



Simulating potential water grabbing from large-scale land acquisitions in Africa

Emma Li Johansson (1), Marianela Fader (2), Jonathan W. Seaquist (1), and Kimberly A. Nicholas (3)

(1) Department of Physical Geography and Ecosystem Science, Lund University, (2) International Centre for Water Resources and Global Change (UNESCO), hosted by the German Federal Institute of Hydrology, Koblenz, Germany, (3) Centre for Sustainability Studies, Lund University

The potential high level of water appropriation in Africa by foreign companies might pose high socioenvironmental challenges, including overconsumption of water and conflicts and tensions over water resources allocation. We will present a study published recently in the Proceedings of the National Academy of Sciences¹¹ of the USA, where we simulated green and blue water demand and crop yields of large-scale land acquisitions in several African countries. Green water refers to precipitation stored in soils and consumed by plants through evapotranspiration, while blue water is extracted from rivers, lakes, aquifers, and dams. We simulated seven irrigation scenarios, and compared these data with two baseline scenarios of staple crops representing previous water demand. The results indicate that the green and blue water use is 39% and 76-86% greater, respectively, for crops grown on acquired land compared with the baseline of common staple crops, showing that land acquisitions substantially increase water demands. We also found that most land acquisitions are planted with crops such as sugarcane, jatropha, and eucalyptus, that demand volumes of water $>9,000 \text{ m}^3 \cdot \text{ha}^{-1}$. And even if the most efficient irrigation systems were implemented, 18% of the land acquisitions, totaling 91,000 ha, would still require more than 50% of water from blue water sources.

¹Johansson, E.; Fader, M.; Seaquist, J.W.; Nicholas, K.A.: Green and blue water demand from large-scale land acquisitions in Africa. PNAS, doi : 10.1073/pnas.1524741113.