



European Union Water Initiative Plus for Eastern Partnership countries
(EUWI+)

TRANSBOUNDARY SUB-PARTS OF GROUNDWATER BODIES AND TRANSBOUNDARY MONITORING NETWORK OF THE REPUBLIC OF BELARUS AND UKRAINE

Display Material for the EGU General Assembly 2021, EGU21-4599
(vEGU21: Gather Online | 19–30 April 2021)





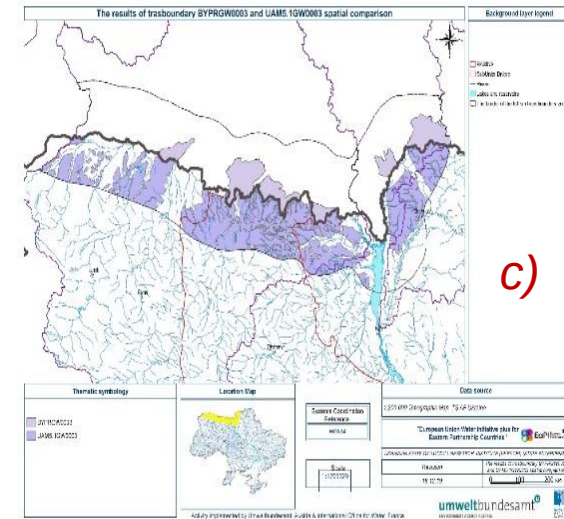
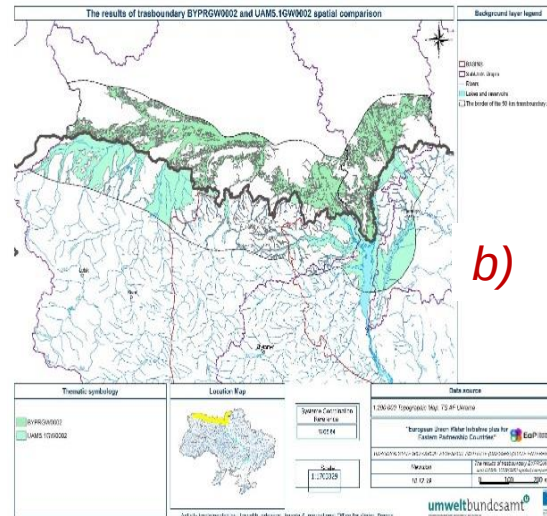
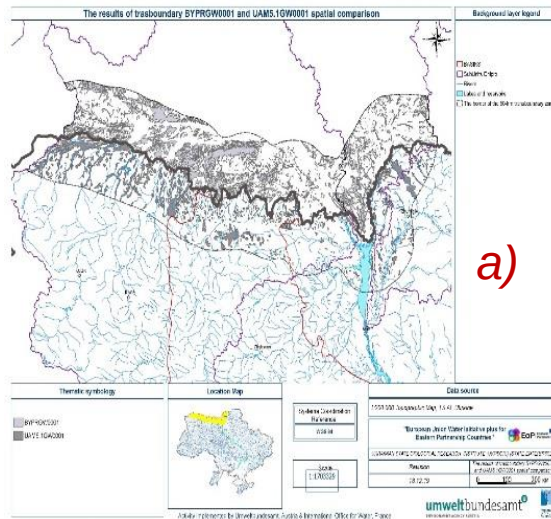
TRANSBOUNDARY SUBPARTS OF GROUNDWATER BODIES AND TRANSBOUNDARY MONITORING NETWORK OF THE REPUBLIC OF BELARUS AND UKRAINE

Developed under the European Water Initiative
Plus for Eastern Partnership Countries (EUWI+)

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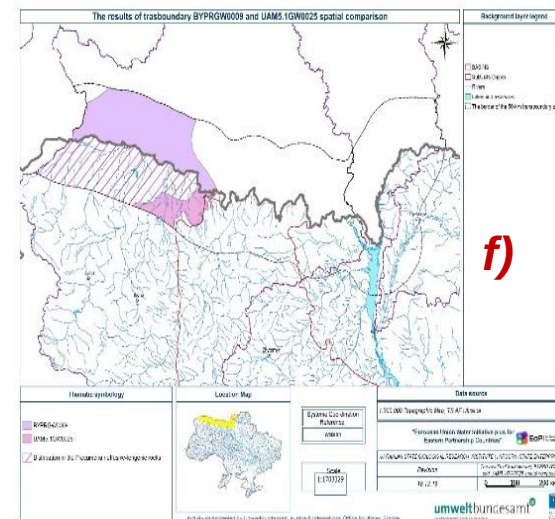
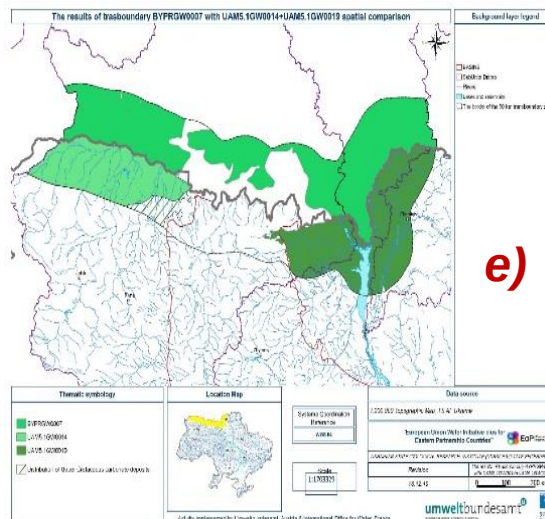
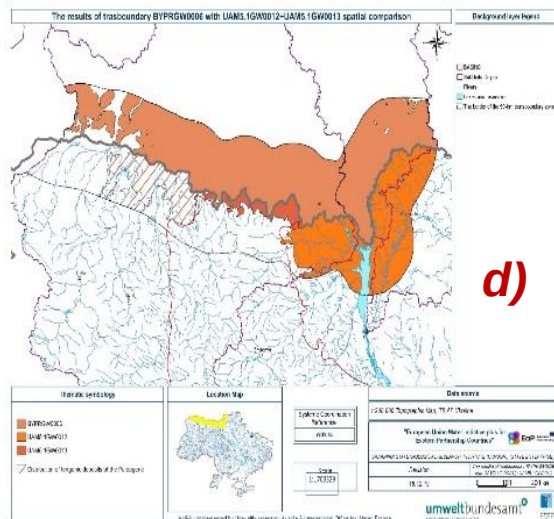
TRANSBOUNDARY SUBPARTS OF GROUNDWATER BODIES (GWB)

- The “EU Water Initiative Plus for Eastern Partnership (EaP) Countries (EUWI+)” involves six eastern neighbors of the EU: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. The EUWI+ project addresses existing challenges in both development and implementation of efficient management of water resources and in particular the water monitoring capacities. It supports the EaP countries to move towards the approximation to EU acquires in the field of water management as identified by the EU Water Framework Directive.
- A recent study of 2019 identified transboundary GWBs in the Dnipro River Basin of Ukraine and the Republic of Belarus. In total eight (3 unconfined and 5 confined) transboundary GWBs in Ukraine were identified as transboundary linked with six GWBs in Belarus. A study in 2020 aimed at identifying those sub-parts of the GWBs which are subject to transboundary GW interaction.
- To identify and characterize transboundary sub-parts of GWBs on both sides of the border the transboundary corridors at a distance of 50 km from the state border were identified. This distance was chosen to capture the area of recharge of aquifers and complexes of the zone of active water exchange (watersheds) and the area of groundwater discharge (river valleys).

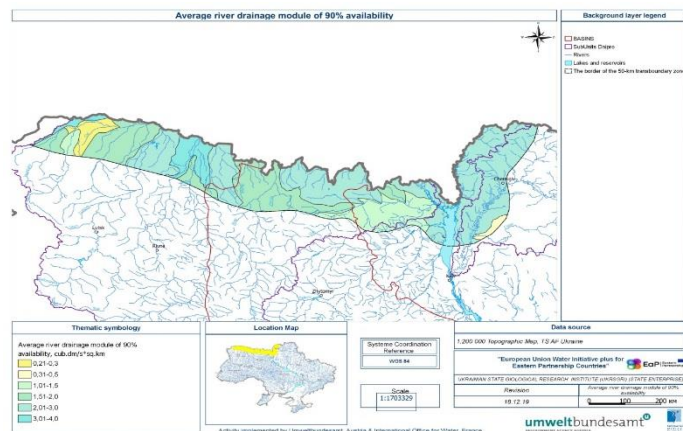


- Groundwater bodies (GWBs) in bog sediments **(a)** in both Ukraine and Belarus have been identified due to the high vulnerability, peculiarities of the hydrological regime and the need for protection (according to the Ramsar Convention). Due to low natural quality and pollution, they are not used for water supply. The main anthropogenic load is drainage reclamation and development of peat lands.
- GWBs in alluvial, lake-alluvial and water-glacial sediments **(b) (c)** are used in rural areas for drinking water needs with the help of shallow wells. Groundwater due to shallow occurrence and lack of aquitards in the roof is vulnerable to pollution. Nitrate pollution is common in rural areas.

CONFINED TRANSBOUNDARY GROUNDWATER BODIES



- GWBs in Paleogene **(d)**, Cretaceous **(e)** and Precambrian **(f)** sediments in both Belarus and Ukraine are protected from pollution. They are operated by separate wells and group water intakes for centralized water supply. At the same time, small-scale water extraction is carried out on the Ukrainian territory, as it is sparsely populated and is characterized by insignificant anthropogenic pressure.
- The chemical composition of groundwater during long-term operation remains stable and, given current trends to reduce groundwater production, there is no reason to predict its deterioration.



The transboundary territory is located in Polissia (marshy woodlands), the zone of excessive moisture.

GW recharge of the unconfined GWBs is due to the infiltration over the entire area of their distribution.

Confined aquifers also have infiltration supply. The regional recharge area is the Ukrainian Shield, a large positive structure. The direction of GW flow is from the hydrogeological region of the Ukrainian Shield towards the artesian basins in Belarus.

Taking into account GW recharge, to determine the influence of GW intakes operation radius in the transboundary zone of Ukraine, the value of river drainage module of 90% availability was used. This analysis showed that the radius of influence of none of the existing operational water intakes reaches the border with Belarus.

Groundwater bodies	Distance to the border with Belarus, km	Radius of influence, km
<i>In Paleogene sediments</i>	12 – 50	3.5 – 9.4
<i>In Upper Cretaceous sediments</i>	7 – 50	2.7 – 5.3
<i>In Alb-Cenomanian Cretaceous sediments</i>	20 – 50	2.8 – 6.7
<i>In Precambrian rocks</i>	30 – 35	1.7 – 2.3

TRANSBOUNDARY MONITORING NETWORK

- In the transboundary zone of **Belarus**, the total number of GW monitoring sites is 238 wells, of which: 37 wells of hydrogeological posts and 196 groundwater intake wells. In addition, local groundwater monitoring is carried out at 57 enterprises.
- In the transboundary zone of **Ukraine**, the GW monitoring network consists of only 3 observation wells, which is insufficient. Hence, 10 new wells are proposed. It is also proposed to include 14 groundwater intakes operating on approved GW reserves, as well as extracting at least 100 m³/day.

BELARUS



UKRAINE



CONCLUSIONS

- The conditions for groundwater resources formation in the transboundary Ukraine-Belarusian zone in the Dnipro basin are very favorable, because groundwater recharge occurs on the territory of Ukraine, where the territory is sparsely populated and human pressure is minimal.
- The impact from dispersed small water users that abstract groundwater in the transboundary zone is negligible. So, both the quantitative and the qualitative status of the GWBs in the transboundary area are predominantly good.
- At the same time, there are common problems to be solved which require GW monitoring restoration and international coordination. Priority is the restoration of the GW monitoring network in the Ukrainian border area.
- ***Detailed information can be found in the technical reports on the EUWI+ project homepage:***
 - **[Full report Ukraine](#)**
 - **[Full report Belarus](#)**

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