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Changes in the reliance on groundwater *versus* surface water resources in Asian cities

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Abstract Changes in the relative reliance on surface water and groundwater water resources, due to land-use/cover changes in Tokyo, Osaka and Seoul, to water law and institutions in Osaka and Bangkok, and from the point of view of climate change in Taipei, have been analysed. Urbanization causes a reduction of groundwater recharge and increase in thermal transfer into the subsurface environment. The regulation of groundwater pumping due to serious land subsidence did not work in Bangkok, in the absence of alternative water resources, in particular because the private sector owns groundwater. The price of water is another major factor for the change in the relative importance of groundwater and surface water for reliable water resources.

Key words urbanization; groundwater; climate change; water resources; Asia; land cover change; law