Document title	Draft revised HELCOM Recommendation 23/5
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Agenda Item	5 - Matters arising from the subsidiary bodies
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Submitted by	Executive Secretary
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Background

HOD 59-2020 considered a revised HELCOM Recommendation 23/5 on storm water management taking note that:

- Russia suggests including the words "..and modernization of urban areas" in item 7 section A and adding one measure related to redistribution of excess water between catchment areas with available capacity in item 12 section B.
- Estonia expressed concern regarding the reporting format proposed in the draft Recommendation.

HOD 59-2020 in general, supported endorsement of the Recommendation for the adoption by HELCOM 42-2021 (document 6-2), pending study reservation by Germany with expected clarification by 15 January 2021.

This document contains the draft Recommendation 23/5, slightly updated to address suggestions by Russia and the Estonian proposal for the reporting procedure (second last paragraph of the document). Germany has not yet lifted the reservation placed on the document at HOD 59-2020.

Action requested.

The Meeting is invited to adopt the revised HELCOM Recommendation 23/5 on storm water management, in case Germany lifts the study reservation, or to consider an alternative procedure for adoption of the Recommendation.

Draft revised HELCOM Recommendation 23/5

HELCOM RECOMMENDATION 23/5*)

Adopted 6March 2002
amended [XX XXX 20XX]
having regard to Article 20,
Paragraph 1 b) of the Helsinki
Convention

REDUCTION OF DISCHARGES FROM URBAN AREAS BY THE PROPER MANAGEMENT OF STORM WATER SYSTEMS

THE COMMISSION,

RECALLING paragraph 1 of Article 6 of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki Convention), in which the Contracting Parties undertake to prevent and eliminate pollution of the Baltic Sea Area from land -based sources,

HAVING REGARD also to Article 3 of the Helsinki Convention, in which the Contracting Parties shall individually or jointly take all appropriate legislative, administrative or other relevant measures to prevent and abate pollution in order to promote the ecological restoration of the Baltic Sea Area,

RECALLING Article 5 of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki Convention), in which the Contracting Parties undertake to prevent and eliminate pollution of the marine environment of the Baltic Sea caused by harmful substances,

RECALLING FURTHER commitments from the HELCOM Ministerial Declaration 2018 (Brussels) to develop cost-efficient measures addressing input of micro-plastics and hazardous substances in wastewater sector.

RECALLING ALSO HELCOM Recommendation 36/1 on the Regional Action Plan on Marine Litter, in particular actions RL4 on improvement of storm water management in order to prevent litter, including microlitter, to enter the marine environment from heavy weather events and RL 7 on compilation of available techniques as well as research and develop additional techniques in wastewater treatment plants to prevent micro particles entering the marine environment,

BEING MINDFUL that a considerable part of oil pollution of the marine environment is caused by oil contaminated waters discharged via storm water systems,

RECOGNIZING a need for limiting oil pollution from storm water systems applying efficient treatment of oil contaminated waters,

RECALLING ALSO HELCOM Recommendation 28E-5 on municipal wastewater treatment,

RECOGNIZING the need for limiting the harmful effects caused by storm water discharges to the Baltic Sea,

RECOGNIZING ALSO the need for development of present sewerage systems,

DESIRING to limit pollution caused by unsuitable sewerage systems,

RECOMMENDS to the Governments of the Contracting Parties to the Helsinki Convention that:

A. Storm water planning

1 in order to improve quality of urban environment, the ecosystem services approach should be applied in storm water planning; this means that storm water should be seen as a resource for increasing wellbeing of the environment and citizens, maintaining biodiversity and promoting a good condition of surface and groundwater,

2 integrated Storm Water Management (ISWM) should be applied in urban development processes at all levels – from planning and construction to infrastructure operation and maintenance (see Annex 1 for supporting information),

3 storm water planning should be catchment area based and should take the natural runoff paths of stormwater into consideration,

4 storm water management processes should be systematically reviewed and improved when urban space development/regeneration is implemented (e.g. roads, streets, squares, public greening),

5 storm water systems and facilities should be planned, designed and dimensioned according to future scenarios of climate change, utilizing the best available scientific knowledge on changing precipitation volumes, changing patterns of precipitation intensity and rising water levels in seas, lakes and rivers,

6 for high intensity storm events, secondary runoff paths should be prepared to divert storm water exceeding the storm water systems capacity, however the proportion on water released through the secondary runoff paths should not exceed 30% of the total estimated annual volume of storm waters. Excessive storm water should preferably be directed to suitable low-lying areas that can be used as temporarily flooded retention basins considering existing infrastructure, land use and natural characteristics of territories. Buildings and infrastructure should be planned on adequate elevations to avoid damage during flood events,

7 storm water planning tools (e.g. Green Area Factor) should be applied at early urban planning stages and modernization of urban areas when the water drainage is being planned,

8 in order to work systematically with storm water issues, municipalities (or other respective authorities) should develop storm water policies and/or plans,

9 impact of climate change should be taken into account when planning storm water management.

B. Reduction of discharges of urban areas by proper management of storm waters

10 storm waters should be managed according to a priority order, adapted to local circumstances. The following general priority order should apply:

- **I.** storm water to be treated and utilized at the source,
- **II.** storm water to be conveyed away from the source with a system that retains and detains the water,
- **III.** storm water to be conveyed away from the source in a storm water sewer to retention and detention areas located on public areas before conveying the water to a water body (brook),
- **IV.** storm water to be conveyed in a storm water sewer directly to the recipient water body; and
- **V.** storm water to be conveyed in a combined sewer to wastewater treatment plant,

11 a switch to duplicate systems and/or Low Impact Development (LID) systems should be prioritized in order to avoid overflows in the sewage system if/where possible LID solutions should be integrated in combined system to reduce flow peaks and reduce overflow events during intense storm events (see Annex 1 for supporting information),

12 the overflow from combined sewage systems may prevent achieving the environmental objectives for the receiving waters. To prevent environmental impact of the overflow, main overflow spots should be identified, and measures such as local infiltration, retention basins, treatment of the overflow or separating the combined sewer system applied and redistribution of excess water between catchment areas with available capacity,

13 assessment of local storm water impact should be carried out for the waterbodies' catchment areas; such assessment should identify and prioritize measures to be taken to improve storm water management (see Annex 1 for supporting information),

14 areas with high storm water flood risk should be mapped and risk of contamination of the aquatic environment by chemicals, oil or litter, including micro litter, should be assessed,

15 measures to ensure storm water quality should be taken already at the source to prevent the deterioration of the quality of storm water (e.g. efficient dry street cleaning and other measures minimizing microparticles associated with traffic; management of storm waters and waste on construction sites),

16 dumping of the street cleaning snow directly to sea or to any other water bodies should be prevented. The street cleaning snow should be taken to designated areas where meltwater is managed as urban storm water according to the recommendations to reduce urban area storm water discharges.

C. Management of high-risk storm waters

17 storm water from heavily polluted areas should be treated separately on site (e.g. Water Sensitive Urban Design, WSUDs, oils separators); measures can be based on local research and considered case by case (see Annex 1 for supporting information),

18 contaminated waters from industrial areas, production plants, leachate from landfills, service stations, mechanical workshops and other plants as well as storm waters from areas where oil is handled or stored should not, without effective water pollution control and treatment measures, be connected to a storm water system or discharged to the recipient.

RECOMMENDS that this Recommendation will be in force when adopted,

RECOMMENDS that the Contracting Parties assess regularly the implementation of this recommendation and report the results of the assessment to the Commission every three years starting in 2033 with data from 2030,

DECIDES that this Recommendation should be reconsidered in 2035.

Annex 1 – Supporting information for the implementation of the Recommendation

I. Integrated Storm Water Management (ISWM)

Integrated Storm Water Management (ISWM) is a comprehensive approach to storm water management. Instead of a narrow focus on a single problem, the ISWM undertakes a holistic storm water management approach: studying the characteristics of specific sites and areas, understanding the relevant impacts, and tailoring a comprehensive array of tools to individual situations.

Success requires the integration of the ISWM system into the urban development processes of the city at all levels, from urban planning to operation and maintenance.

With an ISWM system a city can:

- achieve their goals of water quality protection and flood mitigation to protect the natural and built environment,
- design for not just the worst-case scenario, but also for average and minimal events to minimize the impact of storm water on neighbouring lands,
- determine what solutions and infrastructure together with their interconnections are required to manage the storm water runoff that results from different storms events, and
- ensure that storm water is treated as a resource that enhances our cities, rather than treat it as waste that needs to be removed through underground storm sewers.

Besides, the ISWM approach has a number of added advantages compared to conventional storm water drainage. It enhances urban environment by applying greener and more eco-efficient planning principles, thus promoting additional environmental benefits and multiple ecosystem services. Further, the ISWM approach promotes transition from conventional to sustainable storm water drainage where the priority is given to the "Green Infrastructures" over the "Gray Infrastructures".

More information: http://www.integratedstormwater.eu/content/integrated-storm-water-management

II. Assessment of local storm water impact

A watershed assessment is clarifying the quality, quantity and origin of the storm water in the specific watershed area. Also, factors affecting these values are analysed to deliver information for land use planning and decision making. A watershed assessment can be used as a parallel or as background tools for storm water management guidelines.

Typically, a large watershed of for example a river or stream is divided into smaller sub-watersheds in order to display the movement and course of the water in the landscape. Division into smaller sub- watershed also helps to articulate the effect of the possible land use change into local hydrology and water cycle. Following issues are typically analysed:

- main water bodies, how they are located and in what condition they are,
- soil types and groundwater areas,
- land use in watershed and possible changes.

The existing storm water related problems (like flooding issues, contaminant loads) and potential future changes are analysed. In the assessment the main principles and recommendations for storm water management are presented for each watershed or for each watercourse.

More information: http://www.integratedstormwater.eu/iwatertoolbox

III. Planning of Green infrastructure

Green Factor is a practical and user-friendly Excel-based tool for urban planning. It ensures sufficient green infrastructure when building new lots in a dense urban environment. The Green Factor is

calculated as the ratio of the scored green area to lot area. The target level for the lot can be achieved flexibly by the garden designer by selecting some of the 39 green elements, such as planted and maintained vegetation or various run-off water solutions, when designing the lot. The green factor can, for example, be included in the zoning regulations or used for granting concessions during a construction permit application process.

More information: http://www.integratedstormwater.eu/material/green-factor-tool

IV. Green Technologies

The term **Low Impact Development (LID)** has been commonly used in North America and New Zealand, and dates back to the 1970s. The approach attempts to minimise the impact of development (and the subsequent storm water management) on nature. The most recent LID manuals re-establish hydrological targets for both retrofit and new urban developments as well as provide design options to meet and sustain these objectives.

The term **Water Sensitive Urban Design (WSUD)** began to be used in the 1990s in Australia. The objective of the approach is to manage the water balance, maintain or even enhance the water quality, and maintain water-related environmental and recreational opportunities. Storm water management is a subset of the WSUD approach that aims to address the whole urban water cycle on all scales and densities.

Both concepts offer a strategic approach to urban planning and design that aims at minimising the hydrological impacts of urban development on the surrounding environment. Strategic approaches deliver the principles and objectives of the ways the water infrastructure is considered in planning and design projects. Good to know: to achieve the objectives, different techniques can be used. These techniques are generally categorised under **best management practices (BMPs)** or **sustainable urban drainage systems (SuDS).**

SuDS consist of a range of storm water management technologies based on the philosophy of replicating the natural, pre-development drainage of the site. These techniques are typically aimed more at water quantity than quality control, but in the end the design of the structure defines its potential functions. In the North American context, Best Management Practice (BMP) has been originally used to describe pollution prevention activities. However, in everyday practice both quality and quantity control are being targeted.

Both concepts are based on a variety of structures capable of managing and controlling surface run-off through techniques, such as infiltration, detention, conveyance and/or rain harvesting. In general, they employ physical, chemical, and/ or biodegradation processes to improve the quality of surface run-off by minimising the amount of storm water-based pollutants washed into nearby watercourses. The structures help to reduce flood impacts by temporarily storing water, often filtering the pollutants at source, and encouraging infiltration of storm water into the ground. The design of structures can often be geared towards reducing impacts across the flood pathways and at distant impact sites further down a catchment.

Instructions in SuDS manuals are always created for local conditions. They often cannot be applied directly to the Baltic Sea Region but demand some adjusting. Unfortunately, an extensive library of suitable techniques for Nordic conditions does not yet exist. However, useful information on ways to implement different sustainable solutions as well as a good handbook is provided, for example, on the Baltic Sea Challenge webpage: www.waterprotectiontools.net.

A useful manual on different kind of techniques: www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx. The manual includes not only the list of different techniques, but instructions are also given to various techniques such as hydraulic and treatment design, safeguarding biodiversity and landscape values, as well as material selection.

Some good examples from Sweden: http://godaexempel.dagvattenguiden.se

Annex 2 – Reporting format for HELCOM Recommendation 23/5 concerning reduction of discharges from urban areas by the proper management of storm water systems

REPORTING FORMAT FOR HELCOM RECOMMENDATION 23/5 CONCERNING REDUCTION OF DISCHARGES FROM URBAN AREAS BY THE PROPER MANAGEMENT OF STORM WATER SYSTEMS			
Country:		Year:	
A. Storm water planning			
1. Has the ecosystem services approach been applied in storm water planning? If Yes, please describe how			
Yes	No	Partly	Unknown
2. Has the storm water planning been done at catchment area base and considering the natural runoff paths of storm water?			
Yes	No	Partly	Unknown
3. Is Integrated Storm Water Management (ISWM) being applied in urban development processes? If Yes, please describe how			
Yes	No	Partly	Unknown
4. Has any urban space development/regeneration been implemented (e.g. roads, streets, squares, public greening)? If Yes, has the storm water management process being reviewed and improved?			
Yes	No	Partly	Unknown
5. Have storm water systems and facilities been planned, designed and dimensioned according to future predicted scenarios of climate change, including predictions of changing precipitation volumes, changing patterns of precipitation intensity and rising water levels in seas, lakes and rivers? If Yes, please describe how			
Yes	No	Partly	Unknown
6. Have secondary runoff paths been prepared for high intensity storm events? If Yes, please describe them			
Yes	No	Partly	Unknown
7. Have storm water planning tools been applied at early planning urban stages? If Yes, please describe which ones and how			
Yes	No	Partly	Unknown
8. Is there a storm water policy and/or plan in your administration? If Yes, please provide further details			
Yes	No	Partly	Unknown
9. Has the impact of climate change been taken into account when planning storm water management? If Yes, please provide further details			
Yes	No	Partly	Unknown
B. Reduction of discharges of urban areas by proper management of storm waters			
10. Has the general priority order indicated (B.10 in the Recommendation) been followed when managing storm waters? If Yes, please provide further details			
Yes	No	Partly	Unknown
11. Have measures been taken to avoid overflows in the sewage system? If Yes, please provide further details			
Yes	No	Partly	Unknown

12. Is storm water conveyed in a combined sewage system? If Yes, please provide further details			
Yes	No	Partly	Unknown
a) Have main overflow spots been identified?			
Yes	No	Partly	Unknown
b) Is overflow treated? If Yes, please indicate how			
Yes	No	Partly	Unknown
13. Has an assessment of the impact of local storm water been conducted? If Yes, please provide further details			
Yes	No	Partly	Unknown
14. Have the storm water flood risk and quality risk (chemicals, oil or litter including microlitter) areas been identified? If Yes, please provide further details			
Yes	No	Partly	Unknown
15. Have measures to ensure storm water quality been taken at the source to prevent the deterioration of the quality of storm water? If Yes, please provide further details			
Yes	No	Partly	Unknown
16. Have measures to prevent the dumping of the street cleaning snow directly to sea or to any other water bodies been taken? If Yes, please provide further details			
Yes	No	Partly	Unknown
C. Management of high-risk storm waters			
17. Is storm water from heavily polluted areas treated separately on site? If Yes, please indicate measures taken			
Yes	No	Partly	Unknown
18. Are contaminated waters from industrial areas, production plants, leachate from landfills, service stations, mechanical workshops and other plants as well as storm waters from areas where oil is handled or stored treated before being connected to a storm water system or discharged to the recipient? If Yes, please indicate measures taken			
Yes	No	Partly	Unknown