




# QUALITY AND LEADING INNOVATION II.

## International Scientific Conference

## Proceedings

27. - 29. September, 2016
Košice (SK), Uzhgorod (UA)

## QaLI

The conference continues the long standing tradition of Slovakia in the field of quality of work, production and life and previously organized conferences on this subject. The conference will take place also in Virtual Conference Environment.

## Mission

The mission of this conference is to enable the participants obtain factographic and general knowledge for quality improvement and topics for leading innovations in the conditions of Slovakia and European Union.
The aim of the conference is to establish a forum where participants will be able to share views and ideas on the problems and trends in the field of quality of work, production and life, innovative improvement and open innovation.

## Scientific Comittee

ZUZANA HAJDUOVÁ, doc. RNDr. PhD., dean FoBE UoE (SK)
MICHAL TKÁČ, Dr. h. c. prof. RNDr. CSc., FoBE UoE (SK)
GABRIEL WEISS, Dr. h. c. prof. Ing. PhD., TUKE (SK)
ALEXANDER KIRÁLY, doc. JUDr. Ph.D., VŠB (CZ)
ŠÁRKA VILAMOVÁ, doc. Ing. Ph.D., VŠB (CZ)
SMOLANKA VOLODYMYR, Doctor of Sciences, Prof., Uzhhorod NU (UA)
ROHACH OLEKSANDR, Doctor of Sciences, Prof., Uzhhorod NU (UA)
SERZHANOV VITALIY, Assoc. Prof., PhD., Uzhhorod NU (UA)
KUBINIY NATALIYA, Prof., PhD., Uzhhorod NU (UA)

## Organizing commitee

Roman LACKO, Ing. PhD., Adela FERANECOVÁ, Ing. PhD., Slavomíra STAŠKOVÁ, Ing.

## Editors

Jaroslav DUGAS, Ing. PhD., Miriam MITROVÁ, Mgr., Matej HUDÁK, Ing. PhD.

## Rewiewers

Michal TKÁČ, Dr. h. c. prof. RNDr. CSc.,
Vincent JAKUB, prof. Ing. PhD.

## Organizing Institutions

University of Economics, Faculty of Business Economics with seat in Košice (SK)
Uzgorod National University (UA)
Technical University of Košice (SK)
VŠB Technical University of Ostrava (CZ)

## Patner Institutions

Pro Oeconomica
Uzgorod National University, *www.uzhnu.edu.ua/en*
Prof. Ing. J. Pazman Foundation
Professor Čollak Foundation
Institute for expert research and education, University of Žilina in Žilina, *uzvv.uniza.sk*
Specialized institute of geriatrics of St. Luke in Košice

## Sponsors


200 pcs.
The publication has not undergone language revision.
Authors are responsible for the content and language level of contributions.

© 2016 University of Economics, Faculty of Business Economics with seat in Košice
Uzgorod National University

ISBN 978-617-589-123-0

# CONTENT

# ENVIRONMENTAL QUALITY IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT IN THE SLOVAK REPUBLIC

*Štefan KUZEVIČ, Žofia KUZEVIČOVÁ, Marcela GERGEĽOVÁ, Gabriel HERBRIK*

## Introduction

The issue of environmental quality is currently high on the agenda. Everyone is entitled to live in an environment that its quality meets the requirements and standards for healthy development and quality of life. To achieve a healthy environment is essential to ensure sustainable transport, rational use of natural resources, ensure sustainable development, the maintenance of natural processes. Every man and society should exert efforts to boost the quality of life without having to come to increasing degradation of nature and the environment in which we find ourselves.

## 1. Sustainable development (SD)

According to the National Sustainable Development Strategy [1] sustainable development is understood as "*a targeted, long-term (continuous), comprehensive and synergetic process affecting conditions and all aspects of life (cultural, social, economic, environmental and institutional) at all levels (local , regional, global) and directed towards a functional model of a certain community (local and regional community, country, international community), which meets biological, material, spiritual and social needs and interests of people, while eliminating or significantly reducing interventions threatening, damaging or destroying conditions and forms of life, does not burden above the acceptable level, wisely using its resources and protects the cultural and natural heritage.* "

Among the long-term priorities (integrated objectives) Sustainable SR, which are identified in the National Sustainable Development Strategy [1] to include also the high quality environmental protection and rational use of natural resources - effective environmental protection, economical use of natural resources, elimination of environmental burdens and damage to the environment, limiting economic development in line with the natural conditions and potential, achieving and maintaining a quality environment with an emphasis on vulnerable areas.

The strategic objectives of sustainable development, which is required under the direction and long-term priorities set out to achieve in relation to the environment, are [2]:

- Improvement of population health and health care, improvement of lifestyle
- Development of an integrated model of agriculture
- Restructuring, modernization and recovery of the manufacturing sector
- Improvement of transport and technical infrastructure, tourism development
- Restructuring and modernization of the banking sector
- Reduction in energy and raw material intensity and increase the efficiency of Economy
- Reduction of the use of non-renewable natural resources in the rational use of renewable energy sources
- Reducing the environmental load environment
- Mitigate the effects of global climate change, depletion of the ozone layer and natural disasters
- Improving the quality of the environment in the regions.

The evaluation of individual strategies, concepts, programs, and activities related to sustainable development, which are being implemented on the basis of 16 principles (the management of people) and 40 criteria (to assess the application of the principles) is a section dedicated to the environment - ecological principle:

- preservation and promotion of biodiversity, vitality and resilience of ecosystems,

- optimization of spatial arrangement and functional use of the landscape and ensuring its spatial system of ecological stability,
- preservation and promotion of life-supporting systems,
- keep the high quality components of the environment - minimizing negative impacts on the environment,
- minimizing the use of non-renewable resources and preferential use of renewable resources, but only within the limits of their fertility.

One of possibility is the increased use of renewable energy. [7]

The main indicators of sustainable development of the EU are shown in figure 1.

| | |
|---|---|
| Socio-economic development | • Growth rate of real GDP per capita |
| Sustainable consumption and production | • Resource productivity |
| Social inclusion | • The population that is in need or social exclusion |
| Demographic changes | • The employment rate for older workers |
| Public health | • Healthy life years and life expectancy at birth (by gender) |
| Climate change and energy | • Greenhouse gas emissions<br>• Share of energy from renewable sources in gross final energy consumption |
| Sustainable transport | • The share of the energy consumption of transport relative to GDP |
| Natural resources | • Birds index<br>• Catches of fish stock over dangerous biological limits<br>• Status of fish stocks managed by the EU in the Northeast Atlantic |
| Global partnership | • The share of ODA to GDP |
| Well-managed public affairs | • No major indicator |

Fig. 1 Indicators of Sustainable EU

## 2. Pillars of sustainable development

Within the need for monitoring and evaluation and compliance with the principles of sustainable development and the achievement of objectives in the Slovak Republic they were selected indicators covering all pillars of sustainable development. (Fig. 2 and Fig. 3)

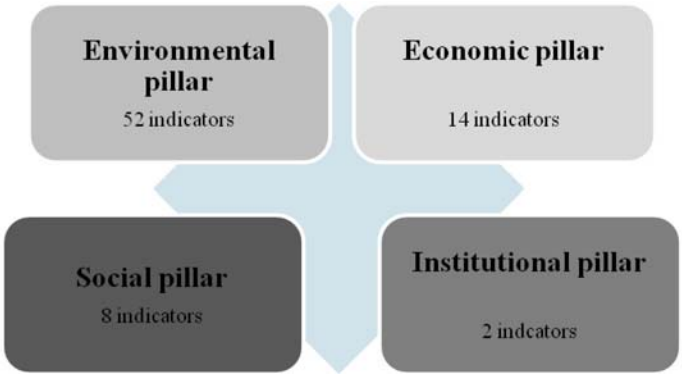


Fig. 2 pillars of sustainable development

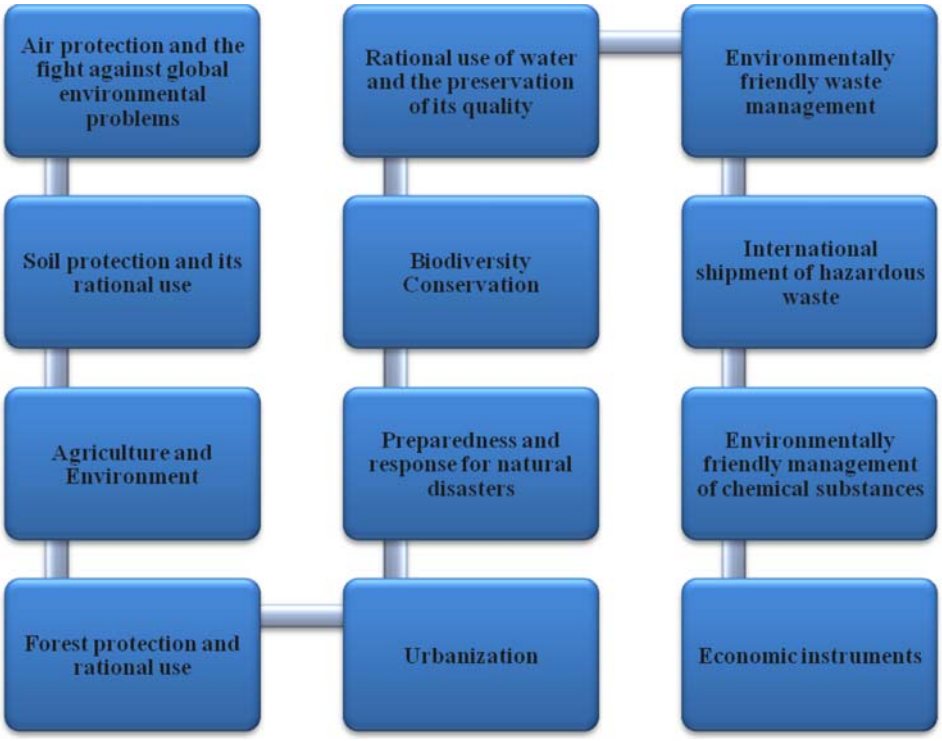


Fig. 3 The issue of sustainable development within the environmental pillar

Within each indicator, it is necessary to collect a large amount of data which is then processed, analyzed and evaluated. To manage the type of data it is advisable to use geographic information systems and tools that we offer. Some indicators are already currently being processed in a GIS environment and presented either in the form of maps or map server public. The important role played by the quality of data which subsequently enter into the evaluation process.

One serious problem at present is the danger of area erosion. [5], [6] Landslides deliver the quantity of material and economic damage to property of citizens. [9] It is appropriate, therefore, to carry out prevention and monitoring of territory that could potentially threaten the site.

Figure 4 The map of potential water erosion Soil Science and Conservation Research Institute. [8]

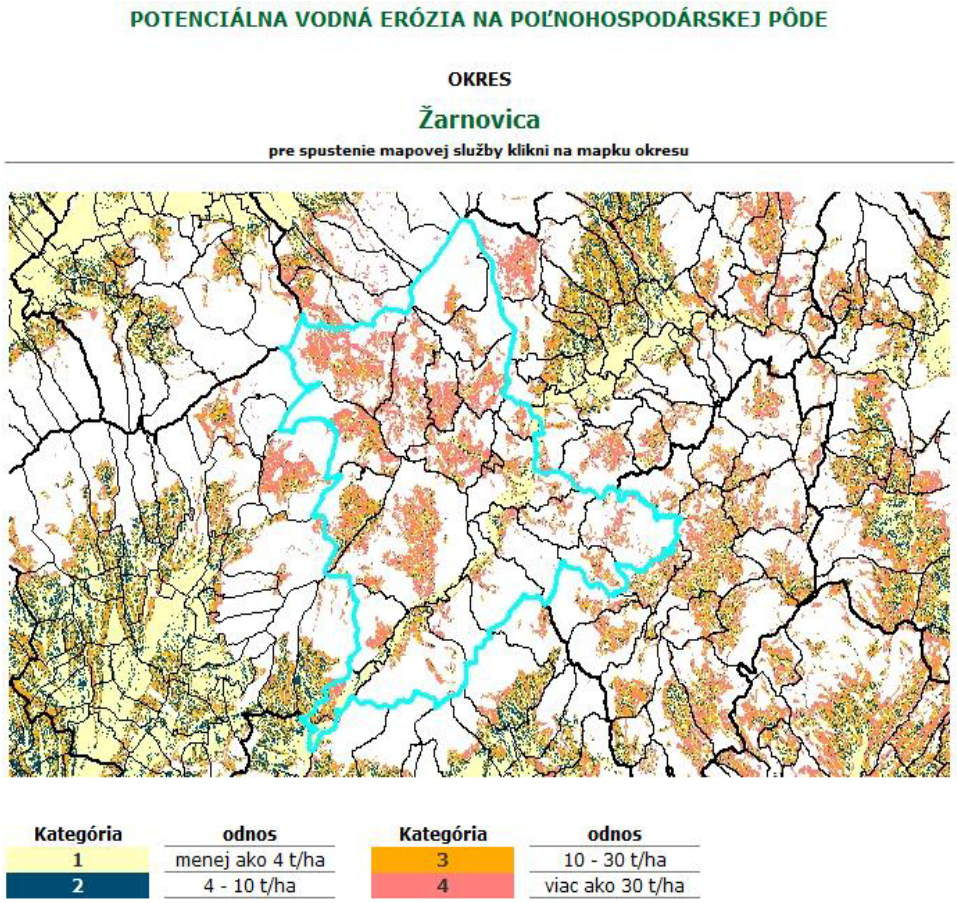


Fig. 4 Indicator: Soil erosion [8]

## 3 Presentation of data on the state of the environment

Currently, most of the data made available in digital form via the map server. In addition to the standard method of viewing data online through a web browser, the vast majority of map server also offers other services such as WMS.
The Web Map Service (WMS) is a standard developed and spread by the Open Geospatial Consortium (OGC). The service works on the principle of client-server and allows the sharing of spatial data in the form of raster maps. Returned are georeferenced raster data, enabling their proper location in space. The user then can directly view the data and use it for further processing and analysis. The advantage of using this service is the ability to connect directly to the data as the basis of a program that uses the geographic information systems. Information about the quality of the data is recorded by means of metadata that are part of the digital data.

In Slovakia are the numbers of data providers through a public map server. Most of the data related to the environment and under the auspices of the Ministry of Environment. As part of compliance with the INSPIRE Directive and its transposition law 3/2010 coll. the National infrastructure for spatial information (NISI) was built by the National Geoportal (NG), which provides access to spatial data and spatial data and NISI obligors through network services. [3]
Information on the geological structure of the subsoil is also an important part of the project preparation. Details can be obtained from Geofond managed by the State Geological Institute of Dionýz Štúr. The Institute provides through its website and services WMS data from different areas such as geology, hydrogeology, engineering geology, geophysics, geochemistry, soil, mineral resources, mining works and geomorphological division.

Slovak Hydrometeorological Institute (SHMI) monitors the state of the environment of the Slovak Republic, which is a systematic, consistent across time and space defined by observation of the very specific characteristics of individual components of the environment or impact when operating (a rule in monitoring network), to a certain degree notice the ability to represent the monitored area, and then collectively larger territorial unit.

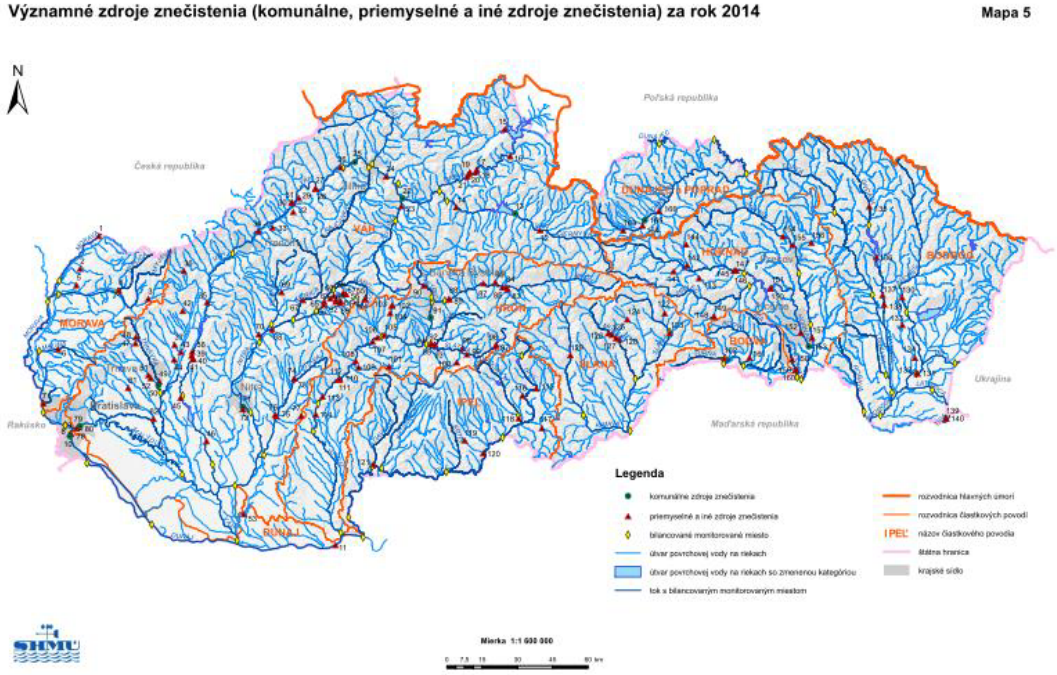


Fig. 5 Significant sources of pollution [3]

## Conclusion

Assessment and evaluation of the quality of the environment are part of sustainability. Protecting the environment improves our quality of life investigation and the protection of fossil fuels, increased use of renewable energy sources.

## References:

[1] Národná stratégia trvalo udržateľného rozvoja SR schválená uznesením vlády SR č. 978/2001 10.10.2001, http://www.minzp.sk/dokumenty/strategicke-dokumenty/
[2] Enviroportal, Indikátory TUR, Ukazovatele na hodnotenie plnenia Národnej stratégie trvalo udržateľného rozvoja v oblasti environmentálneho piliera TUR http://www1.enviroportal.sk/indikatory/schema.php?schema=33
[3] Národný geoportál, dostupné online http://geoportal.gov.sk/
[4] Kvalita povrchových vôd, http://www.shmu.sk/
[5] Kukučka, P., Weiss, G., Labant, S., Weiss, R.: Effects of geological factors on the stability of landslide processes. SGEM 2014. 14th International Multidisciplinary Scientific GeoConference : Informatics, Geoinformatics and Remote Sensing : conference proceedings : volume 2 : 17-26, June, 2014 Albena, Bulgaria. - Albena : STEF92 Technology Ltd., 2014 P. 223-230. - ISBN 978-619-7105-11-7
[6] Weiss, G., Labant, S., Weiss, E.: Deformation analysis of the network structure measured by global navigation satellite systems with a selection of cofactors, 2014, Inżynieria Mineralna. 2014, 33, 1, 55-68. ISSN 1640-4920.

[7] Naščáková, J., Weiss, E., Červenka, P., Mixtaj, L., Weiss, R.: A support of the renewable source energy utilization and conditions for the biogass station investment. Acta Montanistica Slovaca. 2009, 14, 4, 323-329. ISSN 1335-1788
[8] Pôdny portál, Informačný portál o pôde. Available at: http://www.podnemapy.sk
[9] Labant, S., Weiss, G., Zuzik, J., Baran, M.: Graphical interpretation deformation analysis of stability area using of strain analysis. Acta Montanistica Slovaca. 2014, 19, 1, 31-40. ISSN 1335-1788

**Summary**

It is part of sustainability and the assessment and evaluation of quality of life. In the long term sustainability goals is improving the quality of life. The very quality of life and the understanding is the result of complex relationships and inextricably linked to the quality of the environment. In many indicators used to assess the quality of life internationally also includes indexes that are directly related to the state of environmental stress factors such as. noise, air pollution, loss of biodiversity, etc .. The paper deals with selected indicators for assessing the implementation of the National Sustainable Development Strategy within the environmental pillar.

**Key words:**
Quality of life, sustainability, the environmental pillar of sustainable development

**Address of the authors:**

**asoc. prof. Štefan Kuzevič, MSc., PhD.**
Institute of Earth Resources, Faculty BERG
Technical University of Košice
Park Komenského 19, 040 01 Košice
e-mail: stefan.kuzevic@tuke.sk

**asoc. prof. Žofia Kuzevičová, MSc., PhD.,**
**asoc. prof. Marcela Gergeľová, MSc., PhD.**
Institute of Geodesy
Cartography and GIS
Faculty BERG, Technical University of Košice
Park Komenského 19, 040 01 Košice
e-mail: zofia.kuzevicova@tuke.sk
marcela.gergelova@tuke.sk

**Ing. Mgr. Gabriel Herbrik**
University of Economics in Bratislava
Faculty of Business Economics with seat in Košice
Department of corporate financial management
Tajovského 13, 041 30 Košice
tel.: +0421(0)55 / 722 31 11