The Politics of Comfort

An exploration on access to sustainable architecture based on class in Bogota, Colombia

Who does the city serve?

Camila Zuniga

Abstract

In 2021, Project Legacy, a private university building in Colombia's capital of Bogota, designed by William McDonough + Partners, opened its doors to Colombia's prospective youth seeking higher education in sustainable business. Using this new building as a case study and the city of Bogota this dissertation will analyse the socioeconomic effect of accessibility to sustainable architecture. This dissertation will explore how Bogota's complicated political history helped form the city's extreme class divide. The focus will be to investigate how this contributed to limited access to sustainable architecture for people living in low-class neighbourhoods in the modernizing city. To do so, this dissertation explores how the stratification system, an economic classification of urbanized spaces, makes living in Bogota a dissimilar experience for someone in strata 1 (low class) and someone in strata 6 (high class), and how Bogota's futuristic sustainable buildings might stay as a 'future' for citizens in lower stratums for generations to come.

This dissertation argues that the class divide has major implications on who influences Bogota's architecture, who is privileged enough to experience clean and safe spaces and the future of where these spaces will be built. Using theory on accessibility, comfort, sustainability, government policies, and maps of Bogota, this dissertation will contextualize the connection between class and varying experiences of personal and collective comfort in the city. The work of William McDonough will be used as the sustainable theoretical framework to unpack the emerging sustainability in the city. The work of Henri Lefebvre, David Harvey, and the theory of *Right to the City* will be used as the socio-spatial framework in Bogota's urban context. Bogota's sustainable architecture already benefits the environment and the local economy, however, it is yet to benefit the people of lower stratas. This combination of sustainable spatial and social theory will support the argument that sustainability is something that Bogota needs to implement to be inclusive of people of all classes, as the collective deserves the right to comfort and safe architecture.

CONTENTS

Introduction

Social sustainability and Socioeconomic Division in Bogota

As wealth gaps increase, cities become more separated economically and architecturally. This separation is notable as access to new sustainable developments becomes more limited to city centres and the wealthy. This dissertation will analyse the class division that has been woven through Bogota's urban fabric while contextualizing the relationship between socioeconomic division and limited accessibility to sustainable architecture. Bogota's political history and physical geography will be explained as they partly led to urban separation and class division. The city's urban and economic division played a part in the formation of the stratification system which architecturally separates the city. This dissertation will look at how this division affects the people living in Bogotá by their relation to their neighbourhoods. It will also analyse citizens' indirect relation to the broader scope of accessibility to comfort and higher standards of sustainable architecture. Using theories found in Cradle to Cradle, Right to the City, and After Comfort, this dissertation aims to examine how Bogota's urban and social division affects citizens today and how the city's future might be in jeopardy of becoming even more divided if not acted upon.

'Formal sustainability' is a term which refers to high-cost private buildings in Bogota that implement new-age technology in their architecture to reach high sustainable standards. The concept of 'formal sustainability' will be analysed and applied to Project Legacy (Universidad EAN's main campus building), the main case study in Bogota. Universidad EAN is a private building designed by William McDonough + Partners. This private university building shows the advancements in technology in Colombia and the welcoming of sustainable innovations. This dissertation questions whether the University's private status means people from middle to higher-class backgrounds will make up most students studying there. The intricacies of accessibility to the city will be reiterated through this case study to show how citizens of higher strata have greater access to sustainable spaces. The privilege of accessibility will be examined in its relation to the quality of life in Bogota; including levels of safety, comfort, health, and inclusion.

Chapter Analyses

In chapter 1, the origin of Bogota's urban division and its stratification system will be explained by using official documents and maps. The city's sustainable goals will be analysed through government sustainability plans and transportation initiatives. The different modes of sustainability will be explained in chapter 2. Then the main case study, Universidad Ean, will be analysed and compared to cradle for its accomplishment of circular economy design principles. The socioeconomic effects of sustainability on comfort in architecture will then be compared through theory and Project Legacy. Chapter 3 then returns to the driving theory behind this dissertation, accessibility, which will be analysed through the lens of inclusion and safety, then examining varying socioeconomic access to Project Legacy. The main topic of this dissertation, accessibility, will be closed upon by relaying the current frustrations with limited access to the health, safety, and comfort to sustainable architecture Bogota and what should be done in the future.

Theoretical Background

This dissertation analyses how socioeconomic division can affect people's accessibility to sustainable architecture, and how Bogota's urban framework affects where new sustainable developments are being built. William Mcdonough's Cradle to Cradle shows the importance of circular economy in architecture. This theory demonstrates how Project Legacy uses sustainable principles to provide efficient design for its environment. Bogota's emerging sustainable efforts will be analysed and the socioeconomic effect on sustainability in different stratums will be idenitified. McDonough's sustainable framework will then be critiqued for its lack of social theory and how class highly affects sustainability. "After Comfort" by Daniel Barber will be used to show the connection between class and sustainability. The ideas in 'after comfort' explain how the higher classes have a daily expectation of comfort and a regulation of comfort in their architecture, contrasting how the lower class have lower expectations of comfort because of their limited accessibility to it. David Harvey's Right to the City will be used to show the importance of socioeconomic inclusion in a city and how the built environment affects the people living in it. The theorized effect that differing amounts of 'accessibility' in the predominantly class-divided city will be analysed and critiqued. Henri Lefebvre's book, Le droit à la ville (The right to the city), will be used to explain what can be done to resolve issues of inequality in sustainable development in Bogota.

Methodology

This dissertation will use political history, government documents, and socioeconomic stratification maps to understand Bogota's division physically and economically. After researching the urban framework of Bogota, this dissertation will evaluate how a lack of funding and accessibility to sustainable architecture affects people's daily lives. Through the analysis of various news sources, this dissertation will examine how living in different stratas affects citizens quality of life in Bogota. The theory listed above will be used as a lense to explain how lack of access to sustainability was formed and perpetuated by the local laws and architecture. A lack of official government strata maps proved to be a research obstacle; this research gap was filled by using a collection of maps sourced from different secondary sources to sufficiently explain the stratum system in Colombia. The use of original diagrams, timelines, and map interventions was a way to incorporate primary research to visually explain and combine research information. Language difference was an obstacle faced throughout the research process as many of the government documents were in Spanish. Legislations, maps, government documents, and other sources were translated and compared to overcome this restriction.

Chapter 1: Spatial Division in Bogota

Spatial division in Bogota was largely instigated by the city's violent political history (Simpson, 2002). Gangs in the countryside caused mass immigration into the south of Bogota, thus leading to further economic separation. The stratification system further separated citizens in Bogota (Sowell, 2002, pg.5). Colombia's sustainability agenda aims to improve the city, however, if the south's poor infrastructure is not directly addressed, the new sustainable developments can perpetuate the division by creating further economic and urban divide (Donald and Martens, 2018).

Figure 1 - Overview of Downtown Bogota, edited by Camila Zuniga (Puttkamer, 2023)

1.1 A divided city

Historically, Colombia's government has been monopolized by a small elite, which has ruled both the conservative and liberal parties (Davis, 1996). In 1947, this overruling government was starting to be challenged by Jorge Eliécer Gaitán (figure 2), a popular liberal politician, who became the leader of the Colombian liberal party. Gaitán's popularity came from his main campaign strategy for socially responsible capitalism and a participating democracy. He profoundly inspired and mobilized citizens with his distinct liberal politics (Skretteberg, 2015).

The assassination of Gaitán (figure 3), in April 1948 ignited violent riots, known as 'Bogotazo'. This riot was fueled by the city's poor fighting the elites in power, a nod to Gaitán's legacy. The Bogotazo riots eventually led to the full destruction of the city's downtown area. "Bogotazo has served as an antidote to the revolution because the ruling classes now tend to avoid the excessive partisanship and disdain for the welfare of the masses that helped set the stage for the rising of the poor on 9 April —"Black Friday"—1948" (Davis, 1996, p.2). The uprising sparked greater turmoil and ignited an undeclared civil war, referred to as 'La Violencia', lasting from 1948 to 1958 (Paul, 2013, p. 41). This violence killed 200,000 people, between one and two million were displaced, and a further 150,000 found refuge in Venezuela (Skretteberg, 2015). Nevertheless, Bogota experienced an economic upswing during this period when Laureano Gomez assumed the presidency in 1950. The city's growing economy attracted people with lower incomes from the countryside. At the same time, many refugees fled the threats from 'La Violencia' in rural areas and moved to Bogota for safety (Simpson, 2002).

Figure 2 - Liberal Politician, Gaitain, speaking at a rally, edited by Camila Zuniga (González, 1948)

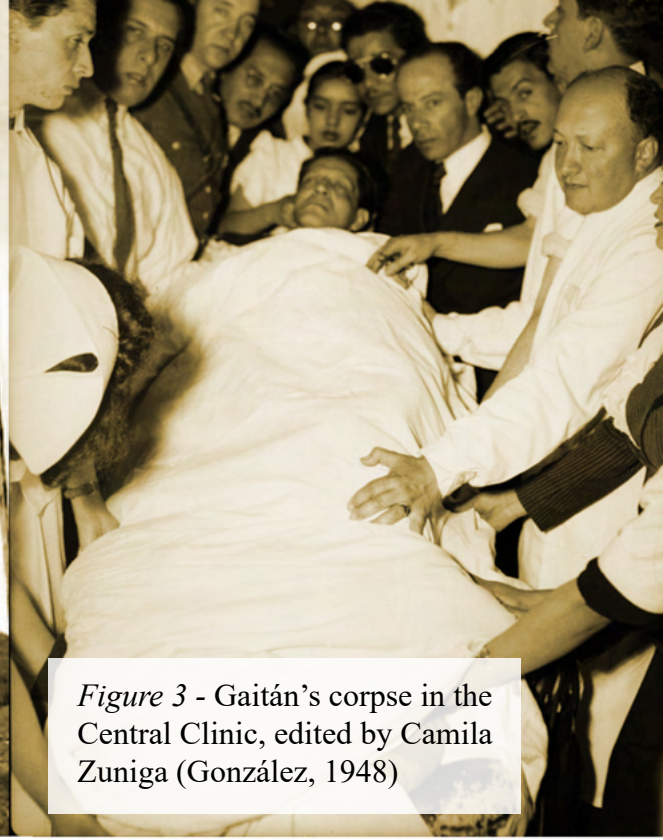


Figure 3 - Gaitán's corpse in the Central Clinic, edited by Camila Zuniga (González, 1948)

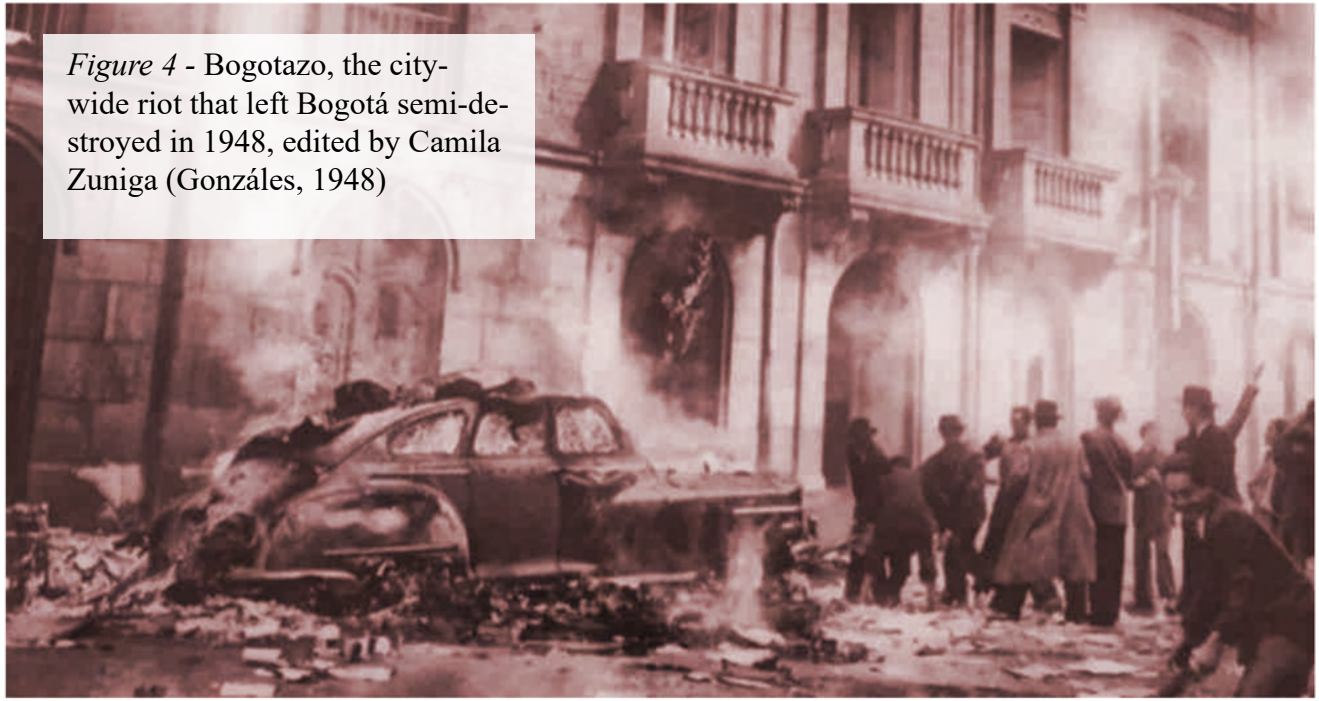


Figure 4 - Bogotazo, the city-wide riot that left Bogotá semi-destroyed in 1948, edited by Camila Zuniga (Gonzáles, 1948)

Environmental features and planning history also played a part in the formation of the division. Bogota's major topographical features laid the foundation for the city's boundaries (Simpson, 2002). Rio Bogota made the city's east boundary while the Andean mountains made the right boundary. City planners like Louis Sert and Le Corbusier played a crucial role in determining the locations of both planned and unplanned settlements within these boundaries (City Paper Bogota, 2013). They helped plan many early settlements in the northern part of the city, which left the southern part of Bogota free for 'unplanned' development. "The twin cities – the planned and unplanned urban areas of Bogota – have a symbiotic relation with one another" (Simpson, 2002). The wealthy residents in the north employ the poor residents in the south. The southern citizens provide essential labour in the city's industry, construction, and transportation sectors (Kellet and Nappier, 1995). The distinct areas of Bogota may be socially and physically separated; however, they intrinsically rely on one another.

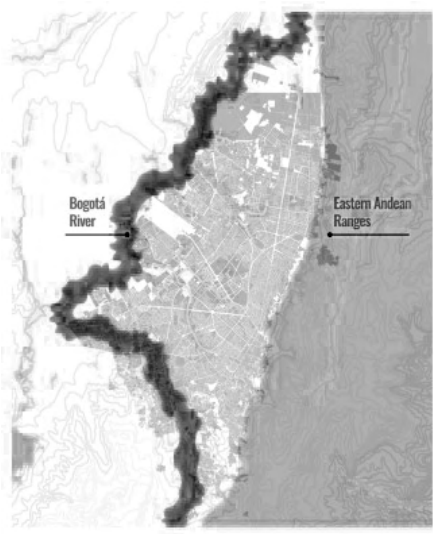


Figure 5 -Map of Physical Boundaries, edited by Camila Zuniga

Figure 6 - Book Cover of 'Le Corbusier Y Wiener: Las Huellas Del Plan para Bogota (Javeriano Historical Archive)

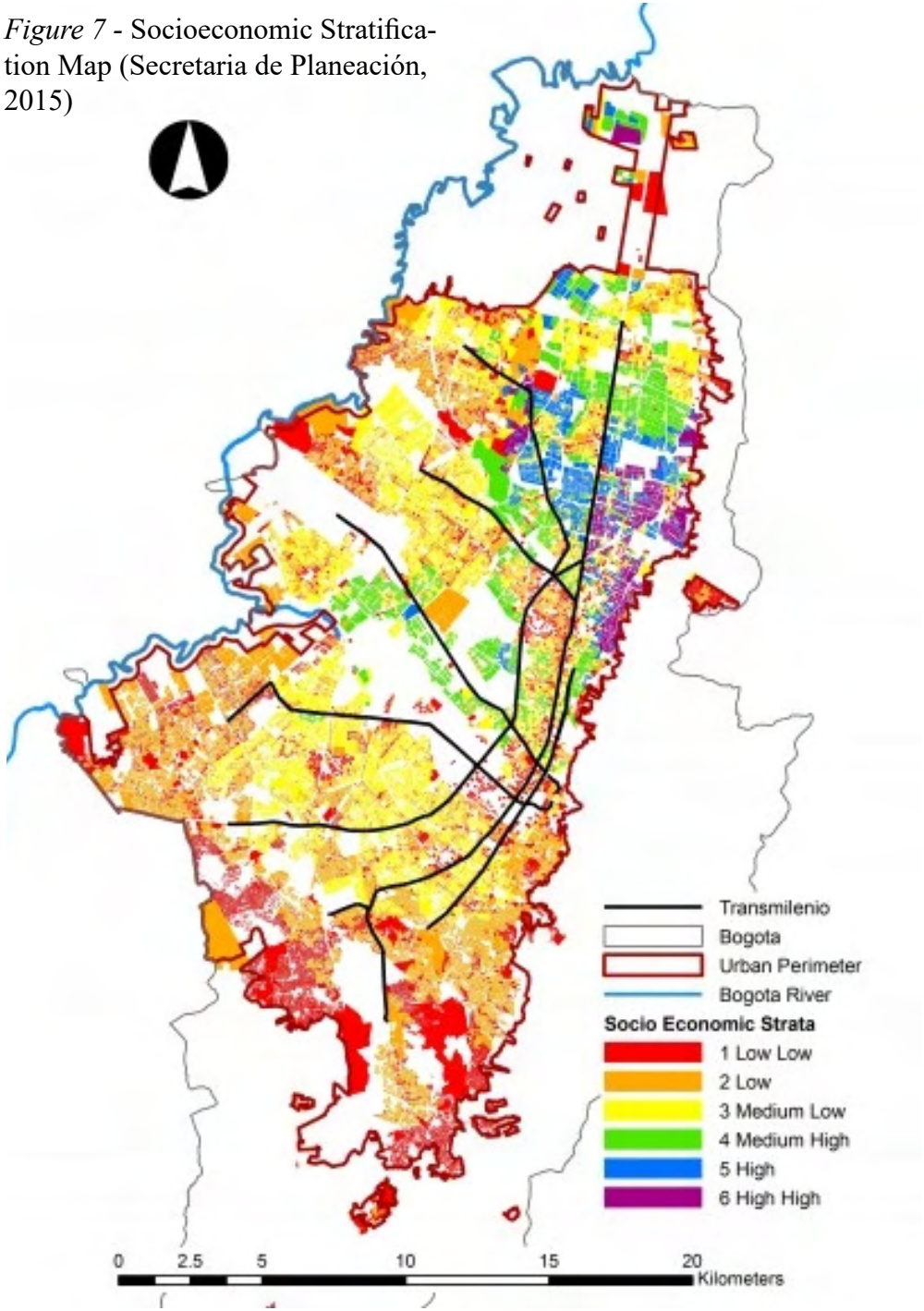


Figure 7 - Socioeconomic Stratification Map (Secretaria de Planeación, 2015)

1.2 Colombia's Stratification System: Urban and Social Separation

Colombia implemented its stratification system in the 1980s. Socioeconomic stratification is the classification of residential properties that receive public services. Its main purpose is to charge strata differently for residential services "allowing subsidies to be assigned and contributions to be collected" (Colombia. National Administrative Department of Statistics, 2015). The stratification system characterizes neighbourhoods based on their physical qualities and categorizes them from 1-6, 1 being the lowest quality neighbourhoods and 6 being the highest. This system allows poorer neighbourhoods to pay less for their home bills (electricity, water, and sewage) than people living in wealthier neighbourhoods (Espjorn, Emmy, and Fjalland, 2012). The map in figure _ shows the neighbourhoods in Bogota split into different stratas.

The stratification system was implemented because of Bogota's major class divide. _"More than half of Bogotá's citizens live in [strata] 1 and 2, mostly in dense slums that cover the hillsides" (Jessel, 2017). In contrast, northern luxury apartments in strata 6 make up less than 2% of Bogota's homes. The difference in quality of neighbourhoods can be seen in *figure 8*. The poorest population is concentrated in the south and south-west of the city. This area of Bogota is part of the unplanned market which lower-income citizens built because of the north's lack of affordable housing.

Although the stratification subsidies do make household bills more affordable for people in lower strata, studies have shown that too many people receive subsidies when they do not need them (Quiñones et al, 2021). This is because the stratification classification is only based on a home's characteristics and income is not incorporated. This system makes it possible for high-income citizens to live in low-strata neighbourhoods (and receive unnecessary subsidies), but it is unlikely for low-income citizens to be able to afford to live in high strata neighbourhoods (Jessel, 2017). Even though there are inconsistencies within the system the current stratification system does show a clearer visual of the economic divide.

Figure 8 - Collage edited by Camila Zuniga (O'donnell, 2017)

A luxury neighbourhood in the northern hills (strata 6)

The neighbourhood of Soacha, south of Colombia's capital Bogota, is home to hundreds of thousands of internally displaced people. Most of the houses are poorly constructed and live in communities without running water, electricity or sanitation. It's common for two or three families to share the same dwelling

Socioeconomic stratification has negative social side effects such as social stigmatizing, which creates a society where classism is accepted. The law of stratification is not at fault for creating the division, it is purely revealing it (Jessel, 2017). The maps (fig. 9 and 10) show income and housing inequalities in the city. Riano, an economic urbanist and professor at the University of Rosario in Bogotá, said “There are plenty of expressions like: ‘He got out of the strata,’ if a person thinks they are important, or ‘You can notice his strata’ to imply a person is bad” (Jessel, 2017). The subsidization of services might even try to omit a ‘separate but equal status’. “So called egalitarian segregation served only to introduce the most extreme forms of discrimination. This convergence is in no way pure chance: where it is race, caste, class, or sex reduced to an inferior condition... [problems arise when] the ruling caste bases its argument [of equality] on the state of affairs it created itself” (De Beauvoire, 1949, p.16-17).

Figure 9 - Average Income per strata map (Jáuregui, No Date)

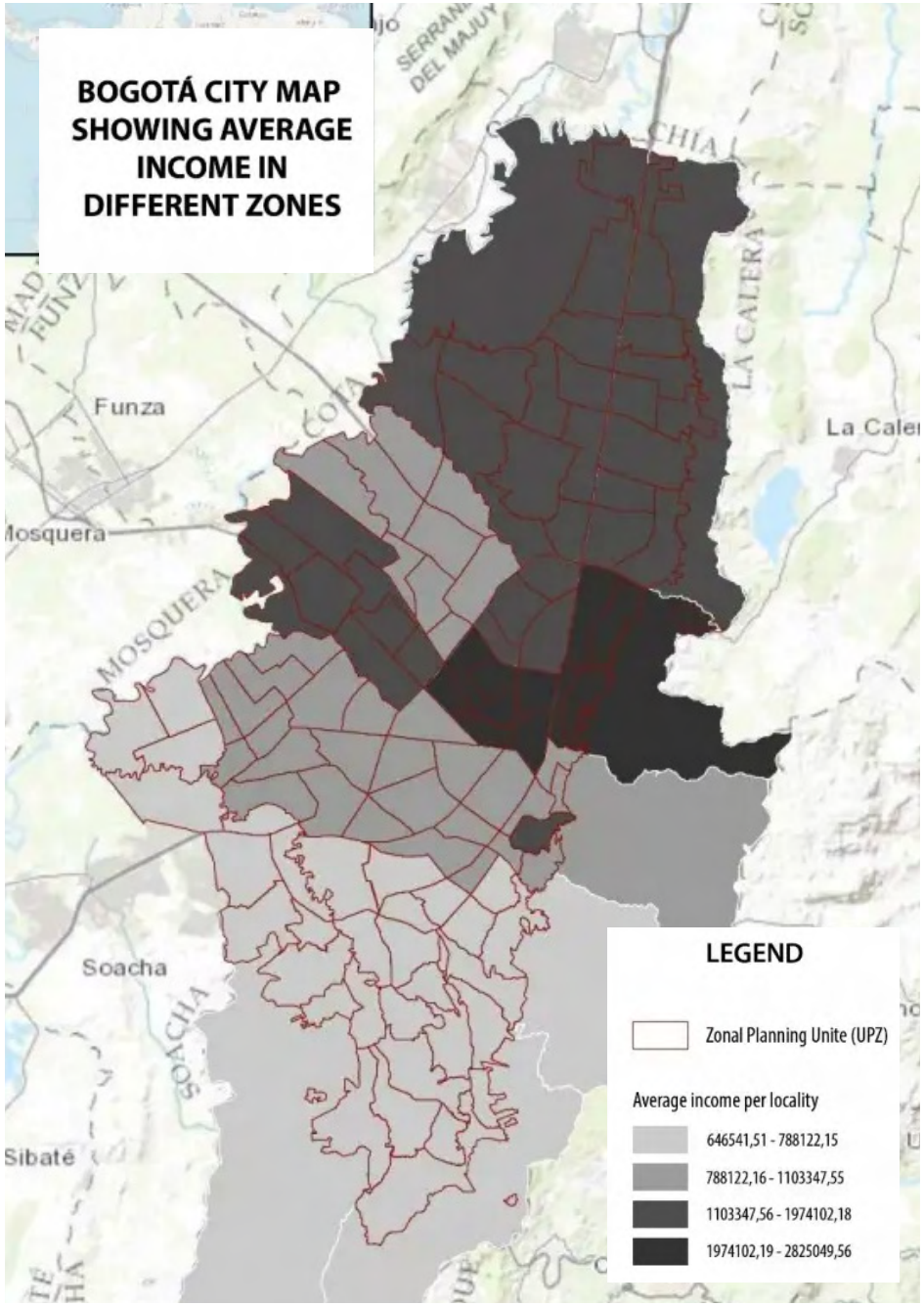
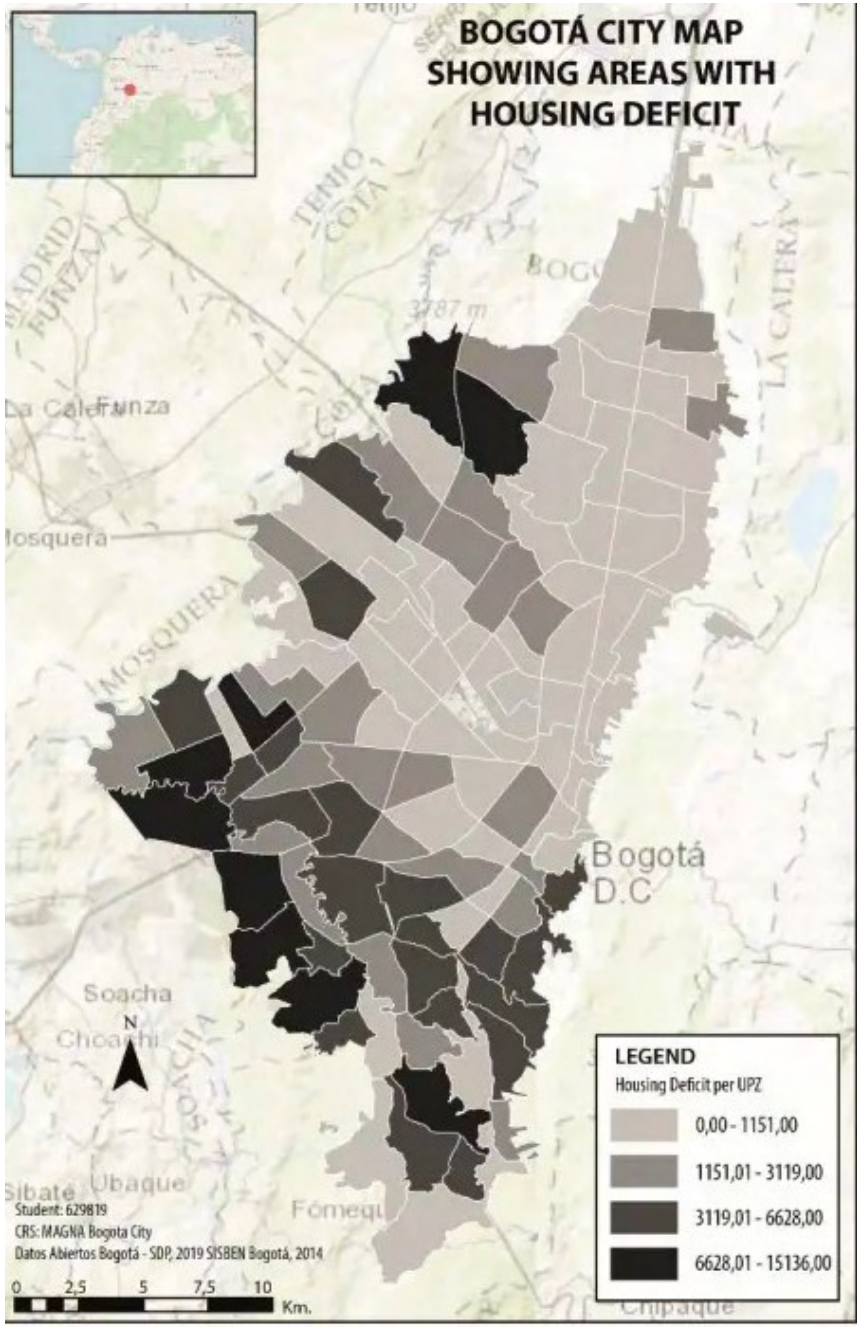


Figure 10 - Bogota city map showing areas with housing deficit (Jáuregui, No Date)



1.3 Colombia's Sustainability Agenda

Pre 1990s, Bogota was one of the most polluted cities in the world. In 1995, Antanas Mockus, the new mayor, had a plan to change the city's destructive fate. Mockus' proposal of the "Bus Rapid Transport system (BTR), the addition of greenways and parks, ...bicycle lanes, restriction on cars, car free days, [and] waste management programs" completely changed Bogota's urban fabric (Rodriguez, 2014). These changes helped the city become one of the most sustainable cities today. In a sustainability study, Global consulting company Arcadis ranked "Bogota 20th place position in the global 'Planet' category for its outstanding advances in climate action" (Reyes, 2022).

Since then, Colombia has had multiple aspirational social and sustainable goals. In 2015, Colombia committed to the development of sustainability in architecture by adopting the United Nations 2030 Agenda for Sustainable Development (United Nations, 2023). The agenda includes 17 sustainable development goals (SDGs), with multiple subgoals within each section. These provide a blueprint for "peace and prosperity for people and the planet, now and into the future" (United Nations, Department of Economic and Social Affairs Sustainable Development). The agenda recognizes the importance of combining two factors: 1. ending deprivation (poverty and inequality), and 2. growing essential services (health, education, equality, and economy) in all countries. This strategy tackles climate change while improving living and economic conditions for all citizens (United Nations, 2023).

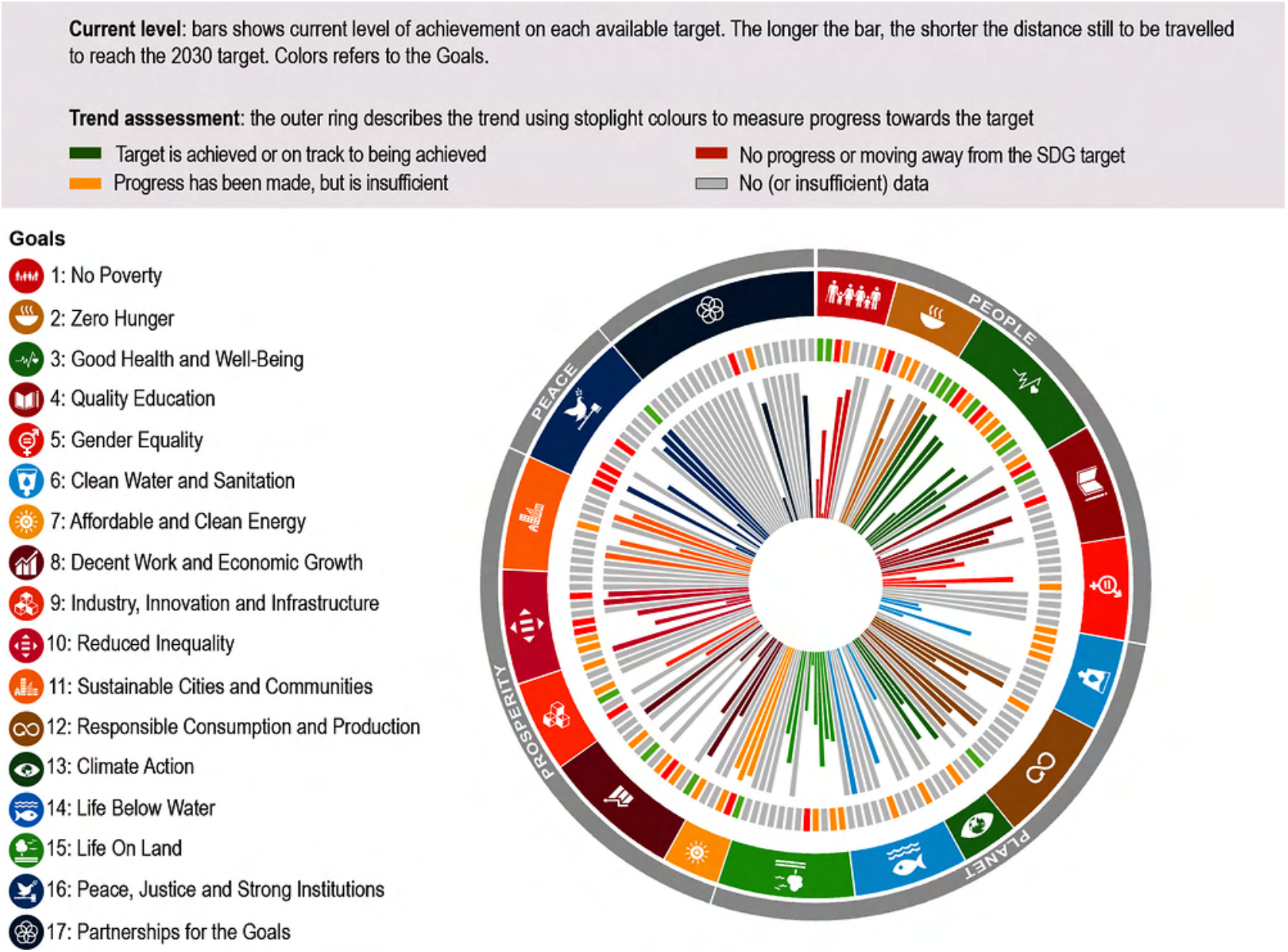


Figure 11 - SDG Goals indicator (UNDESA, 2021)

An Organization for Economic Co-operation and Development (OECD) study on Colombia's progress in SDG claimed all residents in Colombia have access to modern sources of energy, low energy intensity, and hydropower renewables account for more than 70% of total electricity generation (OECD, 2022). However, the term 'accessibility' is not clearly defined in the study and other sources claim many 'sin-strata' (without strata) neighbourhoods (or slums) have unreliable electricity, which is only accessible at night (O'Donnell, 2017). Although Colombia has met many SDG goals, many targets are still behind compared to other countries. A main weak point in Bogota's agenda is education inequality, due to differences in socio-economic background, gender, immigration status, and location (OECD, 2022).

Bogota is a fast-growing city with a current population of 8 million, expected to grow to 11 million by 2030 (World Green Building Council, 2023). The expected growth will require the city to build more houses, an estimated 3 million by the middle of the century. Although this is a daunting undertaking, Bogota has multiple resources to make it a sustainable transition, notably the Colombian Green Building Council (CCCS) and the UN's Building Efficiency Accelerator (BEA) which aims to help increase the use of renewable and efficient energy in buildings (World Green Building Council, 2023). Some examples of Bogota's sustainable efforts include Universidad EAN and Atrio Tower, some of the most sustainable buildings in Latin America (Quiroga, 2023). Both state-of-the-art sustainable buildings are located in the centre of Bogota, a dense area, prone to big developments.

The Rapid Bus Transit System (RBTS) has greatly improved Bogota's co2 emissions and transportation connectivity. However, there is still a lot of improvements to be made within the system. Some issues are crowded buses, low frequency, high fares, long waiting times (20+ minutes during rush hour), and pollution from old buses (Urban Sustainability Exchange, 2023). Sustainably speaking, many of "the continuous investments in Bus Rapid Transit (BRT) and other forms of public transport around highly attractive corridors reinforce cycles of segregation and concentration of formal economic activities" (Oviedo et al., 2019).

Figure 12 - Diagram of Tranmileno Bus system (Dörrbecker, 2017)

Figure 13- Rush Hour at the Bus Rapid Transit System (Transmileno BRT, 2023)

Figure 14- Average travel time by public transportation (Jáuregui, No Date)

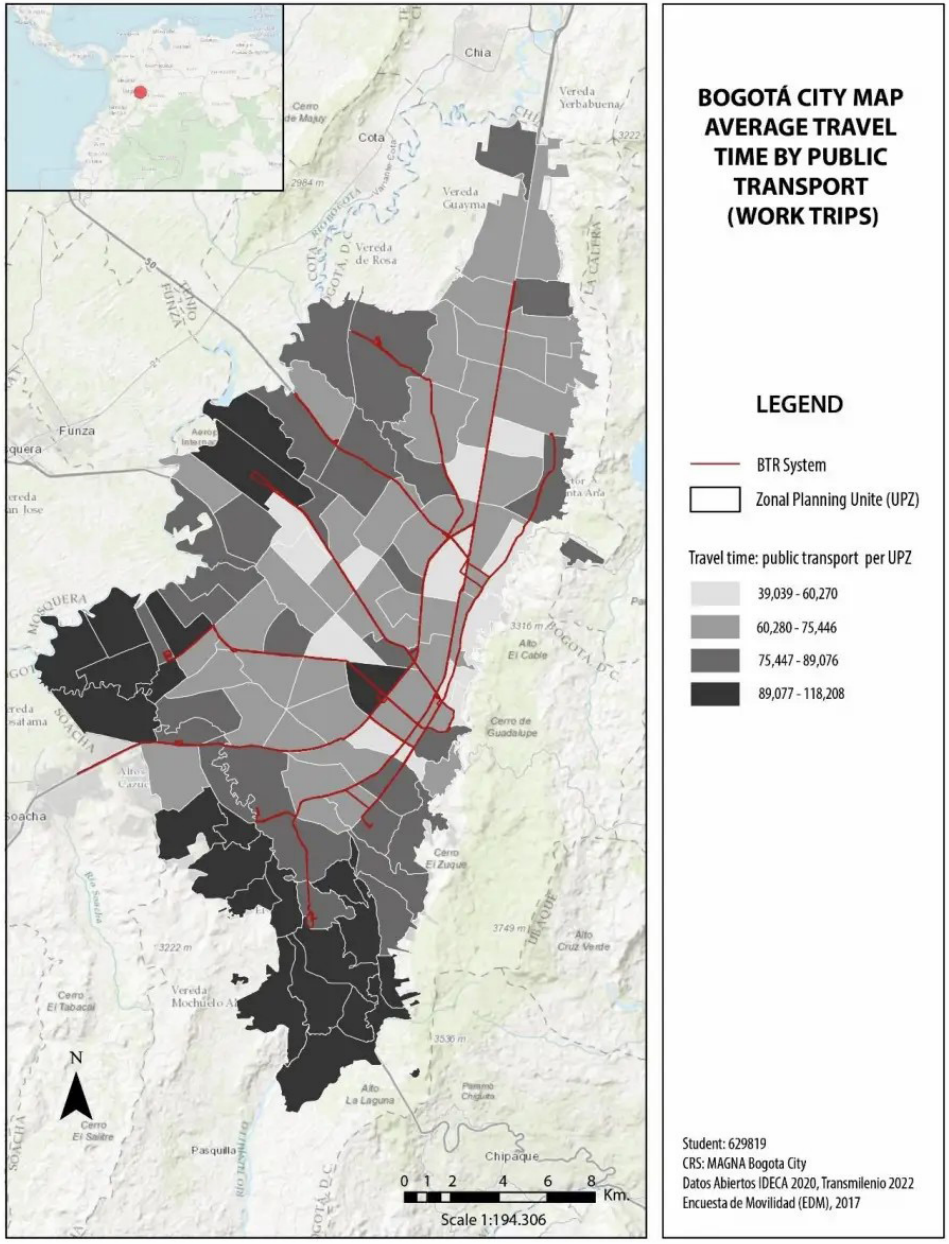


Figure 15 - External view of Project legacy, edited by Camila Zuniga (William McDonough + Partners, 2021)

The big political events in the mid-20th century had a significant impact on the city; the destruction of architecture in downtown Bogota reflected the frustrations citizens had with their government. Furthermore, the physical and economic separation in Bogota set the stage for the city's citizens to be divided socially and architecturally. A study on Colombia's stratification system found the goal of creating greater equality through subsidies is "being achieved, if at all, in a very limited way" (Bernal et al, 2007). Greater inequality is manifested through distorted housing prices found throughout the different stratas (Bernal et al, 2007). The growing housing demand could perpetuate the issues in the stratification system and economic inequality. The issues of education inequality and unequal opportunities will be a big challenge Bogota will have to tackle, which cannot be resolved using exclusively sustainability principles (OECD, 2022

Chapter 2: Modes of sustainability in Colombia

2.1 *Cradle to Cradle* and Project Legacy

Cradle to Cradle is a sustainable design theory that is in direct contrast to today's modern linear economy; "a system in which people buy a product, use it, and then throw it away...there is no thought along the line regarding recycling or reuse" (Knight, 2023). Products made in this linear system follow a single-use model which causes a high volume of new manufacturing. Sustainable authors critique the linear economy model because of its inefficiency and high waste output. They suggest instead the Circular Economy model, a design approach that significantly reduces waste by continuously recycling, reusing, and remanufacturing resources to create a closed-loop system. (Stockholm Environment Institute, 2023).

In *Cradle to Cradle*, William McDonough and Michael Braungart expanded on the original theory of circular economics by examining the design industry's history and effect on modern design processes (Braungart and McDonough, 2009). Cradle-to-cradle is a method of design that implements circular economy methods and emphasizes how the design process, along with its byproducts, should align with sustainable principles and contribute positively to the environments well-being. The cradle-to-cradle theory seen in circular economy, lays out sustainable alternatives to the modern cradle-to-grave design process seen in linear economy.

Mcdonough is a revered architect and has introduced the cradle-to-cradle theory into practice through his architecture firm William McDonogh + Partners. In 2021, Mcdonough + Partners opened the doors to Project Legacy, a building encapsulating all their sustainable technologies and hopes from the *Cradle to Cradle* design theory. It is situated in the heart of Downtown Bogota (strata 6) and serves as a campus for Universidad EAN. In 2021 it "became the nation's first project financed by lower-interest green financing, and the first to benefit from energy efficiency tax incentives" (William McDonogh + Partners, 2021). However, it is not just the building that is beneficial to the environment, it is also the economic courses being taught inside which will centre on Cradle to Cradle and Circular Economy principles (William McDonogh + Partners). Project Legacy's current use as a sustainable centre shows that this building will not just have a physical impact on its local environment but will continue to improve the environment thanks to the students bringing a sustainability-conscious mindset to their future work.

Figure 16 - Wonderframe highlighed through windows of Project Legacy (William McDonough + Partners, 2021)

Project legacy achieves LEED (Leadership in Environmental Design) certification through multiple sustainable strategies. Firstly, the demolition process of the prior development resulted in the “nation’s most successful material recovery effort to-date, with more than 99% of the construction debris — some 50,000 tons — diverted from landfills for reuse” (William McDonough + Partners, 2021). The crucial feature of the design is the buildings external shade structure, the WonderFrame™ (fig. 16), a modular structure that is perpetually reusable and/or recyclable. The WonderFrame™ and solar chimneys facilitate natural ventilation through shade and wind control. Project Legacy was one of the first to “implement new Verification Protocol for Engineered Natural Ventilation Systems in Equatorial Climates...developed by Bogotá-based environmental engineering consultants...for the Colombia Green Building Council” (William Mcdonough + Partners, 2021). The project used locality to its advantage as it implemented local materials and labour, therefore reducing import emissions and contributing to the local economy. Some of the design features can be seen in figures 17-20.

As a critique of Project Legacy, it does not seem to fully implement the *Cradle to Cradle* principles as it demolished a building that was previously able to be refurbished. It can be problematic to boast about ‘a record amount of material recovery’ when the demolished materials will still need more energy output and new material to be strengthened and reused. Some environmentalists theorize building new buildings is usually the last resort because new buildings are labour and resource intensive. A lower carbon alternative is retrofitting existing structures (Monchaux, 2019).

Figure 17 - Interanl view of the Wonderframe of Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)

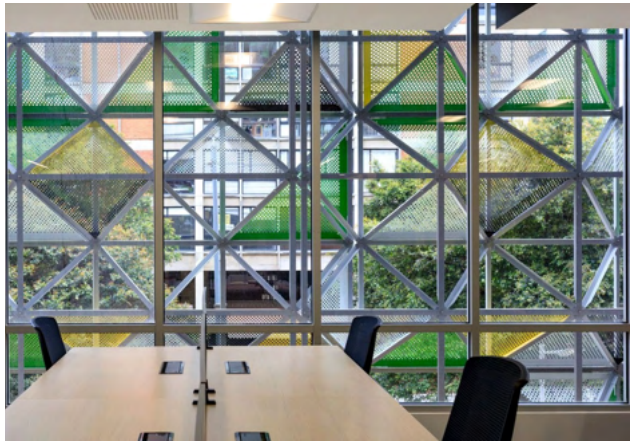
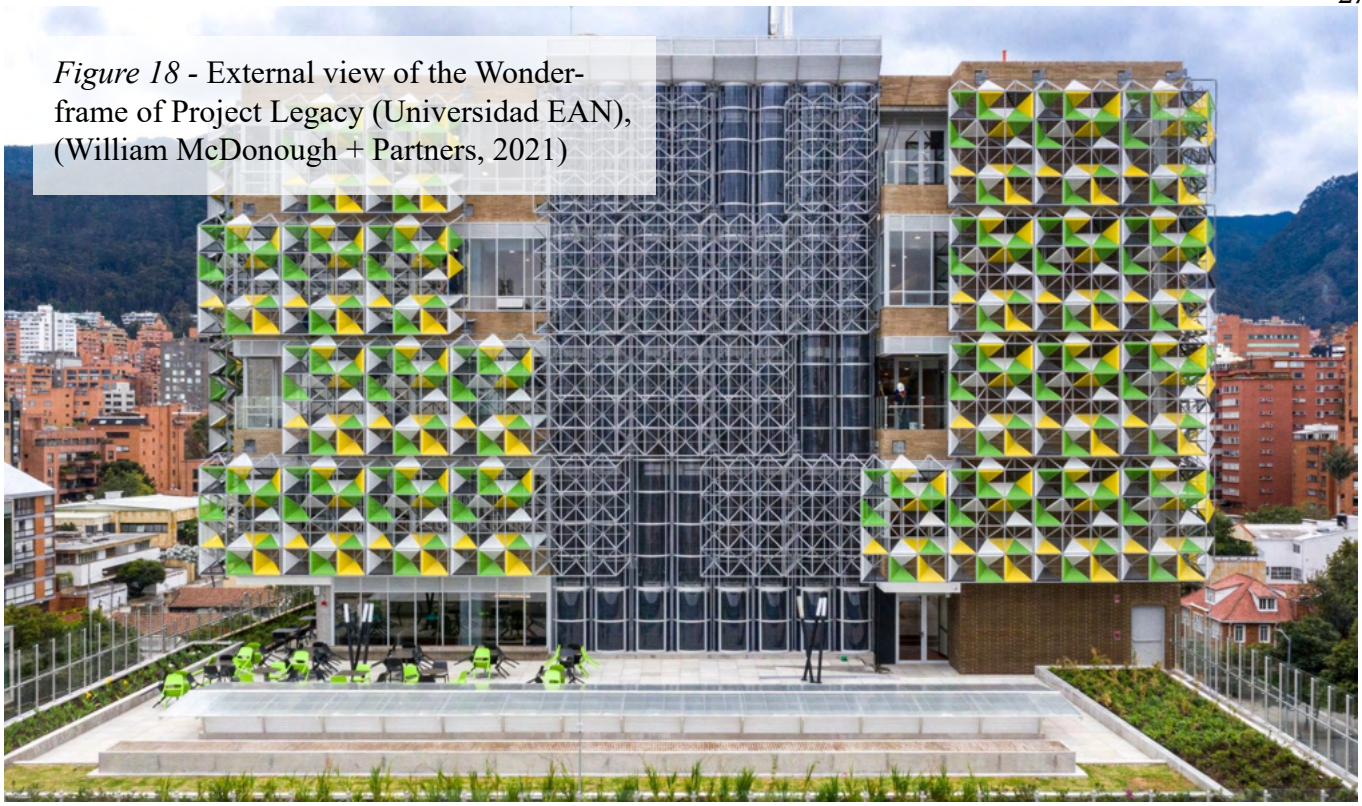


Figure 19 - Exterior seating outside Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)

Figure 18 - External view of the Wonderframe of Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)



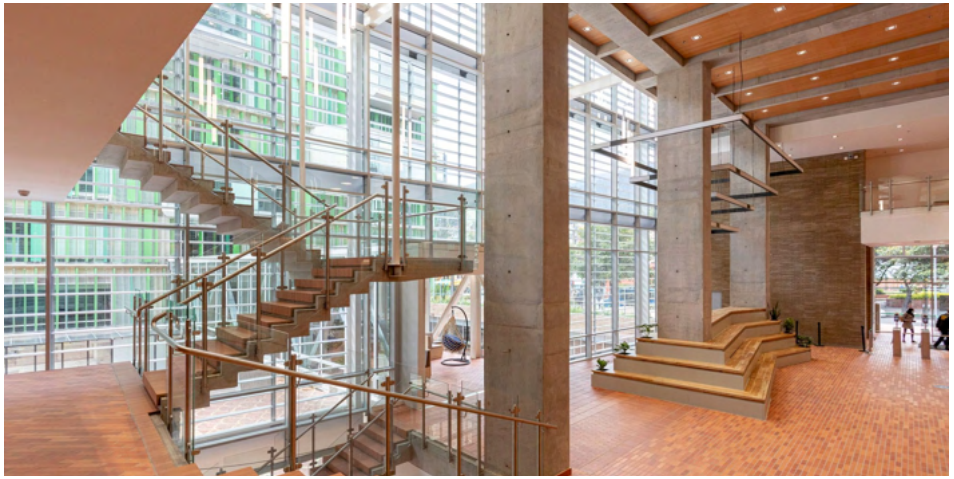


Figure 20- Internal view of Project Legacy (Universidad *EAN)* (William McDonough + Partners, 2021)

2.2 Formal and Informal sustainability

Bogota's northern infrastructure was highly planned and left little room for affordable housing (Simpson, 2002). The need for affordable housing led to spontaneous development in the south, this type of 'unplanned' housing is referred to as informal housing (or ghettos, slums, and barrios). It is considered unplanned because it is not tied to government or official urban plans (Elsayed and Nassar, 2018). However, Dovey and King argue that "they are not entirely unplanned or undesigned since they are the result of strategic speculative action by residents" (Dovey and King, 2011). By contrast to the south's informal housing is the centre and north's formal development. The central location ensures an economically safe area for developers to build formal sustainable buildings (Tellez, 2018). The two types of building processes of formal and informal will be examined through a sustainable perspective.

'Formal sustainability' is a term for high-budget buildings that use modern technology, expensive materials, and architects to create sustainable architecture. Private institutions and rich developers have commissioned many technologically advanced sustainable buildings in northern and central Bogota, in high strata neighbourhoods. Universidad EAN is an example of formal sustainability in architecture. In an interview, the building's architect William McDonough stated: "As an architect, I have often wondered how buildings can align with Arthur C. Clark's statement: 'any sufficiently advanced technology is indistinguishable from magic.' To me, the EAN building is magical" (William Mcdonough + Partners, 2021). McDonough's opinion on the subject displays the commitment to integrate sustainable technology throughout the fabric of the building. This example of formal sustainability physically affects Bogota by lowering the city's environmental emissions, repurposing the demolished site materials, and adding a technologically advanced facade to downtown Bogota (Rodriguez, 2014).

Figure 21 - Barrio Los Alpes spills over the unstable Andes highlands of Ciudad Bolivar in the far south of Bogota, photo by Steve Hide (Colombia Corners, 2023)

Although there are many innovative technologies involved in creating this sustainable building, there are also many methods that make its sustainability applicable to any building, like its use of local construction and recycled local materials. These methods can be seen more obviously in ‘informal sustainable’ buildings.

Informal sustainability is a term for when informal settlements unintentionally use sustainable construction and design methods. In Bogota, informal settlements are built by local people and made with common and affordable materials such as bricks and corrugated metal (fig.23) (Sanchez, 2014). Financial constraints are the main reason behind the reuse of old materials and using the minimum amount of new consumption when constructing new settlements in low-strata neighbourhoods (Elsayed and Nassar, 2018). Figure 22 shows the gradual changes in building an informal settlement, from ‘the essential’ to ‘the possible’ (Sanchez, 2014). Although they are a lower quality of infrastructure compared to formal architecture, they do contribute to the city’s sustainability efforts through low environmental impact.

Figure 22 - Stages of progress development within Informal neighbourhoods (Sethi, Urbz)

Stages of progressive development in homegrown neighbourhoods- plots are usually 6x12 sq.m in area and process of housing is based on feasibility and materials acquired.

Figure 24- A view of an informal neighbourhood, "Village City" of Nuevo Usme enveloped as the 5th locality of Bogota (Sethi, Urbz)

Figure 23- A finished informal settlement using hollow clay bricks in Ciudad Bolivar, the largest homegrown settlement in Bogota (strata 1) (Sethi, Urbz)

John Turner, an architect who studied informal settlements in Latin America, wrote that “the poor in such settlements demonstrated great energy and intelligence in the use of resources and in evaluating priorities” (Dovey and King, 2011). Although they rise out of necessity, such settlements are often looked down upon which “has led to a situation where they are...relatively invisible within the urban spectacle and largely unstudied in terms of morphology and image” (Dovey and King, 2011). There is much more research to be done in terms of how such settlements function and affect the environment.

After studying informal and formal sustainability, it is theorized that pure sustainability can be best carried out through either two extremes: 1. The complete implementation of advanced technology or 2. The complete lack of financial resources. In Bogota, Project Legacy is an example of formal sustainability and shows financial freedom from not having to settle for unsustainable materials or wasteful building methods. By contrast, informal settlements in southern Bogota are an example of informal sustainability where homes are built minimally. Low-income communities in southern Bogota have a smaller carbon footprint than affluent northerners do because of their lack of monetary resources to be mass consumers (Watts, 2023). Strangely, this type of lifestyle rarely counts as sustainable, neither is it praised like formal sustainability is. This is an interesting social paradox that should be further studied. Formal sustainability has greater levels of physical comfort, safety, and health associated with it which makes this type of sustainability in architecture more positive for users, however, both informal and formal sustainability achieve the goals of reuse and less consumption.

2.3 The Division of Comfort in Sustainable Developments

Comfort is not just a feeling; it is also spatial and can be created by architecture. As mentioned before, sustainability can take on different forms depending on if it is built in a formal or informal environment. It is important to highlight the presence that comfort holds within these differently classed spaces. In *After Comfort*, a theoretical essay about the connection of comfort to architecture, class, and sustainability, Daniel Barber explains how comfort is a product of wealth through the means of architecture and how citizens must have the right to change their personal comfort through the influence of urban design, no matter their class (Barber, 2019). Barber wrote “First comes sustenance, then shelter and protection from the elements, then heat, and, last, cooling, so as to remain active, healthy, and productive, especially in the soup of humidity. After these come layers of precision: filtered air, sealed membranes, sensors everywhere, all the elements of the comfort-industrial complex that aims to wrap itself around the body like a favourite shirt” (Barber, 2019).

Two examples of comfort in high-strata interiors

Figure 25 - Thermally regulated interior of Project Legacy (Universidad EAN), edited by Camila Zuniga (William McDonough + Partners, 2021)

Figure 26 - People enjoy their cities comfort in a cafe in strata 6, edited by Camila Zuniga (Flavours of Bogota, 2024)

Project legacy is a fitting example of creating ‘comfort’ in a world facing a climate crisis. This is vital “due to a combination of political, geographic, and social factors, Colombia is recognized as vulnerable to climate change impacts” (World Bank Group, 2021). ‘Thermal wealth’ is a term in *After Comfort* that explains the connection of wealth to a comfortable, thermally regulated interior (fig. 26). It is common in wealthier countries and in more expensive ‘formal sustainable’ architecture like Project Legacy (fig. 25). Traditionally, a way of maintaining thermally regulated interiors is by using HVAC (heating, ventilation, air conditioning) systems, which is critiqued in *After Comfort* for its energy inefficiency. Project Legacy creates desirable temperature-stable interiors through the use of natural ventilation, which is possible because of the wonderframe and solar chimneys (William Mcdonough + Partners, 2021). Additionally, the use of durable sustainable materials lowers the impact on the environment. Universidad EAN employs beautiful design and provides a comfortable experience for its users; it is a place that even the wealthiest enjoy because their high expectations of comfort are met. People who live near this building and study or work in it have a direct relationship to the comfort it provides, and an indirect relationship to the benefits of the building’s sustainability like clean air.

Discomfort is something less affluent people are used to in many aspects of their lives; they have lower levels of financial and physical security. Discomfort in architecture is unfortunately common in the lower stratum in southern Bogota. Informal housing can have poor ventilation, bad insulation, and structural problems. If poorly managed, the occupants face the threat of homelessness as their home becomes uninhabitable. As referenced in 2.1, Tuner explained how tpeople living in informal settlements have a sense of freedom and autonomy within their neighbourhoods, however this 'freedom' comes with a cost. Many citizens in informal settlements compromised "short-term comfort and insecurity, in return for longer-term benefits" (Dovey and King, 2011). The strategic abandonment of comfort allowed people in informal settlements to gain financial benefits [e.g. from lower housing costs]. Some discomfort in informal settlements is due to the threat of natural disasters and high fire risk (Avendano-Uribe, 2023). In addition, informal settlements have higher violence from armed conflict between guerrillas, paramilitaries and state security forces. "The extreme insecurity endured in the Colombian countryside since the mid-20th century has strengthened the pull of the urban as the symbol of modernity" (Zeiderman, 2014). People in informal settlement have a daily and direct relationship with discomfort through their poor architecture and the dangers that surround their neighbourhoods. They have lower access to formal sustainable buildings because of (but not exclusively) classism and lack of social investment in southern Bogota.

Figure 27 - Nearly 700 poor families living in the Altos de la Estancia neighborhood are being forcefully evicted in the midst of the coronavirus outbreak without any government assistance, photo by Colombia Informa, edited by Camila Zuniga (Peoples Dispatch, 2020)

Artist Delcy Morelos shows the importance of the environment in her artwork, which features soil and other natural elements. As an indigenous person from Colombia, she wanted to bring attention to Colombia's extensive history of conflict and displacement, destruction of the Amazonian jungle and ancestral culture, and the issues of sustainability in her country (Cascone, 2023). In 2023 Morelos exhibited two installations at Dia Art Foundation Chelsea, El abrazo (The Embrace) (fig. 28 and 29) Cielo terrenal (Earthly Heaven) (fig. 30 and 31) (Cascone, 2023). The installations act as a reminder to take care of the soil that provides livelihood for everyone, while also critiquing the mistreatment of soil for financial gain. This concept is also seen in *Cradle to Cradle* theory as the environment's importance is placed above capital gain. Morelos's upcoming sculpture at the Pultizer exhibition in 2024 is a commentary about obsession with land ownership. She said, "people put up nets, fences, and railings to delineate and separate land, saying this is 'mine' and that is 'not mine...but it is absurd to think that we can be owners of the earth. We form part of the earth, and we are united with her—we are not her proprietors." This concept of ownership coincides with complicated stratification laws and the informal vs formal architecture of the city. People in high-strata neighbourhoods have higher social status however, their land and emissions are affecting the environment in the same capacity someone from a lower-strata neighbourhood is. Morelos's art shows people that they need to be more respectful of land, not just with sustainability, but also with ownership laws. Land is not merely a physical entity; it is a living organism that has the power to influence lives.

Figure 28 - Delcy Morelos, El abrazo (The Embrace) close up, photo by Bill Jacobson (Dia Art Foundation, 2023)

Figure 29 - Delcy Morelos, El abrazo (The Embrace), photo by Bill Jacobson (Dia Art Foundation, 2023)

Figure 30 - Delcy Morelos, Cielo terrenal (Earthly Heaven) close up, photo by Bill Jacobson (Dia Art Foundation, 2023)

Figure 31 - Delcy Morelos, Cielo terrenal (Earthly Heaven) , photo by Bill Jacobson (Dia Art Foundation, 2023)

There needs to be a careful balance between comfort and sustainability in architecture, to be the most comfortable is not the most sustainable, and vice-versa. This is something that is becoming more important (and challenging) as climate change worsens; and the exterior climate becomes more extreme. In *After Comfort,* the term 'comfort reparations' means equalizing comfort in the world by a redistribution of 'thermal wealth'. "This would involve a massive transfer of thermal wealth while reducing overall comfort. Designing northern discomfort to its limit, refocusing energy resources on the interiors of the Global South" (Barber, 2019). This concept could be applied to the north and south of Bogota. A way to equalize the city is through the strategic implementation of comfort in existing settlements. This could be through improving existing settlements to meet sustainable standards or creating new sustainable developments in the area to address the lack of housing. In this hypothetical, the north may stagnate in development, but it would allow the south to catch up in the comfort equilibrium. "The struggle for comfort is a struggle for equal opportunity, justice, and conditions amenable to growth and self-actualization" (Barber, 2019)

Sustainability is important...Project Legacy is helping Bogota meet its sustainable future. However, 'the politics of comfort' shows that architecture is greater than its sustainable status, it is also about who gets to access these spaces that supply comfort, safety, and health. Looking at William McDonough + Partner's earlier work, they have designed for multimillion-dollar companies like NASA, Walmart, and YouTube. In 1997, they designed the Gap headquarters which stands at almost 200,000 square feet (the building is now leased by YouTube). The building has shifted from housing one corporation to the next. This can be seen in many of McDonough's buildings. In Bogota, sustainability for the upper-stratas is something to be aware of because, as Barber theorized, these formal sustainable buildings reinforce economic inequalities through their status as private buildings for the privileged.

Chapter 3: The Importance of Accessibility to Formal Sustainability

3.1 The Right to Sustainable Architecture: Inclusion and Privilege

The right to sustainable architecture shapes the way people would be able to live and experience Bogota. The theory of *Right to the City* was written by Henri Lefebvre in 1968, in his book Le Droit à la Ville. Lefebvre wrote about the intricacies of urban space, how it is formed through collective action, and how a city should be formed democratically (Lefebvre, 1968). Lefebvre's social theory on the city inspired many to move away from the capitalist theory of extracting a city for its wealth and shift to understanding the city as a social institution that will benefit the people living in it. In David Harvey's interpretative essay *The Right to the City* he wrote that the right to the city is not merely what others "define, but an active right to make the city different, to shape it more in accord with our heart's desire, and to re-make ourselves thereby in a different image" (Harvey, 2003).

The notion of the ‘collective’ in *Right to the City* can be analysed in Bogota as who is included in certain spaces and groups, and who is included in government decisions relating to urban space. In Bogota, inclusion is a problem because of how separated the city is. As explained in 1.1, the government has historically been monopolized by the elite. This affects who gets to influence decision-making relating to urban space, therefore lower strata citizens do not have the right to be apart the “collective power of the processes of urbanization” that is supposed to benefit them (Harvey, 2003). Bogota shows how social segregation, classism, and unequal access to education and health can still manifest physically in different forms that are perpetuated by local architecture and stratification policies (Arellana et all, 2022).

It is important to examine familial privilege in Bogota as it is currently the primary route to access formal sustainability. They have the right to a comfortable sustainable city; their *Right to the City* is based on familial privilege and central or northern location within Bogota (Barber, 2019). The unprivileged also contribute positively to the environment through informal sustainability; however, they do not have the right to comfort, safety, or the city. “Socioeconomic research broadly concludes that ‘spatial segregation may [negatively] affect the employment opportunities of residents of disadvantaged [neighbourhoods] in the city” (Villarreal and Hamilton, 2009, as cited in Guevara and Sheilds, 2019). In the earlier chapter, Daniel Barber explained how one’s class affects the comfort they experience. This chapter’s analysis of *Right to the City* shows how the city and its sustainable developments inadvertently affect the classes experiencing them.

3.2 The Privilege of Safety and Land

The established social and spatial division in Bogota has influenced what areas receive higher levels of care in architecture, which affects the health and safety of their inhabitants. This section will cover the issues of care concerning Bogota's crime rates, health inequalities, and land issues.

The types of crimes in Bogota correlate with their region and economic areas. Citizens in northern Bogota (strata 4-6) have the privilege of a higher amount of wealth than the rest of the city. This privilege of wealth coincides with higher robbery and extortion rates, as it's more common in downtown and northern Bogota (Colombia Reports, 2023). On the other hand, the "most deadly violence in Bogota [like homicide and danger from armed groups] takes part in the impoverished southern districts of the city [of strata 1-3]" (Colombia Reports, 2023). Although Bogota's crime rates are lower than most other big cities in Colombia, citizens in Bogota have a low perception of safety because of the deadly violence in lower stratas and historic violence in the city.

Figure 32 - The police is present in Corferias, a place where local, national and international events take place, on July 27, 2023, in Bogotá, photo by Nathalia Angarita, edited by Camila Zuniga (Reynoso, 2023)

South Bogota is prone to landslides because of its proximity to the Andean Mountains, which put many low-strata homes at risk (Bravo-Lopez, 2023). The municipal government's resettlement programme has been resettling people at risk, however, "hundreds of thousands, if not millions, of Bogotanos live in substandard or hazardous conditions, only a select few (approximately 10,000 households in 2008) have been identified as officially "at risk" and eligible for housing subsidies" (Zeiderman, 2014). This is a challenging situation to be in, however, many refugees and migrants have no choice as these high-risk areas usually have the cheapest land or low settlement fees (International Crisis Group). One of the lucky ones, Estella (fig. 34), was the beneficiary of a government programme to help her relocate from her high-risk neighbourhood of Santa Viviana. Many other citizens still live in dangerous zones and the loss of their house is a dooming fear, they do not have the privilege of safety.

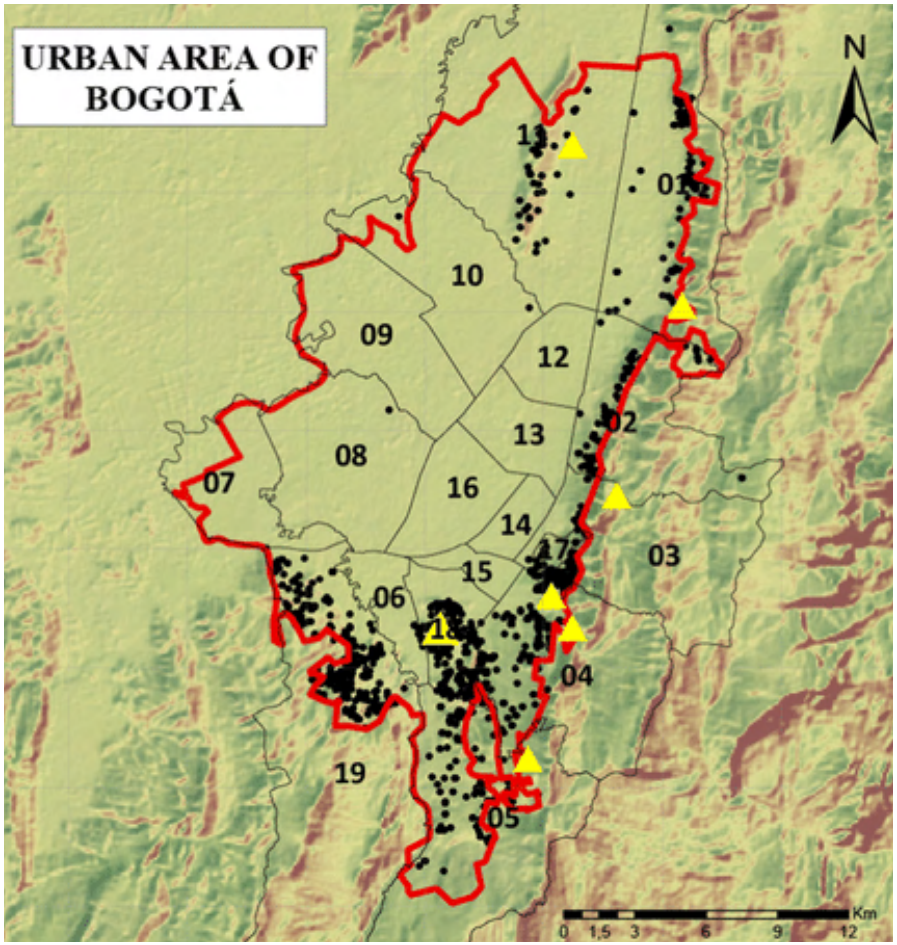


Figure 33 - Landslide map of Bogota
(Santos et al, 2015)

Figure 34 - The Santa Viviana neighbourhood of Bogotá.
photo by Austin Zeiderman (Zeiderman, 2014)

Figure 35 - The Altos de la Florida shantytown in Soacha,
on the outskirts of Bogotá, photo by Eitan Abramovich

3.3 Socioeconomic Access to Project Legacy

When Universidad EAN opened its doors to Colombia's prospective youth seeking higher education in technical business in 2021, it was a great moment for sustainable technology, however the implications of who is going to use this building are important to highlight. There are connections between economic access and transportation access to Project Legacy because of its central location and tuition costs.

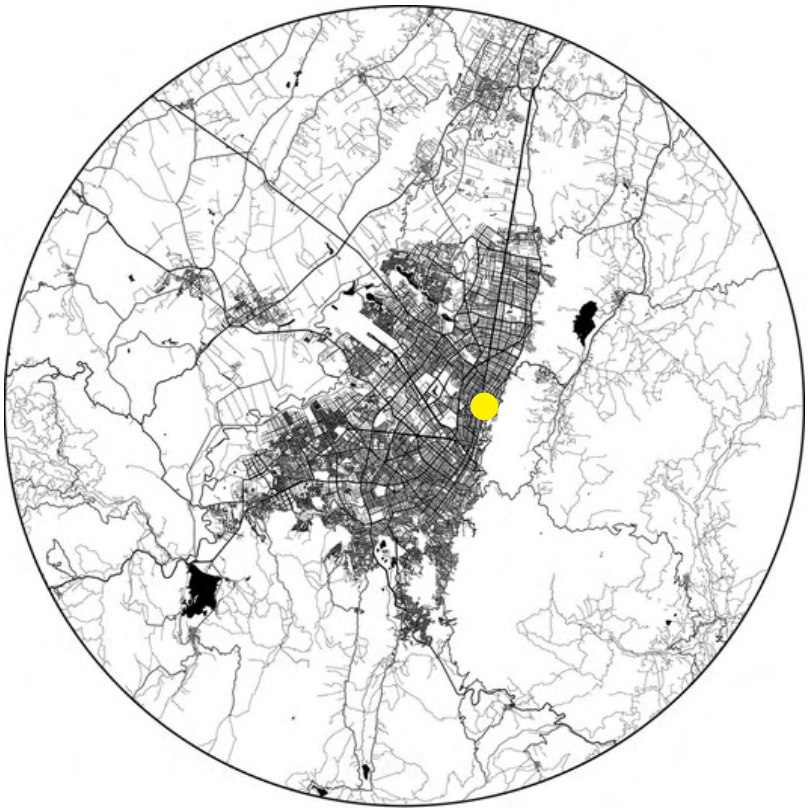


Figure 36- Bogota map diagram showing Project Legacy location, edited by Camila Zuniga (Nils Kue, 2023)

It is located in El Chico, a wealthy neighbourhood classified as strata 5-6. The centralized location, along with the high tuition costs, approximately 30,000,000 cop (5,700 GDP) a year, makes this building accessible to a small market of people in Colombia (Colombia Reports, 2019). There is a strong correlation between students who attend private education in their early years and the attendance of university (Castillo, 2023) The higher quality of private education makes it more desirable for students, only "33% of students in Colombia attend public tertiary institutions while 57% attend private institutions" (Castillo, 2023). According to statistics from CEDLAS and The World Bank, "61% of the richest Colombians aged 18-23 go to university, compared to the poorest 25% of Colombians of the same age" (Colombia Reports, 2023).

Governments can strive for equal treatment of their citizens, yet, as Thomas Jefferson said, there is `nothing more unequal than the equal treatment of unequal'. The freedom to be a consumer and participate in the free market masks as an innate personal freedom, however, there is nothing free about being born into poverty or wealth then saying equality prevails (Waligorski, 1990). This freedom can be a privilege in strata 6, then a crutch in strata 1. If this freedom creates laws that apply policies (like sustainable development) equally to the whole city of Bogota, then the poor areas might never catch up. Equal treatment in an unequal city continues to enforce the divide (Harvey, 2003). The right to be able to change our spaces should be universal as the spaces end up influencing people's whole lives.

Conclusion

As Bogota continues to grow, it has the potential to be a great city where equality is prioritized. Although there are discrepancies within the city's policies and hopes for the future, there are things that can be done within the stratification system, risk governance, transportation, and sustainable development to contribute to who has the right to the city.

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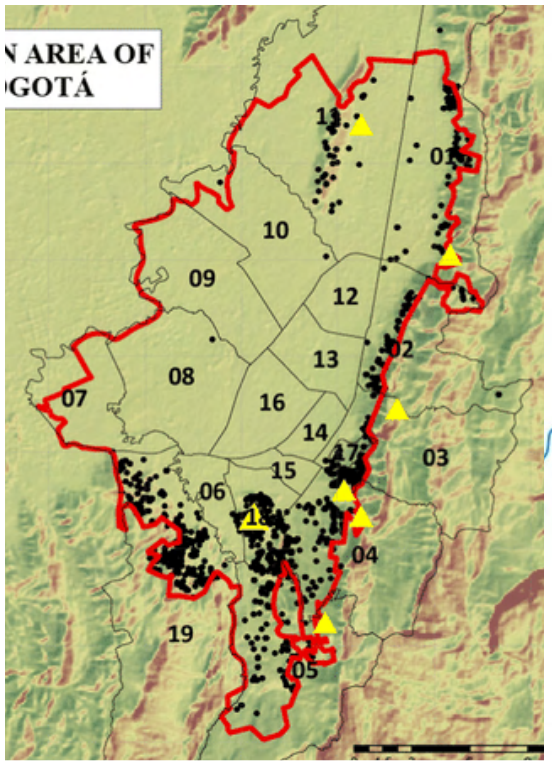
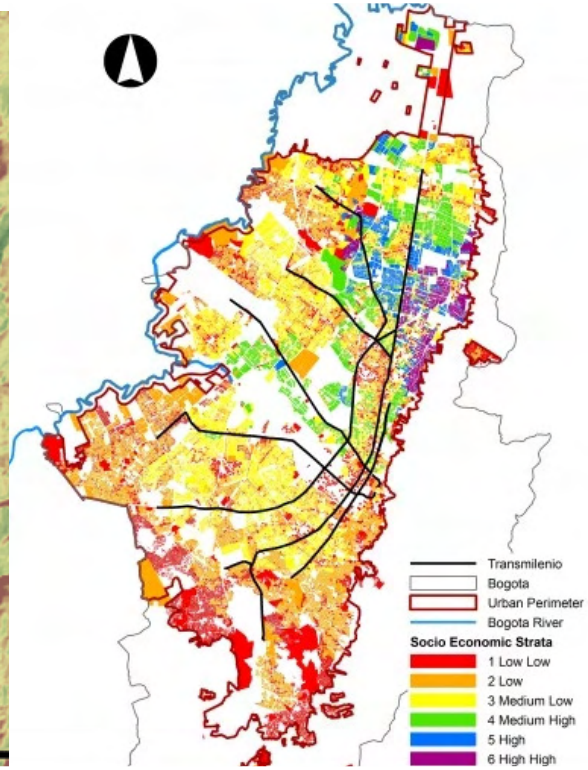
To combat Bogota's spatial division, the stratification system must be fairer to citizens. A different system could be proposed where citizens' incomes and social circumstances are assessed (instead of their properties). This would promote a greater sense of individualism and bill citizens according to their income, not their architecture. A way to improve the physical connection between different stratas is by improving the bus sytem. Connecting more neighbourhoods of different economic levels to the main economic centers would then give more opportunities to people of lower stratas to work in higher-paying areas.

Climate change has created a growing demand for more sustainable developments in Bogota. Bogota shows how formal sustainable developments are primarily built in the city centre, leaving the outskirts of the city centre underfunded and inefficiently built. It has been a challenge in Bogota to integrate affordable housing into the city centre because of wealthy residents' pushback on social housing integration and the lack of political support for these initiatives (Davis, 2019). Policies to combat this could be to slowly integrate affordable housing in mid-strata areas and the improvement of existing informal settlements (Atuesta and Davis, 2019). In many informal areas in the south, homes are prone to landslide risk. Currently "risk governance divides the urban population into those whose lives deserve to be protected, and those left to fend for themselves" (Zeiderman, 2014) A new strategy for rehoming people must be tackled as the current system is leaving thousands in danger.

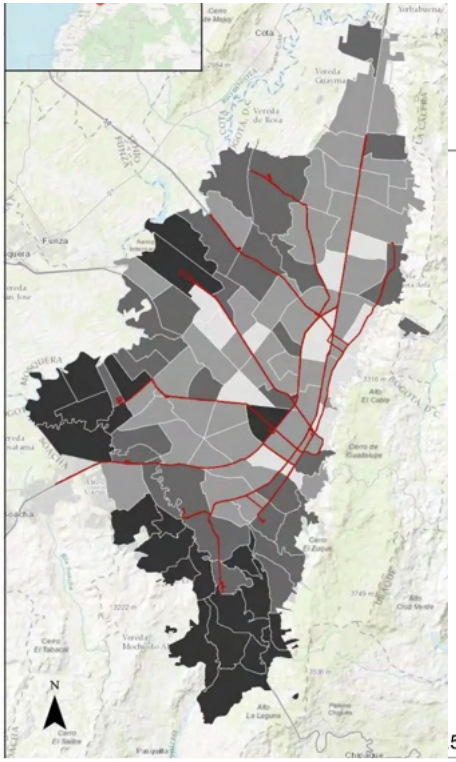
Figure 37 - Bogota maps collage showing visual connection between Safety (1. Landslide risk), low neighbourhood quality (2. Stratification system), Lack of housing (3. housing shortages), and centralised ecnomy/minimal public transportation (4. economic centers)



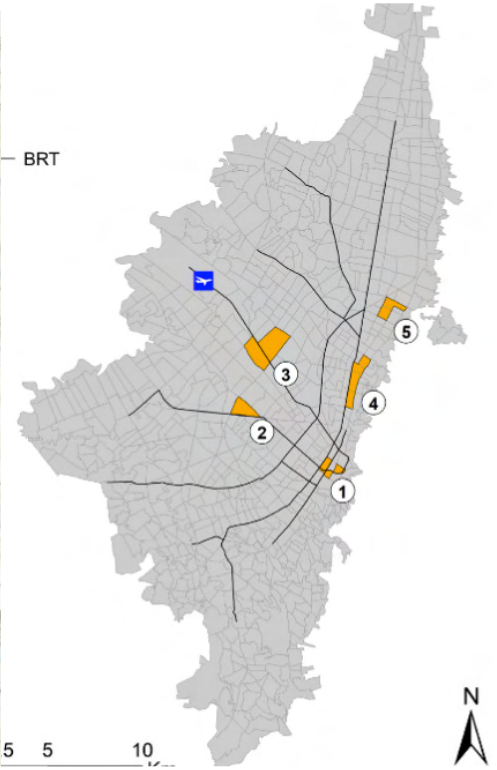
1. Landslide risk



2. Stratification system



3. Housing shortages (darker is greater shortage)



4. economic centers and Transmileno routes

According to Lefebrve Change must be driven by social uproar. The people are the ones being affected, so the people must protest for themselves. The strategies for change listed above might not be the answer to the Bogota's issues of accessibility. There is no master plan or utopian ideal that is going to fix the city. Historically, people have failed at this initiative (Lebreve, 1968). People have theorized what a city might need but they would never be able to understand it better than people who grew up there (Harvey, 2003). Locals of the city are part of the city, and the city is part of them. Their childhood has been shaped by experiences they have had in every part of the city, and they have changed the city in that time. This is why Project Legacy was able to be successful in its environment because it was built for Colombians, by Colombians. The potential of Bogota can be met only through the collective action of its citizens. The city's architecture should function together, north and south, strata 1 and strata 6, to provide citizens with equal accessibility to shelter, safety, then lastly comfort (Barber, 2019). A city must be socially inclusive. Citizens should have the right to create their own city and experience their own comfort.

A final note...

The Politics of Comfort:

It is important to ask yourself, ‘Am I Comfortable?’

If yes...

what are the implications? who is not comfortable? Who deserves to be comfortable? How can I change that?

If no...

Why am I not comfortable? Who controls my comfort? How can I change it?

List of Figures

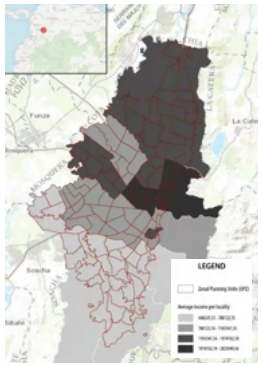


Figure 9 - Average Income per strata map (Jáuregui, No Date)

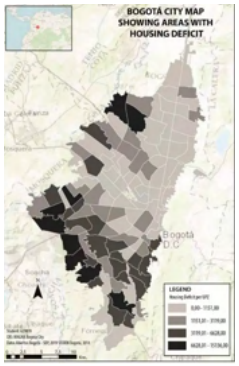


Figure 10 - Bogota city map showing areas with housing deficit (Jáuregui, No Date)

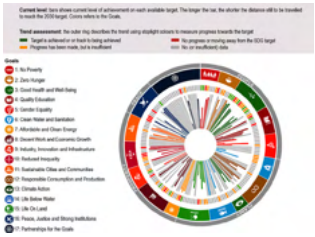


Figure 11 - SDG Goals indicator (UNDESA, 2021)

Figure 12 - Diagram of Tranmileno Bus system (Dörrbecker, 2017)

Figure 13- Rush Hour at the Bus Rapid Transit System (Transmileno BRT, 2023)

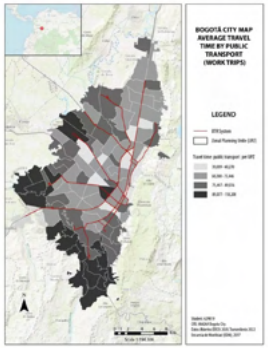


Figure 14- Average travel time by public transportation (Jáuregui, No Date)

Figure 15 - External view of Project legacy, edited by Camila Zuniga (William McDonough + Partners, 2021)

Figure 16 - Wonderframe highlighed through window of Project Legacy (William McDonough + Partners, 2021)

Figure 17 - Interanl view of the Wonderframe of Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)

Figure 18 - External view of the Wonderframe of Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)

Figure 19 - Exterior seating outside Project Legacy (Universidad EAN), (William McDonough + Partners, 2021)

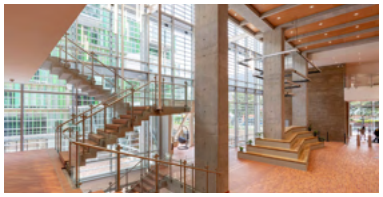


Figure 20- Internal view of universidad (William McDonough + Partners, 2021)

Figure 21 - Barrio Los Alpes spills over the unstable Andes highlands of Ciudad Bolivar in the far south of Bogota, photo by Steve Hide (Colombia Corners, 2023)

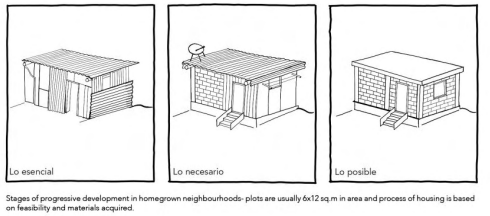


Figure 22 - Stages of progress development within Informal neighbourhoods (Sethi, Urbz)

Figure 23- A finished informal settlement using hollow clay bricks in Ciudad Bolivar, the largest homegrown settlement in Bogota (strata 1) (Sethi, Urbz)

Figure 24- A view of an informal neighbourhood, “Village City” of Nuevo Usme enveloped as the 5th locality of Bogota (Sethi, Urbz)

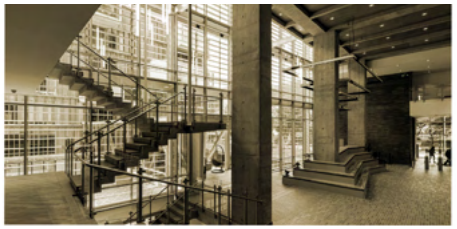


Figure 25 - Interior of Project Legacy (Universidad EAN), edited by Camila Zuniga (William McDonough + Partners, 2021)

Figure 26 - People enjoy their cities comfort in a cafe in strata 6, edited by Camila Zuniga (Flavours of Bogota, 2024)

Figure 27 - Nearly 700 poor families living in the Altos de la Estancia neighborhood are being forcefully evicted in the midst of the coronavirus outbreak without any government assistance, photo by Colombia Informa (Peoples Dispatch, 2020)

Figure 28 - Delcy Morelos, El abrazo (The Embrace) close up, photo by Bill Jacobson (Dia Art Foundation, 2023)

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Figure 31 - Delcy Morelos, Cielo terrenal (Earthly Heaven) , photo by Bill Jacobson (Dia Art Foundation, 2023)

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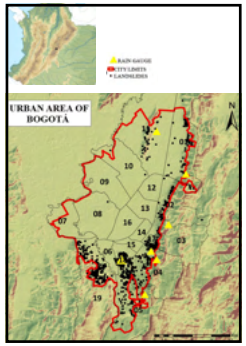

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Figure 34 - The Santa Viviana neighbourhood of Bogotá. photo by Austin Zeiderman (Zeiderman, 2014)

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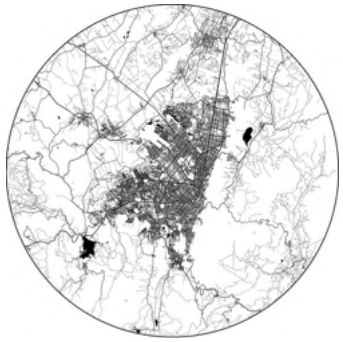

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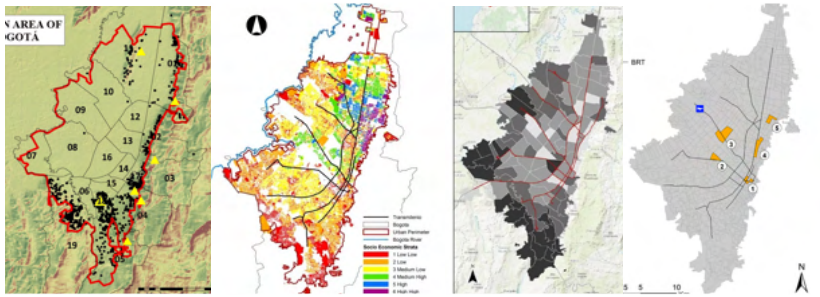

Figure 37 - Bogota maps collage showing visual connection between Safety (1. Landslide risk), low neighbourhood quality (2. Stratification system), Lack of housing (3. housing shortages), and centralised ecnomy/minimal public transportation (4. economic centers)

Cover page - Original collage from different photographs

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Thank
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