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Draft Updated Integrated Tisza River Basin Management Plan

Annex 3. Summary on elaboration of inventories on priority substances emission, discharges and losses

Project co-funded by the European Union (ERDF, IPA funds)

DANUBE REGION strategy

Questionnaires

No	Question /Country	Ukraine	Romania	Slovakia	Hungary	Serbia
1.	**EU MS: what is the current status of the elaboration of the PS EDL inventory and when will the assessments be available?** **Non-EU MS: is there any similar activity on-going or planned?**	In Ukraine inventory of polluting substances in Tisza basin is done by the Department of use and monitoring of water resources of Tisza river basin authority annually. For this, a special form (2TP Vodhoz) is used. From 2019 with adoption of the new Decree on State Water Monitoring, a new WFD compliant inventory will be applied.	The first Priority Substances EDL inventory has been achieved in 2013 based on data for the period 2009-2011, followed by the second PS EDL inventory in 2014 with data from 2012-2013, according to the EQS Directive and the WFD CIS Guidance Document no. 28 requirements. Presently, we are in process to update it with new data and information.	Elaboration of the 1st PS EDL inventory has been achieved in 2013 based on data for the period 2009-2011.	1st EDL Inventory had been published in the 2nd River Basin Management Plan of Hungary by the end of 2015. Results are public and available here: http://www.vizugy.hu/vizstrategia/documents/988BF7DB-B869-46C6-9463-E9E4BFC81D2A/3_6_Hatteranyag_Veszelyesanyagok.zip	Harmonisation and implementation of legal acts with EU water legislation is envisaged for the period 2018-2021. The responsible institution for implementation of EQSD and PS inventory is the Ministry of Environmental protection. Data collection activities are initiated and Inventory is under development
2.	**Which point sources are involved into the assessments? How are the emissions quantified?**	All legal entities which discharge wastewaters are considered as point sources. The emissions are quantified as difference between the maximum admissible concentrations and real values.	All monitored point sources of pollution discharges are considered in assessment. The emissions are quantified according to the national methodology. The methodology is developed based on the WFD CIS	Into assessment industrial facilities, E-PRTR were involved. (UWWTD data lack information on pollution by PS). Point sources emissions were quantified on the base of effluent measurements.	UWWTPs, industrial and other facilities (every facility with above 15 m^3 waste water discharge/operative days, not just E-PRTR). Emission quantification was based on influent-effluent measures and emission factors in case of UWWTPs, in case of industrial facilities only effluent measures were addressed.	not defined yet

			Guidance Document no. 28 recommendations.			
3.	**Do you address PS diffuse pollution? How do you assess the diffuse emissions?**	Diffuse pollution is not addressed at the moment. No modelling is applied as well.	Yes. The diffuse emissions are assessed according to the Guidance Document no 28 on the Preparation of an Inventory of Emissions, Discharges and Losses of Priority and Priority Hazardous Substances recommendation. The diffuse load was estimated as the difference between the total riverine load and the load discharged from point sources.	PS diffuse pollution was addressed. Diffuse loads were calculated by formula: Ldif = Ly (total riverine load) – Dp (total point source discharge) – Lb (natural background load) The quantification of emissions, discharges and losses was carried out by calculating of the riverine load (by OSPAR, 2004 equation - recommended by technical guidance) and then by linking results with existing information on the pollution sources or eventually with natural background. For metals the natural background concentrations - developed for each of the WB, were taken into account. In case of synthetic substances - for level of background concentration, half of the limit of quantification (0,5LOQ) have been used.	In general, diffuse emissions were calculated according to riverine load approach. Based on available data we addressed different pathways of HS: air deposition, groundwater and transportation. Air deposition loads were calculated based on data of European Monitoring and Evaluation Programme and CORINE Land Cover. HS groundwater loads were estimated based on interflow data and concentrations of the infiltration area. HS loads from transportation were estimated based on the following data: number of motor vehicles and emission factors of toxic metal loads from break wear, tire wear and exhaust gases. The estimation method was developed by Péter Budai [1]in 2011.	**NA**

[1] http://www.omikk.bme.hu/collections/phd/Epitomernoki_Kar/2011/Budai_Peter/ertekezes.pdf

4.	**Which pollutants/pollutant groups have been involved to the emission assessments?**	The form 2-TP includes the following substances: Nitrogen group (nitrogen total, nitrogen ammonia, nitrates, nitrites) Phosphorus group (phosphates, total phosphorus) Organic pollution (BOD, COD) General physical-chemical parameters (dry residue, suspended solids, chlorides, sulphates) Specific substances (Synthetic surface-active substances, oil products, heavy metals). In total, 56 pollution substances should be identified. But at present Tisza basin authority laboratory cannot make needed analysis.	All PS according to Annex 1, Part A of the EQS Directive 2008/105/EU for which monitoring data were available.	Relevance substances for RBD and sub-basins. They were identified on the base of following criteria: i.) the substance causing the failure state of at least one water bodies ii.) the average concentration of the substance is over half EQS in more than one waterbody iii.) Data from E-PRTR and national Central water database (SEV) confirm the release, which could lead to a concentration corresponding to the above criteria, iv.) there are known sources and activities causing inputs to the basin that could lead to a concentration corresponding to the above criteria.	Involved pollutants in the Tisza RB: specific pollutants (Zn, Cr, Cu, As), heavy metals (Pb, Ni, Hg, Cd), PAHs(anthracene, flouranthene, total Benzo(b)fluor-anthene + benzo(k)fluor-anthene, benzo(a)pyrene), pesticides (atrazine, hexachlorobenzene), other industrial pollutants (dichloroethane, phenols , AOX)	**NA**
5.	**Which pollutants/pollutant groups have been measured in the water bodies? What kind of monitoring is used? Is the data frequency**	**According to the Programme of** State Water Monitoring laboratory of Tisza basin authority had analyzed pollutants at 32 stations. The pollutants include	The inventory was developed for 33 PS, except Brominated diphenylethers, Chloroalkanes, Tributyltin compounds and pentachlorophenol, (which are included in monitoring programme since	Priority substances and substances relevant for SK. Mostly surveillance and operational monitoring. For assessment of chemical status are measured all priority substances, frequency is one in month, 12 per year. River basin specific	All parameters of Directive 2008/105/EC were measured (at least by one of the stations) except of tributyltin-cation, chloroalkanes, total cyclodiene pesticides, brominated diphenylethers. Data of surveillance monitoring stations on the national border was used in the Tisza RB (12 samples/year). Riverine load approach cannot be	All 33 Priority and priority hazardous substances have been measured in surface and ground water bodies. Annual Monitoring program on selected water bodies with mostly monthly fervencies. Currently monitoring network covers only 24% of SWB and 20% of GWB.

	appropriate for load calculations?	*Chemical and physical-chemical parameters* Temperature, dissolved oxygen, mineralization. specific conductivity; electric conductivity, pH; BOD, COD, N total, N ammonia, N nitrite, N nitrate, P total, P phosphates. ***Specific synthetic pollutants*** (surface active specific substances, oil products) **Specific non-synthetic pollutants (**heavy metals) In practice it is surveillance monitoring. 12 times per year. Monthly – only drinking water sources. The network is not sufficient for load calculations, especially for small rivers. Monitoring of the small rivers is limited to background concentrations measurements prior development of reference values of	2016) where monitoring data were available. The used data resulted from the surveillance and operational monitoring, depending on the status of water bodies, with frequency according to the WFD.	pollutants are measured in the relevant water bodies, where are discharged.	applied properly in Hungary (see question 7), increase of sampling frequency may not give more accurate results or may not be economical.	Load calculations would be possible only for large rivers.

		the maximum admissible concentrations.				
6.	**What particular substances have been found of national importance?**	Not identified.	The following substances have been identified as relevant at the national level: Cd, Pb, Hg, Ni.	Following the requirements of the European Water Framework Directive (WFD), a process of selecting relevant dangerous substances and developing a related Pollution Reduction Programme (PRP) has started in the Slovak Republic in 2001. Based on the results of a three years investigative screening campaign, 59 chemical substances were identified as relevant dangerous substances in 2004 and included in the national PRP. From this list of 59 chemical substances, 33 priority substances were already included in the EQS Directive (2008/105/EC). The remaining 26 relevant dangerous substances were assigned as river basin specific pollutants (Annex VIII substances of the WFD) for the Slovak Republic. Priority substances significant for SK part of the Tisza RB are: Atrazine, , p.p. DDT, Dichloromethane, DEHP,	Relevant substances on national level: Cd, Hg, Pb, Ni, diuron, endosulfan, atrazine, lindane, hexachlorobenzene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, anthracene, fluoranthene, nonylphenols, trichloromethane, tetrachloroethylene, DEHP + specific pollutants (Zn, Cr, Cu, As)	Not identified as such

				PAHs, Trichlomethane, Octylphenols, Hexachlorcyklohexane, Cadmium and its compounds, Mercury and its compounds. From SK relevant substances (identified in 2008) significant for SK part of the Tisza RB are: MCPA, 4-methyl-2,6-di-terc butylphenol, cyanides, dibutylphtalate, PCB (congeners 28, 52, 101, 118, 138, 153,180), arsenic and its compounds, cuprum and its compounds, zinc and its compounds.		
7.	**What are the most important problems/gaps identified related to the inventory compilation?**	1. Absence of the legal basis (it should be solved with the adoption of Decree of State Water Monitoring) 2. Absence of national monitoring system, compliant with WFD requirements (to be developed after adoption of the above-mentioned Decree) 3. Absence of laboratory equipment	-estimation of the diffuse pollution sources for all pollutants due to the lack of modelling tools. -quantification of the natural backgrounds for some SWBs and the relevant non-synthetic PSs, being available a national methodology which should be updated.	• insufficiently precise analytical methods for determining some substances as required by Directive 2009/90 / EC laying down further to Directive 2000/60 /EC of the EP and a number of technical requirements for chemical analysis and monitoring of water status • absence of data on the concentrations of PS and SK relevant substances identified in 2008) in sediment and biota, • insufficient scope of monitoring quality of	Estimations on diffuse loads have significant uncertainty with the method of riverine load approach. The reason is related to particular geographic and hydrological conditions of Hungary. 95% of water quantity comes from abroad therefore national contribution is very small. Riverine loads based on the difference between inflow and outflow loads cannot be calculated accurately because the error of the estimation exceeds the national contribution. Difficulties related to surface water monitoring system are heterogeneous list of measured parameters and different	The most important gaps are Data availability and Insufficient monitoring network

				discharged waste water in relation to PS and SK relevant substances (legislation lacks a tool for compulsory periodic updating of indicators of the pollution - monitoring the full range of PS and SK RS as part of the renewal of the authorization for the discharge of wastewater) • lack of data on air pollution, specific organic substances (PS, SK RS) • comparability of water contamination by heavy metals in the stream, and the waste water discharges. Issued permits for waste water discharge prescribe- the limit values for total form (bound, not only to water but also of suspended solids), in contrast to the requirements for the chemical status of water bodies - where EQS apply to the filtered water. Therefore, it is presently difficult to estimate the contribution from point and diffuse source in the total riverine load. • insufficient information about the	analytical methods used by national laboratories. To address HS loads by different pathways the available data are often not sufficient. HS pollution occurs in smaller catchments but data are not available on that spatial scale to identify the sources. Other difficulty is because of heterogenic monitoring data: there is no information about HS distribution between different matrixes (sediment, suspended solids, water) Emission and immission data cannot be compared because the measured parameters are different. (E.g. dissolved and total metals).	

				content of PL and RL pollution in municipal waste water.		
8.	**Have specific measures been recommended to control PS emissions?**	No	Yes, according to the Article 16 of the WFD, measures have been planned and implemented in order to reduce the pollution with priority substances and to phase out the hazardous priority substances at pollution sources; applying the measures to prevent the deterioration of the chemical status of all water bodies; analysis of the three priority substances (mercury, hexachlorobenzene, hexachlorobutadiene) in biota.	For identified sources of pollution (point and diffuse) measures were proposed. In addition to improve future PS EDL inventory following measures were proposed: • reducing the limits LOQ laid down in the case of methods which do not meet the LOQ required by Directive 2010/108 / EC, respectively a switch to other matrix setting of relevant indicators, • introduce monitoring of the organic matter in the monitoring of emissions to air, • creating tools to increase the level of future emissions inventories (e.g. Models, data on the production and use of substances – e.g. Of REACH, from the analysis of substance cycles, production and emission factors).	Legislative modification is under scientific preparation in order to harmonize the emission control parameters with the EQS Directive. Scientific monitoring program is under preparation for the purpose of identification of HS sources, loads and emission factors.	Harmonisation and implementation of legal acts with EU water legislation is envisaged for the period 2018-2021. The responsible institution for implementation of EQSD and PS inventory is the Ministry of Environmental protection. Data collection activities are initiated and Inventory is under development

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Partners: General Directorate of Water Management, Hungary | Global Water Partnership Central and Eastern Europe, Slovakia | International Commission for the Protection of the Danube River, Austria | Ministry of Water and Forest, Romania | Ministry of Foreign Affairs and Trade, Hungary | National Administration "Romanian Waters", Romania | National Institute of Hydrology and Water Management, Romania | Public Water Management Company "Vode Vojvodine", Serbia | Regional Environmental Center for Central and Eastern Europe, Hungary | The Jaroslav Černi Institute for the Development of Water Resources, Serbia | Water Research Institute, Slovakia | World Wide Fund for Nature Hungary

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