



Unraveling the nexus between water and food security in Latin America and the Caribbean: regional and global implications

Barbara Willaarts (1,2), Alberto Garrido (1,2), Barbara Soriano (2), Lucia De Stefano (1,3), Elena López Gunn (4), Maite Aldaya (1), Pedro Martínez-Santos (1,3), Ramon Llamas (1,3)

(1) Water Observatory-Botín Foundation Spain (barbara.willaarts@upm.es), (2) CEIGRAM, Technical University of Madrid, Spain (barbara.willaarts@upm.es), (3) Universidad Complutense, Madrid, Spain , (4) ICATALYST, Madrid, Spain

Latin American and the Caribbean (LAC) is a water and land abundant region, and plays a key role in meeting global food and water security. During the last decade, LAC has experienced a rapid socio-economic growth, largely sustained by its competitive advantage in the production and exports of agricultural and mining products and by the high commodity prices in the global market. This study seeks to quantify the contribution of LAC's agriculture to global food and water security, i.e. virtual water trade, and evaluate the environmental and societal implications for regional development. Results show that between 2000 and 2011, LAC has increased its agricultural production 27%, and it now accounts for nearly 18% of the global agricultural market. As a result, the agricultural water footprint (WF) of LAC was augmented 65%; and yet, nearly 19% to 44% of the actual agricultural WF - depending on the countries - is virtual water exported to third countries. In fact, almost 50% of the increase in global virtual water trade during the last decade, corresponds to LAC. Such global contribution has significant implications for regional water and food security. From an environmental perspective, crop expansion (mostly rain-fed) resulted in the deforestation of nearly 1 million km², turning this region into the second most important deforestation hotspots worldwide. This land clearing is having large impacts of ecosystem services, e.g. carbon sequestration, water quality or biodiversity conservation. From a socio-economic perspective, increasing agricultural production has improved regional food security indicators, although one in every seven children is still stunted in LAC and nearly 10% of the population remains undernourished. Dietary shifts and socio-cultural factors also lag behind the growing problem of malnutrition in the region, i.e. overweight and obesity. Improvements of water access and sanitation, have had a positive impact on food security indicators, especially among the high-income LAC countries. We conclude that despite the large contribution of LAC's agriculture to global water and food security, this goal is at present intensively tapping into LAC's natural capital. Also, regional improvements in water security have improved, but important goals remain and new challenges are emerging. Water governance in LAC is evolving to address the challenges posed by rapid socio-economic changes, however, as is often the case, the implementation of reforms lags behind.