

Geological administration activities in geological mapping in Poland

Ewa Zalewska*, Eliza Dziekan-Kamińska*



E. Zalewska



E. Dziekan-Kamińska

In accordance with the Act of 4th February, 1994 — Geological and Mining Law, the supervision of geological mapping is one of the duties of the state geological administration. It involves producing a variety of geological maps including hydrogeological, geoenvironmental,

geochemical, geotouristal and natural resources maps as well as cartographic documentation of selected outcrops and geological profiles.

In the recent years the Minister of the Environment have commissioned a number of gravimetric and magnetic maps of Poland.

The magnetic maps ΔT in scales of 1 : 200,000 and 1 : 50,000 cover nearly the entire area of the country, except for N–E Poland (the work in the Sudetes is still in progress). This places Poland in a small group of countries possessing a thorough knowledge about the Earth's magnetic field on their territory.

Gravimetric maps of the Carpathians in the scale of 1 : 200,000 have been prepared in co-operation with the Czech Republic and Slovakia.

The main aim of geological mapping is the creation of an accurate picture of the country's geology, which serves as a basis for a variety of economic enterprises. Such geological studies are utilised by national and self-government administration, geological survey and business people alike. They are used, among others, for the purpose of regional and local spatial development planning, designing and construction of roads, prospecting and documenting of natural resources as well as geological and environmental education.

Cartographic works carried out on behalf of the Minister of the Environment are financed by the National Fund for Environmental Protection and Water Management.

The Minister of the Environment fulfils tasks in the area of geology with the assistance of the Chief National Geologist, who exercises substantive supervision over the Department of Geology and Geological Concessions.

The co-ordination of the geological mapping activities and the performance of related pilot research is executed by the Polish Geological Institute, which serves as the State Geological Survey.

In order to ensure the necessary high standards of all maps and related studies as well as its compatibility, the Minister of the Environment has appointed a Commission for Cartographic Works — an advisory body in charge of

controlling and ensuring the quality of geological mapping. The Commission consists of distinguished specialists in different fields of geology, mining, ecology, IT, as well as independent editors, who guarantee a professional and unbiased opinion on submitted documents.

In 2004 the Ministry of the Environment adopted "The Ministry's Geological Mapping Policy 2005–2020". This document carries a summary of the geological mapping activities to date and provides an outline for future projects.

Among the most important geological mapping projects are the following four series maps in the scale of 1 : 50,000, consisting of 1069 sheets and covering the entire territory of Poland: the *Detailed Geological Map of Poland 1 : 50,000 (DGMP)*, the *Geological-Economical Map of Poland 1 : 50,000 (GEMP)*, the *Geoenvironmental Map of Poland 1 : 50,000 (GMP)* and the *Hydrogeological Map of Poland 1 : 50,000 (MHP)*.

The *Detailed Geological Map of Poland 1 : 50,000* is the basic detailed geological map of the country, a compendium of geological information about Poland, on the basis of which other geological maps in different scales and on a variety of subjects are produced. The work on this map begun in 1956. As of today 116 sheets remain outstanding.

The *Hydrogeological Map of Poland 1 : 50,000* shows the hydrogeological conditions as well as economic and environmental elements relating to hazards and protection of underground waters. The first sheet of this map was prepared in 1989 and by the end of 2004 all 1069 had been completed. Currently the work focuses on updates and new thematic layers.

The next two cartographic series are the *Geological-Economical Map of Poland 1 : 50,000 (GEMP)* and the *Geoenvironmental Map of Poland 1 : 50,000*. The former contains information on mineral deposits, their distribution and development, as well as selected elements of mining and mineral processing, hydrogeology and engineering geology, nature protection, landscape and cultural monuments. The latter is an updated and extended version of the Geological-Economical Map with new layers concerning surface geochemistry and waste issues (areas with favourable and unfavourable geological conditions for the establishment of waste landfills). MGGP has been edited since 1997 and MGP since 2002. 847 sheets have been made so far. After completion of all sheets the map will be regularly updated.

In the early 1990s the digitalisation process of the main maps series commenced. Strict data format and software standards were applied, which enabled the incorporation of the data into the Central Geological Database (CBDG) and made subsequent updates and extensions relatively easy.

In order to maintain the compatibility of all geological maps produced in Poland they are produced according to detailed guidelines published by the Minister of the Environment.

A full and unlimited access to geological databases is available on the Polish Geological Institute premises and selected types of data can be viewed via the Internet. The rules and costs of obtaining the data can be found on or

*Ministry of Environment, Department of Geology and Geological Concessions, Wawelska 52/54, 00-922 Warszawa, Poland

www.mos.gov.pl/kartografia/index.eng.html;

www.pgi.gov.pl/mapy.

Apart from the maps series described above, the Minister of the Environment commissions other types of cartographic projects for selected areas and in different scales, for example: *Geological Map of the Tatra Mountains 1 : 10,000* (9 sheets currently under preparation); *Map of the Degraded Areas and Areas of Increased Natural Hazards 1 : 10,000* (4 pilot sheets); *Geological Engineering Atlases* of the Wrocław, Poznań, Gdańsk–Gdynia–Sopot and Kraków Agglomerations or *Geotouristical Map of the Suwałki Landscape Park 1 : 25,000*. About to be finished is the *Geological Map of Poland 1 : 500,000* and the *Geological Map of Poland 1 : 200 000* is currently being updated.

Separate databases are created for all the current cartographic projects.

The Minister of the Environment recently commissioned a project “Implementation of the integration of the geo-environmental databases and Regional Systems of Spatial

Information — for the Opole Voivodship.” The main task of the project is to enable the local governments to access, use and update the GIS-based geo-environmental databases created for the Minister of the Environment and maintained by the Polish Geological Institute.

The rapid development of geosciences enhanced by a steady influx of new geological data and teamed with a widespread use of state-of-the-art computer software and hardware, as well as the ever-growing number of geological maps’ users requires constant data actualisation and development of new types of maps and databases. Detailed maps are prepared for selected areas, using the 3D surface models, aerial and satellite photography. In order to improve the safety of data, to enable the creation of continuous thematic layers for the whole country, and to build new and improve existing databases, the Minister of the Environment is planning to introduce an Integrated System of Geological Cartography (IKAR).