



Sustainable regional development and natural hazard impacts

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During the last decades, natural hazard impacts on social and economic development in many countries were increasing due to the expansion of human activities into the areas prone to natural risks as well as to increasing in number and severity of natural hazardous events caused by climate changes and other natural phenomena. The escalation of severe disasters (such as Tohoku earthquake and tsunami in Japan 2011) triggered by natural hazards and related natural-technological and environmental events is increasingly threatening sustainable development at different levels from regional to global scale. In our study, we develop a model of ecological, economic and social sustainable development for the European part of Russia and the Republic of Belarus. The model consists of six blocks including 1) population, 2) environment, 3) mineral resources, 4) geographic space, 5) investments, and 6) food production and import. These blocks were created based on the analysis of the main processes at the regional level; all the blocks are closely interrelated between each other. Reaching the limit values of block parameters corresponds to a sharp deterioration of the system; as a result, the system can lose its stability. Aggravation of natural and natural-technological risk impacts on each block and should be taken into account in the model of regional development. Natural hazards can cause both strong influences and small but permanent perturbations. In both cases, a system can become unstable. The criterion for sustainable development is proposed.

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