

# GLOSSARY

**Air pollution:** The alteration of the environment by substances or forms of energy placed there by human activity or nature, in quantities, concentrations, or levels capable of interfering with the well-being and health of people, harming flora and fauna, degrading the quality of the environment, or affecting the resources of the Nation or of private individuals” (Law 23 of 1973).

**Areas that generate additional building rights:** Declared protected regional areas with an adopted management plan, which border urban land or urban expansion land. They have been defined by the Land Management Plan and are susceptible to being compensated by additional building rights (article 2 of decree 24/152 of 2021).

**Assed-based community development:** It is an approach to community-based development based on the principles of A) Appreciating and mobilizing individual and community talents, skills, and assets (rather than focusing on problems and needs) and B) Community-driven development rather than development driven by external agencies (Mathie & Cunningham, 2007).

**Assisted ecological restoration:** regeneration of ecosystems through human intervention (Crouzeilles et al., 2017).

**Backcasting:** A planning technique where desired future conditions are visualized and steps are defined to reach them. In other methods, the actions taken are a continuation of the present and extrapolated into the future (Holmberg & Robèrt, 2000).

**Barrel of Liebig:** The law of the minimum (LLM) states that the most limiting nutrient constrains the growth of an organism at that moment (Liebig, 1840). More recently, to address pressing social-environmental challenges, such as carbon-climate feedbacks and food security, many ecosystem models have adopted LLM to simulate the growth of plants and microorganisms that affect crop yield (under various levels of fertilization), the global carbon cycle (Achat et al., 2016, Lawrence et al., 2019, Zhu et al., 2019), aquatic and ocean biogeochemistry (Degroot, 1983, Yool et al., 2011), etc.

**Bio-corridors:** A biological corridor is a linear landscape element that provides for movement between habitat patches but not necessarily reproduction. Thus, not all life history requirements of a species may be met in a corridor (Rosenberg et al., 1997).

**Bioblitz:** A BioBlitz is an event that focuses on finding and identifying as many species as possible in a specific area over a short period of time. At a BioBlitz, scientists, families, students, teachers, and other community members work together to get a snapshot of an area’s biodiversity. These events can happen in almost any geography - urban, rural, or suburban - in areas as small as a backyard or as large as a country. Smartphone technologies and apps such as iNaturalist make collecting photographs and biological information about living things easy as part of a BioBlitz. High-quality data uploaded to iNaturalist become part of the Global Biodiversity Information Facility, an open-source database used by scientists and policymakers worldwide. (National Geographic Society, n.d.).

**BiodiverCities:** The concept was first registered as a series of conferences promoting the dialogue between academics and practitioners in Paris (2010), Rio de Janeiro (2012), Cape Town (2014), and Marseille (2015). These exchanges focused on protected areas in and around cities. The concept adopted new layers in the years to come. The Global Network of Local Governments for Sustainability (ICLEI), the voice of local governments before the Convention on Biological Diversity, entitled an entire work agenda “BiodiverCities.” The publication “BiodiverCities: A Primer on Nature in Cities” was developed by ICLEI Canada and Toronto and Region Conservation. Then, in 2019, the Colombian Government implemented a nature-positive approach to urban development under the name of BiodiverCities (BiodiverCiudades). The BiodiverCities strategy was initiated in close dialogue with city Mayors to tap into different opportunities for mainstreaming biodiversity in 14 cities nationwide. Building on this country’s leadership, in 2021, the World Economic Forum and Colombia partnered to scale a global initiative with a substantial ambition: BiodiverCities by 2030. Finally, there is the BiodiverCities project in the context of the E.U. Biodiversity Strategy, aiming to enhance the use of green

infrastructures in urban contexts (2020) (WEF & Alexander Von Humboldt Biological Resources Research Institute, 2022).

**BiodiverCity by 2030:** a joint initiative of the World Economic Forum and the Alexander von Humboldt Institute, championed by the Colombian Government. The initiative aims to support city governments, businesses, and citizens, to enable cities to live in harmony with nature by 2030. BiodiverCities by 2030 sets a vision of cities as living systems where their economic, social, and ecological functions come together in harmony. BiodiverCities have five characteristics, guiding nature-positive actions on infrastructure, governance, economy, health, and well-being (WEF & Alexander Von Humboldt Biological Resources Research Institute, 2022).

**Biodiversity basin:** An area of movement and habitat, larger than the urban area, where certain species exist. A biodiversity basin is always specific and will vary in size, shape, and spatial extent depending on the species’ characteristics, size, mobility, reproductive, and feeding habits (see theoretical chapter Understanding BiodiverCities from a Transformative Change Approach).

**Bioeconomy:** There is no single narrative around the bioeconomy. It is often associated with an economy that builds on natural resources, especially biomass, to sustainably produce goods and services, mediated by innovations resulting from gathering knowledge. At the urban-regional level, the bioeconomy can contribute to creating comprehensive, sustainable, and profitable value chains and networks, such as those associated with the use of biological assets to obtain economic value (e.g., the use of wild plants marketed in urban distribution centers), developing controlled environments (e.g., urban agriculture) or creating new products from biomass (e.g., biorefineries) (Taylor & While, 2021). An added value of these initiatives is that they can support the resilience of cities to change, for example, in periods of scarcity or restriction, towards becoming self-sufficient with local consumption and production networks (Murcia-López, 2022).

**Bioindicators:** Bioindicators include biological processes, species, or communities and are used to assess the quality of the environment and how it changes over time (Holt & Miller, 2010).

**Biomass:** any organic matter available on a renewable basis, including crops and agricultural wastes and residues, wood and wood wastes and residues, animal wastes, municipal wastes, and aquatic plants (Bracmort, 2013).

**Biomimicry:** The construction of public space and territory can learn from and integrate with natural systems. Biomimicry at the urban scale can radically change how we conceive our environments (Kellert et al., 2011; Wahl, 2006).

**Biotopes:** An area of uniform environmental conditions that provides living space for an assemblage of flora and fauna. It refers to biological communities (Olenin & Ducrot, 2006).

**Birdwatching tourism:** Avitourism is an emerging subsector of the nature-based tourism industry, where the motivations of tourist travel are focused on the observation, admiration, and monitoring of birds, which promotes their protection and conservation (Steven et al., 2015).

**Buildability rights:** Square meters of additional construction over the essential urban development uses, obtained as consideration for the delivery to the municipality of land defined as protected regional areas (article 2 of Decree 24/152 of 2021).

**Capital city:** Cities that concentrate the most significant number of social, economic, population, cultural, and political activities (Therborn, 2008).

**Circular Economy:** the term ‘circular economy’ denotes an industrial economy that is restorative by intention and design [...] products are designed for ease of reuse, disassembly, and refurbishment, or recycling, with the understanding that it is the reuse of vast amounts of material reclaimed From end-of-life products, rather than the extraction of resources, that is the foundation of economic growth (Ellen MacArthur Foundation, 2013).

**Citizen participation:** Although it is always mentioned in wetland management policies, citizen participation is rarely effective. The project has had 12 participation spaces, four working groups, and five participatory diagnostic tours (see the case study Everybody gives, everybody wins).

**Citizen science:** Public participation and collaboration in scientific research to increase scientific knowledge. Through citizen science, people share and contribute to data monitoring and collection programs (Dickinson et al., 2010; National Geographic, 2020).

**City:** Government agencies and individual researchers have given different definitions of this concept, most based on one or more factors: total population, population density, and the impervious surface area or built structure. In most cases, high human population density and extensive impervious surface area are the two prominent factors that define what is urban (Wu, 2014). According to authors such as Alberti (2008), cities are complex ecological systems dominated by humans, and human elements differentiate them from natural ecosystems in many ways. From an ecological perspective, urban ecosystems differ from natural ecosystems in terms of climate, soil, hydrology, species composition, population dynamics, and flows of energy and matter.

**Conservation landscapes:** A large-scale management and conservation approach that includes different conservation objectives. It seeks to include multiple species, ecosystems, and anthropic matrices in management programs, the use of long-term management objectives, and the consideration of ecological dynamics and complexities. Its strategies and management are flexible and adaptive and correspond to the context and strategic aim of the conservation project (Lindenmayer, 2008).

**Cutting-edge industrialization:** Industrialization that occurs with high technologies (cutting-edge or advanced). They take place in countries with a high level of development and require significant capital investment, are exceptionally present in some developing countries (Flores, 2016).

**Design-build:** Generally, D.B. is an arrangement between an owner and a sole entity to execute both design and construction phases under one agreement (Construction Industry Institute, 1997; Friedlander, 1998; Beard et al., 2001). Part, or all, of the design and construction, might be executed by the entity or subcontracted to other firms. The contract is usually awarded on the lowest price or best value basis. Hence, the central theme of the D.B. project delivery system is that the contractor is responsible for performing both the design and construction stages, so the system has several advantages. These advantages emanate from the contractor’s early participation in the design process and include reduced project completion time and lower cost enhanced communication (Anumba & Evbuoman, 1996; Konchar & Sanvido, 1998). This delivery system satisfies the client’s need to accomplish projects earlier, with fewer overall expenses and additional costs (Dewi et al., 2011).

**Directionality:** Transformation is about establishing new directions: This is important because historical studies have shown that most innovations are cumulative and, therefore, can be said to have a direction seen as natural or inevitable; hence, only certain solutions are sought, and others are ignored. Transformative innovation proposes that not all innovations are positive; some can be highly damaging and create social inequality. Therefore, new directions need to be considered, and other development trajectories opened up to fulfill societal and environmental goals (see theoretical chapter Understanding BiodiverCities).

**eBird:** eBird began with a simple idea—that every birdwatcher has unique knowledge and experience. The goal is to gather this information in the form of checklists of birds, archive it, and freely share it to power new data-driven approaches to science, conservation, and education. At the same time, it develops tools that make birding more rewarding, from being able to manage lists, photos, and audio recordings, to seeing real-time maps of species distribution, to alerts that let you know when species have been seen (eBird, n.d.).

**Ecological connectivity:** Ecological Connectivity is the unimpeded movement of species and the flow of natural processes that sustain life on Earth (CMS, 2020).

**Ecosystem disservices:** Disturbances produced by ecosystems, such as pests, garbage, infrastructure deterioration, diseases, animal attacks, allergens, and poisonous organisms, as well as hazards such as floods and storms (Von Döhren & Haase, 2015).

**Ecosystem services:** Benefits (direct or indirect) derived from ecosystems that enhance human well-being (Millennium Ecosystem Assessment, 2005). Based on the Millennium Ecosystem Assessment (2005), these services can be classified into four categories: provisioning, regulating, cultural, and supporting. Provisioning services: products obtained from ecosystems (e.g., water). Regulating services: benefits obtained from ecosystems without undergoing transformation processes (e.g., pollination). Cultural services: non-material benefits obtained from ecosystems (e.g., site identity). Supporting services: services necessary for producing other services (e.g., soil formation).

**Effective Public Space:** To guarantee the planning and management of public space in the POTs and fundamentally monitor the quantitative and qualitative deficit of the same in cities, Article 14 of Decree 1504 of 1998 established the category of Effective Public Space, which corresponds to the public space of a permanent nature, made up of green areas, parks, squares, and squares. For its measurement, an indicator of public space per inhabitant and a minimum EPE index of 15 m<sup>2</sup> was established (Conpes 3718, 2012).

**Energy cycle:** Describes the interactions among the earth’s energy sources (NASA, 2022). In ecosystems, it describes the energy flow through living things within an ecosystem (Christian, 2009).

**Environmental education:** Environmental education aims to produce a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution (Stapp et al., 1969).

**Experimentation:** Early phases of transition are often characterized by experimentation where it is unclear which different developmental paths are the best options for society. Experiments can be a mechanism for building niches, which can be important for socio-technical change by challenging existing approaches, setting up new collective priorities, and guiding transformations (see theoretical chapter Understanding BiodiverCities).

**Feedback loops:** A key characteristic of the intertwined relation between social and ecological domains is that they are governed by feedback loops (Knoot et al., 2010). Loops can be positive or negative according to their potential to enhance change and support the system’s natural dynamism. When ecological systems are disturbed (intervened by humans), it creates an imbalance and forces the system to adapt and self-regulate (see theoretical chapter Understanding BiodiverCities).

**Financing instruments:** Any contract giving rise to both a financial asset of one entity and a financial liability or equity instrument of another entity. The Financial assets include cash, a contractual right to receive cash or another financial asset from another entity (i.e., trade receivables), a contractual right to exchange financial instruments with another entity under potentially favorable conditions, or an equity instrument of another entity. Financial instruments include both primary and derivative instruments (Kirk, 2008).

**Food guilds:** The term guild holds a central place in community ecology. A guild is defined as a group of species that similarly exploit the same class of environmental resources. This term groups together species without regard to the taxonomic position that overlaps significantly in their niche requirements (Koran & Kropil, 2014; Simberloff & Dayan, 1991).

**Food security:** Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for active and healthy life (FAO, 1996).

**Forest Bioeconomy:** The bioeconomy is expected to be the guiding paradigm within the forest-based sector in the years to come. It has been defined in various ways. In a forest-based context, it can be understood to mean the utilization of forests to create products and services that help economies replace fossil-based raw materials, products, and services. The forest-based bio-economy links the whole forest value chain from managing and using natural resources to delivering products and services (Wolfslehner et al., 2016).

**Geotubes:** High-strength woven polypropylene geotextile designed to receive and retain pumped material. It allows water content to escape through fine pores until the requi-

red density of the contained material is reached. Geotubes are commonly used for dehydrating in the paper, agriculture, and wastewater industries (Sheehan, 2012).

**Grassroots movements:** movements that aim to mediate adversity and respond to societal needs (building resilience) (Ferreira & Pantidi, 2018).

**Green corridors:** Central to this vision of green infrastructure is the idea of linkages and connectivity between patches of open spaces and woodlands, between diverse types of wildlife habitats in urban and peri-urban areas. The words 'green corridors characterize the connections,' a notion of strips of vegetated land running through a matrix of urban and industrial development (Douglas & Sadler, 2011).

**Green infrastructure:** An interconnected network of green spaces that conserve the functions and values of natural ecosystems and provide associated benefits to the human population (Benedict & McMahon, 2006).

**Happiness:** Initially, it consisted of an exercise that sought to collect evidence of feelings of gratitude produced by municipal attention to community problems. Years later, this was adjusted to an idea that happiness is a feeling and not an emotion that emerges and goes away, and as a feeling, it is lasting and has an objective basis in something that did happen. In the Sweet City vision, happiness arises from the attention and empathy of the municipality and is a feeling that includes a dose of gratitude. Once the vision of Ciudad Dulce began to be governed, the concept of Wellness and Happiness of Curridabat was developed, aimed at improving the following experiences: nutritious food, mental health, fun exercise, and quality relationships, connected by a transverse axis: presence (García & Marin, 2020).

**Heat island:** Urban areas generate their own microclimate by altering wind and water currents, a smog-generated greenhouse effect, and using building materials with high insulative properties and albedo (Arnfield, 2003). Particularly well-known is the urban "heat island" effect (Landsberg, 1981; Brazel et al., 2000; Kuttler, 2008). This effect is especially felt at night when the surrounding areas cool down while the city reluctantly releases its built-up heat (McIntyre, 2011).

**I-Tree Eco Software:** i-Tree Eco is an open-access software tool developed by the United States Forest Service (USFS). It analyzes the urban forest structure in terms of species composition, leaf area, and tree health and uses these parameters to estimate the ecosystem services those trees provide. I-Tree Eco can quantify the amount of air pollution removed by a particular stand of trees or entire urban forest every year for common air pollutants, including PM2.5 (Nowak & Crane, 2000).

**iNaturalist:** Joint initiative of the California Academy of Sciences and the National Geographic Society. It is a citizen science project and online social network of naturalists, citizen scientists, and biologists based on the concept of mapping and sharing biodiversity observations around the world. The project can be accessed through its website or mobile applications (Unger et al., 2021).

**Indigenous community settlements:** These are areas of an indigenous territorial domain, whether reservations, reserves, partialities, or traditional territories that are recognized but not legalized. They express their own forms of endogenous social organization (Secretary General of the Organization of American States, 1993; Sinchi, 2022).

**Industrial environmental fabric:** it is constituted by the natural or artificial elements that, when intertwined in the territory where the industry is based, enable the exchange of species, dynamic ecosystem processes, the strengthening of biodiversity, and the mitigation of natural threats (Vicente, 2022).

**Industrial symbiosis:** The emerging field of industrial ecology demands unwavering attention to the flow of materials and energy through local, regional, and global economies. The part of industrial ecology known as industrial symbiosis engages traditionally separate entities in a collective approach to competitive advantage involving the physical exchange of materials, energy, water, and by-products. The keys to industrial symbiosis are collaboration and the synergistic possibilities offered by geographic proximity. Eco-industrial parks are examined as concrete realizations of the industrial symbiosis concept (Chertow, 2000).

**Informality:** Urban informality is perceived as a container for the urban poor who are vulnerable to the harsh effects of climate change (Alam & Golam Rabbani, 2007; Huq

& Reid, 2007; Nchito, 2007), with limited economic output critical for inter and intra-generational equity (Fekade, 2000; Ueta, 2003) as well as exercising practices, activities and growth patterns which are seen as detrimental to the environment and agricultural and industrial land use, thereby affecting sustainable development (Asere & Kita, 2015; De Risi et al., 2013; Napier, 2007; U.N. Habitat, 2003; United Nations 2006).

**Land management instruments:** Instruments that allow regulation of the dynamics of the city's territorial transformation to optimize the use of natural and human resources to achieve decent living conditions for the current population and future generations" (Law 388 of 1997). These include land and municipal planning, rights transfer, expropriation, compensation, transfer of titles, and urban development units, among others (Law 388 of 1997).

**Landscape approach:** a strategy to recognize the importance of solid and strategic ecosystems for adaptation and ecohydrological connectivity, promoting their conservation and sustainable use fairly and equitably (Shepherd, 2006).

**Landscape connectivity:** Landscape connectivity is "the degree to which absolute isolation is prevented by landscape elements which allow organisms to move among patches" (Merriam, 1984).

**Learning:** Experimenting with different options should generate 2nd order learning, which are processes that question existing routines, rethinking how problems are defined and what solutions are considered appropriate. This involves reflexivity – the ability of actors to reflect on their practices and assumptions and those of others. It should also stimulate actors to engage with each other to allow 2nd order learning (see theoretical chapter Understanding BiodiverCities).

**Lidar-based map:** Light Detection and Ranging (LIDAR) technology is a laser-based remote sensing technology that calculates the distance to a target by illuminating it using laser light (Lohani & Suddhasheel, 2017).

**Life stories:** These autobiographical accounts of the community of the Samper Mendoza Marketplace allude to the decisions and practices put in place by different actors concerning structural conditions that delimit, enable or hinder them. Understanding someone's life story implies understanding that it emerges as part of a broader social set in which power relations are involved. In the case of the vendors of the Samper Mendoza Marketplace in Bogotá, these life paths are also defined by class, gender, and origin conditions. There, the actions they have taken to enter and remain in the herbal trade have emerged in the continuous interaction between the development of knowledge and practices related to the plants they sell and the abilities to navigate the city's herbal market (Méndez, 2021).

**Living heritage:** Protecting heritage not only as preservation of the built environment but also as an ongoing history that combines ancestral heritage, local traditions, and ways of relating to the landscape and adapting to present challenges (see case study Floods allowed).

**Local environmental management:** A set of actions aimed at strengthening local governments' capacities to protect their communities' biodiversity and adapt to climate change (Cleis, 2010).

**National Park City:** A National Park City is a place, a vision, and a city-wide community acting together to improve life for people, places, and nature. A defining feature is the widespread commitment to act so people, culture, and nature work together to provide a better foundation for life and so we can enjoy ourselves too. It is long-term, large-scale, hyperlocal, personal, and intergenerational. Everyone in a National Park City has the potential to contribute and benefit every day (Sacramento Park City, n.d.)

**Map:** A drawing of the earth's surface, or part of that surface, showing the shape and position of different countries, political borders, natural features such as rivers and mountains, and artificial features such as roads and buildings (Cambridge Dictionary, n.d.).

**Map of London:** The map of London's great outdoors includes the capital's 3,000 parks plus woodlands, playing fields, nature reserves, city farms, rivers, canals, and all the spaces contributing to London's landscape (National Park City, n.d.).

**Momposina Depression:** An abnormal sedimentation basin within the fluvial system of the Magdalena River. It concentrates about 80% of the total number of marshes in the

region, has a concave shape, and is one of the largest floodable systems in the world, with more than 1000 km<sup>2</sup> (Angarita et al., 2016; Herrera et al., 2001). It is characterized by periodic flooding due to its location in the middle of a fault system that originates a continuous subsidence process, which gives way to a natural wetland ecosystem, habitat of multiple species of fauna and flora (Rojas & Montejo, n.d.).

**National forest city:** In China, they emerge as a project to improve the urban environment, promote forest growth, and integrate urban development by promoting and maintaining adequate green spaces. The State Forestry Administration (SFA) and the National Greening Committee launched a National Forest City (NFC) designation campaign in 2004 (Zhang et al., 2021).

**National Park:** Natural or near-natural areas whose main objective is to protect biodiversity, thereby maintaining ecological processes, decreasing loss of species, and conserving the area's distinct ecosystems. In addition, they provide a base for spiritual, scientific, educational, recreational, and environmentally and culturally compatible visitor opportunities (IUCN, 1994).

**Natural cities:** Despite being human-made artifacts, cities have biological functions. Cities and people must belong to nature and co-evolve with it (Kellert, 2018).

**Nature-based solutions:** Contribution of well-managed and diverse ecosystems to enhance human resilience and to provide additional development opportunities for men and women in poor communities" (Potschin et al., 2016).

**Nature-positive:** Nature-positive means halting and reversing nature loss by 2030, measured from a baseline of 2020. It focuses on species distribution, abundance, functional traits, genetic diversity, demographic trends, and the intactness and integrity of ecosystems and biomes. The concept also comprises the functioning of ecological and global processes like hydrology, rainfall patterns, and migration, which support biodiversity, maintain drinking water supplies, sustain agriculture, and ensure a stable climate. Together, these provide a resilient planet, able to cope with shocks and stresses without crossing destabilizing tipping points. (Locke et al., 2020).

**Participatory auditory monitoring of biodiversity:** the process of continuous collection of information on biodiversity, where local communities, institutions, researchers, and other actors are actively involved, and which allows evaluating progress towards the fulfillment of actions and objectives (Guariguata, 2016; Lindenmayer & Likens, 2018).

**Participatory design:** a design process that involves all stakeholders as protagonists so that they are the ones who generate their own solutions (Bratteteig et al., 2012; Robertson & Simonsen, 2012; Sarkissian, 1986). Therefore, its main objective is to pool knowledge between multidisciplinary stakeholders, such as system designers and users of those systems (Mallanm et al., 2017).

**Phenology calendar:** Specialized calendar that records the sequence of phenological events. It is a series of lists with dates and statistics of phenological phases, duration, and intervals. Its primary use is to generate a graphically designed phenological spectrum and study the records' average values. It is widely used in agricultural activities and tourism management (Zheng et al., 2016).

**Pollinators:** Invertebrates, mammals, birds, and any other agency responsible for pollen transport between individuals of the same species (Molles, 2015).

**Population centers:** Correspond to the so-called "caserios" (hamlets), the heads of the police stations, and the heads of the small municipal towns. They are known as occupation "foothills" and are small settlements that fulfill epicentral roles for certain geographic areas. They offer little in the way of social, economic, and administrative services to the population (Sinchi, n.d.).

**Prototype:** Apparent but concrete representation of part or all of a business idea or a product or service. A prototype incorporates the basic elements so that it is functional, can be tested, and answers a series of questions about the idea's business viability and how it can be implemented. The prototyping process validates the viability of the product/service concept being planned (Méndez, 2021).

**Public space:** Like the notion of location, public space occurs at various scales and levels of understanding, from the small physical scale of a street or park to a neighborhood, city, or country. Depending on the type of approach, this can be described as a physical spa-

ce that relates to people, which is possible to distinguish in terms of ownership, control, access, and use (Mehta, 2014).

**R&D:** Research and experimental development (R&D) comprise creative and systematic work undertaken to increase the stock of knowledge – including knowledge of humankind, culture, and society – and to devise new applications of available knowledge (OECD, 2015).

**Recreational green space:** Due to its spatial proximity alone, urban green spaces, like parks or forests, provide health benefits to people because they improve, for example, thermal comfort and air quality (Jarvis et al., 2020). In addition, recreation, which can only be achieved when urban green spaces are accessed and used (Brown, 2008; Wang et al., 2015), contributes to physical and psychological health and well-being via, e.g., relaxation, physical activity, and social interactions (Byrne et al., 2009; Wolch et al., 2014; Rigolon, 2016).

**Regeneration:** Recent urban agendas have introduced narratives of "regeneration," an idea that draws insights from socio-ecological relations to deliver real-world solutions for urban planning (Raymond et al., 2004). Circular Economy practices oriented to reusing, repairing, and recycling are common examples of new efforts to incorporate an environmentally friendly dimension to urban development (see theoretical chapter Understanding BiodiverCities).

**Right to the city:** The French philosopher Henri Lefebvre argued that the "Right to the City" is the right to "urban life, to renewed centrality, to meeting and exchange places, to the rhythms of life and uses of time, that allow the use of full and complete times and places" (Lefebvre, H. 1996). David Harvey noted that Lefebvre's concept is "not simply a right to access what already exists, but a right to change it according to our heart's desire" (Harvey, 2003).

**Rural settlements:** Correspond to the areas between the perimeter of the municipal capital and the municipality's border. They are made up of farms and grouped into hamlets belonging to the municipality (Sinchi, 2022).

**School Environmental Project (PRAE, for its Spanish acronym):** a pedagogical strategy regulated in Colombia through Decree 1743 of 1994. It invites public and private schools to identify environmental situations and to generate an educational proposal transversal to the curriculum that involves students in its resolution through interdisciplinary pedagogical practices and research.

**Scientific expeditions:** As an umbrella term, it broadly defines a culturally and historically specific mission carried out by a group of people with specific work tasks to reduce the unknown and systematically acquire, collect, and document knowledge. David Philip Miller already pointed out in 1996 that "basic descriptors of scientific activity - for example, experiment or discovery or observation - become (...) complex processes of interpretation based on particular cultural practices (Klémun & Spring, 2016).

**Settlement ring:** the population ring of the Colombian Amazon is the continuation of the national peripheral urban system in the south of the country, a phenomenon that is explained by the territory's social construction and that means the consolidation of urban-rural elements through the network of population centers and road axes, anthropic cover (pastures and crops), intervened areas -transformed areas- and the concentration of population in urban areas. It is based on continuous construction for the production and circulation of goods. The population ring is a common scenario, both for the Colombian Amazon and the rest of the Amazonian countries (Sinchi, n.d.).

**Settlements of peoples in isolation:** Indigenous groups that have chosen not to have contact with the white man. It is a free and voluntary decision to survive according to their own uses and customs and thus create a cultural identity that differs from all other human groups (Franco, 2012).

**Sinú river:** River that flows through the municipalities of Ituango, Tierralta, Valencia, Montería, Cereté, San Pelayo, Cotorra, Loricá and San Bernardo del Viento, departments of Antioquia and Córdoba in Colombia. It rises in the Paramillo massif, at 3500 meters above sea level, and its mouth is at the mouth of Tinajones, where it forms a delta at the southern end of the Morrosquillo Gulf on the Caribbean Sea (IGAC, n.d.).

**Social urbanism:** Social urbanism is used as a way to address socio-spatial inequality that plagues many cities. It is a developmental approach based on investing in people, places, and jobs through creating public spaces and infrastructure. In Colombia, social urbanism came out of bringing public services to informal settlements as a way to reduce inequality and violence. This innovative concept is founded on the idea that public space has no socioeconomic divisions.

**Social-ecological functionality:** Processes emerging from the interactions between components of the social and ecological systems (SES). A function, such as firewood provision, depends on both the people harvesting wood and the trees producing it. Changes in SES functions may be qualitative or quantitative depending on the nature and number of actors and the nature and quantity of ecosystem components that contribute to the functions (Rives et al., 2012).

**Social-ecological systems:** dynamic systems involving biophysical and social factors that regularly interact in a resilient and sustained manner over time at hierarchical scales. It constitutes an analytical tool that combines social and ecological factors (Everard, 2020). They are based on the "human being in nature" perspective.

**Socio-technical:** These are systems that exist in areas that fulfill basic social needs such as energy, mobility, food, education, and healthcare. Each system involves a wide range of human and non-human actors, different levels of regulations and policies, a mix of market dynamics, a collection of scientific and lay knowledge, and a series of technologies and recurrent practices (F. Geels, 2002) (see theoretical chapter Understanding BiodiverCities).

**Soundscape:** The soundscape is any acoustic field of study. We may speak of a musical composition as a soundscape, a radio program as a soundscape, or an acoustic environment as a soundscape. We can isolate an acoustic environment as a field of study just as we can study the characteristics of a given landscape (Schafer, 1977).

**Sponge cities:** Cities with the capacity to incorporate urban water management into urban planning policies and designs. They have the appropriate legal frameworks and planning tools to implement, maintain and adapt the infrastructure system to collect, store and treat rainwater (Zevenbergen et al., 2018). Thus, sustainable urban development includes flood control, water conservation, water quality improvement, and natural ecosystem protection (Li et al., 2018).

**Stepping Stones:** Stepping stones are habitat patches in a landscape that are favorable to different species, and that offer them refuge as they travel across, allowing them to move between other larger patches of habitat (Saura et al., 2013).

**Sustainability:** Callicott and Mumford develop the meaning of the term "ecological sustainability" as a valuable concept for conservation biologists. In "Ecological Sustainability as a Conservation Concept," these authors advance an ecological definition of sustainability that connects human needs and ecosystem services: "meeting human needs without compromising the health of ecosystems." They propose this concept as a guiding principle for areas where human activities occur (Morelli, 2011).

**Sustainability education school network:** The Hills of Bogotá Schools Network is a space for integration and active collaboration between educational institutions for the appropriation of the Cerros de Bogotá. To this end, it provides tools to schools, public and private, for the articulation, strengthening, visibility, and execution of School Environmental Projects, or other pedagogical projects, which aim at the conservation, appropriation, and sustainable use of the Hills of the city of Bogotá and the ecosystem services it provides. It also acts as a facilitator of collaborative work between schools and institutions with interests related to the network's objectives (Hills of Bogotá Schools Network, n.d.).

**System optimization:** in system optimization, change originates mainly from reacting to specific problems using the practices of existing systems. Policymakers often find this approach more convenient as it is supported by rationales of efficiency, competitiveness, and market-led dynamics (see theoretical chapter Understanding BiodiverCities).

**System transformation:** system transformation emphasizes the need to reconfigure systems and requires a shared vision of change. Such a reconfiguration requires

changes in the rules and practices of the existing system. This means working to change features of the system, such as the nature of markets, infrastructures, and technologies, as well as some of the values, expectations, and preferences that guide the choices and actions of actors in the system (Geels & Schot, 2007) (see theoretical chapter Understanding BiodiverCities).

**Taxonomic research:** A taxonomy is a system of categories and relationships. Taxonomies have also been called "typologies" and "mind maps." Developing a taxonomy represents the next level of organizing information. In this analytical process, the investigator uncovers the threads or inclusionary criteria that distinguish and link categories. For example, basic categories such as "whales" and "dogs" belong to the larger category of "animals", basic categories such as "blocks" and "dolls" belong to the larger category of "toys." In taxonomy, sets of categories are grouped based on similarities. A taxonomic analysis is, therefore, an analytical procedure that results in an organization of categories and that describes their relationships. A taxonomic analysis focuses on identifying the relationship between wholes and parts (DePoy et al., 2016).

**Technomass:** Indicator to measure the process of matter accumulation in urban ecosystems (Inostroza, 2014).

**Territorial occupation model:** The Territorial Occupation Model - MOT, is the most generic territorial image that allows for spatializing the objectives of greater scope and the scenario projected to guide the policies of use and occupation of the space that, according to the optimal potential of the environment, the potentialities, and the biophysical, economic and cultural limitations, allows to manage the social construction and the ecological transformation of said space. The construction of an MOT starts, in the first place, from the territory itself, from its genesis and evolution, from its physical expression (natural and cultural), and from the social, environmental, and economic indicators it represents. Likewise, it is built from identifying problems and opportunities and constructing the future vision of its development, which must be constituted as a collective agreement considering its articulation and insertion in different areas and scales of the territory (Londoño Gómez, 2014).

**Transformation:** Transformations involve radical changes in socio-technical and social-ecological systems and how these relate, where the term "radical" refers to the scope of change rather than its speed (Grin et al., 2010). This is embodied in the sustainable development goals that highlight the link between environmental and social sustainability. Transformations also refer to multi-actor processes that entail interactions between different social groups such as firms, user groups, scientific communities, and social movements (see theoretical chapter Understanding BiodiverCities).

**Transitory Zones for Normalization & Territorial Training and Reincorporation Areas (ZVTN and ETCR, for their names in Spanish):** Temporary and transitory areas, defined, delimited, and agreed upon between the National Government and the FARC-EP to carry out the process of laying down arms and initiating the transition to legality of the FARC-EP. For a period from 12/02/2016 to 05/31/2017 (Unit for Comprehensive Care and Reparation for Victims, 2017).

**Trophic chain:** Set of chemical constituents of the tissues of organisms that vary according to the diet of the organisms participating in the food chain. In this way, there are transfers of matter and energy in the form of food from one organism to another (Begossi et al., 2004).

**Universal accessibility:** The health and wellness benefits of contact with nature are well known but are unevenly distributed in society. Unfortunately, this inequitable access to nature means marginalized communities and people with disabilities have significantly less access. This concept arises to enable the accessibility of all people to nature in an equitable manner in urban and rural contexts (Groulx et al., 2022).

**Urban:** Pertaining or relating to the city (RAE, n.d.).

**Urban acupuncture:** As stated in the theory of urban acupuncture initiated by the architect and urbanist Manuel de Sola Morales, cities can be viewed and treated as living

organisms. This approach supposes that small surgical and selective interventions in the built environment can have a strong and catalytic influence on the urban ecosystem when these are planned in strategic positions (Kaye, 2011).

**Urban centers, municipality capitals:** Correspond to the perimeter of the municipal capital where the mayor's Office is located. They are delimited on the perimeter of the essential public services and include the urban expansion area declared by the municipal council through an agreement. To define the urban role, the activity to which most of the population is dedicated is identified (ECLAC, 2013; DANE, n.d.).

**Urban coding:** The term urban coding could be used in a general sense to mean the application of any kind of code used in the urban context. In this way, any design, building, layout, or zoning code can be described as an urban code. Therefore, the term 'urban coding' embraces a diversity of practices, traditions, and formats, extending from urban scale locational regulations to the prescription of architectural design details and from abstract legalistic ordinances to illustrated examples in building manuals.

**Urban Commons:** This notion is guided by principles of solidarity, active citizen engagement, inclusion, and social justice (Borch & Kornberger, 2015; Foster, 2011). Urban Commons offer a wide range of city resources that can be made accessible and used by all dwellers, especially those with difficulty accessing these services (see theoretical chapter Understanding BiodiverCities).

**Urban ecology:** Urban ecology is the study of ecosystems that includes humans living in cities and urbanizing landscapes. It investigates ecosystem services closely linked to urban development patterns (Alberti, 2005).

**Urban hierarchy:** Analysis through the supply of services and facilities available to each urban center in the Amazon region, since this supply is directly related to the hierarchical role of each one of them (Riaño & Salazar, 2009).

**Urban metabolism:** refers to the processes of exchange by which cities transform raw materials, energy, and water in the urban area (Broto et al., 2012). It is a technical, political, and economic effort that allows the strengthening of the supply networks of materials and energy, which seeks the efficiency and effectiveness of the transformation processes, as well as the reduction of environmental damage, allowing policy managers to anticipate unwanted events (Díaz Álvarez, 2014).

**Urban support capacity:** the population that a city-territory can sustain, maintaining its functionality and resilience (EAFIT, 2019).

**Urban systems:** Flows of energy, water, and chemical elements among the cities (Douglas, 2010).

**Value chain analysis:** From a broad perspective, value chains make it possible to analyze relationships and interdependencies between the most relevant actors and transactions involving priority products. Therefore, identifying value chains makes it possible to observe how value is created in markets and understand their basis in several aspects. The latter include the practices of the actors involved, the environment in which their practices and transactions take place, the related knowledge, the governance systems that make them possible, and the support services that enable them (Rojas et al., 2020).

**Wetland complex:** It is a set of ecosystems that share the same geographical area, with similar characteristics and conditions, which are related to an ecological and environmental level (Secretariat of Environment of Bogotá, n.d.).

**Wetlands:** Ecosystems that, due to geomorphological and hydrological conditions, allow water to accumulate temporarily or permanently and give rise to a distinct type of soil or organisms adapted to these conditions (Jaramillo Villa et al., 2016).

**Zenú society:** Indigenous people located in the reservation of San Andrés de Sotavento, department of Córdoba, and in El Volao, in Colombia's Urabá Antioquia. Numerous settlements, partialities, and individual landowners exist in Córdoba, Sucre, Antioquia, and Chocó (Ministry of Interior, 2004). The Zenú culture stood out for its excellent management of hydraulic engineering, as evidenced by an efficient system of canals that, for almost two thousand years, covered 600,000 hectares (UNHCR, 2011; Arango & Sánchez, 2004).

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