Ukraine occupies about 0.4% of territory of the world land. Ukraine has several of geological formations complexes on age and lithological composition (crystalline, sedimentary etc.). The natural evolution processes formed within the Ukraine up to 5% of the world mineral resources.

The coal industry is founded on considerable coal reserves of three basins (Donetsk, Dnipro and L'viv-Volynsk) and occupies one of leading places in a fuel and energy complex of country.

Donbass is one of the oldest and large coal mine regions not only in Ukraine and in former USSR, but also in the world. The history of progressing within the Donbass exceeds 200 years. The Donbass area is up to 15 thousand km$^2$, the depth of mining works is (up to 900-1300 m). Here under the influence of mine drainage the regional disequilibrium in the system "mineral skeleton of rocks - underground water" have been increase. Regional ecological-hydro-geological consequences of the mine water cycle also are:

- Leveling of the hydro-geochemical conditions due to surface and underground water merging;
- Increasing of their mineralization owing to salt leaching from soils and pore solutions;
Groundwater vulnerability growth under the influence of technogenical factors owing to growth of rock massive permeability and increasing of depth of infiltration technogenical contamination.

Now within the Donbass about 240 mines by depth from 500 up to 1300 m is exploited. In a period since 1960 till now in the planning order, in connection with coal reserves working-off, have been enclosed by method of "wet conservation" (practically of free encroaching of mine workings) more than 100 mines. There are about 150 mines, enclosed in different time and joint with acting one on different depths of workings, that allows to keep up them in condition of incomplete flooding.

During all period of Donbass development have been mined more than 21.0 billion t (up to 12.0 cubes km) rocks, including coal about 15.0 billion t (10.0 cubes km). As a result of extraction huge bulk of soils at coal mining more than 600 km$^3$ of the rock mass deformed with entirety break. Lowering (average on 1.5-2.0 m) of daylight have been taken place with simultaneous rock permeability increasing and growth of the groundwater vulnerability owing to intensification their interaction with the contaminated surface water.

In modern conditions coal mining is accompanied by water inflow in mines, total size is 25 m$^3$/sec. (777.6·10$^6$ m$^3$/year), that in 3 - 5 times to exceed the bulk of natural water resources within the region (result of frequentative inflow of fluvial waters in zones of mine drainage). Bearing-out of saline is 2.4 million ton per a year (average mineralization of mine water is 3.0 kg/m$^3$). The regional cone of depression (depth - 40-50m) have been formed under influence of long drainage within zone of free-flow filtering. Within the mine fields the depth of local underlying cones of depression in the carboniferous water bearing complex is 800-1000 m. The bulk of the drained soils is about 150-200 km$^3$. Mine water inflow during maximal progressing of the coal mining was 3.0-3.5 m$^3$/t. At present by coal mining decrease water inflow is 8.0-10.0 m$^3$/t, that degrades water-ecological conditions within the region.

There are more than 300 accumulators of mine water, 1185 cone-shaped dumps, including more than 300 burning etc. within this region. The spatial contamination
of underground hydrosphere taken place under the influence of these
technogical objects and shown by the way of groundwater mineralization
increase of macro - and microcomponent. It is conditioned by intensification of
infiltration of technogical contamination from surface accumulators solid and
liquid wastes. Per the last years the microcomponent contamination of ground
and surface water have been taken place against the background stable
macrocomponent composition.

According to ecological monitoring big number (several tens) of contaminated
groundwater areas took place owing to growth of technogical loading and
vulnerability. During last 30 years the groundwater mineralization increased from
0.5-1.0 g/dm$^3$ to 1.5-3.0 g/dm$^3$ and more. Thus areas with fresh groundwater
(content of saline - up to 1.0 g/dm$^3$) was reduced in 4 times, water with increased
mineralization (1.5-3.0 g/dm$^3$) are established on 83 % of considered territory.
Besides big number of ponds-accumulators of mine water, tailing dumps, water
storages and other objects of infiltration power supply groundwater, including
leakage from water communications of industrial-urban agglomerations, to
assists stable raising of groundwater levels and progressing of water flooding.

Technogical activity of heat- and water-transfer in the aeration zone is
important factor of vulnerability growth and speed-up migration of contamination
into ground and pressure horizons.

Thus, the long-time destabilization of levels condition (due to their regional
raising) and chemical composition of underground water in affected areas of
considerable number of mines closure (about 100 of 246 on all Donbass regions
on 2000 year) is the leading process of forming of modern ecology-hydro-
geological conditions of coal mining regions in Donbass.

Ecology-hydro-geological influence of mine water within the Donbass limits at the
present stage of their forming is differ by considerable complication due to
extremely multidirectional and multifactor affecting of industry-urban
agglomerations, depressions zones of underground water levels on surface
water body as a result of mine drainage. It is necessary to mark the regional
influence of principle variations of natural hydrogeofiltration systems, which were
earlier in equilibrium position in boundaries: "watershed (supply area) - declines of river valley (transit area) - water-meadow and bed rivers zone (area of discharging)". In most cases filtration from the rivers is realized by "sprinkling", condition that is the rivers have "the suspended nature" above mine fields and are the main mechanism of redistribution of the contaminated and mineralized mine water and their multiple inflow in the zone of mine water inflow forming.

Development of mining regions of Ukraine during the period from 1950 to 2000 years make for increasing of mine water bulks (up to 0.8 billion m$^3$/year) and consequent variations of natural hydrodynamic conditions. The quasi-equilibrium system "mine water - mineral skeleton" was formed on any time in the upper zone of geological environment within the Donbass region. It, in turn, result in reconfiguration and redirections of groundwater streams, sources of forming of their resources.

Ecological basis of the influence of geological environment estimation on potential of Donbass progressing should be ability for taking into account of autorehabilitation rising of groundwater levels and dynamics of their nature-historical position in the system "watershed - floodplain-riverbed zone". The forecast of position nature-historical and nature-technogenical groundwater levels, new conditions of formation and reallocation of mine water demands special methodological approaches to basis of operation nature-technogenical of systems of mining regions with taking into account town-forming role most of the mines and series of new factors. Such, for example, as rock mass disturbances, increasing of permeability, high silty of river beds, decreasing of their inclines and permeability of the under river bed sediment.

Below shown following mine water forming factors which are aggravated ecological-hydrogeological situation within the region:

- intensification of interaction of surface water objects (rivers, ponds, springs etc.) with groundwater (carbonic horizons), owing to breaking by mine workings of regional confining layers, increasing of rock massifs permeability, tectonic zones presence;
• Reduced zones forming above mine workings with increasing of high infiltration and active drainage of groundwater;
• Growth of the water saturation of the upper zone of soils and grounds owing to cutting of depression cones and regional groundwater levels increasing, that will promote hydro-geo-migration and bio-geo-migration of technogenical landscapes contamination;
• increasing of risk of chemical contamination of acting water intakes were in geofiltration interplay with closed mines (growth of mineralization is 20-30 me/years);
• Risk of activization of karst, landslide processes, mining (volumetrical hygro-geo-mechanical) shocks at large block of rocks displacement;
• Potential energy accumulation in the drowned mine workings with forming hydro-geo-mechanical exertion and decreasing of rock massif stability of (pillars, tectonic zones etc.);
• Change of migration ways of explosion gases in a direction acting mines, water intakes, industrial-urban agglomerations (we observed the stable tendency of gas explosion increasing in the Donetsk mines per the last years.