

Water risk assessment in China based on the improved Water Risk Filter

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Abstract Finding an effective way to deal with the water crisis and the relationship between water and development is a major issue for all levels of government and different economic sectors across the world. Scientific understanding of water risk is the basis for achieving a scientific relationship between water and development, and water risk assessment is currently an important research focus. To effectively deal with the global water crisis, the World Wide Fund for Nature and German Investment and Development Company Limited proposed the concept of water risk and released an online Water Risk Filter in March 2012, which has been applied to at least 85 countries. To comprehensively and accurately reflect the situation of water risk in China, this study adjusts the water risk assessment indicators in the Water Risk Filter, taking the actual situation in China and the difficulty of obtaining the information about the indicators into account, and proposes an index system for water risk evaluation for China which consists of physical risk, regulatory risk and reputational risk. The improved Water Risk Filter is further used to assess the sources and causes of the water risks in 10 first-class and seven second-class water resource areas (WRAs). The results indicate that the water risk for the whole country is generally medium and low, while those for different regions in the country vary greatly, and those for southern regions are generally lower than those for northern regions. Government regulatory and policy implementation as well as media supervision in northern regions should be strengthened to reduce the water risk. The research results may provide decision support and references for both governments and industrial enterprises in identifying water risks, formulating prevention and control policies, and improving water resources management in China.

Key words water risk assessment; water risk filter; assessment method