

PRESSURE FACTORS

Chapter 2

PRESSURE FACTORS

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It is logical to expect that human activities in the CACENA region might have an impact on both transboundary groundwater quantity and quality. Alluvial settings of the aquifers are likely to be jeopardized by the pollution loads from the agricultural and industrial activities, since the groundwater resources are used for these purposes as indicated by the riparian countries. Furthermore, inefficient irrigation systems and mismanagement of the irrigation water diversions have resulted in elevated water and soil salinity levels and overall environmental degradation. However, recent data from the water bodies' monitoring is very scarce or even no monitoring activities are performed by countries. Therefore, assessment of the pressure factors on the transboundary aquifers is very limited.

AGRICULTURE

Among other types of groundwater utilization, abstraction for irrigation has comparable significance to that for drinking water. Central Asian countries are significantly dependent on irrigated agriculture, and both water quantity and quality have emerged as issues in the republics' development. The assessment shows that twelve out of 18 aquifers are utilized for irrigation. The percentage of total abstraction for irrigation is comparable with drinking water and varies in similar intervals. This finding is not a surprise due to the fact that agriculture is the largest water consumer in the region and a major employer of the region's workforce. In the CACENA region, the poor condition of irrigation infrastructure and bad agricultural practices jeopardize water and land resources. This could be the

case for the aquifers with very high percentage of abstraction for agriculture recorded by Azerbaijan (aquifers No. 5, 80-85%, and 7, 55-60%) and Uzbekistan (aquifer No. 3, 50-75%). However, the economic difficulties in the CACENA region have suppressed both the usage of water for irrigation and the application of fertilizers and pesticides. With the expected economic growth and the need to increase crop production, agricultural pressure factors are expected to become more important.

INDUSTRY, MINING, THERMAL SPA

Industrial pressure factors on transboundary aquifers in the CACENA region seem to be rather limited. For industry, water is modestly utilised only from eight aquifers, with a rate of less than 25% of total groundwater abstraction (aquifers No. 2, 3, 5, 6, 9, 10, 12 and 17). For mining, only four cases were recorded with less than 25% of total

abstraction (aquifers No. 1, 9, 10 and 11) and for thermal spa two cases less than 25% were indicated (aquifers No. 9 and 12). Heavy metals and organic substances were reported by countries. However, precise and recent data from the monitoring programmes are not available. Country reports were mainly based on the expert judgement of the existing industrial activities in the aquifer recharge areas.

LIVESTOCK

Livestock watering is reported as a minor (less than 25%), but widely employed water use in the majority of the region. However, in the responses, nothing was reported on the type of the animal production (extensive or intensive) in the aquifer areas. Evidence of these pressures may come from pollution by pathogens and nitrogen, but there are no data reported to quantify this pressure factor on the transboundary aquifers in the CACENA region.

Percentage of total groundwater abstraction for different uses in the identified transboundary aquifers				
Type of use	Percentage of total groundwater abstraction (aquifer no. refers to summary table above)			
	< 25%	25-50%	50-75%	> 75%
Drinking water	3, 5, 9, 12, 14	1, 4, 7, 17	2, 15	6, 8, 11, 10, 13, 16, 18
Irrigation	1, 6, 9, 10, 12	2, 17	3, 7, 15	5, 14
Industry	2, 3, 5, 6, 9, 10, 12, 17			
Mining	1, 9, 10, 11			
Thermal spa	9, 12			
Livestock	1, 2, 3, 9, 10, 12			

