

Izabela Basista • **Verification and Efficiency Analysis of an Algorithm for Similar Properties** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

The value usually sought through valuations is market value, and its establishing is preceded by analysis of real estate market, in particular as regards obtainable prices, rent rates and transaction conditions. Moreover, the market features of properties are defined that have the most significant influence on the properties' value.

After the analysis of a real estate market, the next stage is to select properties similar to the valued properties. According to the *Land Administration Act*, a "similar property shall be construed as a property comparable with the valued property in terms of location, legal status, purpose, usage and other features that influence its value." Nevertheless, the legislator has not defined specific manner for selection of similar properties. This is the reason why real estate appraisers have certain freedom with selecting similar properties in the valuation process. In practice properties are deemed similar when most of the attributes which describe them are the same.

This study offers the result of a verification and efficiency analysis of algorithm designed for the selection of properties most similar to the valued property. It is based on price-determining indexes calculated for each property in the database and for the analysed and valued property. The algorithm allows for the selection of similar properties at the confidence level defined by the user, which constitutes additional information about the group of properties selected from the database. The exemplary database shows how the algorithm works. Its effectiveness has also been measured, and the results have been included in the final part of this study.

**Keywords:** algorithm, selection of similar properties, real estate market analysis

Karol Firek, Stanisław Barycz, Wojciech Kocot, Michał Witkowski • **Evaluating Damage to a Typical Precast Warehouse Building** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

This article presents a case of a damaged warehouse building built in the typical reinforced concrete precast technology. Damage and irregularities identified during an inspection were described and their causes were analyzed. Identification of the type and extent of the damage led to the conclusion that the most important are the concrete cracks and losses along the edges of the load-bearing structure column heads at the level of the roof girders support, and not the cracks and displacements of the curtain wall fragments, which the user was most concerned with. The described example is a confirmation of a need to carry out regular evaluations of the technical condition of buildings, so that users can rationally plan renovation works for the further safe use of the structure.

**Keywords:** evaluating technical condition of building structures, damage of building, warehouse building in the reinforced concrete precast technology, safety of structure

Katarzyna Grzesik • **Application of the IWM-PL Model for the Life Cycle Assessment (LCA) of Municipal Waste Management in Krakow. Part 1** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

Life cycle assessment (LCA) is a tool for evaluating environmental aspects and potential environmental impacts, initially developed for the evaluation of a product's life cycle. LCA can be also employed for evaluating the environmental performance of the waste management systems. The assessment time frame stretches from the moment, when waste is generated until its final disposal take place. Since the 1990s, several waste LCA tools have been developed to model the environmental impact of waste management systems. In 2011 the first Polish language application, the IWM-PL model, was issued.

The goal of this study is the quantification of the environmental impacts from the municipal waste management system in Krakow, state in 2010, applying the IWM-PL model. The study

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is divided into two parts presented in two papers: *Application of the IWM-PL Model for the Life Cycle Assessment (LCA) of Municipal Waste Management in Krakow. Part 1* and *Application of the IWM-PL Model for the Life Cycle Assessment (LCA) of Municipal Waste Management in Krakow. Part 2*. Part 1 presents goal and scope as well as an inventory analysis (LCI), part 2 – life cycle impact assessment (LCIA) and interpretation.

The goal of part 1 of the study is the evaluation of the structure, scope and organization of the data needed by the IWM-PL model. The paper explains thoroughly the process of gathering, estimating, calculating, and assuming the data required by the IWM-PL model, in order to perform LCA of the municipal waste management system in Krakow. The uncertainties are also discussed and data of low and high uncertainty are indicated.

The functional unit for this LCA study is the total quantity of waste introduced into municipal waste management system in 2010 in Krakow city. The functional unit includes mixed waste, separately collected waste, bulky waste, garden waste and waste from infrastructure (commercial sector), collected and transferred to treatment during the whole year. The functional system boundaries of this analysis are defined as all processes of waste treatment performed in Krakow (recycling of secondary materials outside of Krakow), transport of collected waste to the waste facilities (sorting station, dismantling station, composting plants, landfill) and also transport of secondary raw materials from the sorting station to the recycling stations. The constructing of waste facilities are excluded from system boundaries, while the fuel and energy needed for operating the installations are incorporated in the system boundaries.

**Keywords:** life cycle inventory, life cycle assessment, municipal waste management system, models for life cycle assessment

Krystyna Michałowska, Ewa Głowienka-Mikrut, Sławomir Mikrut, Mateusz Bochenek • **Updating, Integration and Making Available Spatial Data with the Use of the State-of-the-Art Technologies** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

This paper presents possibilities for the utilization of spatial information derived from various sources (GPS field measurements, map scanning, data resources in centres for land survey

and cartography documentation, orthophotomaps, WMS and WFS data, map Websites). It also draws attention to potential problems encountered in the process of data integration with the use of state-of-the-art processing technologies and making available geographical information. The authors also introduce the issue of the quality of processed data in the aspect of their accuracy and reliability, and the possibility of their incorporating into Spatial Data Infrastructure (SDI) resources.

**Keywords:** SDI, SIP, GIS, data integration, WMS and WFS Web services, open-source applications

Krystyna Michałowska, Tomasz Nałęcz, Ewa Głowienka-Mikrut, Sławomir Mikrut, Jakub Garczarek • **The Use of Land Surveying in the Process of Managing Mineral Deposits** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

Regulations of law obligate entrepreneurs, who conduct mining activities to keep records of mineral deposit resources, and at the stage of the deposit liquidation, to carry out the land reclamation. Both at the stage of the deposit exploitation, and during the deposit reclamation it is necessary to make use of land survey maps and calculations.

The paper presents the way of using topographic maps to determine the volume of minerals to be extracted from the deposit, and to carry out land reclamation works, consisting in reducing of the inclination of slopes that were created as a result of mining activities.

**Keywords:** mineral deposits, land reclamation, land surveying

Joanna Pałubska, Jan Ruchel • **Investment Nature of Real Properties on the Example of Wielka Wieś Municipality** • Geomatics and Environmental Engineering 2013, Vol. 7, No. 3

Market value of a given real property, created by many factors, mainly depends on individual market characteristics of the real property, strictly related to its type. The segment of real properties with investment potential, for example agricultural real properties, deserves particular attention. Agricultural lands, attractive in

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terms of location, are treated as good investment of capital, while the prices achieved in the course of their sale are not dependent on the attributes affecting farming productivity but on parameters enabling the change of their intended use for a more profitable one. It can be indicated by significant diversification of agricultural land prices, where high prices usually relate to speculative purchasing. The number of such transactions is very high especially in the attractive suburban areas and it exceeds the number of real properties purchased for agricultural use. Investments in such locations allow achieving high profits, especially because the prices of building lands are high. These actions, however, are accompanied by the risk of failure to achieve expected profits, related to existing legal obstacles or the ones that may arise.

**Keywords:** real property investments, agricultural lands, change of real property's intended use

Ewelina Saran • **Nonrenewable Energy Sources in Poland** •  
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Hard and brown coal reserves, if rationally managed, will be sufficient for the next several decades. Taking natural gas into account, the amount of reserves will be appropriate in order to fulfill nearly 1/3 of the needs within a similarly long period. However, the condition is that some new gas fields ought to be discovered (which is still quite possible to happen). Nevertheless, the proven oil reserves are small, whereas the likelihood of discovering some new deposits is rather low. Currently (2006), the annual crude oil production extracted from drillings located in both mainland and the Baltic Sea oscillates around 0.70 Mton, whereas the oil consumption does not exceed 20 Mton. According to the data collected in 2006, the percentage of Polish crude oil share equaled 3.9. Fulfilling the future needs for oil and gas, as being carried out at present, will require imports of these media. Oil and natural gas in particular are used in Europe as a means of political pressure mainly from the Russia's side. Thus, it is considered to be rather difficult, or even impossible for Poland to resolve the hydrocarbon fuel supply in an autonomous way. The problem, however, can be solved effectively within the framework of the European Union.

**Keywords:** petroleum/oil, natural gas, hard coal, brown coal (lignite)