



# AQUARES Action Plan

*Association "Baltic Coasts"*

## Part I – general information

Project title: AQUARES “Water reuse policies advancement for resource efficient European regions”

Organisation: Association “Baltic Coasts”

Partner organisation: Ministry of Environmental Protection and Regional Development of the Republic of Latvia

Country: Latvia

NUTS2 region: Latvia

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## Part II – Policy context

The Action Plan aims to impact:

<input checked="" type="checkbox"/>	Investment for Growth and Jobs programme
<input type="checkbox"/>	European Territorial Cooperation programme
<input type="checkbox"/>	Other regional development policy instrument

Name of the policy instrument addressed: Operational programme “Growth and Employment”

### Specifics of the Aquares project in Latvia

The objectives of the AQUARES project are

- To ensure the sustainable and efficient use and management of water by promoting the integration of water reuse into policy instruments of the EU Member States
- To promote the introduction of technological and management innovations related to water reuse
- To increase the capacity of the public sector and non-governmental organisations for implementation of the EU policy proposals and targets for the sustainable use of water resources.

The main tasks and activities of the AQUARES project in Latvia have been related to the promotion of public awareness of the benefits of water reuse and the advantages of these benefits, as well as the integration of water reuse measures into policy planning instruments.

As justified below, taking into account the specifics of the climate and water management sector, the interests of Latvia are in water reuse measures aimed at sustainable stormwater management solutions that promote the use of stormwater for urban microclimate regulation, biodiversity, irrigation and firefighting, as well as improvement of the attractiveness of public outdoor spaces.

### Specifics of the climatic and environmental conditions in Latvia and forecasts of the climate change impacts

Latvia has a temperate climate with a relatively low average temperature and a relatively high level of precipitation, which determines the abundance of water resources. The climate in Latvia is significantly affected by the warm and humid air masses that form over the Atlantic Ocean and move



across the Baltic Sea. Latvia is characterised by pronounced changes in weather conditions caused by cyclonic activity. The average annual air temperature in Latvia is +6.4° C. The warmest month is July with an average air temperature of +17.4° C and an average maximum of +22.3° C. The coldest month of the year is February with an average air temperature of -3.7° C and an average minimum air temperature of -6.6° C (LEGMC, 2019).

The amount of precipitation per year in Latvia is 692 mm. The months with the highest precipitation are August and July, with an average of 77 and 76 mm, which coincides with the highest temperature, while the driest is April with an average of 34 mm (Figure 1).

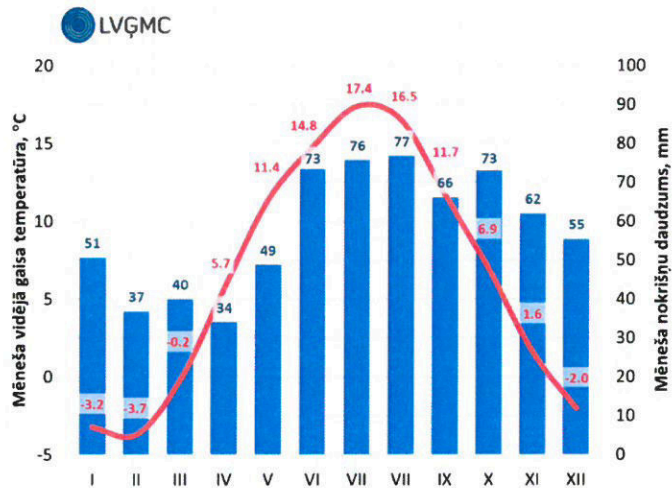
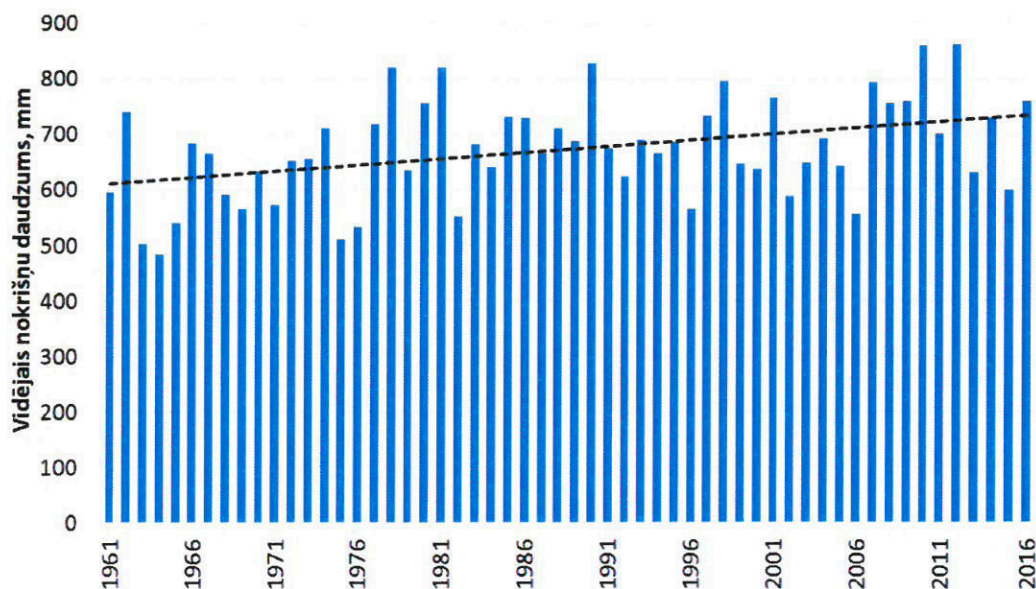


Figure 1. Climate standard norms for monthly average air temperature and precipitation from 1981 to 2010 (LEGMC, 2019)

The average annual relative humidity is 81%. The lowest moisture content in the air is in May – 71%, the highest in December – 89%.

As the climate changes, precipitation tends to increase (Figure 2).



As the climate changes, the upward trend in the amount and intensity of precipitation is expected to continue. By the end of the 21<sup>st</sup> century, the average air temperature in Latvia will rise by 3.5° C above annual averages of 1961-1990 in the RCP 4.5 scenario and by 5.5° C in the RCP 8.5 scenario.

The manifestations of climate change in the territory of Latvia so far have marked an increase in the total amount and intensity of atmospheric precipitation, as well as an increasing number of cases of heavy precipitation, and it is forecasted that such trends in Latvia will continue throughout this century.

Precipitation has increased by 6% from 651 mm (1981-2010 compared to 1961-1990) and is expected to reach 13% (RCP 4.5) to 16% (RCP 8.5) increase (2071-2100 compared to 1961-1990).

The maximum daily precipitation has increased by 1 mm from the historical value of 33 mm (1981-2010 compared to 1961-1990). It is projected that an increase of 3 mm (RCP 4.5) to 6 mm (RCP 8.5) will be achieved in the future (2071-2100 compared to 1961-1990).

The maximum five-day rainfall has increased by 2 mm from a historical value of 58 mm (1981-2010 compared to 1961-1990) and is projected to reach 9 mm in the future (RCP 4.5). up to 12 mm (RCP 8.5) increase (2071-2100 compared to 1961-1990).

Floods and winds caused by precipitation have been identified as one of the most significant risks caused by climate change in Latvia. Nowadays, in Latvia, mostly 1-10 mm more precipitation falls in five days than in the reference period. Intensive rainfall causes local damage in Latvia every year, flooding populated areas, washing out roads, as well as damaging infrastructure. The risk of torrential floods is projected to increase further by the end of the century. According to the initial flood risk assessment for 2019-2024<sup>1</sup>, it is necessary to study potential rain flood areas at the national and local level, as well as to plan measures to manage the associated risks.

According to river basin management plans for the years 2016-2021<sup>2</sup>, the main impacts on surface and groundwater resources come from agriculture, as well as point and diffuse pollution from domestic wastewater, while the effects of diffuse stormwater pollution are not identified. However, based on international experience and local water quality measurements compiled, incl. within the frameworks of the NOAH project<sup>3</sup>, it is becoming clear that untreated stormwater can also account for a significant share of water pollution.

In summary, this means that climate change will increase the adequacy of water resources, but at the same time also the risk of flooding and the urban heat island effect as average and extreme temperatures rise. Flooding caused by heavy rainfalls also increases the risks of water pollution.

### **Specifics of water reuse in Latvia**

Taking into account the specifics, risks and opportunities of the climatic and environmental conditions in Latvia, as well as the outcomes of the work groups led by the AQUARES project, which involved stakeholders from public administration, municipalities, water management, research sector and the community of experts on water reuse, active or passive use of stormwater could be relevant for Latvia. Given the multifunctionality of nature-based/green infrastructure solutions, direct solutions that can provide the following functions are supported:

- Stormwater treatment
- Flood risk reduction
- Maintenance of natural water balance and soil moisture/reduction of active irrigation
- Microclimate regulation – reduction of energy consumption for cooling
- Ensuring biodiversity
- Active use of water for irrigation and firefighting
- Creation of an attractive urban environment

Thus, the aim of the action plan is to promote the implementation of sustainable / green infrastructure / NBS stormwater management solutions in Latvia.

<sup>1</sup> [https://www.meteo.lv/fs/CKFinderJava/userfiles/files/Vide/Udens/Ud\\_apsaimn/UBA%20plani/Sakotnejais\\_pludu\\_riska\\_NOV\\_ERTEJUMS.pdf](https://www.meteo.lv/fs/CKFinderJava/userfiles/files/Vide/Udens/Ud_apsaimn/UBA%20plani/Sakotnejais_pludu_riska_NOV_ERTEJUMS.pdf)

<sup>2</sup> <https://www.meteo.lv/lapas/vide/udens/udens-apsaimniekosana-/upju-baseinu-apgabalu-apsaimniekosanas-plani-/upju-baseinu-apgabalu-apsaimniekosanas-plani-un-pludu-riska-parvaldiba?&id=1107&nid=424>

<sup>3</sup> <https://wrebl.rtu.lv/2018/10/03/noah-new-interreg-project-on-reduction-of-urban-stormwater/>



### Legislative and policy context

Latvian regulatory enactments lay the foundations for the sustainable use of water resources, with regard to water quantity and water quality, as well as the implementation of the “polluter pays” principle. Also, with regard to sustainable stormwater management and green infrastructure, the regulatory enactments provide a basis for their implementation, but the legislation does not specifically promote it. In co-operation with the MEPRD, a study of the regulatory framework for the promotion of sustainable stormwater management has been carried out<sup>4</sup>, but it will take longer to implement all the identified changes. At the same time, international best practice shows that initially a large effect can be achieved with methodological and financial instruments. Therefore, the action plan focuses on recommendatory actions.

The new Latvian Operational Program draft for EU Funds for 2021-2027<sup>5</sup> provides for several specific support objectives related to the sustainable use of water resources and green infrastructure.

#### SSO 2.1.3 “Promote climate change adaptation, risk prevention and disaster resilience”

Supports the implementation of green and blue infrastructure solutions to ensure adaptation to climate change. In accordance with the national flood risk management documents, the following measures to be implemented for flood protection have been determined: development of multifunctional green and blue infrastructure solutions for flood risk prevention and adaptation; combined infrastructure solutions in places where green and blue infrastructure measures alone cannot provide adequate protection; other measures specified in the national flood risk management documents.

#### SSO 2.2.1 “Promoting sustainable water management”

The supported activities are planned to improve the efficiency of water management services by providing adequate infrastructure capacity, improving operational efficiency and energy efficiency, and reducing pollution: modernisation and adaptation of wastewater treatment plant technologies and elements to adequate capacity, treatment quality, pollution prevention, as well as measures to promote energy efficiency and use of renewable energy; development of sewage sludge management (treatment) infrastructure; renovation and reconstruction of old, overly exploited sewerage networks and infrastructure objects, as well as construction of new networks.

#### SSO 2.2.3 “Improving nature protection and biodiversity, green infrastructure, especially in urban areas, and reducing pollution”

In order to take into account effects, risks and potential impacts of climate change on human health and well-being, infrastructure, the environment and the resilience of ecosystems in the assessment of the state of the environment, the improvement and further development of the monitoring system of water, climate, incl. air, ground incl. soil, as well as biodiversity is to be supported for assessment, monitoring and forecasting the effects of climate change.

## Part III – Details of the actions envisaged

### **ACTION 1 – Guidelines for municipalities on sustainable and integrated stormwater management**

1. **The background** (please describe the lessons learnt from the project that constitute the basis for the development of the present Action Plan)

Latvian legislation does not hinder, but also does not promote sustainable stormwater management and reuse. The principles and priorities of sustainable stormwater management (e.g., runoff reduction, decentralised management, etc.) are embedded in national legislation in some countries, such as Finland, Sweden, Poland, Lithuania, Germany, but not in Latvia.

<sup>4</sup> [http://cleantechlatvia.com/wp-content/uploads/2016/12/P%C4%93t%C4%ABjums\\_priek%C5%A1likumi\\_lietus%C5%ABde%C5%86u\\_apsaimn\\_CLEAN\\_ECH\\_LATVIA.pdf](http://cleantechlatvia.com/wp-content/uploads/2016/12/P%C4%93t%C4%ABjums_priek%C5%A1likumi_lietus%C5%ABde%C5%86u_apsaimn_CLEAN_ECH_LATVIA.pdf)

<sup>5</sup> [http://www.esfondi.lv/upload/2021-2027/fmprog\\_29042021\\_dp.docx](http://www.esfondi.lv/upload/2021-2027/fmprog_29042021_dp.docx)



Changes in the regulatory framework may take longer, while the experience of other countries, notably Sweden and Denmark, shows that sustainable management can also be promoted through practical experience, pilot projects, which in turn require methodological guidance.

Most municipalities in the Baltic Sea Region include stormwater impact assessment and the introduction of sustainable stormwater management methods at various levels of urban planning. Municipalities most often develop stormwater management programs at the local level. In Latvia, too, stormwater management is the responsibility of local governments, as also pointed out in the legislation<sup>6</sup>. Some local governments (e.g., Sigulda) prioritise sustainable stormwater management in spatial planning, despite the lack of national requirements.

The Recommendations on Sustainable Stormwater Management Policy in the Baltic Sea Region countries<sup>7</sup> emphasise the importance of guidelines and recommendatory materials for the implementation of sustainable solutions at the local level.

The lessons learned within the project AQUARES included the need for a multidisciplinary approach for the implementation of water reuse solutions, in combination with solutions that are multi-functional. The crucial role of municipalities in implementing these solutions was also a key learning from AQUARES, on which this action was based on.

The following specific lessons learned and good practices served as inspiration for this action:

- Evaluation of best practices for monitoring, assessing, and ensuring compliance with water reuse standards (A1.4) stressed the need for national standards and guidelines and provided inspiration for summarising best practice on water reuse policies and guidelines to implement these;
- The good practice from Lanškroun city, Czech Republic, especially the practices of green roofs, infiltration areas, flood protection measures and implementing experience;
- The good practice of the Hanging garden in Polička, Czech Republic, especially the technical solutions and implementing experience;
- The good practice of Łódź Rain Gardens, Poland, especially the multiple rain gardens integrated in the urban planning concept of the city;
- The good practice of Constructed Wetlands Gorla Maggiore, Lombardia, Italy, which showed multiple benefits as well as the role of water retention, reuse and treatment planning from the catchment basin perspective.

Latvian local governments have repeatedly emphasised that they lack experience and knowledge to implement such solutions, while the ESIF operational program includes activities that provide for green infrastructure and nature-based solutions, the implementation of which will require a methodological basis.

So far, methodological materials for various aspects of sustainable stormwater management have been developed within several projects, and methodological guidelines for the use of green infrastructure solutions for stormwater treatment, as well as design guidelines for engineers and landscape architects<sup>8</sup> are being developed in cooperation with MEPRD. However, there is a necessity for comprehensive guidelines for the implementation of sustainable stormwater management at the municipal level. This would facilitate the development of municipal stormwater management programs/guidelines at the local level. The guidelines will promote the development of project proposals for EU funded projects that relate to climate adaptation and sustainable water management. Financing for these projects is included in the Latvian Operational Program for years 2021 – 2027, within the SSO 2.1.3. and 2.2.1.

## 2. **Action** (please list and describe the actions to be implemented) /

Task: To develop guidelines for sustainable stormwater management for local governments.

The guidelines would ensure sustainable stormwater management, the main objectives of which would be:

<sup>6</sup> Law of Local Governments, section 3, part 1 and 2; Law on Water Management Services, section 6, part 7.

<sup>7</sup> <https://www.bsrwater.eu/news/publication-recommendations-stormwater-management>

<sup>8</sup> <http://cleantechlatvia.com/lv/2016/12/10/4992/#toggle-id-3>

- To use the stormwater for improvement of the attractiveness of the environment, biodiversity conservation and promotion of good surface and groundwater status and the sustainable use of resources.
- To ensure stormwater management at regional and local level, while taking into account the effects of climate change.
- To eliminate the problems caused by stormwater and improve the public outdoor space as changes in municipalities take place and the density of buildings increases.
- To control stormwater flow rate and improve stormwater quality.
- To reduce stormwater runoff into sewage.
- To use cooperation and procedures that support systematic and comprehensive stormwater management and ensure sufficient expertise and resources.

The guidelines should include a hierarchy/priority sequence of the following solutions:

- Reduction of runoff through permeable coverings/water reuse
- On-site stormwater treatment and retention/infiltration using decentralised methods
- Stormwater treatment and retention/infiltration using centralised off-site solutions
- Stormwater drainage in a centralised separate stormwater sewerage/ditch system
- Stormwater drainage in a centralised combined sewerage system

Preliminary/indicative content of the guidelines:

1. Introduction
2. Definitions
3. Urban hydrology and stormwater management systems
4. General principles of stormwater management
5. Stormwater management planning process
6. Organisation, responsibilities and requirements in stormwater management
7. Spatial planning
8. Stormwater management planning
9. Construction process control
10. Hydrology and factors affecting the amount of stormwater, compliance with the catchment principle
11. Hydrogeological requirements
12. Stormwater quality, urban water load and environmental impact
13. Stormwater management methods and their design issues
14. Costs and benefits of stormwater management solutions
15. Landscape considerations
16. Maintenance of stormwater management systems
17. Types of stormwater management solutions in different building situations

1. **Players involved** (please indicate the organisations in the region who are involved in the development and implementation of the action and explain their role)

Cleantech Latvia / Association "Baltic Coasts" / MEPRD / Latvian Association of Local Governments

2. **Timeframe**

2022-2023

3. **Costs** (if relevant)



Approximately 30-40 thousand EUR

**4. Funding sources** (if relevant):

Funding of Latvian Foundation for Environmental Protection

LIFE projects

The guidelines will include the most recent information available and materials from other projects financed by Latvian national or EU funds<sup>9</sup>.

**ACTION 2 – Guidelines for motivational tools for sustainable stormwater management solutions**

**1. The background** (please describe the lessons learnt from the project that constitute the basis for the development of the present Action Plan)

One of the factors that promotes the use of stormwater as a resource is the full implementation of the “polluter pays” principle and the collection of fees for the maintenance and development of stormwater management infrastructure. At the same time, one of the biggest problems mentioned in connection with sustainable stormwater management in Latvia is the lack of funding. Unlike most countries in the Baltic Sea Region, local governments responsible for stormwater management systems do not charge a fee/tariff for the maintenance of stormwater drainage infrastructure, except in some municipalities where there is a joint sewerage system and where stormwater drainage is paid for in the same way as for domestic sewage disposal. The reason for this is the historical situation, as well as the lack of political will to impose a regular payment on the population.

In accordance with the research of the regulatory framework performed by Cleantech Latvia, the Latvian legislation in essence allows local governments to apply a fee for stormwater management by developing special binding regulations. However, there is a lack of methodology on how to do this.

At the same time, there are a number of other tools by which local governments can reduce the burden on the stormwater management system by motivating landowners to develop decentralised stormwater management solutions and reduce the amount of stormwater discharged into the municipal system. These tools include green infrastructure planning tools, technical rules for new connections, co-financing for decentralised solutions, etc.

The following lessons learned and good practices of AQUARES projects served as inspiration for developing this action:

- The comparative analysis of regional and national policies on water reuse (A1.1) noted both the need for incentives and removal of disincentives for water reuse;
- The report on AQUARES regions’ needs and opportunities in water reuse (A1.2) stressed the importance of cost recovery and need for financial sustainability in water reuse;
- Local stakeholder meetings stressed the need for stimulation mechanisms needed for the implementation of water reuse solutions so that they become financially beneficial for the private sector is the reason for the development of this action, especially when low water price hampers water reuse;
- The good practice of the combination of rainwater network and storm water storage tanks, in Region of Attica, Greece, especially the solution that combines multiple benefits that offset the costs, enabled by supporting local regulation;

<sup>9</sup> For example, the project “Methodical suggestions and design guidelines for sustainable water management solutions” funded by Latvian Foundation for Environmental Protection



- The good practice of the Constructed Wetlands Gorla Maggiore, Lombardia, Italy, which showed multiple benefits offsetting costs, enabled by local regulation and thus making a good replication case.

The action will gather information on mechanisms for incentives for water reuse (motivational tools) and develop a draft local regulation on stormwater fee. It is expected that the action will result in the development of local policy documents incentivising storm water reuse. It will also promote the attraction of funding for water reuse solutions from the private and public sector.

**2. Action** (please list and describe the actions to be implemented)

Development of a collection of best practices and methodological material/guidelines on motivational tools for sustainable stormwater management solutions.

The material would include the following sections:

- International best practice in the field of stormwater tariffs: application and calculations
- International best practice for other motivational tools for sustainable stormwater management solutions
- The introduction of stormwater tariffs is possible by developing binding regulations for local governments
- Example of stormwater tariff calculation on the example of a particular municipality
- Draft binding regulations of the local government when introducing a stormwater tariff
- Example of stormwater tariff calculation on the example of a particular municipality
- Other possibilities for introduction of motivation mechanisms corresponding to Latvian conditions and specifics of the local government

**3. Players involved** (please indicate the organisations in the region who are involved in the development and implementation of the action and explain their role)

Cleantech Latvia / Association "Baltic Coasts" / MEPRD / Latvian Association of Local Governments

**4. Timeframe**

2022-2023

**5. Costs** (if relevant)

Approximately 15-20 thousand EUR

**6. Funding sources** (if relevant):

Funding of Latvian Foundation for Environmental Protection  
LIFE projects

Date: 24.09.2021

Signature: \_\_\_\_\_

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Stamp of the organisation: \_\_\_\_\_





Vides aizsardzības un reģionālās attīstības ministrija  
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*Regarding support for the Action Plan developed by the project AQUARES  
"Water reuse policies advancement for resource efficient European regions"*

The Ministry of Environmental Protection and Regional Development of the Republic of Latvia (hereinafter – the Ministry) confirms that it got acquainted with the Action Plan developed by the project AQUARES "Water reuse policies advancement for resource efficient European regions" (hereinafter – Project). The Ministry holds the view that the proposed Action Plan activities:

1. Guidelines for municipalities on sustainable and integrated stormwater management; and
2. Guidelines for motivational tools for sustainable stormwater management solutions

would be a valuable input in efforts to promote public awareness of the benefits of water reuse and the advantages of these benefits, as well as to enhance the integration of water reuse measures into policy planning instruments. The Ministry also appreciates that it was given a possibility to discuss the Action Plan with the Project representatives before its finalization. The Project objective and actions are closely aligned to the Ministry's interests to promote climate neutrality and develop capacities of urban municipalities for sustainable transition in Latvia, therefore the Ministry believes that the proposed Action Plan will complement other ongoing or planned activities and looks forward to further work on water reuse.

Yours faithfully,

Acting Deputy State Secretary for the Environment,  
Director of Environmental Protection Department

Rudīte Vesere