and colmatation ponds
2. Construction of a multifunctional reservoir on the Potok
- Północny river with a sequential sedimentation and biofiltration system (SSSB) (between Olsztyńska St and railway tracks)
3. Remeandering of the Mleczna river (at the boulevards over Mleczna)
4. Floodplain polders on the Cerekwianka river (at NSSZ Solidarności St. - behind Jana Łaskiego Roundabout)
5. Canal A0 and SSSB on the Mleczna river above the Borki reservoir (at Sucha St)

Small BGI (blue-green infrastructure):

6. Climapond Public Kindergarten No. 16 (3 Grenadierów St)
7. Green bus shelters (Struga St opposite Galeria Słoneczna)
8. Rain garden – Public Kindergarten No. 4 (23 Jana Kilińskiego St)
9. Rain Garden and Climapond - Public Kindergarten No. 11 (10 Kościuszki St)
10. Climapond – Public Primary School No. 11 (19 Gagarina St)
11. Absorptive basins (Square Bema St/Jasińskiego St)
12. Rain gardens - Nursing Home (16 Wyścigowa St)
13. Rain gardens - Nursing Home (88 Struga St)
14. Green bicycle shelter - RCS at (63 Struga St)
15. Rain Gardens and Climapond - XI LO (27 11 Listopada St)
16. Tree trench and Green bicycle shelter - Public Primary School No. 33 (5 Kolberga St)
17. Climapond and Green bicycle shelter - III LO (44 Traugutta St)
18. Climabox - Municipal Cultural Centre Amphitheatre (5 Daszyńskiego St)



Aquatic plants introduced by BZI in the urban space.

These solutions are receivers of rainwater from paved areas in the city (roofs, sidewalks, streets, parking lots) significantly reducing their transport to rainwater drainage systems and further to rivers. In addition, by retaining water in the city, these solutions improve the microclimate, while nature-based elements used in them increase biodiversity.

The solutions presented under the project are an example of activities integrating the hydrotechnical approach to water management with biological and ecological activities. The combination of the knowledge of engineers and ecologists helped to work out implementations thanks to which the city space, apart from functional aspects, gains a natural element, responsible for the quality of the functioning of an urbanized area, which is important in the era of climate change.

Implementations carried out in Radom under the LIFERADOMKLIMA-PL project demonstrate the reduction of the flooding problem by retaining rainwater flowing into the city through river systems. The Borki Reservoir together with the colmatation ponds retain almost 30,000 m³ of water flowing in the Mleczna River to Radom after rainfall. In turn, the floodplain polder constructed on the Cerekwianka River has the capacity to take over up to 17,000 m³ of water carried by the river into the city after heavy rainfall. The multifunctional area created on Potok Północny allows retaining 11,000 m³ of rainwater carried by the river. Together, these three systems are able to reduce the amount of water flowing into the city center in the amount of almost 60,000 m³, preventing uncontrolled flooding of many parts of the city. In addition, the biofiltration system created in colmatation tanks improves water quality by reducing biogenic compounds (responsible for the formation of blooms in the Borki reservoir) by 12% to 34% and suspended matter carried by the river by an average of 39%. This system improves the physical parameters of water (e.g. oxygenation), enhancing the processes of water self-purification. The solutions used in all implementations are based on natural elements (plant systems), which also allow them to contribute to the increase in biodiversity, also creating habitats for numerous organisms. The solutions retain water in the landscape and improve the city's microclimate.

Demonstrative project implementations in Radom contribute to improving the quality of life of the city's inhabitants by generating a favorable microclimate in its space. Thanks to promotional and information campaigns, the implementation of the project raises social awareness of the need to adapt urban space to climate change, and the need for sustainable water management while protecting biodiversity. The project strengthens the exchange of experience and expert knowledge on the role of blue and green infrastructure in urban space and in adapting to climate change.

2. Situation Analysis

2.1. SWOT analysis

The table below presents the results of the SWOT analysis for Radom after the implementation of the LIFERADOMKLIMA-PL project.

Strengths	Weaknesses
<ul style="list-style-type: none"> creation of demonstrative facilities to reduce the problem of flooding, improve water quality and increase biodiversity demonstrative solutions play an educational role in the city's adaptation activities to climate change trained staff in schools and kindergartens the experience of UMR and WMR employees in the implementation of large climate projects and the role of BGI in adapting the city to climate change building a team of specialists and stakeholders (working groups) exchange of experience with other projects, which allows keeping up to date with the latest solutions tightening cooperation between employees of city institutions and scientists, entrepreneurs and NGOs creation and use of tools (monitoring stations, GIS portal, database, city vulnerability analysis) for assessing the state of environmental quality and planning in the context of climate change 	<ul style="list-style-type: none"> some of the facilities, especially the ones built in the last period of the project, require time to stabilize the plant structures for optimal functioning of the solutions maintaining the biodiversity of individual species and taxonomic groups often requires conflicting actions (e.g. fish and amphibians) the unpredictability and variability of weather conditions, especially the increasingly intensifying and extending periods without precipitation with high temperature, hinders the proper functioning of solutions failure to create a unit in the Municipal Office that would guarantee the coordination of future investments in the field of adaptation to climate change
Opportunities	Threats
<ul style="list-style-type: none"> the possibility of involving the society and local NGOs in civic initiatives for the city's further adaptation to climate change development of local companies in connection with further implementation of BGI solutions a society that is aware of the climate crisis and adaptation measures is an opportunity for the city to continue its adaptation measures initiated in the project in various segments continuation of the adaptation activities started in the project is an opportunity for the city to improve the health and safety of its residents the replication capability of design solutions in the scale of an entire city is able to contribute to financial savings related to lower losses due to floods) and lower funds necessary for health care related to the poor quality of the urban environment demonstrative solutions for retaining and managing rainwater and their replication on a city scale guarantees lower costs related to the discharge of this water 	<ul style="list-style-type: none"> unstable macroeconomic conditions (e.g. inflation, the risk of prolonging or intensifying international crises, the return of the pandemic) may limit the budget for maintaining the effects of the project (e.g. for equipment maintenance) and the replication capabilities of implementations insufficient quality of urban projects in terms of their compliance with the climate change adaptation strategy deterioration of the residents' quality of life and economic development opportunities insufficient assurance of project's continuity and effectiveness of solutions developed within the project

3. Development methodology

Activities have been broken down into three categories:

- After LIFE activities - obligatory activities aimed at maintaining the direct effects of project activities) (Table 4.1),
- Actions resulting from the strategic documents of the City of Radom (Table 4.2),
- Action needs proposed by NGOs (Table 5).

The following abbreviations were used in the study:

WMR – Municipal Waterworks in Radom Ltd.

UŁ – University of Łódź

MR – City of Radom

FPP – FPP Enviro Ltd.

BP – Project Beneficiaries

WO – Facility Owners and Managers

SR – Community of Radom

ALP – After LIFE Plan

PRTZ - Radom Green Areas Development Program (concept, November 2022)

OPPMR- Evaluation of Radom urban space vulnerability to climate changes (2015)

MPA - Climate Change Adaptation Plan for the city of Radom until 2030 - resolution of the City Council in Radom No. XXIV/202/2019 of August 26, 2019.

3.1. After LIFE activities

These activities result from the need to maintain the implemented solutions, including the BGI demonstration, and ensure their proper functioning after the project is completed and are an obligatory element of the After LIFE Plan. They are directly related to the implementations made under the project (Action Plan - Table 4.1).

In addition to maintaining the infrastructure, After LIFE activities also ensure the continuation of the monitoring of the project's results as well as the dissemination of the drafted solutions through a number of educational and promotional projects.

The action plan defines their scope, implementation period, potential source of financing and estimated costs in the following price ranges: * < PLN 10,000, ** PLN 10,000 - PLN 50,000, *** > PLN 50,000 - PLN 300,000 and **** > PLN 300,000. The costs quoted are expressed in current prices, i.e. without taking inflation into account. Costs were estimated based on market research and beneficiaries' experience in implementing similar activities. For all activities, the period assumed in the After LIFE plan is 5 years after the end of the project. The activities will be financed from the beneficiaries' own funds as well as, if possible, with the use of external funds, especially when replicating design solutions in terms of large and small BGI in order to manage the city's rainwater.

3.2. Actions resulting from strategic documents

These activities result from the existing and prepared strategic documents of the City of Radom:

- Concept of the Radom Green Areas Development Program (PRTZ),
- Climate Change Adaptation Plan for the City of Radom until 2030 (MPA)

They include e.g. a number of issues related to the implementation of blue-green infrastructure in sensitive areas identified in analyzes carried out as part of the assessment of the city's vulnerability to climate change, as well as the implementation of other key city documents related to BGI. These include, e.g. further implementation of small BGI solutions in the city's central part and large BGI solutions in its peripheral parts by ensuring appropriate provisions in city documents that will implement such activities (Action Plan - Table 4.2). These activities are based on the project of the Radom Greenery Development Program (concept, November 2022), drafted by the Office of the Municipal Nature Conservator.

Due to the length of the source document, Table 4.2 contains only keywords and names of projects - details of their implementation are in the original study. This document is currently at the stage of preparation for social consultations, so it should be taken into account that minor changes will still be possible. The adoption of its final version is planned for 2023. PRTZ is a tool for the implementation of a sustainable urban policy adopted in the strategy of further development of the Municipality of Radom - Radom 2030 and in the Plan of adaptation to climate change of the city of Radom until 2030. The municipality's self-government will be responsible for implementation in cooperation with stakeholders - institutions and residents.

The implementation of PRTZ will require the involvement of many entities: departments of the Municipal Office, municipal units, companies, associations, organizations and residents. The Department of Environmental Protection and Agriculture of the Municipal Office will be responsible for monitoring and implementing the PRTZ. Due to the extensive scope of tasks planned for implementation, labor intensity and complexity, and the need to secure (obtain) significant financial resources, the implementation provides for a timeframe of 2023-2034.

The primary source of financing will be the municipal budget. In the case of securing the funds necessary as „own contribution“, it will be possible to apply for funds from the European Union, as well as national and regional instruments. Due to the complexity and long-term nature of the issues - tasks and the lack of executive documentation - the costs of implementing the provisions of PRTZ are difficult to estimate at this stage. This particularly applies to technical activities. Planning the budget for such a long period is inherently burdened with too much chance of error. Therefore, the calculations will be developed successively by specific units.

Activities resulting from the implementation of the MPA not included in the PRTZ are primarily organizational activities related to changes in local law in the field of, e.g. spatial planning, organization of public space, development of guidelines for dealing with climate hazards, improvement of the functioning of municipal services or hazard warning systems.

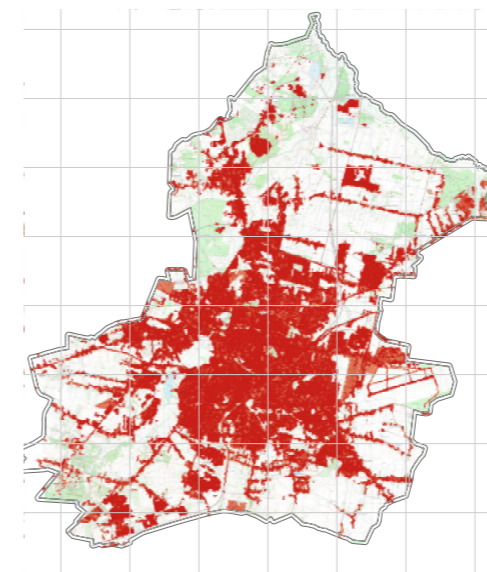


Fig. 3. Key areas for investments related to unsealing the surface, increasing biologically active areas and retaining rainwater in the place of rainfall (small BGI) to prevent flooding. The areas marked in red are priority areas.

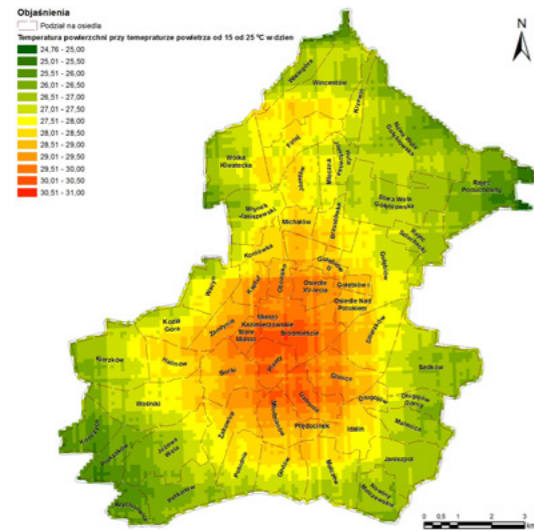


Fig. 4. Key areas for investment related to the mitigation of the urban heat island and the effects of heat waves. The areas marked in red are priority areas.

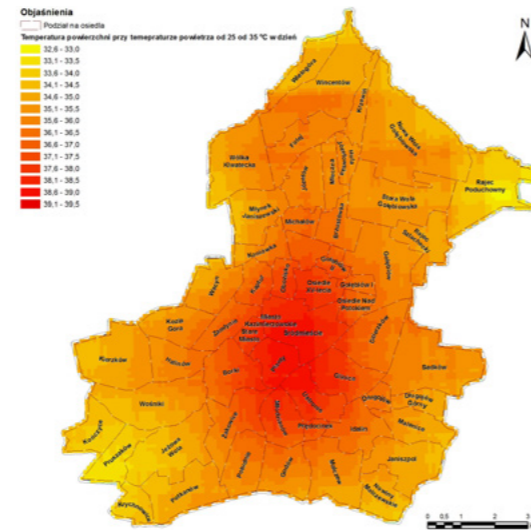


Fig. 5. Key areas for investment related to the mitigation of the urban heat island and the effects of heat waves broken down into estates. The areas marked in red are priority areas.



Fig. 6. Areas at risk of flooding by rivers (Vulnerability Assessment, 2015).



Fig. 7. Areas at risk of flooding by the rainwater drainage system (Vulnerability Assessment, 2015).

3.3. Action needs reported by NGOs

During the project meetings with NGOs and residents' representatives, a number of needs were reported that fit in with the continuation of activities implemented under the LIFERADOMKLIMA-PL project. They are primarily aimed at strengthening the natural capital of the city and its biodiversity, as well as activating the inhabitants. The action plan was drafted as a result of a meeting of the working group for the development of the After LIFE Plan with local social activists and representatives of NGOs on March 11, 2022. The participants of the meeting presented a number of needs for the implementation of further adaptation measures in and around Radom. These actions were supplemented by others reported later and presented in the Action Plan – Table 5.1.

4. After LIFE Action Plan

4.1. After LIFE activities

Code	Action	Range	Period	Responsible entity	Estimated cost over 5 years	Sources of financing
4.1.1	Maintaining the activities of working groups.	Organization of working group meetings as needed.	5 years	UMR	*	Own budget
4.1.2	Maintaining a spatial database and maps of sensitive areas in Radom's urban space.	Website maintenance, hosting, domain cost.	5 years	UMR	*	Own budget
4.1.3	Maintenance of the design solution: colmatation ponds and the Borki reservoir.	In accordance with the developed instructions for use.	5 years	WMR	****	Own budget
4.1.4	Maintenance of the design solution: A multifunctional adaptation area on Potok Północny.	In accordance with the developed instructions for use.	5 years	WMR	****	Own budget
4.1.5	Maintenance of the design solution: the valley of the Mleczna River in the section covered by the project activities.	In accordance with the developed instructions for use.	5 years	WMR	****	Own budget

4.1.6	Maintenance of the design solution: Channel A0 with a sedimentation and biofiltration system.	In accordance with the developed instructions for use.	5 years	WMR	****	Own budget
4.1.7	Maintenance of the design solution: Floodplain polder on the Cerekwianka River	In accordance with the developed instructions for use.	5 years	WMR	****	Own budget
4.1.8	Maintenance and conservation of design solutions in terms of „small“ blue-green infrastructure in urban space.	In accordance with the developed instructions for use.	5 years	WO UMR SR NGO	***	Own budget
4.1.9	Replicating design solutions in terms of large BGI in order to manage the city's rainwater.	Management of rainwater and delaying its runoff by building retention reservoirs along with pre-treatment of rainwater, e.g. through SSSB. Planned tasks: 1) construction of a complex of 8 retention ponds in the IDEA housing estate; 2) construction of a flood protection reservoir on Potok Północny; 3) construction of retention tanks on the rainwater drainage network.	5 years	WMR UMR	****	Own budget, external funds
4.1.10	Replicating design solutions in terms of small BGI in order to manage the city's rainwater.	Reducing the outflow of rainwater to the rainwater drainage system by building small BGI devices in urban facilities (schools, kindergartens, parks, squares, etc.).	5 years	UMR	****	Own budget, external funds
4.1.11	Monitoring of climatic conditions.	Maintenance of measuring stations.	5 years	WMR	**	Own budget

4.1.12	Monitoring of physical and chemical properties of water and evaluation of the effectiveness of completed implementations.	Evaluation of the effectiveness of implemented investments in the field of large BGI.	5 years	WMR UŁ	***	Own budget
4.1.13	Biodiversity monitoring.	Evaluation of the most important natural effects of implemented BGI investments.	5 years	FPP - coordination	*	Own budget
4.1.14	Implementation of the Blue - Green Mazovia project along the river valleys of the Radom region.	Developing and popularizing trails through the river valleys of the Radom region, involving young people in compiling information about the river environment, recreational walks for seniors, creating publications with experts about rivers and their historical significance for the Radom region.	5 years	Masovian Province Project submitted by Mr. Jarosław Staniszewski	***	Participatory Budget of Mazovia
4.1.15	Maintenance of the project website.	Website maintenance, hosting, domain cost.	5 years	UMR	*	Own budget
4.1.16	Maintenance of information boards.	Maintenance of information boards.	5 years	UMR	*	Own budget
4.1.17	Promotion and dissemination of project results.	Providing an electronic version and distribution of printed versions: Layman's Report, Handbook of Good Practices, leaflets, lesson plan on BGI, organization of workshops in schools, walks around the project sites.	5 years	BP NGO UMR WMR UŁ FPP	*	Own budget
4.1.18	Cooperation and exchange of information with other projects and initiatives.	Promotion of project results during meetings, conferences, study visits, city events.	5 years	BP NGO UMR WMR UŁ FPP	*	Own budget



Climapond at Kindergarten No.4.

4.2. Actions resulting from strategic documents

Code	Action category	Proposed activities (projects)	Document
4.2.1	Promotional and educational activities: - Promotion of ecological attitudes, - Ecological education; - Building a civil society; - Development of public-private partnership; - Social integration.	A1.EKOTEAM green partnership - cooperation with schools, universities, - public-private partnership (foundations, companies, NGOs, gardening centers, supermarkets); A2. A shelter for plants (green waiting room) A3. Eco-media (Brochures, publications, posters, folders about the nature of Radom) A4. Promotion of „pollinators“ - biodiversity A5. Themed plant collections A6. Adopt a tree A7. EDUKlima – training A8. Rain Hunters („catching the drop“) - promotion of small retention, blue and green infrastructure solutions in individual households A 9. Green areas connect generations A10. Planting on request A11. Green box - social home A12. A tree for everyone A13. Garden Festival A14. RADOM TREES application A15.Community gardens A16.Educational activity program for the years: 2023-2026, 2027-2030, 2031-2034	PRTZ

4.2.2	Technical and investment activities.	B1. Green ring with reachers B2. Modernization and continuation B2.1 parks and green areas (squares) B2.2 educational institutions – GREEN CLASSROOMS B2.3. cultural institutions B2.4. healthcare facilities B3. Green courtyards B.4. Green roads (greenery in the streets) B4.1. reconstruction and restoration of tree stands (inventory, stand management plan, greenery design, supplementary plantings); B4.2.introducing additional forms of greenery (cover plants, decorative grass, perennials, groups of shrubs, hedges, alleys, rows); B4.3. „unsealing“ the surfaces; B4.4. „green stops“; B4.5. small architecture: benches, bins, street fountains, other BGIs; B4.6. tree protection: root screens, tree trench anti-compression systems, horizontal and/or vertical protection; B4.7. replacement of „threshing floors“ with turf/cover vegetation, decorative grass, restoration of lawns B4.8. vertical greenery, introduction of vines at bus shelters, retaining walls, columns, pillars; B4.9. phytoremediation B5. New green areas B5.1.Old Radom Cultural Park B5.2.River Park (naturalistic) B5.3.Zoobotanical garden B5.4. Parks and green areas (pocket parks) B6. Wild corners (naturalistic enclaves), B7 Eco-infrastructure B8. Forest parks - introduction of a recreational function for communal forests, forest management B9. Development of natural and recreational functions, increase of water ecosystem services B9.1 reeds B9.2 construction of large and small reservoirs B9.3 opening rain channels B9. Support for natural and legal persons in water retention	PRTZ
4.2.3	Protective measures - protected and valuable natural areas.	C.1. Establishment of new forms of nature protection C1.1. natural and landscape complexes C1.2. ecological land C 1.3.documentation station C1.4. monuments of animate and inanimate nature C2. Protection of existing forms of nature protection C2.1.Control of alien, invasive, dangerous species C2.2.Protective measures - monuments of nature C3. Natural inventories and updates, habitat monitoring	PRTZ

4.2.4	Formal and organizational activities.	D.1. Maintenance operations - work estimates and work schedules, D2. Books of Park Objects, D3. Code of good practice (GREEN CONSTITUTION, i.e. standards) D4 Procedures and services sheets D5.Updating resolutions regarding parks D6. Stocktaking and forest stand management plans	PRTZ
4.2.5	Implementation of other adaptation measures planned in MPA.	Activities resulting from the implementation of the MPA not included in the PRTZ are primarily organizational activities related to changes in local law in the field of spatial planning, organization of public space, development of guidelines for dealing with climate hazards, improvement of the functioning of municipal services or hazard warning systems.	MPA



Colmatation ponds.

5. Action needs proposed by NGOs

5.1. Actions proposed by NGOs

Code	Action	Range
5.1	Restoration of the Mleczna river valley near the mouth of Strumień Gołębiowski.	Restoration of the river valley in order to increase biodiversity and prevent flooding.
5.2	Restoration of the Mleczna river valley near the mouth of Potok Północny.	Restoration of the river valley and construction of a floodplain in order to increase biodiversity and prevent flooding.
5.3	Reconstruction of the floodplain polder in the valley of the Mleczna River above the Borki reservoir.	Restoration of the floodplain in the concept presented by the LIFE team in 2017. The action is aimed at flood protection against "backflows" from the Borki reservoir.

5.4	Restoration of water reservoirs in the Strumień Południowy valley (Ustronie Park).	Restoration of water reservoirs (Staw Prędociński and the reservoir at ul. Grzeczmarowski) in the valley of the currently meliorated Strumień Południowy, which causes flooding in the area of ul. Jana Pawła II. Application of solutions used in meandering the Mleczna River as part of the LIFE RadomKlima project.
5.5	Restoration of the pond at ul. Orzechowa in the Ustronie housing estate (Strumień Południowy area).	Improvement of the habitat conditions around the reservoir (currently fenced and lined with ecogrid) in order to increase biodiversity and make it available to residents.
5.6	Restoration of the Kosówka Valley and reconstruction of the pond at ul. Młyńska.	Improvement of biodiversity through restoration of the watercourse and the pond in the Protected Landscape Area.
5.7	Reconstruction of the pre-war Rudka/Rutka reservoir on Potok Północny (Międzytorze).	The action is aimed at securing the built floodplain on Potok Północny as part of the LIFE RadomKlima project. The area where the watermill used to be has a very high natural potential.
5.8	Developing the concept of natural development and flood protection of the water reservoir on Pacynka (the Pacynka River downstream of the sewage treatment plant - outside the City of Radom).	The action requires determining the target function of the planned reservoir: recreation or restoration of the area and leaving hay meadows.
5.9	Construction of an educational square at the Jacek Malczewski Park and the Clothing and Leather School Complex (ul. Śniadeckich).	The action requires determining the target function of the planned reservoir: recreation or restoration of the area and leaving hay meadows.
5.10	Rainwater management in the J. Korczak School and Educational Center in Radom at ul. J. Grzeczmarowski 15.	Construction of a reservoir to manage rainwater from the roofs of the school in order to use it for the maintenance of greenery, and construction of large-sized underground rainwater tanks to prevent flooding in the tunnel at ul. Grzeczmarowski.
5.11	The use of rainwater for irrigation of urban greenery in the Public Primary School No. 11 at ul. Gagarina 19.	Construction of an above-ground tank collecting rainwater and an automatic drip irrigation system for the newly planted tree stand.
5.12	Construction of an educational path in Piotrówka/Grodzisk.	Construction of an educational path at the level of the meandered section as part of the LIFE RadomKlima project of the Mleczna River in order to enable educational activities.
5.13	Expansion of the spatial identification system for drzewa.radom.pl.	Expansion of the existing system with an information service on completed BGI investments.
5.14	Inventory and creation of a map of the river network and watercourses along with the unification of names.	Currently, there is no complete information on the course and nomenclature of the river network and watercourses. Continuation of work started as part of the City Development Study, also taking into account the broadly understood natural aspects and maps of surface and other runoffs drafted as part of the LIFE RadomKlima project.
5.15	Integration of the application for the LIFE project location system with the results of the Watercourse Inventory.	Completion of the watercourse layer on the map of LIFE project activities.
5.16	Development of a map of potential places for creating flower meadows and other meadow and pasture habitats in the city area.	Currently, there is no coherent concept for creating flower meadows and other naturally valuable grassy areas in the city.
5.17	Development of alternative solutions for the use of meadows.	Due to the vanishing of some of the sown flower meadows, it is necessary to work out alternative solutions for creating and maintaining meadow habitats, e.g. for pasture plants or moving vegetation from built-up areas.

5.18	Increasing the area of green roofs.	Construction of green roofs, e.g. on small architecture objects and garages.
5.19	Removal of invasive vegetation.	Implementation of measures to prevent the spread of invasive vegetation (knotweed, Canadian goldenrod, ringworm, Jerusalem artichoke), which is found throughout the city and threatens natural habitats (especially in the valley of the Mleczna River).
5.20	Construction of a biofiltration channel for water discharge from Galeria Słoneczna.	Rainwater management.
5.21	Construction and maintenance of the Educational Square designed as part of the project at the School of Leather and Clothing, Styling and Services in Radom.	Construction and maintenance of an educational square promoting blue-green infrastructure, based on a conceptual design developed as part of the LIFE RadomKlima project.



Educational boards at Kindergarten No. 11.

6. Summary

This study presents a comprehensive set of actions necessary to maintain the effects of the LIFE RadomKlima project. Not only the beneficiaries of the project will be involved in their implementation: the Municipality of the City of Radom, Spółka Wodociągi Miejskie in Radom, University of Łódź and FPP Enviro Sp. z o.o., but also NGOs and other entities. Only comprehensive, coordinated undertakings can bring the intended results and properly adapt the City of Radom to the inevitable climate changes. Extensive promotional activities will ensure that the developed solutions and experience gained during the implementation of the project will be used not only in Radom, but also in other places in Poland and abroad.





Borki reservoir and colmatation ponds



LIFERADOMKLIMA-PL PROJECT

As the first city in Poland, Radom has been implementing a project on adapting the city to anthropogenic climate change since 2015. The project called „Adaptation to climate change through sustainable management of water of the urban area in Radom City” (LIFERADOMKLIMA-PL, LIFE14 CCA/PL/000101) is co-financed by the European Union under the LIFE Program and the National Fund for Environmental Protection and Water Management.



The project is implemented by:



with partners:



More about the project: www.life.radom.pl