A fundamental, comprehensive, geographic atlas Resources and Environment World Atlas compiled by the Institute of Geography, Russian Academy of Sciences, in collaboration with other institutions of this country was published in 1998–1999. Two volumes of the atlas comprise extensive information amassed to date by natural, social, and interdisciplinary sciences on the environment and resources, as well as factors affecting them. The atlas represents a third generation of Russian fundamental cartographic works of the global scale. Therefore, it will be a significant contribution to the resolution of problems agitating mankind on the threshold of the third millennium. The preparation and publication of the atlas were carried out by the Austrian Institute of East and Southeast European Studies and Hölzel GmbH Co. (Austria).

It is known that since the Great Geographic Discoveries and especially in the latest third of the 16th century, when the basic world atlases prepared by Abraham Ortelius and Gerhardus Mercator were published, the fundamental cartographic works became a mirror of the geographic pattern of the world. They fostered the knowledge and enhanced the understanding of the geographic structure of the world. Thus, they became an element of the general human culture. Nowadays, combined atlases play an important integrating role in the system of geographic sciences and most Earth sciences as well. They mobilize these sciences for studying fundamental principles of the arrangement, functioning, and evolution of geosystems in specific territorial modes of manifestation. The expression of the obtained knowledge in terms of maps represents a unique map language for the description of objects in Earth sciences.

The demand for a comprehensive image of the world became urgent in the latest quarter of the 20th century, when problems of the utilization of natural resources and the conservation of environment outgrew the regional and national boundaries to become global problems, since the elaboration of the strategy for the survival of mankind became the primary issue. The global-scale, combined cartographic works designated to obtain such an image represent a summary of fundamental knowledge of the Earth and its resources, environmental and economic potentials, as well as the database for elaborating scientific scenarios and prognoses.

Russia and the former Soviet Union were always among the leading countries in the field of compiling major atlases. This tradition dates back to the time of Peter the Great and gained a strong impetus in the Soviet Union. The first generation of Soviet world atlases goes back to the two-volume Great Atlas of the World published in 1937 (Volume 1) and 1939 (Volume 2). The second generation of atlases comprises the fundamental reference Atlas of the World published first in 1954 and republished in 1967, the three-volume Marine Atlas (1950, 1953, 1958), as well as the Physicogeographic Atlas of the World (1964), mainly compiled by the Institute of Geography of the USSR Academy of Sciences, and lastly the Soviet Atlas of the Antarctic (1966, 1969), which gave a comprehensive illustration of the Earth’s southern polar region.

The third generation of global atlases was opened by the Atlas of Oceans in several volumes (1974, 1977, 1980, 1993). Later, the Atlas of the Arctic (1985) and a revised version of the reference Atlas of the World (1999) were published. A series of fundamental atlases, which were prepared by the Institute of Geography, Russian Academy of Sciences (or with its direct participation) and published in the late 1990s, belongs to the same generation. Among these are the two-volume atlas Resources and Environment World Atlas (1998), World Atlas of Snow and Ice Resources (1997), Arcatlas Our Earth, ESRI, (1996), the atlas-monograph Paleoclimates and Paleoenvironments of the Northern Hemisphere. Late Pleistocene–Holocene (1993).

The Resources and Environment World Atlas was compiled by the Institute of Geography, Russian Academy of Sciences, in collaboration with other institutions of the former Soviet Union and then Russia. More than 300 scientists and specialists from 30 research institutes, high-educational and production institutions were engaged in the work. The atlas incorporates extensive data amassed so far by natural, social and interdisciplinary sciences on resources and environment of the planet, as well as factors affecting them.

Two volumes of the atlas comprise 207 separate maps, the scale of basic maps being 1 : 60000000 (49 maps) and 1 : 80000000 (40 maps). When compiling the atlas, new theoretical concepts and calculation procedures for mapping parameters were approbated. New types of global maps, including the ecological, medical–geographic, and others were also elaborated. More
than 200 space images of different territories and their interpretation are presented in it. This is the first atlas representing such kind of data.

The Atlas consists of four major sections: (1) Earth and Space; (2) Evolution of the Landscape Geosphere; (3) Structure and Resources of the Landscape Geosphere; (4) Anthropogenic Factors Affecting the Landscape Geosphere.

The first section (about 2% of the total volume) covers main physical and physiognomical features of the Earth’s surface as a space object in relation to the nearest planets of the solar system. This material is of great importance for understanding the structure and evolution of the surface, interior, as well as gaseous and liquid shells of our planet. The work also shows principal stages in the development of space-borne methods of studying and mapping planets of the solar system based on materials delivered by spacecrafts.

The second section (about 10%) depicts results of the global paleoreconstructions of basic abiotic and biotic components of the geosphere through the Proterozoic, as well as stages of the evolution of mankind and its migration throughout the Earth. More detailed reconstructions were made for the Late Pleistocene and Holocene. The reconstructions reveal the response of individual landscape components to climatic fluctuations related to main climatic cycles of the past million years. They show successive stages in the development of the modern environment and the possible scenario of its evolution in future. For instance, paleoclimatic reconstructions for the Holocene Optimum (6–5 ka ago) and the Mikulinian Interglacial (125 ka ago) can be regarded as potential scenarios of climatic (and ecological) situations at an average global temperature increase by 1° and 2°C, respectively.

The third and the largest section (about 68%) comprises various thematic maps arranged into three subsections. The subsection Structure and Resources of the Lithosphere characterizes the geological and geomorphological structure of the continental surface and the ocean floor, the potential of raw mineral resources in the Earth’s interior, as well as the most important geophysical phenomena (seismicity, volcanism, heat flow, and others), which have a pronounced effect on humans and their activity. It also reflects modern concepts of the plate tectonics, presents various types of information on ring structures, Quaternary and bottom sediments, and the relief, and offers the catalogue of giant mineral deposits.

The subsection Structure and Resources of the Atmosphere and Hydrosphere characterizes these dynamic components of the geosphere as the most important constituents of the habitat for biota and mankind. The subsection includes maps of conventional important components (solar radiation, air temperature, wind velocity, river discharge, sediments, evaporation, humidity, and natural hazards) and maps of estimated parameters for ecological implications (radiation index of aridity, probability of droughts, agroclimatic resources, bioclimatic potential, land erosion, fresh water volume on the planet and in reservoirs, provision of population with water resources, water consumption, and economic component of the hydrological cycle on the Earth). The largest lakes of the world are characterized in detail.

The subsection Structure and Resources of the Biosphere furnishes a comprehensive (qualitative and quantitative) characteristics of soils, fauna, flora, protected environmental objects, and landscapes. For instance, the Earth’s soil cover is represented by soil characteristics, weathering crusts, petrographic and mineralogical classifications, and data on age, structure, and eocogeographic characteristics of soils. The most impressive topics include the soil–ecological zonation, the aridity and danger of secondary salinization of soils, the risk of soil pollution by technogenic minor elements, the sensibility of soils to technogenic acidic impacts, etc.

Maps of vegetation and fauna of continents and oceans include for the first time types of global and sub-global biomes, reserves of living phytomass and mortmass, the consumption of nitrogen and mineral nutrition elements for constructing the primary phytomass production, resources of wild nutritive and medicinal plants, the species diversity and depauperation of fauna as a result of anthropogenic effects, the zoogeographical zonation of oceans, the recovery of fish, mollusks, and crustaceans as objects of food industry. The subsection is crowned by two series of maps devoted to protected environmental objects and territories (i.e., biosphere reservations), the global UNESCO heritage, water-and-swamp areas of international esteem, as well as landscapes. The maps dedicated to landscapes show zonal and sectoral regularities, regional and individual variations in the Earth’s landscape, hydrothermal parameters, geochemical characteristics, and anthropogenic changes.

The last section Anthropogenic Factors of Changes in the Landscape Geosphere (about 20%) comprises maps of the population, agglomeration growth and prognosis of the demographic growth for the first quarter of the next century, maps of the environmental impact of major economic branches (industry, power engineering, transport, agriculture, forestry, and others). Along with maps showing the pollution of the World Ocean and deterioration of the Earth’s forest cover, these maps depict the intensity and scale of the anthropogenic impact upon the environment. The provision of the world population with food, as well as preconditions and reasons for some natural endemic diseases are also given in the section.

As pointed out above, space images were widely used when compiling the atlas. On the basis of these images, the contents of some maps were refined and thus information furnished by the maps was specified. Space images were selected to show planetary regular-