Editorial

https://revistas.udistrital.edu.co/ojs/index.php/Tecnura/issue/view/1088

Climate change constitutes one of the greatest challenges humanity faces. According to the report prepared by IDEAM, 'Climate Change in the Region of Bogotá, Cundinamarca, and its implications for regional development:' "***Climate change*** *refers to statistically significant variation, either in average climatic conditions or in its variability, which is maintained over a long period of time. This change can be produced by natural processes, external reinforcements, or long-lasting anthropogenic changes in the composition of the atmosphere and land use."* It is worth highlighting that what arouses concern about this phenomenon is not the climatic variability generated but the speed this variability has shown in recent years.

In Colombia, climate change arouses interest given that its effects are materialized in human and material losses, mainly due to the intensification of climate variability events such as the El Niño and La Niña phenomena. The **El Niño phenomenon** refers to the warm current that flows from the coast of Ecuador and Peru, which is associated with the fluctuation of intertropical pressure on the surface and the circulation of the Pacific and Indian oceans—called the Southern Oscillation. It generates changes in winds, sea temperatures, and precipitation in the tropical Pacific. The opposite effect is called the **La Niña phenomenon** (IDEAM, 2012).

Additionally, it should be mentioned that climate change is also associated with changes in the **vocation of the soil**, that is, the use of a soil unit defined by the capacity to support the characteristics of an activity on the analysis of its biophysical basis. Within the established classes are agricultural, livestock, agroforestry, forestry, and conservation. This change has generated **soil degradation**, which is the decrease or negative alteration of ecosystem functions caused by natural or anthropic processes and affects **associated ecosystem services** such as food production (that directly depends on the availability and quality of the soil), the reserve of fresh water in the soil (that determines the quantity-quality supplied to natural environment), and carbon capture (estimated to be two-thirds of the carbon fixed on the planet) (FAO, 2018). The change in the vocation of the soil (and its waterproofing due to urban expansion) directly affects **the hydrological cycle**, defined as the global water balance that helps to understand the interactions between the ocean and the continent. It represents the circulation-transformation of water in different states of matter and its interactions between the atmosphere, lithosphere, and the biosphere (IDEAM, 2010).

There are several proposals and strategies to face and mitigate the effects of climate change in our country; one of them is to integrate the development of nature-based solutions (NBS) into the Development and Land Use Plans, as an option for urban growth (Keesstra, Nunes, Novara, Finger, & Avelar, 2018). NBS refer to the implementation of management measures in which natural dynamics are simulated or reconstructed, considering the interaction flows between the phases involved: soil, sediments, water, and pollutants. These measures are divided into two categories: the first corresponds to NBS that seek to maintain the functionality of the soil and enhance its resilience, while the

second refers to those that seek to transform the flows between the matrices involved based on the concept of connectivity (Keesstra, Nunes, Novara, Finger, & Avelar, 2018).

Within the framework of these solutions are the so-called Green Infrastructure, which correspond to the integration of green spaces in construction systems (forests, wetlands, parks, and green roofs, among others) to promote ecosystem resilience and achieve benefits for the society through the potentiation of ecosystem services. Forests, wetlands, and floodplains help control peak flows and remove pollutants from the water, among other ecosystem services (Demuzere, Orru, & Heidrich, 2014).

Cesar Augusto García-Ubaque
DIRECTOR
cagarciau@udistrital.edu.co