

# The *Atlas of Environment* (of Poland). How to present on maps data on the environment collected by official statistics?

Maciej Zych <sup>a,\*</sup>

<sup>a</sup> *Statistics Poland, Spatial and Environmental Surveys Department, m.zych@stat.gov.pl*

\* Corresponding author

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## Abstract:

Official statistics are statistics produced within a national statistical system which includes statistical organizations and authorities within a country that collect, process and disseminate official statistical data on behalf of the national government. Statistics Poland (Polish: Główny Urząd Statystyczny) is such a body in the Republic of Poland. Official statistics are usually collected within a legal framework, and in accordance with basic principles which ensure minimum professional standards, such as independency and objectivity.

Nevertheless, official statistics have their limitations – not all potential statistical data are collected (the balance of costs related to data acquisition, including the time burden imposed on respondents, against the potential benefits of obtaining specific data is important here), not all data may be made available (e.g. the need to maintain statistical confidentiality, low-reliability data). The detail of data collection is also important – data can be collected at the level of the entire country, but also at the level of administrative, statistical or other divisions. In the case of data presented on maps of a specific country, it is especially important to have data for smaller territorial units (data collected at specific points often cannot be presented in these points due to the need to maintain statistical confidentiality – data on individual entities, e.g. industrial plants, cannot be published, such data must be aggregated to larger spatial units before publication).

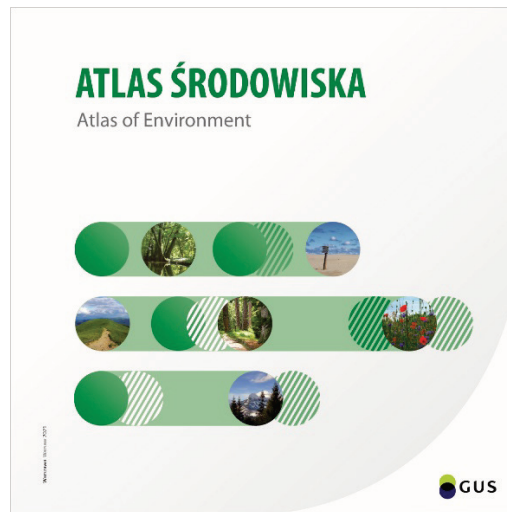


Figure 1. The cover of the *Atlas of Environment* (© Statistics Poland).

Environmental data is one of the types of statistical data collected by Polish official statistics. These data have been presented for years in the form of tabular and descriptive publications (e.g. *Environment* (2022), *Economic Aspects of Environmental Protection* (2022), *Statistical Yearbook of Forestry* (2022)). It was decided to publish them also in a cartographic form, as the *Atlas of Environment* (2021) (Figure 1). However, the preparation of such an atlas was associated with the issue of data availability. A significant part of environmental data collected by official statistics concerns the entire country, which means that these data cannot be presented on the map of this country, but only on maps of wider regions (e.g. the European Union, the world) or on charts presenting the change of a given phenomenon over time. The data collected by Polish official statistics concern only a narrow section of topics related to the environment, in particular limited to various quantitative indicators. Data related to biodiversity are not collected, e.g. the occurrence and abundance of animal species, the occurrence of uncultivated plant species, the condition and types of

vegetation cover, water condition (quantitative, e.g. flows, and qualitative, e.g. water quality). Climatic data obtained from the Institute of Meteorology and Water Management are also taken into account only to a small extent. The thematic scope of the *Atlas of Environment* and the detailedness of the maps contained therein was determined by the availability of environmental data being obtained by Statistics Poland.

The atlas was divided into seven chapters: *Natural conditions. Use and protection of land and soil; Resources, use, pollution and protection of waters; Air pollution and protection. Radiation; Nature and biodiversity protection; Waste; Economic aspects of environmental protection; Environmental indicators of sustainable development* (data for EU countries).

The following map scales are included in the atlas: a full-page map of Poland – 1:3,800,000 (11 maps), a map of Poland covering of 1/4 page – 1:9,000,000 (74 maps), a map of Poland and adjacent countries covering of 1/4 page – 1:21,500,000 (1 map), a full-page map of Europe or the European Union – 1:21,500,000 (30 maps), a world map covering of 1/2 page – 1:200,000,000 (7 maps).

The atlas consists of 120 pages, with 281 maps and 175 charts/graphs. In terms of numbers, the maps of Poland with the division into voivodships predominate – there are 60 such maps in the atlas. Other types of maps are: maps of Poland with the division into Regional Water Management Boards areas (7 maps), full-page maps of Poland with the division into gminas (the third order administrative units, 5 maps), full-page maps of Poland with the division into powiaty (the second order administrative units, 3 maps), maps of Poland without division (10 maps), maps of the European Union or Europe with the division into countries (30 maps), maps of the world with the division into countries (7 maps).

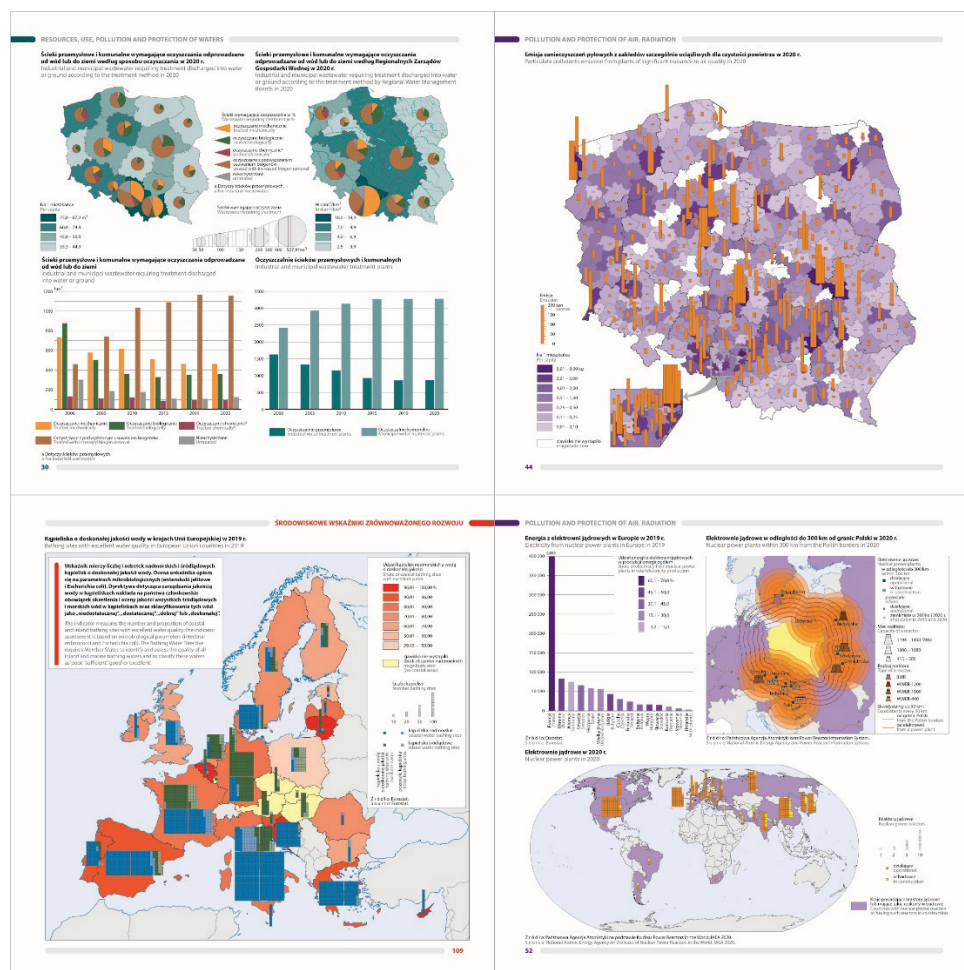


Figure 2. Examples of the content of the *Atlas of Environment* (© Statistics Poland).

Maps made by using quantitative cartographic presentation methods predominate in the atlas. Choropleth and diagram methods are the most frequently used on maps of the *Atlas of Environment* (Figure 2). These two quantitative methods may be observed on 115 maps. Furthermore, on three maps the isoline method is used (real isarithms and equidistant isolines), and on five maps – the chorochromatic method (in four cases together with the signature method) is presented. All choropleth maps in the atlas are with a relation to an area. The using of diagram maps is varied. Among these maps

in the atlas, the most frequently used are: simple diagrams – 39 times (bar ones – 24, pie ones – 15), structural diagrams – 7 times (all pie diagrams), summary-structural diagrams – 22 times (bar ones – 5, pie ones – 18), segment diagrams – 16 times (including 9 times segment structural diagrams), complex diagrams – 4 times, and others – 4 times.

The *Atlas of Environment* is the first graphic study illustrating the state and threats to the environment in Poland, in European countries, and in other countries of the world. The publication responds to the growing demand for statistical spatial information on environmental issues and it is an easy-to-read source of information about the state of the environment in various territorial cross-sections.

The Atlas of Environment is next atlas publication prepared by Statistics Poland – the publication designed to show statistical data not only in the form of tables with data or analytical descriptions/texts, but also in a visually attractive graphic/cartographic form. The presentation of statistical data on maps prepared by Statistics Poland is not limited only to atlases (previously published: *Demographic Atlas of Poland* (2017), *Statistical Atlas of Poland* (2018), *Atlas of Enterprises* (2019)) – maps and charts are also more frequent in other statistical publications (e.g. *Statistical Yearbook of the Regions* (2022), *Regions of Poland* (2022), *Environment* (2022), *Rural Areas in Poland in 2020* (2022)), as well as in a specially dedicated geostatistics portal, where cartographic visualizations of statistical data provided by Statistics Poland for regional levels may be prepared (<https://portal.geo.stat.gov.pl/en/home/>).

Publications containing statistical maps are well received by recipients, as they allow for quick analyses and orientation in the distribution and values of the presented data. Data presented in this way are more interesting and effective for users than tabular elaborations (although they will not replace them), and the maps themselves are readily used in further elaborations (Pieniążek and Zych (2020)). The key element in order to be able to prepare further publications of this type is the collection by official statistics of the largest possible amount of statistical data at regional levels.

The *Atlas of Environment* is bilingual, Polish-English. The atlas is also available as an open data publication in the PDF format on the website of Statistics Poland: <https://stat.gov.pl/en/topics/environment-energy/environment/atlas-of-environment,6,1.html>.

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