



Assessment of the Economic Losses Resulting from Land Subsidence in Bandung Basin, Indonesia

H.Z. Abidin (1), I. Gumilar (1), H. Andreas (1), and Y. Fukuda (2)

(1) Geodesy Research Group, Faculty of Earth Science and Technology Institute of Technology Bandung, Jl. Ganesha 10, Bandung, Indonesia, (2) Graduate School of Science, Kyoto University, Japan

The Bandung Basin is a large intra-montane basin surrounded by volcanic highlands, in western Java, Indonesia, inhabited by more than seven million people. The basin, an area of about 2300 km², is a highland plateau at approximately 650–700 m above sea level and is surrounded by up to 2400 m high Late Tertiary and Quaternary volcanic terrain. Based on the results of 9 GPS surveys conducted since 2000 up to 2011 it was shown that several locations in the Bandung Basin have experienced land subsidence, with an average rate of about –8 cm/year and can go up to about –23 cm/year in certain locations. A similar rate of subsidence was also detected by the InSAR (Interferometric Synthetic Aperture Radar) technique.

In general, the impacts of land subsidence in Bandung basin could be seen in several forms, such as cracking of houses, permanent constructions and roads, changes in river canal and drain flow systems, wider expansion of flooding areas, and malfunction of drainage system. The tangible and intangible impacts of land subsidence cannot be underestimated. The primary environmental and economic effects of land subsidence phenomena can vary from negligible to severe depending on the present land-use nature of the affected area and the subsidence magnitude and coverage. The indirect effects of subsidence through aggravation of other hazards already present in the area are frequently more severe than the direct effects. In the case of Bandung basin, the increase in flooding coverage caused by continuing subsidence introduce more problems compared to other indirect effects of land subsidence. Land subsidence also Increases the maintenance costs for the affected buildings and infrastructure, and lowering the quality of living environment (e.g. health and sanitation condition) and ecosystem in the affected areas. Although not easy, quantitative assessment of economic losses resulting from land subsidence in Bandung basin has been carried out. Methodology and estimated results will be presented and discussed in this paper.