

## FOREWORD

After almost a quarter of the 21<sup>st</sup> century, we are still asking ourselves what challenges we face. The reason for that is probably the fact that the changes we are witnessing are rapid, extensive, and in many areas extreme. On the one hand, they are an inherent feature of progress and development, but at the same time, we see a number of challenges in the functioning of the system as a whole. Sporek et al. [2019] point to ideological and political factors, including protectionist tendencies, resource depletion, and climate change, as having a significant impact on the global economy. The EEA report [2019] suggests that the key question for this century is how to achieve global development that balances social, economic, and environmental considerations. Currently, environmental issues have taken on a more global character, and the associated risks have been identified as the greatest threat to humanity. As a result, there is a noticeable attempt to move the global economy towards a path of sustainable development and a green economy.

The aim of the Geomatics, Landmanagement and Landscape (GLL) quarterly is to present and exchange scientific ideas, including those in the fields of environmental planning, land formation, nature conservation, and property management, using modern geoinformation techniques. The GLL editorial team hands out another issue, which includes papers on the analysis of information contained in databases, the use of modern data acquisition techniques in animal inventory and landslide research, as well as the monitoring of surface deformation. Another group of topics discussed in this issue are flood protection, flood risk mapping, and adaptation to climate change.

In the first paper, the authors present the possibilities of processing cadastral data in order to obtain material that can serve as a valuable source of information for the analysis of the current cadastral status. Cadastral data can be processed to produce comparative material with data from the Land and Building Register (EGiB). This methodology can be used to detect discrepancies and differences between the source data and the current data contained in the EGiB. This makes it possible to identify areas where the causes of the discrepancies need to be clarified and the necessary corrections made to address the discrepancies that have occurred.

The next study used terrestrial laser scanning and specialist software to conduct an inventory of wildlife and ground cover in a city park. The result of the work is a 3D model of trees using available modelling algorithms.

Another paper discussed the possibility of using radar (SAR) together with other satellite data for Earth observation to identify and track ground deformations and landslides. The research aims to illustrate how open-source data processing software, SNAP, provided by the European Space Agency, can be combined with publicly available datasets from the Copernicus programme. By employing InSAR technology, the study identified landslides and generated a large-scale map.

The fourth paper analyses the flood risk associated with morphological processes in the bowl of the Fom El-Gherza dam in Algeria. The dam has lost a significant fraction of its flood capacity, which has altered its possibility of reducing the culmination of a flood wave. One-dimensional hydroinformatics software was applied in the flood wave transformation analyses and the built model was calibrated. The results made it possible to identify the areas at risk of flooding while the resulting maps provide a tool for decision-making support.

Urban development and its impact on climate change were analysed in the final, fifth paper. Cities can adapt to climate change in many different ways. Modern approaches to urban planning and land use respond to cities adapting to changing climate conditions and to the need for a liveable environment. Interdisciplinary and multifaceted efforts are necessary to achieve the best results. This requires social commitment, which seems to be a major challenge. Studies clearly show that awareness of climate change in Polish society is insufficient and that extensive information campaigns are needed.

We cannot predict the future, yet we can create it. A purely technical, environmental, economic, or social approach to solving the most pressing problems lying ahead of us in the 21<sup>st</sup> century will not suffice – only an interdisciplinary approach can guarantee success. We share the results of our research in the belief that they can be part of the solution to these problems and challenges.

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## References

- Sporek T., Czech A., Fronczek M., Kos-Łabędowicz J. 2019. Pomiędzy polityką a ideologią – globalne wyzwania współczesnej gospodarki światowej. Prace Naukowe. Uniwersytet Ekonomiczny w Katowicach.
- Raport EEA. 2019. The European environment – state and outlook 2020. Knowledge for transition to a sustainable Europe. European Environment Agency.