



Groundwater Management in Romania – Challenges of WFD and GWD implementation

*Senior adviser Ruxandra Balaet,
Hydrogeologist PhD Eng.,
Ministry of Environment, Water and Forests*



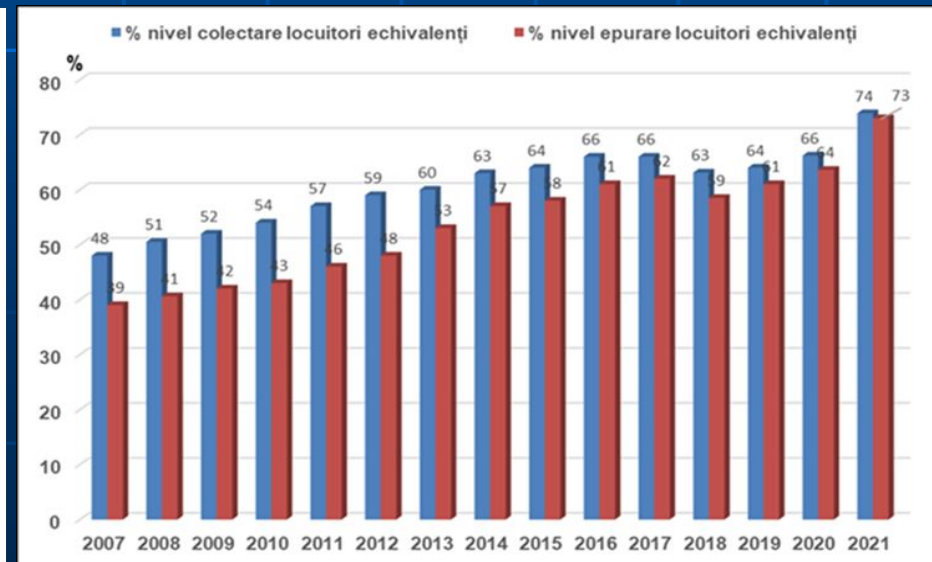
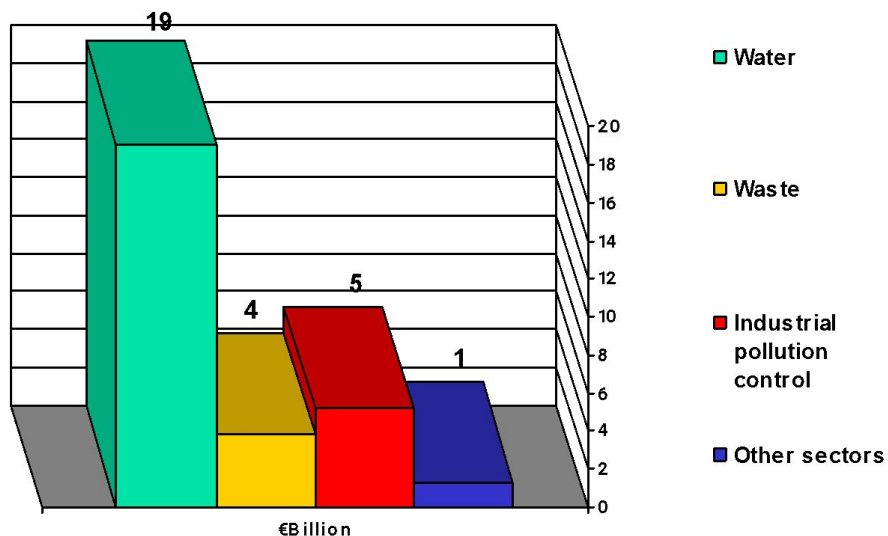
ruxandra.balaet@mmediu.ro

The 20th Europe – INBO International Conference,
Annecy-FRANCE



ROMANIA – facts and figures on water management

- 238,391 sq. km; 19,365 mil. inhabitants; 46% in rural localities.
- Climate: Temperate, four distinct seasons, similar to other states in Central Europe
- 78.905 km. rivers (4864 codified water courses), 329 natural lakes ($S > 25$ ha.), 324 permanent reservoirs, complex regional hydrogeological structures
- National system for water integrative monitoring: quality+quantity surface water and gw



ENVIRONMENTAL OBJECTIVES FOR GW

- preventing or limiting the input of pollutants into underground waters and preventing the deterioration of the state of all underground water bodies;
- protection and improvement of the quality of underground water bodies and ensuring a balance between the flow taken and the groundwater recharge, with the aim of achieving a good status of the groundwater;
- the reversal of any significant and sustainable trend of increasing the concentration of any pollutant, trends resulting from the impact of human activity, in order to progressively reduce groundwater pollution.

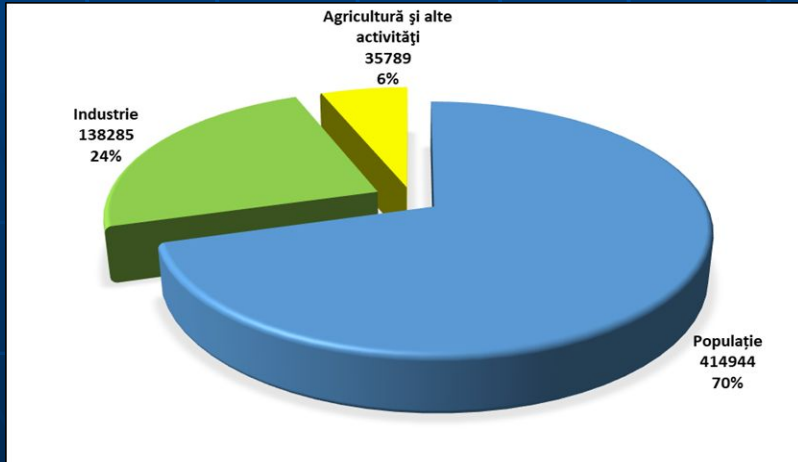
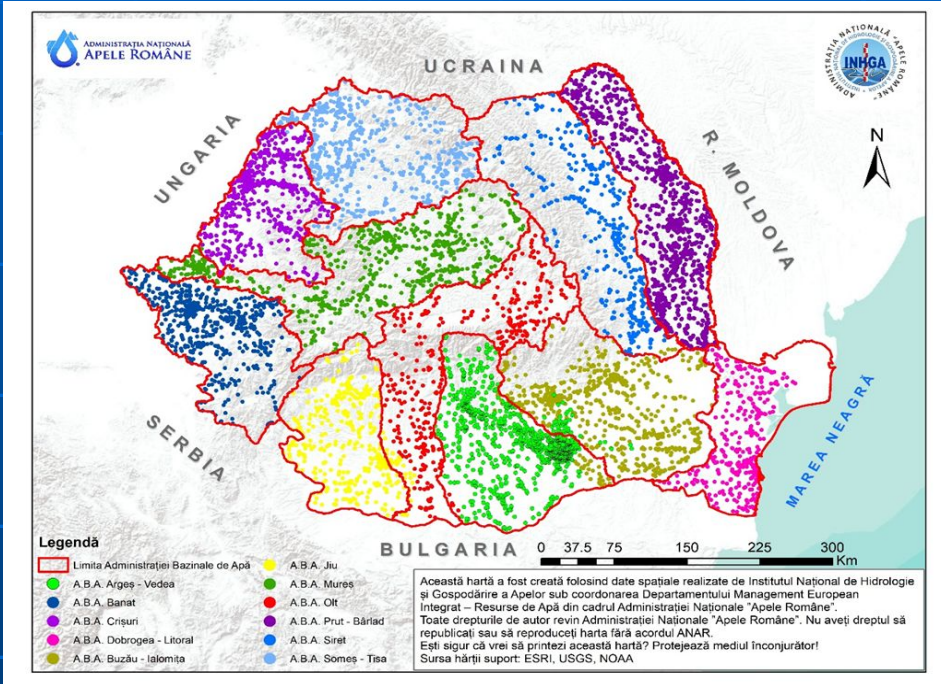




143 GWBs - 17 transboundary , 115 shallow gw, 28 deep confined

GW EXPLOITATION

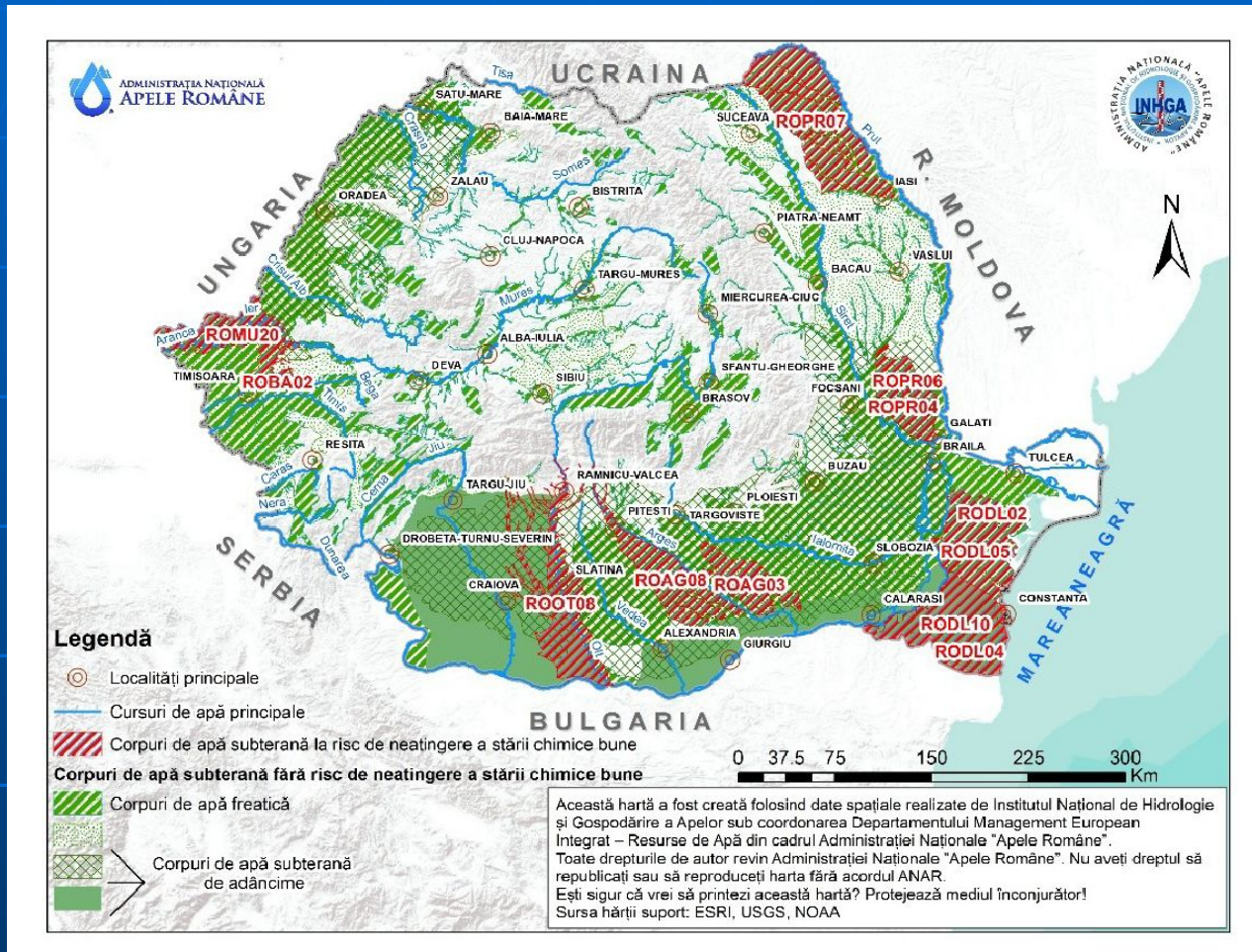
Basin District Name	Exploited volumes by user types (thousands of m ³ /year)			
	Population	Industry	Agriculture and others	Total
Somes-Tisa	14.368	10.817	1.994	27.179
Crisuri	24.915	16.485	1.317	42.717
Mures	26.675	3.823	2.117	32.615
Banat	28.807	4.337	3.277	36.421
Jiu	27.956	5.558	3.845	37.358
Olt	26.235	13.646	164	40.045
Arges-Vedea	94.528	43.221	8.920	146.670
Buzau-Ialomita	27.449	3.430	4.823	35.702
Siret	57.579	25.673	3.063	86.315
Prut-Barlad	27.365	3.891	1.450	32.706
Dobrogea-Litoral	59.067	7.404	4.819	71.290
Total	414.944	138.285	35789	589018



Compared with precedent RBMP (2009-2015) exploited yields increased by approximately 115.527 th. m³/an (24,40 %). Abstracted volumes for drinking water supply and for agriculture increased, those for industry decreased.



None of the 143 gwbs present quantitative risk



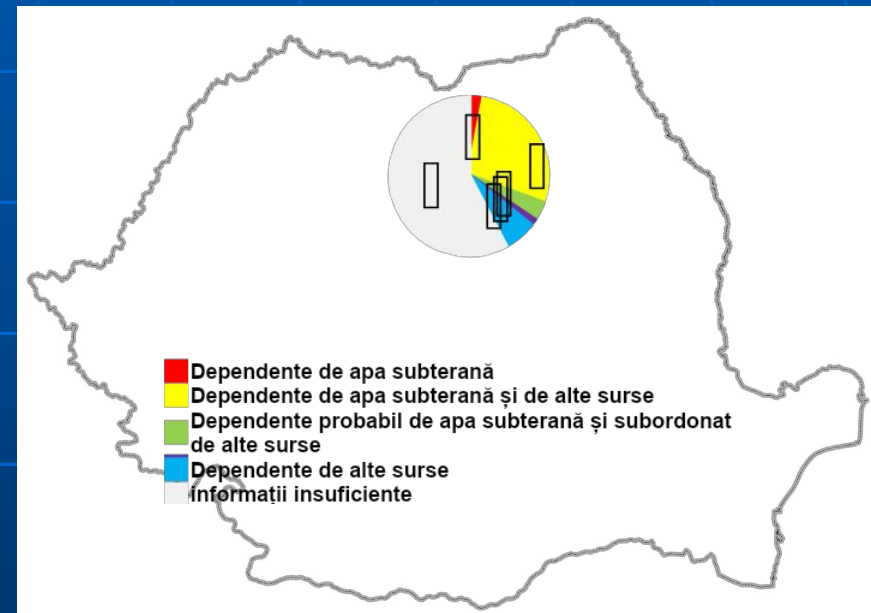
**GWBs at chemical risk - 12 from 143 (2nd RBMP)
(for 12 GWBs exemptions from environmental
objectives were asked)**

INTERDEPENDENCY GWBs – TERRESTRIAL and AQUATIC ECOSYSTEMS

Dependency evaluation –
based on 2 indicators:

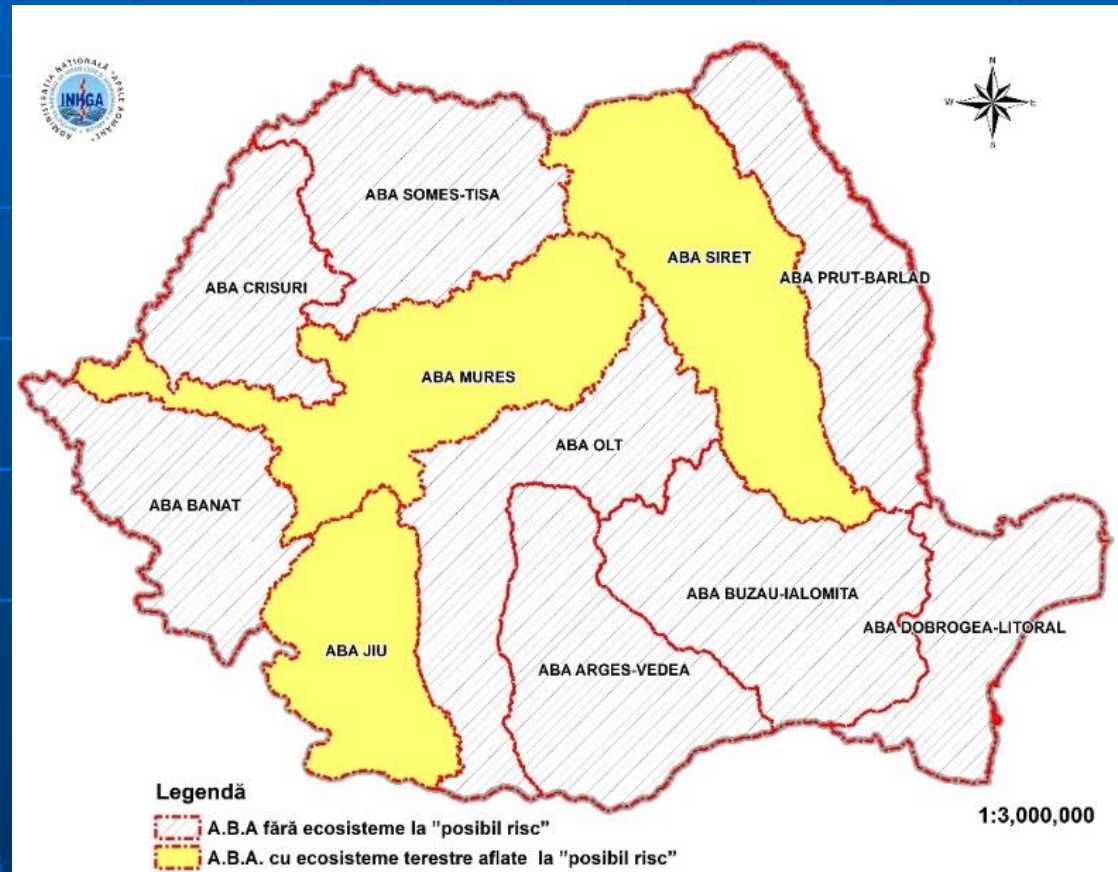
1. Hydrodynamic Regime

2. Hydrochemical Regime



INTERDEPENDENCY GWBs – TERRESTRIAL and AQUATIC ECOSYSTEMS (2)

- A.B.A. Mureș and Jiu: Habitats superposed on GWBs in poor chemical status due to nitrates
- A.B.A Siret: habitats superposed on GWBs in poor chemical status due to ammonia



Thank you very much for your attention!

