Climate change adaptation strategies in the technical sphere

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The present report deals with the issues of adaptation to climate change and variability in the context of risk management. The necessity for specific adaptation measures is determined by result of extreme events monitoring and trend analyses of exposure and vulnerability of the man-made objects. The study considers following methods: indirect assessment of damage potential; estimation of social and economical risks related to the climate extremes and dangerous weather events. Presented map indicates areas of increased risk for the key industries. This map can be the basis for elaboration of adaptation measures. The adaptation systems at different levels are analyzed: global, regional, national (country), local (district, municipality), and specific infrastructure facilities. Action at one level must be associated with other levels.

An emphasis is laid on large-scale hydro meteorological adaptation systems. The most important component of adaptation at the national level (as well as national security) is updating (actualization and harmonization with Euro code) of normative climate database. The system of normative documents underlies climate services at the national level. The authors consider risk assessment methodology that includes notions of the fuzzy sets theory. It allows taking into account incomplete information and stochastic nature of obtained results. The study considers adaptation planning and its including in the structure of normative documents.

According to WCC-3 adaptation measures must rely on integrated information including economic data that are useful for decision-making purposes. The case study of decision making in point of renewable energy development in the Far East Region (high risk area) is presented. In this region helio-, wind and hydro power economic resources as well as cost performance (capital input, running characteristics etc) were estimated. The obtained results were included in investment potential assessment of each source of renewable energy and "decision matrix" system.