



Effect of urbanization on the water footprint of food consumption in China over 1992-2008

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In the past few decades, China's water and food security has been facing severe challenges from population growth, rapid urbanization and shifts in diets. Regional differences are caused by variability in land and water availability, but China also has a high diversity in food culture and there are provincial differences in urbanization degrees. The spatial differences and changes in the water footprint (WF) of food products in China have been widely reported and recognized. Previous studies, however, have paid little attention to the differences between rural and urban diet habits. The current study estimates Chinese provincial water consumption, both green and blue WFs, related to the changing food consumption patterns of urban and rural residents over the period 1992-2008. Over this period, China's urban population increased from 24% to 47% of the total population. At provincial level, the urbanization degree varied though, from 29% to 88% in 2008. Eight categories of food were considered: (1) cereal and starchy roots, (2) sugar and sweeteners, (3) vegetable oil, (4) vegetable, (5) meat, (6) poultry, (7) eggs and (8) fish and seafood. Results show that WF of food consumption per capita decreased across the whole country over the study period. On national average, WF per capita reduced by 36% from 543 m³/cap/yr in 1992 to 345 m³/cap/yr in 2008. In 2008, rural WF per capita (~367 m³/cap/yr) was 14% larger than urban WF per capita (~321 m³/cap/yr). With rural-urban differences in terms of diet habits, both the structure and magnitude of WFs of food consumption varied between rural and urban areas. We present the quantitative results on how the WFs of Chinese urban and rural food consumptions per province developed annually under urbanization, population growth, diet changes, WF reductions per food products and income increases.