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Preliminary Research on Quantitative Model of Water Resources Carrying Capacity Based on Water Resources Balance Sheet

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The water resources are not only basic natural resources, but also strategic economic resources and ecological control factors. Water resources carrying capacity (WRCC) constrains the sustainable development of regional economy and society. Studies of WRCC can provide helpful information about how the socio-economic system is both supported and restrained by the water resources system. Based on the researches of different scholars, major problems in the study of WRCC were summarized as follows: the definition of WRCC is not yet unified; the method of carrying capacity quantification based on the definition of inconsistency is poor in operability; the current quantitative research methods of WRCC did not fully reflect the principles of sustainable development; it is difficult to quantify the relationship between the " water resources – economic society - ecological environment". As such, there is a need to develop better quantitative assessment methods to determine the regional WRCC. This paper proposes a new idea of quantifying the carrying capacity of water resources: through the compilation of water resources balance sheet, to master the situation of water consumption and water environmental degradation, and to grasp the assets and liabilities situation of the regional water resources. On this basis, we try to explore a quantitative calculation method of WRCC which can reflect the connotation of sustainable development and establish a quantitative model of WRCC, which covers "water resources – economic society - ecological environment".