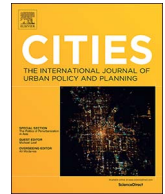


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City profile

## Guatemala City: A socio-ecological profile

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### ABSTRACT

This profile of Guatemala City focuses on the intertwined human and environmental dimensions driving urban space development. Using a socio-ecological approach, it shows current urban development depends on the city's historic trajectory. It shows aspects of Maya civilization and remnants of Spanish colonialism. It explores modernity and neocolonialism and discusses the potential for a sustainable development in the future. Emphasis is placed on socio-ecological challenges and benefits that the city could receive from new interventions. Finally it discusses contemporary ideas to foster urban development towards a more sustainable direction.

### 1. Introduction

The majority of the population in Central America will live in urban agglomerations by 2050 when its urban population will have reached an average of 72% and Guatemala will have reached 67.3% (UN, 2015). This implies that the country has to focus on promoting sustainable urban development for its urban centres urgently. A socio-ecological perspective presents the opportunity to visualize in the city, the human and environmental dimensions in an interrelated manner and not separately as is predominantly handled. (McPhearson, Haase, Kabisch, & Gren, 2016; Pickett, Cardenasso, Childers, McDonnell, & Zhou, 2016).

An early profile of Guatemala City (GC) exists (Marroquín, 1987) and it is being updated since major changes have occurred since then. First, Central America is the second most rapidly urbanizing region in the world (Maria, Acero, Garcia, & Aguilera, 2016). GC is still, the major urban centre in Central America and the most important in Guatemala. Second, like others cities in Latin America, new developments are taking place, which bring about new land uses and socio-ecological conflicts, deepen existing ones, but also present opportunities for considering creative urban development solutions.

Using current perspectives and approaching cities as complex socio-ecological systems (Cook, Hall, & Larson, 2012; Elmqvist et al., 2004; McHale, Bunn, Pickett, & Twine, 2013); we can understand sustainability as a process in which human values are fundamental in co-producing the ecology in cities, while at the same time needs to include ecological, social and political dimensions. This approach has recently been fostered in urban sustainable literature (Pelling & Manuel-Navarrete, 2011; Pickett et al., 2013; Pincetl, 2015).

### 2. The landscape context and the population of GC

GC is situated in the central highlands of Guatemala at 14°37' North and 90°30' West with an altitude of 1533 m. The landscape originated from forces related to the geological history of the Central American Isthmus particularities (Fig. 1).

The valley is formed of Quaternary deposits (MAGA, 2005) and has a structure that is prone to geologic hazards due to five tectonic faults systems following a North-South direction. These make GC a high risk area for earthquakes as history have shown (Bohnenberger et al., 1976; Villagrán, Lindholm, Dahle, Cowan, & Bungum, 1997).

The region displays patterns of a temperate and humid climate including a dry season, from November to April and a rainy season from May to October. The mean temperature is about 18.8 °C, with 77% humidity and 1266 mm of rain (MAGA, 2005). The city is located between the continental water dividing Pacific and Atlantic watersheds with two major basins for the rivers Villa Lobos and Las Vacas, respectively (MAGA, 2005). The natural vegetation of GC is found in the ravines and corresponds to the Mesoamerican Pine-Oak Forests Ecoregion (Vreugdenhil, Meerman, Meyrat, Diego Gómez, & Graham, 2002).

GC shows, typical for Central American small countries and capitals, a high urban primacy (Cuervo, 2004; Lungo, 2004) which has been increasing since 1950 (Velásquez, 1989). It has the highest number of inhabitants compared to other Central American cities (Demographia, 2016; Urbanística, 2016).

According to the last census (INE, 2003), 18% of the total national urban population lives in GC with a decreasing tendency since the 1950s and a negative net-migration. The reason for this can be found in a relocation of the population since the 1970's into rapidly growing

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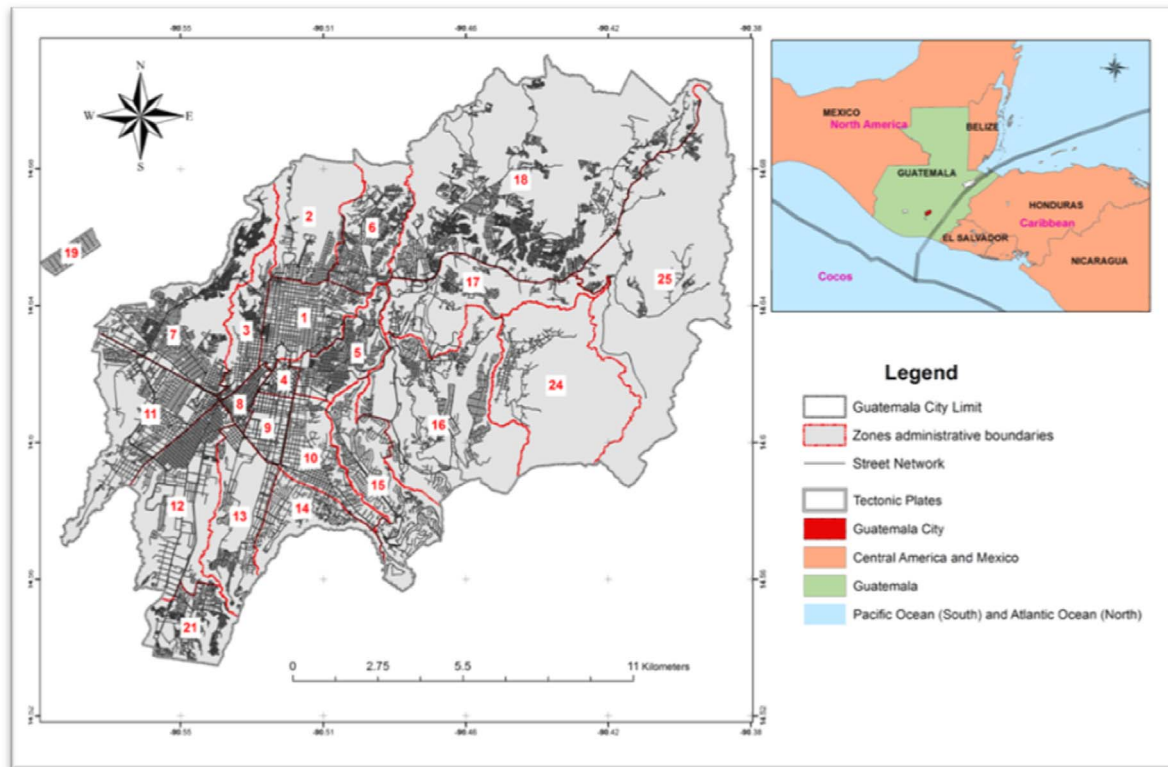


Fig. 1. Location of Guatemala City. The figure shows the position of Guatemala City (upper right) in a geological Central American context. The area to the left shows the administrative units or zones, of the boundaries to Guatemala City, including the road network.

suburbs that make up the urban sprawl in a Metropolitan Area (CEUR, 2012; Martínez, 2014). In the same census (INE, 2003) population ethnic groups in GC comprised citizens recognizing themselves belonging to 93.5% as Ladino, 5.5% as Mayan and 0.08% and 0.03% as Garífuna and Xinca, respectively.

GC is crucial for the country's economy due to the contribution of the city to 63% of the national GDP (Maria et al., 2016) highlighting how polarized the urban network and the national economy in Guatemala are. In relation to the total economically active population, 74% of inhabitants were employed in the tertiary sector, but still many inhabitants struggle in the informal economy (Offit, 2011; Way, 2012). According to their working position (an indirect measure of social segments based on better job position equals better income) social segments were identified with 13.3% in the higher strata, 21% in the medium, 45.5% in the medium-low and 20% in the lower segment (INE, 2003; Martínez, 2014).

### 3. Guatemala City's historical urban development

GC's urban space development and history could be seen over different periods in terms of how society and nature co-evolved. From this perspective, aspects of nature appropriation and use are shown in relation to changes in urban demography, economy, politics, environment and morphology.

In the area in which GC is located, the Maya Civilization settled between 1200 and 1100 BCE, remaining until 600 CE in a city known as Kaminaljuyú. This city benefited from a geographical privileged central position with a large area, many forests, fertile soils and surface water that allowed them to control important goods and trade routes boasting important ceremonial, economic and political activities during the Late Preclassic (Sharer & Traxler, 2005).

In colonial times before the foundation of GC the area was used to agricultural activities and the landscape was covered by pastures, cereals, wetlands, mixed forests, fruit plantations, sugar cane fields and

orchards with areas suitable for extracting different building materials (Chután, 2015; Gellert, 1990).

Based on Gellert (1994), Pinto (1994) and Velásquez (1989), GC development can be classified into four periods.

#### 3.1. The first period: Foundation until 1871

The newly founded capital's initial spatial layout followed the Ordenanzas of King Philip II: a geometric grid to start developing the new city (Fig. 2). The new urban plan took into account rivers, hills and lagoons (Ramírez, 2013). By that time, about 9 ha had been acquired by landlords in order to develop the city and were known as “tierras ejidales” or common lands (Gellert, 1994; Rodas, 2008).

The new city retained its importance in the region because it was still the capital of the captaincy and home to all of the representatives of the Spanish Kingdom. The result was that more political and economic power was concentrated in GC than in any other urban centre in Central America. In this sense, GC's centralized system was similar to those of other Spanish colonial capitals (Luján, 2008).

In this period, a pattern of centre-periphery segregation was established and maintained which is common to other colonial cities following Spanish crown laws (Belaubre, 2011; Lutz, 1997). Segregation occurred as the “elite” population (Spanish descendants, merchants, religious orders and Spanish representatives) occupied the core of the city and the “plebes” (poor Indigenous people and racially mixed people known as “mestizos” who ensured the supply of labour and goods) situated in the peripheries.

Since colonial times, Guatemala's economy was based on an appropriation of nature in the form of agricultural monocultures, exporting them as commodities. Following Solórzano (1977) at the time of the foundation of GC, the main economic activity was the export of indigo tree dye (*Indigofera suffruticosa*) that succeeded the crash in exports of cacao (*Theobroma cacao*). When the international demand for it declined years later, the country relied on the natural dye carmine

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