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A review of the potential of nature-based solutions (NBS) to address the challenges of the water-energy-food nexus (WEF Nexus) in the coming decades

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The water, energy, and food security nexus (WEF Nexus) is the interlinkage between water security, energy security, and food security. An increasing world population is projected to increase energy and food requirements, which will increase the need for freshwater drastically in the coming decades. Projected climate change impacts will aggravate water availability, especially in urban areas. Nature-based solutions (NBS) have proven to generate multiple benefits that defuse the expected merging tensions within the WEF Nexus. This paper outlines the theories, provides examples, and discusses the potential of NBS to address the future WEF Nexus. For this purpose we reviewed recent papers on the theories of WE, WF, EF, and WEF Nexus, we described and summarized 19 representative real-life case studies, and we identified the knowledge gap within the theory and the case studies. We provide quantitative potentials and qualitative benefits for NBS described in the literature over the past decades. Our review demonstrated the impressive potential of NBS to address the projected challenges within the WEF Nexus. The study concludes by recommending NBS for specific WEF Nexus challenges and highlighting the need for decision-makers to consider the implementation of NBS in urban planings.