Chancay-Lambayeque basin at a glance

Overview.- The Chancay-Lambayeque is one of the most extensive watersheds along the Peruvian coast (Juárez et al. 2006). Habitat types within the region range from subtropical desert to tropical dry forest and cloud forest. A total of 116,259 ha are considered irrigable (Garcés-Restrepo and Guerra-Tovar 1999).

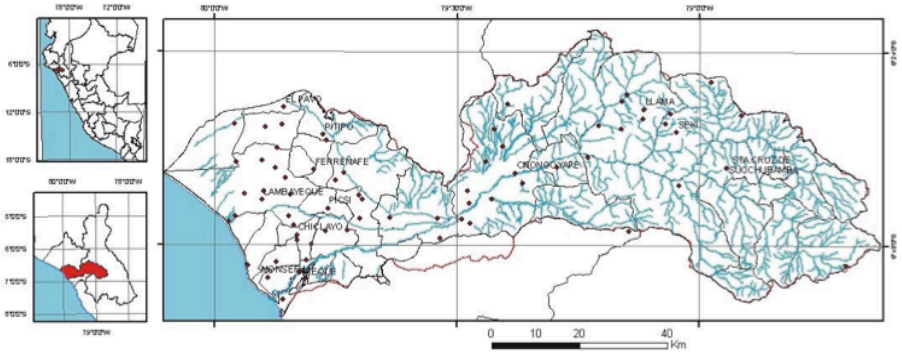


Image source: Juárez et al. 2006

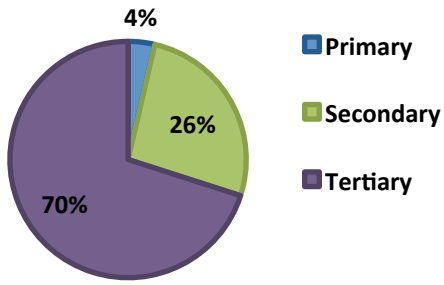
Geographic and physical features.- Located in northern Perú, between 6°20' and 6°55' S in latitude and between 78° 38' and 80°03' W in longitude (Juárez et al. 2006), the Chancay-Lambayeque river basin consists of two parts: a mountainous, cold region with rainy seasons and subsistence farming, and an arid, coastal, subtropical desert plain with agricultural irrigation and dominant south-southeast winds (Garcés-Restrepo and Guerra-Tovar 1999; Ministerio de Agricultura 2013). Landslides, mudslides, earthquakes, and flooding are occasional occurrences, particularly in the higher elevations (Juárez et al. 2006).

Hydrologic features.- The most important river in the system is the Chancay, at 170 km in length (Garcés-Restrepo and Guerra-Tovar 1999). The Chancay exhibits an irregular flow regime, with flow peaking in March and April (Juárez et al. 2006). It originates at the confluence of the Tacamache and Perlamayo Rivers, at 3800m altitude (Juárez et al. 2006). The river receives inputs from tributaries including the Tayo, Llantán, Las Nievas, Cañad, Chilac, San Lorenzo, Huamboyaco, La Chinchera, Cirato, Cumbil, and Camellón Rivers before emptying into the Pacific Ocean (Juárez et al. 2006). Water quality in the region is generally good, with sediment loads averaging 500 ppm and low levels of sodium (Garcés-Restrepo and Guerra-Tovar 1999), but sedimentation and pollution are increasing (Juárez et al. 2006).

Social features.- An estimated 941,970 people live within the Chancay-Lambayeque watershed (Juárez et al. 2006). Approximately 73% of the population lives within the province of Chiclayo, with the remaining population distributed among six different provinces (Juárez et al. 2006). The population is predominantly urban (77% in 1995) and youthful, with an annual growth rate of 2.5% (Garcés-Restrepo and Guerra-Tovar 1999). In recent years, growth of mining has resulted in a demographic shift at higher elevations, with emerging dominance of mining companies and conflicts between miners and other land users in the region (Juárez et al. 2006).

Economic features.- Major economic activities in the watershed include fishing, agriculture, hunting, tree farming, industrial manufacturing, and, recently, mining and tourism (Juárez et al. 2006). Subsistence farming is a primary activity in the higher elevations of the watershed, with a relatively small amount of commercial farming (Juárez et al. 2006). Farming in the region requires inputs of fertilizer due to low soil fertility (Garcés-Restrepo and Guerra-Tovar 1999). Major agricultural market products in the watershed include corn, alfalfa, dairy products, coffee, sugarcane, rice, and cotton (Garcés-Restrepo and Guerra-Tovar 1999). The Department of Lambayeque has the most developed manufacturing industry in the region (Juárez et al. 2006) and is primarily focused on production of sugar, rice, soda, beer, flour, and cooking oil.

Value of Economic Activities Production in the Chancay-Lambayeque river basin (sub-regional GDP)



Source of data: CEA 2008.

Current challenges.- Lowland areas are under intensive agriculture, with consequently high environmental degradation (Juárez et al. 2006). Impacts of agriculture include erosion, water salinization, and solid waste pollution (Juárez et al. 2006). Intensive rice and sugarcane agriculture, in particular, are blamed for widespread salinization in the Chancay-Lambayeque lowlands (Alarcón 2013). Meanwhile deforestation is a problem on hillsides, where clearing of forests for agriculture and ranching results in accelerated erosion (Juárez et al. 2006). Because the soils erode rapidly on the hillsides, degradation of cleared land is rapid, requiring further clearing at higher elevations (Juárez et al. 2006). In lowlands, water quality and quantity are both of concern (Juárez et al. 2006). Erosion and agriculture at higher elevations contribute both sedimentation and nutrient pollution. Novel agricultural approaches such as treatment and reuse of wastewater show promise, since the aridity of the region is highly limiting to its productivity under normal agricultural practices (Villafane 2012). A recent analysis conducted by the Autoridad Nacional del Agua concluded that major threats to water quality in the Chancay-Lambayeque watershed include runoff from abandoned mines and contaminated discharge from households and municipalities (iAgua 2013). As economic development in the region continues, contamination of aquifers by industrial activities is of increasing concern. Potential contaminating industries in the region include beverage production, textile production, paper production, plastics production, and production of chemical substances (Diagnóstico 2001). The Autoridad National del Agua has initiated monitoring of the Chancay-Lambayeque watershed to keep track of water quality issues (Agencia Peruana de Noticias 2013). Mining is also creating current challenges due to direct land use conflicts and agricultural groups blaming mining companies for degrading water quality; protests against mining activities have recently been organized in the region (Gobierno Regional Cajamarca 2013).

Synthesis.- Current economic development in the Chancay-Lambayeque basin is likely to impact water quality, in particular. Intensive, cash crop agriculture dominates the lowlands and is generating widespread salinization. Highland areas are shifting from subsistence agriculture to a combination of cash crops and mining, with accelerated water sedimentation and nutrient pollution as consequences. Efforts to monitor water quality are underway.

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