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**Third River Basin Management Plans
Second Flood Hazard and Risk Maps and Second Flood Risk Management Plans
Member State: Slovakia**

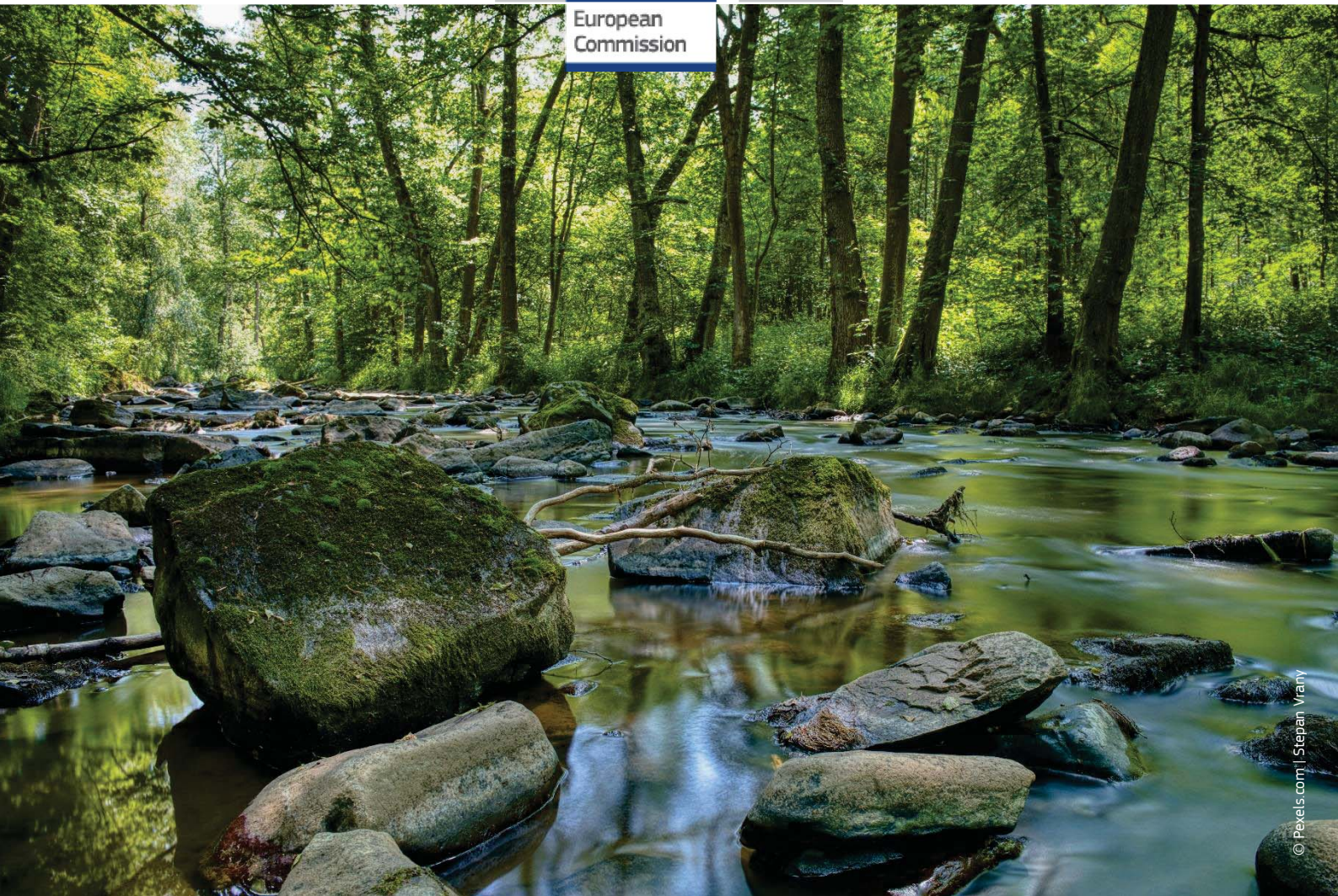
Accompanying the document

**REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN
PARLIAMENT**

**on the implementation of the Water Framework Directive (2000/60/EC) and the Floods
Directive (2007/60/EC)**

**Third River Basin Management Plans
Second Flood Risk Management Plans**

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Country-specific staff working document

Slovakia



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SECTION A:

WATER FRAMEWORK DIRECTIVE

The assessment of Slovakia's third River Basin Management Plans was published in February 2025.

See [EUR-Lex - 52025SC0021 - EN - EUR-Lex](#).

SECTION B:

FLOODS DIRECTIVE

1. 1. Flood risk management under floods directive (FD)

The Floods Directive requires each Member State to examine its territory for flood risks, assess the potential adverse consequences of future floods for human health, the environment, cultural heritage and economic activity, identify significant risks, map flood extent and the potential adverse consequences, and take measures to reduce flood risk. These activities are reflected in:

- (a) the preliminary flood risk assessments (PFRAs), including the identification of areas of potential significant flood risk (APSEFRs);
- (b) the preparation of flood hazard and risk maps (FHRMs);
- (c) the establishment of flood risk management plans (FRMPs).

The preliminary assessments, mapping and planning for flood risk are repeated in six-yearly cycles.



There are two units of management (UoMs) in Slovakia, and these are the same as under the Water Framework Directive's river basin districts (RBDs). The UoMs cover 10 sub-basins, for which PFRAs were prepared. Fluvial, pluvial and groundwater floods are considered to be potentially significant sources of flooding in both of Slovakia's UoMs, and Slovakia has designated 195 APSEFRs. The impacts of climate change on flood risk were considered at the time of the second PFRAs, based on the outputs of nine models of general atmospheric circulation (GCMs) developed by four global climate centres. The GCM outputs were regionalised into individual selected points across the country using

statistical methods and measured data. Scenarios for the possible course of climate change provide time series up to 2100. Scenarios are available for several climatic factors, such as air temperature, atmospheric precipitation, global radiation and humidity. The expected impact of climate change on the occurrence of floods in the future was assessed based on the national reports of the Slovak Republic on climate change, prepared by a team of experts commissioned by the Ministry of the Environment approximately every four years.



1.1 Flood hazard and risk maps

Slovakia has published FHRMs at an online portal on the website of the Slovak Water Management Enterprise (SVP)¹, together with a user manual and an interactive map². One map has been produced covering both UoMs but the connection to the APSFRs is unclear: the FHRMs are at a different portal than the APSFR map.

Fluvial floods are considered the only important flood source in Slovakia and are the only type included in the FHRMs. Three probabilities are considered: low (return period 1 000 years), medium (return period 100 years) and high (return period 10 years). The FHRMs cover flood extent, water depth, flow velocities, numbers of inhabitants, economic activity marked via land use, cultural heritage, drinking water protection areas, recreational and bathing waters, Natura 2000 areas, locations of environmental load, and significant pollution sources, including sites designated under the Industrial Emissions Directive. In the interactive map, there are separate layers for flood hazard and flood risk for the individual flooding probability scenarios.

In terms of changes in contextual information (i.e. the way in which information about the maps is conveyed to the public) since the first FHRMs, access to the FHRMs is provided via a digital portal instead of single map sheets in PDF format. The second FHRMs include cultural heritage together with information about the limitations of the maps and an assessment of uncertainties. The methodology for hydraulic calculations and comments on the determination and visualisation of flood consequences is reported in detail.

In terms of changes in methodologies used to prepare maps since the first FHRMs, the approach to the spatial determination of geographical areas has been reconsidered. For the second FHRMs the geographical areas contained municipalities in sequence on a water course or close to a water course. In addition, details about the methodology for hydraulic calculations are now included: FHRMs are developed using hydraulic modelling of steady non-uniform flow and unsteady flow, including collapse of infrastructure and levees. The flood extents were developed using current hydrological data and are based on up-to-date modelling techniques. In addition, in the risk assessment of sensitive objects, a binary method was used ('at risk' / 'not at risk'). For the other elements, vulnerability is expressed indirectly: it is conveyed by the symbols of the various elements in combination with the extent of the flood zone.

Climate change in the second FHRMs

¹ https://mpt.svp.sk/svp_vmapportal/?basemap=orto2022&zoom=1&lat=48.635428&lng=19.190401.

² <https://www.arcgis.com/apps/webappviewer/index.html?id=3f4c256c5d0d48f38570038a34b40229>

As regards the consideration of climate change effects in the preparation of flood hazard and risk maps, please see Section 3.1 on adaptation to climate change.³



1.2 Flood risk management plans

Objectives and measures

Slovakia has prepared FRMPs for 10 sub-basins across its two UoMs, using the same outline, methods and approaches across the plans. The FRMPs are available on the website of the Ministry of the Environment⁴. The FRMPs for three sub-basins were assessed – the Hron; the Dunajec and Poprad; and the Danube.

Slovakia has identified four strategic objectives at national level, linked to six core indicators. All four strategic objectives call for the reduction of potential adverse consequences of floods and address human health, economic activity, the environment and cultural heritage. The FRMPs identify indicators to measure progress towards the common objectives; changes in flood risk, as determined by the FHRMs, will be used to monitor the effectiveness of the plans.

Slovakia has reported 678 measures to EIONET and has reported on progress made on all its measures. The second FRMPs provide an overview of the progress of measures under the first FRMPs and the reasons for any delays. The great majority of measures (98%) reported to EIONET are for protection, and these types of measure are discussed in all the FRMPs assessed. Although only 1% of the measures reported to EIONET are for prevention, the FRMPs discuss measures to incorporate flood risk in spatial planning and review progress and challenges in this area. Similarly, only 1% of the measures reported to EIONET are for preparedness. The FRMPs refer to measures for flood forecasting and warning and to coordination with civil protection authorities. Slovakia reported the geographical coverage of all its measures to EIONET in terms of three categories: RBD coverage (358 measures, 53% of all measures), APSFR coverage (302 measures, 45%), and national coverage (19 measures, 3%).

The FRMPs explain that the prioritisation of measures has been established primarily through multi-criteria assessment. The prioritisation of measures is carried out at the scale of APSFRs and is based on the assessment of three primary criteria (feasibility of measures, potential damages avoided and number of inhabitants likely to be affected by flooding), and three supplementary criteria (extent of protected areas and their categories, number of significant sources of pollution and number and categories of cultural heritage sites affected). Additional criteria considered include compliance with environmental goals, particularly those under the Water Framework Directive (WFD), and the type of area targeted (e.g. high-risk urban zones, forested areas and agricultural lands). Cost-benefit analysis (CBA) was used to evaluate the effectiveness of measures proposed for individual APSFRs. The CBA methodology uses the calculation of the average flood risk (potential flood damage) per year (or 'loss') and calculates by how much the current risk will be reduced per euro of investment in flood risk management. The method also considers the difference in the number of affected inhabitants before and after the implementation of the proposed measures. In addition, the FRMPs describe the use of the FHRMs in the prioritisation of measures, in land-use planning decisions and in monitoring the effectiveness of the plans.

³ See [EUR-Lex - 52025SC0021 - EN - EUR-Lex](#).

⁴ www.minzp.sk/voda/ochrana-pred-povodnamimi/manazment-povodnovych-rizik/navrh-planu-manazmentu-povodnoveho-rizika-ciastkovych-povodiach-slovenskej-republiky-aktualizacia-2021.html.

The FRMPs focus on 'grey' structural measures such as dykes and reservoirs. They refer to nature-based solutions, but it is not clear how prioritisation between 'grey' and 'green' measures is done. The FRMPs also make some references to ecosystem services. For instance, one FRMP highlights natural water retention measures that can help to reduce the impacts of increased flooding and/or restore the retention capacity of aquifers, soil and aquatic ecosystems, thereby providing ecosystem services. Ecosystem services are also applied in the proposed examples of adaptation measures for the water management sector.

Slovakia has reported that coordination with other relevant EU legislation was respected in the FRMPs. The FRMPs identify measures that support WFD objectives (nature-based solutions in particular) and state that WFD objectives are considered in the prioritisation of the FRMPs' measures. The plans explain that flood risk measures, especially those for natural flood management and nature-based solutions, are designed to deliver co-benefits for both flood risk reduction and water status improvement under the WFD. The FRMPs state that special attention has been paid to the protection of nature and landscape, including Natura 2000 sites and broader biodiversity objectives. This consideration has been embedded in the planning process to ensure that flood protection actions align with environmental goals and legal conservation frameworks. The FRMPs refer to the Birds and Habitats Directives and to Natura 2000 sites, stating that structural measures should respect biodiversity protection requirements; they also summarise the mitigation measures to be implemented. The FRMPs also provide an overview of establishments designated under the Seveso Directive that are located within flood risk areas.

Consideration of climate change in the second FRMPs

As regards the consideration of climate change effects in the preparation of flood risk management plans, see Section 3.1 above on 'adaptation to climate change'.⁵

Governance

The FRMPs provide details of cross-border coordination at the PFRA stage, both bilaterally and within the international Danube RBD, but contain less information on coordination at the FHRM and FRMP stages.

The FRMPs describe meetings and other mechanisms for the active involvement of stakeholders, though they do not list the organisations involved. The FRMPs indicate that comments received in the consultation on the draft plans were addressed without providing any further detail on this.

Progress identified in the second FRMPs

The second FRMPs include several notable improvements.

- o They highlight the role of FHRMs in determining the effectiveness of measures; the maps thus provide a form of baseline.
- o General indicators have been identified for the common strategic objectives, making these objectives measurable.
- o The second FRMPs provide greater information on different types of measure, such as those for preparedness, which include early warning systems.

⁵ See [EUR-Lex - 52025SC0021 - EN - EUR-Lex](#) .

- o Compared to the first FRMPs, there is more information on nature protection as well as reference to types of ecosystem services.
- o The second FRMPs provide more information on the approach and results of public consultation activities.



2. Flood Directive recommendations

Based on the information reported and the FHRMs and FRMPs assessed, the following recommendations are made to enhance flood risk management. In other words, Slovakia should do the following:

As regards the FHRMs:

- clarify the number of APSFRs and the correspondence between APSFRs and the FHRMs;
- provide information about the connection and coordination between the FHRM portal and the APSFR maps;
- make the FHRM portal more user-friendly for non-expert users.

As regards the FRMPs:

- link directly to the objectives and the measures;
- include an assessment of the progress made towards achieving the objectives;
- provide information on the costs of measures;
- provide information on the expected timetables for the implementation of measures;
- provide more detail about the prioritisation and planning of nature-based solutions;
- set out a more detailed overview of the use of CBA and the methodology supporting it;
- provide further information about the likely impact of climate change on flood risk;
- explain the consideration of climate change in the development of measures;
- provide information on whether and how the outcomes of the SEA process are incorporated into the plans;
- include further information on international coordination during the development of the PFRAs, the FHRMs and the FRMPs.