



# When wells run dry: Water and tourism in Nicaragua



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## ABSTRACT

This article uses a political ecology approach to examine the relationship between tourism and groundwater in southwest Nicaragua. Tourism remains a growing industry; however, adequate provisions of freshwater are necessary to sustain the production and reproduction of tourism and it remains uncertain if groundwater supplies can keep pace with demand. Integrating the findings of groundwater monitoring, geological mapping, and ethnographic and survey research from a representative stretch of Pacific coastline, this paper shows that diminishing recharge and increased groundwater consumption is creating a conflict between stakeholders with various levels of knowledge, power, and access. It concludes that marginalization is attributable to the nexus of a political promotion of tourism, poorly enforced state water policies, insufficient water research, and climatic variability.

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## Introduction

Peering over the ledge into the dimly lit, hand dug well, my eyes slowly adjusted so I could see the thirty centimeters of accumulated water at the bottom of the seven-meter deep well. This amounted to a mere 240 l of freshwater—hardly enough to satisfy the needs of the six houses that depended upon the well. Maria explained that it would take three to five days before the well produced another 240 l that could then be pumped and distributed to her relatives.<sup>1</sup> Things have changed in the small coastal community of Playa Gigante, Nicaragua. In years past, this well had been more than adequate to meet their needs. Maria and Ernesto have lived in Playa Gigante since the mid-1990s, shortly after a large portion of the area was redistributed to an agricultural cooperative by the Sandinista government. They had moved here to carve out a new life, supported mainly through fishing and subsistence farming. Ernesto had told me on previous visits his well would fill completely at the end of each rainy season. “I could reach down into the well with my hand and scoop out water with a bucket.”<sup>2</sup> This year (2014), the rainy season brought only 60% of mean precipitation. The two previous years had been below average also. To make matters worse, a local tourism business bought a four-meter by four-meter plot of land within ten meters of his well for the sole purpose of installing a deeper well with a pump. Ernesto told me this was a big reason why his well is now nearly empty.

A decade of tourism growth has brought significant opportunity for local business, including charter fishing for Ernesto. Although many in the community welcome this economic ‘progress,’ they also speak with growing concern about tourism’s impact on limited water supplies. More tourism means more business, but it also means more demand on water—something

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<sup>1</sup> ‘Maria’ here is a pseudonym, as are the other names in this article.

<sup>2</sup> Personal interview, June 4, 2014. (Author’s translation).

that is in shorter supply due to prolonged drought in the region. Collectively this means a scramble for water security and subsequent conflict with definite winners and losers.

This paper explores the relationship between tourism development and local populations in southwest Nicaragua through the lens of freshwater supply. Particular attention is paid to the political and economic institutions in which tourism is embedded, globally and in Nicaragua. Research for this study involved various aspects of the physical and human geography of the study area gathered over five years of intensive field visits to Playa Gigante (2010–2015). A mixed-method approach was used to gather data on site-specific water availability, use, and conflicts. This included in-depth and informal interviews ( $n = 90$ ) with local residents, community leaders, tourists, tourism development managers, and local NGOs; well monitoring ( $n = 92$ ); and geological field mapping. Well monitoring involved bi-annual empirical data collection at each well during the peak of the wet and dry seasons, as well as hourly collections via data loggers. This interdisciplinary and multi-method approach was employed to better understand the complex nature and contingency associated with environmental, political, and economic issues. The research was designed to map the distribution of wells, to track changes in groundwater levels, to estimate the relative water usage of various stakeholders, and to discover perceptions of groundwater level changes with respect to tourism growth and variation in precipitation. The research was confronted by limited baseline data, including conditions that existed before the recent growth of tourism.

The paper is divided into three sections. First, the political ecology of tourism development is outlined at the global and regional level, with particular emphasis on tourism linkages to political agendas and water supply. Second, the causes of water crisis in Playa Gigante are evaluated. Water supply is traced through the limitations of geology and climatic variability to the growing demand through tourism development and increase in local populations. Water is shown to flow towards power, with a small number of winners capturing most of the rewards and the remaining participants scrambling for resources with little hope of water security. Third, the water struggle and its consequences for local populations and tourism developers are outlined. Social power is scrutinized through examples of competition over limited supplies of water, while economic consequences for tourism developers are projected. Implications and recommendations for water management are then offered.

### Political ecology of tourism development

Global tourism has experienced steady growth and expansion over the past six decades and represents one of the largest economic sectors in the world at a value of US\$1,245 billion (UNWTO, 2015). International tourist arrivals grew by 4.7% in 2014, the fifth consecutive year of growth since 2009 (UNWTO, 2015). Like most capitalistic ventures, the long-term success of tourism is dependent upon new markets and opportunities. Within tourism literature, these new markets are described as 'emerging destinations' and constitute the highest area of growth across the tourism landscape. Arrivals to such destinations are expected to increase at a rate of 4.4% between 2010 and 2030—double that of arrivals to 'advanced economies' (UNWTO, 2014). Central America continues to grow in popularity as a tourism destination due to cultural attractions, biodiversity, and affordability. To this end, tourism promoters are increasingly pitching enchanting destinations to tourists with an appetite for discovery and interest in less-crowded destinations. Between 1986 and 2013, tourist arrivals and receipts to Central America grew at average annual rates of 9.3% and 14.2% respectively, exceeding the average global rates. Within Nicaragua, tourism arrivals have nearly tripled in the last 15 years (see Table 1) and contributed 5.0% of total GDP in 2015. This contribution is up from 4.0% in 2013 and is expected to rise by 5.1% per annum from 2016 to 2026 (WTTC, 2016). Given the current and projected growth of tourism in emerging destinations such as Nicaragua, it is critical to evaluate the environmental, social, and economic dimensions of impacts on receiving destinations.

#### *Discourse of tourism*

Tourism is best framed within the larger discourse of capitalism given its market functionality and tendency for valuation within narrowly defined cost-benefit analysis. Although the efficacy and impacts of tourism are simultaneously argued and defended (Hunt, Durham, Driscoll, & Honey, 2015; Messerli, 2011; Spenceley & Meyer, 2012; Torres & Momsen, 2005; Wilson, 2008; Zapata, Hall, Lindo, & Vanderschaeghe, 2011), there is little doubt that economies and resources in developing countries are often reoriented to serve the needs of tourism and exogenous markets (Britton, 1982). Similar dynamics in Central America can be traced back to the 19th century when production and exchange of commodities such as coffee, beef, and sugar were brokered at the hands of elites who monopolized resources and marginalized certain classes of people to the benefit of external consumption (Beckman, 2012; Dore, 2006; Gobat, 2005). This outcome fits with Marx and Engels' (1978) observation of the larger global pretension of capitalism whereby "[t]he need of a constantly expanding market for its products chases the bourgeoisie over the entire surface of the globe. It must nestle everywhere, settle everywhere, establish connections everywhere" (p. 476). Although such a teleology is conceptually easy to consign to tourism, it is no easy task to determine social and economic implications given that capitalistic impacts in developing countries produce markedly different results across space and time. This brings us to the on-going debate of tourism as a means for improving economies in developing countries. Presently, many countries throughout Latin America export commodities with high social and environmental costs. Extractive industries (e.g., oil, natural gas, mining) are more costly on the environment and actually produce fewer jobs than other sectors. In contrast, tourism offers countries a commodity that creates jobs

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