

SCHEME OF MORAVIA PLAN



ECOCITY
BUILDERS



INTRODUCTION

UNEP PROGRAM SUMMARY



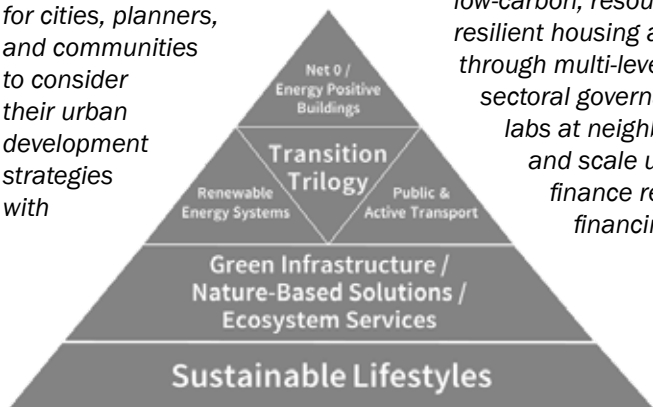
*“The neighborhood approach:
Transformative, Integrated Urban
Sustainability at the Community
Scale”*

The United Nations Environment Cities Unit believes that by working at the neighborhood level, communities can transform their cities. Communities have the power to test innovative solutions in their neighborhoods to some of the most complex and pressing challenges: equity, cross-sectoral integration, governance and finance, so that they respond better to their specific needs.

Neighborhood Approach:
Taking lessons from neighborhood-scale initiatives in cities around the world, the Neighborhood Approach will outline a new way for cities, planners, and communities to consider their urban development strategies with

integrated, transformative sustainability in mind. By taking a whole systems approach, the Neighborhood Approach helps communities solve multiple challenges with integrated solutions. It incorporates community engagement and lifestyle changes to ensure long-term, self-sustaining success. It helps cities and communities tackle some of the trickier questions around the enablers of sustainable development, like governance and financing, as well as understanding the ways sustainable urban development can promote equity and avoid the often-associated gentrification impacts. Lastly, it looks at strategies for propagation past the neighborhood level to bring successful solutions to scale.

A whole systems approach for a profound transition towards sustainable urban development with low-carbon, resource efficient and resilient housing and infrastructure, through multi-level and cross-sectoral governance, innovation labs at neighborhood level and scale up through finance readiness and new financing mechanisms.



HISTORY OF



IN MEDELLÍN

2C, UNAL, EAFIT, COMUNA 8, BOSTON

Since 2014, Ecocity Builders (ECB) has worked in collaboration with the local government and institutions on the execution of participatory, sustainable development projects throughout the city. In 2015-2016, through a Secondary Cities initiative (2C) by the United States Department of State, ECB worked with E2E, UNAL and the Mayor's Office in Comuna 8, with an

emphasis on mapping and research of the urban metabolism of solid waste. In 2016-2017, under the 2C initiative and with the same emphasis on solid waste, ECB worked with Low Carbon Cities, EAFIT, and the Mayor's Office in the Boston neighborhood.

In 2016, they coordinated an ecological footprint analysis of the entire city, in partnership with the British Colombia Institute of Technology in Vancouver, B.C..

MAIN COLLABORATORS AND SUPPORT

Sustainable Neighborhoods - Moravia is a collaborative and intersectoral initiative led by Ecocity Builders, the Planning Department of the Mayor's Office in Medellín, the University of Antioquia - Research Group, GIEM, Route N: Cities for Life, Medellín's Ministry of Environment,

and the Metropolitan Area of the Aburra Valley. The project was initiated and funded by the United Nations Environment Program.



ACKNOWLEDGEMENTS



Moravia Sustainable Project Team of Experts

The Moravia Community and Community Leaders

*Ana Catalina Ochoa,
Director of Medellín Planning Department*

*Isabel Arcos Zuluaga, Medellín
Planning Department*

*Norman Mejia Suarez,
Sub-Director of the Medellín Planning Department*

*Carlota Magdalena Ramirez, Medellín
Planning Department*

*Tomas Tintinago,
Director of the Medellín Ministry of Environment*

Leonardo Ocampo, Medellín Ministry of Environment

*Joe Sánchez Marín, Medellín Ministry of Environment
& GIEM Research Group - University of Antioquia*

Carlos Andres Uribe, University of Antioquia, Director of GIEM Research Group

The Moravian Cultural Center

Albert Kreisel and the Urban Lab Berlin Team

LEAD TEAM

ROLES AND PROFILES



ROLES

Neighborhood Surveys // Neighborhood Observations // Investigation of Existing Information // Diagnostic of Existing Neighborhood Conditions // Community Conversations and Workshops

EXPERTS PROFILES



SYDNEY MOSS

Project Director
Ecocity Builders

Sydney leads participatory sustainable development and urban design initiatives in Latin America. She is passionate about identifying and connecting leaders in holistic and sustainable thinking and doing. Her work often engages multisectoral partners from academia, community and non-profit groups and government. Sydney was trained at UC Berkeley and Loyola University, but has obtained her most valuable education and experience while developing her unique skill set directly on the ground in communities, classrooms and government offices while implementing participatory sustainability projects in Latin America.



LAURA MARIA DIAZ O.

Graphic Designer

Laura is passionate and committed to the environment. She regularly volunteers for socio-environmental NGOs as an active member in the creation and execution of multidisciplinary projects and as a design leader, creating and promoting campaigns to raise awareness, where image and communication have been the main tools to visualize the environmental and social problems. She wants to contribute her actions to help achieve the change that she wants to see in the world.



CATHERINE MONTOYA S.

Environmental Engineer, Specialist in Disaster Risk Aversion Management

For her degree in disaster risk aversion management, Catherine conducted research within the Moravia neighborhood on the perception of vulnerability to geotechnical risk. It taught her more about processes used within the community, which is currently part of an aqueduct, sewage and sanitation project of the University College of Antioquia and the Public Services Department of the Government of Antioquia.



NATALY SAENZ

Environmental Engineer

Nataly has been working through an NGO with the communities of Medellín and Bello's informal settlements for 6 years. In 2017, she had the opportunity to participate in a democratization course on access to planning and development data for an urban metabolic assessment of solid waste management in the Boston neighborhood of Medellín. She has also been developing learning processes around agro-ecology and planting systems within cities has experience in environmental management systems.



CONNOR BERRY

Urban Studies Intern
Ecocity Builders

Connor is a student of urban studies in the United States. He studies the interrelation between urban planning, economy, and inequality. He is in Medellín as a intern of Ecocity Builders, with past internships in Taiwan as a teacher of English and in the United States in a project of sustainable housing demolition.



STEPHANIE DÍEZ L.

Health Administrator with emphasis on Health and Environmental Management, *University of Antioquia*

Stephanie has worked as a community leader for 18 years, participating in different processes among young and adult populations within the community and environmental organizations at local and international levels. She seeks to address not only environmental, but also social and public health issues. These experiences have led her to develop her passion for nature and relationships with the community. Her practical and academic training has been strengthened by the integral management of water resources and solid waste.



LUIS FERNANDO ECHEVERRY C.

Environmental Engineer

Luis is a community leader with over 6 years of experience in working with inhabitants of Comuna 5, Castilla de Medellín. He has been a mediator between the central government and the community, and he currently is on the Local Administrative Board, a popular election office representing a community of approximately 175,000 inhabitants to the municipality of Medellín. He has been a workshop leader for women, training in topics such as the preparation of cleaning and meat products. He is a chemist at the University of Antioquia. In 2017, he completed the Urbinsight course in democratizing access to planning and development data for urban metabolism, certified by Ecocity Builders. He participated in a mapping and archotyping of domestic waste workshop with leaders and residents of the Boston neighborhood of Medellín, which resulted in the installation of a collection system for edible vegetable oil recycling.



ELSA VAN LATUM

Sociocultural Expert

Elsa is a Dutch sociologist with a masters degree in Urban Sociology, specializing in cultural and social inequality. She is also a specialist in immigration and integration issues, the history of European and American urbanism, and the role of culture in the formation and emancipation of social groups. Her work experience includes research on urban problems in New York; social and governmental organizations; teaching languages to immigrants in several countries; and political campaigns in Holland. Elsa lives in Medellín and works as a professor of sociology at Santo Tomás University.



RAMÓN DAVID RUIZ C.

Zootechnologist Specialist in Environmental Management

A technology student and tourist guide, Ramon has worked in wildlife consultancy and as Ornithologist. He coordinated the Medellín Bird Festival in 2017 and works as a bird watching guide for several companies throughout Colombia.



MARÍA SVETLANA VÉLEZ R.

Environmental Trainer

María is a human resources administrator specializing in nonviolent pedagogy. She is a human development coach using RECONOSER technology, an environmental coach for urban garden management, and a certified environmental guide and coach of natural resource conservation at the Nirvana Natural Reserve in Palmira-Valle. She leads guided tours of urban and rural gardens in Medellín and is the founder of the House of Culture in La Buitrera, Palmira-Valle, and coaches solid and organic waste management in Cali, Caldas, and Medellín.

María is a member of the Huerteros Medellín Network and the Municipal Council of Rural Development in Caldas. She has been an executive speaker at Expoarmonízate in Sabaneta 2015 and presented at the 2016 Council of Medellín “Reforms to Popular and Solidarity Economy” forum as well as the 2017 “Blue Gold, water for life” and “Solidarity Economy” forums in Guatapé and Sabaneta. She also promoted and lectured at the 2017-2018 Forums of Economic Solidarity in Medellín and was a lecturer at the 2016 Water Forum in Bello.

María is the creator of the environmental organization ECOFORMAR and served as technologist in environmental management systems at SENA 2018. She authored the 2016 article “Water Wisdom” for *Amar y Servir* magazine and participated in a 2017 documentary about urban gardens for Canal Señal Colombia and the 2017-2018 Peasant and Permaculture Markets.



PAOLA POLLMEIER

Global Management and Governance *Ruta N - City of Medellín*

Paola currently works with the Ruta N, Science, the City of Medellín's technology and innovation center, as the Open Innovation Coordinator, leading a collaborative city / citizen program called Cities for Life that aims to design smart solutions for addressing urban challenges through co-creation mechanisms. She and her team have also been designing and implementing the open data strategy for the Metropolitan Area of Medellín to support collaborative open data governance processes with the Ministry of Technology and the metropolitan municipalities.



COMMUNITY LEADERS

PROFILES



CIELO MARIA HOLGUÍN R.

Cielo is a community leader, with an emphasis on education. She has led formal education processes in the community and worked for 6 years at the center of cultural development of Moravia. Cielo has been a liaison leader for several projects, including the Transformation Stairs and Mural project as well as the Urban Lab Medellín / Berlin framework project.



ÁNGELA MARÍA HOLGUÍN R

Since graduating from the University of Medellín with the title “Communicator and Corporate Relations Officer,” Ángela has been organizing in her community for nearly 20 years and is acknowledged as an important community leader of Moravia. She is currently an English student at the Centro Colombo Americano. As a Moravia community leader she has participated in important national and international projects and is passionate about community work. She works as a communications manager for the musical group Explosión Negra (born in Moravia) and as a business consultant at the University of Medellín.



LUZ MILA HERNÁNDEZ P

Luz Mila is an important community leader in Moravia who has worked on environmental and women's rights initiatives in the community.



ELSY TORREGLOSA

Elsy is an important community leader and development promoter in the Moravia neighborhood. Trained as an industrial production technician, she is a founder and active member of the Moravia based gardening and greenhouse group, the Cojardicom Corporation. Elsy has participated in international projects such as the Urban Lab Medellín-Berlin and the Transformation Stairs of the Tropical Oasis, and as a speaker at the first international forum of low carbon cities in Mexico. Resilient with clear and constant ideas in social planning and purposes, Elsy's motto is: "He who is not born to serve does not serve life."



LUZ MARINA AGUILAR S

Luz is a community leader with 30 years of experience. She is the founder and legal representative of the Corserba Cultural and Sports Corporation whose motto is "Grow with and for the community". She advocates for the economic liberation of herself and her fellow community members through the proliferation of works based on recycled materials.



MARÍA DEL CARMEN RAMÍREZ G.

Maria has been a Moravia community leader since 1980. Holding an academic bachelor with training in other knowledge areas, María has contributed to the education sector of Moravia and the construction of the Moravian church. She's participated in the Moravian Community Action Board and the Sports Promotion, Kátequista.



HEROÍNA CÓRDOBA

Heroína is one of the first community members in Moravia and her family founder the Fidel Castro sector of Moravia in 1962. She currently works to promote equality and has organized women's marches and initiatives to increase women's safety in Moravia. She has contributed to the remembrance of Moravia's history and strives for a decent life for its residents, with peace and justice for all.



ANA LUCIA ARAQUE Q.

Ana Lucia is a revered community leader in Moravia for her environmental leadership. She has worked in government as an environmental strategist and in academic institutes as a biologist. She serves as a representative of the environmental board for Comuna 4, the treasurer of the Moravian JARDINERAS corporation, and as director of COJARDICOM.



ROSA INÉS GIRALDO

Rosa is a community leader who worked as an administrator of the urbanization project "Alamos 01 Torre A" for 10 years and is now a legal representative of the COJARDICOM corporation.



EDWIN ALEXANDER RODAS

Edwin is a leader in the city of Medellín, an accounting and costs technician, and a commercial operations technician. As a student of administrative management at the School of Peace he studies systems and other training actions. As a defender of human rights, Edwin believes that Moravia is a territory of superior knowledge, mobilization, and collective resistance. In his view, the community is tasked with affirming the values of life and freedom as a guiding principle of universal and collective human rights, and of defending human dignity and other principles of their 1991 constitution, for the appropriation of the territory and its use in integral growth, especially collective economic prosperity, and a sustainable environment. The preservation of their essential ancestral identity, multicultural values, memory, and heritage will allow the community to build a new history of peace as a collective challenge.



ARISTOBULO GALOFRE

Aristobulo is a self-taught social leader in Moravia. He is a director of the community gardening group Jardineros.

EXPERTS AND LEADERS



METHODOLOGY AND FRAMEWORK

SUMMARY AND DIAGRAMS



ECOCITY FRAMEWORK AND STANDARDS

Ecocity Builders applied the Ecocity Framework & Standards (EFS) for sustainable urban systems and human habitats as a guide to understand the existing conditions in Moravia and to design a neighborhood plan for sustainability in a participatory effort. Led by Ecocity Builders with input from eco-city activists and academics, the EFS seeks to describe the conditions for a restorative and ecologically sound human presence on earth, as well as a practical methodology to help design, evaluate and guide the path towards achieving an ecocity civilization.

The EFS is composed of 18 standards that are organized into four categories: urban design, bio-geophysical conditions, socio-cultural conditions and ecological imperatives. It is a diagnostic tool for cities and citizens to measure progress towards the conditions of the ecocity.

Designed for a wide range of users, including novices and experts, the Framework maps the steps ahead of a city: from the existing conditions to the “threshold” ecocity standards and more. A city reaches Ecocity Level 1 when it achieves a positive score in all categories. This level in the Standards covers measures related to social justice and life on a planet, including food security, welfare, ecological footprint and GHG emissions based on consumption. There are two more levels, Ecocity Level 2 and Ecocity Level 3, which are steps to become a city of GAIA. The GAIA concept is derived from the system of holistic systems of the earth that is capable of maintaining a homeostatic (ie, stable) state in which all life thrives.





-10



-7.5



-5



-2.5



-2.5



3



7.5



10

Urban Design

Access by
Proximity

Safe and
Affordable
Housing

Green Building

Environmentally
Friendly
Transportation

Live - Associates
Not in Walking
Distance

Unsafe,
Unaffordable
Housing

Responsible
Built-Gent
Unhealthy

Environmentally
Damaging

Walkable,
Affordable

Responsible
Built-Gent
Healthy

Does not
Damage

Complete +
Sustainable

Safe,
Affordable

Regenerative

Improves
Environment

Big Geo Physical Features

Air

Water

Soil

Material
Resources

Energy

Food

Pollutes

Pollutes - Water

Destroys

Depletes

Nonrenewable

Does Not Provide

Clean

Clean and Safe

Healthy

Responsible

Clean and
Renewable

Healthy and
Affordable

Purifies

Purifies

Enriches

Soil

Clean and
Renewable

Nutritious and
Abundant

Socio Cultural Features

Culture

Community
Capacity and
Governance

Economy

Education

Well Being

Unsupported

Non
Cooperative Not
Well Organized

Destroys Nature's
Economy

Not Provided

Violent, Unjust

Healthy
Supported

Healthy,
Participatory

Healthy and
Equitable

Lifelong,
Accessible

Quality of Life
Satisfaction

Harmed

Highly Organized/
Highly
Cooperative

Restores Nature's
Economy

Provides for All

Justice, Peace &
Commitment

Ecological Imperatives

Biodiversity

Carrying Capacity

Ecological
Integrity

Endangered

Overload

Weak, Unhealthy

Healthy

Healthy
Low Impact

Healthy

Thrives
Within the
Biological Limits
Stable, Restorative

Total Score

PILAR I URBAN DESIGN

Access by Proximity: Access by Proximity: The city provides residents with walkable access between safe and affordable housing, basic urban services, and open/green space. It demonstrates environmentally friendly transport options and provides walking and transit access to close-by employment.

Safe and Affordable Housing: Dwellings are affordable, including to low income households, are in a reasonable state of repair with operational facilities and services, provide thermal comfort, and are protected from environmental or human caused hazards.

Green Building: New buildings and renovations are assessed in terms of environmental sustainability and green building standards.

Environmentally Friendly Transport: Non-motorized transportation is supported and encouraged by the city and is used by a significant proportion of people for trips under 5 km. Mode split aims towards the access-by-proximity principle with 80% of trips made by walking, bicycling or low emissions public transportation.



PILLAR II BIO-GEO-PHYSICAL

Clean Air: The city maintains a level of air quality that is conducive to good health within buildings, the city's air shed, and atmosphere.

Clean & Safe Water: Residents have sufficient and continuous access to convenient and affordable clean drinking-water and domestic use water; city water sources, waterways and waterbodies are healthy and function without negative impact to ecosystems.

Healthy Soil: Soils functions and operations meet their ranges of healthy ecosystem functions as appropriate to their types and environments; fertility is maintained or improved.

Responsible Resources/Materials: Non-food and non-energy renewable and non-renewable resources are sourced, allocated, managed and recycled responsibly and equitably, and without adversely affecting human health or the resilience of ecosystems.

Clean & Renewable Energy: Energy is provided for, and extracted, generated and consumed without significant negative impact to ecosystems or to short or long-term human health and does not exacerbate climate change.

Healthy & Accessible Food: Sufficient amounts of healthy and nutritious food are accessible to all and are grown, manufactured, distributed and recycled by processes which maintain the healthy function of ecosystems and do not exacerbate climate change.



PILLAR III

SOCIO-CULTURAL

Healthy Culture: Cultural activities that strengthen eco-literacy, patterns of human knowledge and creative expression are facilitated, symbolic thought and social learning is developed.

Community Capacity / Governance: Full and equitable community participation is supported in decision making processes along with legal, physical and organizational support for neighborhoods, community organizations, institutions and agencies to enhance their capacities.

Healthy & Equitable Economy: The city's economy consistently favors economic activities that reduce harm and positively benefit the environment and human health and support a high level of local and equitable employment options.

Lifelong Education: Residents have access to lifelong education including access to information about history of place, culture, ecology, and tradition provided through formal and informal education, vocational training and other social institutions.

Quality of Life / Wellbeing: Residents report satisfaction with their quality of life including employment, the built, natural and landscaped environment, physical and mental health, education, safety, recreation and leisure, and social belonging.

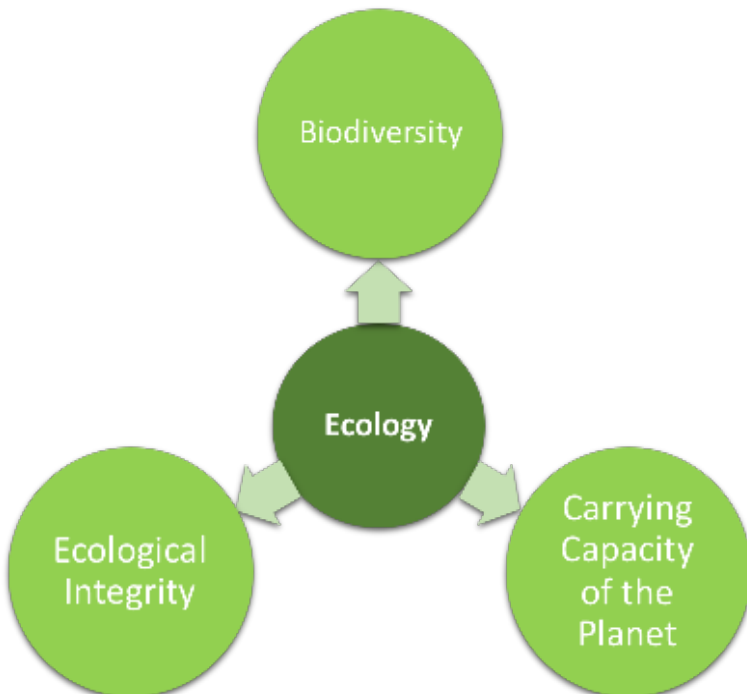


PILLAR III ECOLOGICAL

Healthy Biodiversity: Biodiversity: Biodiversity of local, bioregional and global ecosystems is sustained, including species diversity, ecosystem diversity and genetic diversity; natural habitat and biodiversity is restored.

Ecological Integrity: Essential linkages within and between ecosystems are maintained and provide contiguous habitat areas and ecological corridors.

Earth's Carryong Capacity: Demands on ecosystems are within the limits of the Earth's bio- capacity, resources are converted restoratively and support regional ecological integrity.



METHODOLOGY

Ecocity Builders identified and created a team of professionals based in Medellin whose experience was aligned with the International Ecocity Standards. The team surveyed citizens, made observations and investigated existing information in the Moravia community for a diagnosis of existing conditions in the neighborhood.

The team of experts presented their initial diagnosis to the community at a neighborhood meeting and worked with community members to verify their understanding of the conditions within the neighborhood.

The team then met with community leaders to discuss possible interventions to improve the sustainability and quality of life in their community.

They then met with the Medellin

governmental institutions and water and energy services to develop a list of viable preliminary proposals to include in the neighborhood's sustainability plan.

The team worked with the community to organize an event and presented their ideas, then divided the members of the community into groups and organized facilitated workshops to collect comments and ideas from members of the community.

The team of experts revised the project proposals based on the contributions of the community.

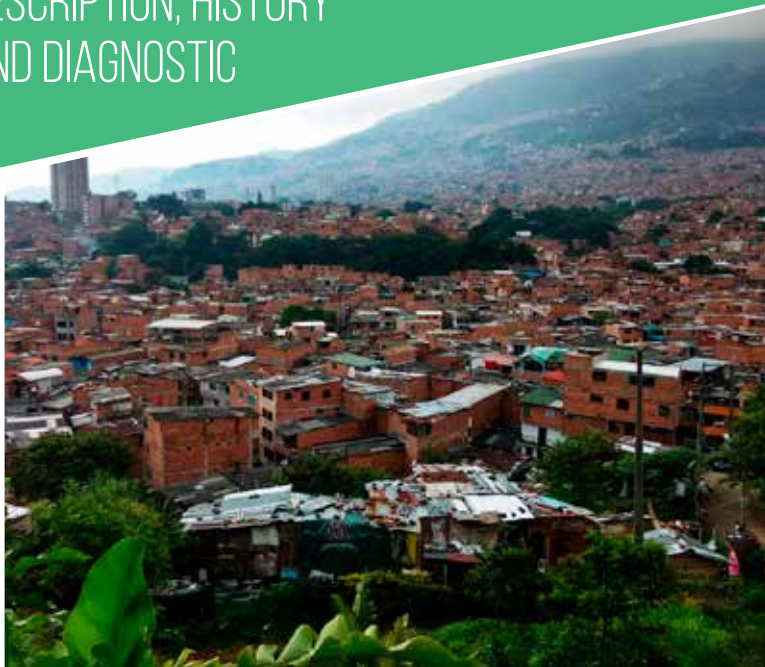
The team of experts organized an event and presented the project proposals to a representative of UNEP and to local agencies and interested parties. The attendees divided into groups and discussed the individual proposals and discussed the viability of the plan.

The team then worked to integrate the various project proposals into four integrated proposals.



MORAVIA BARRIO

DESCRIPTION, HISTORY AND DIAGNOSTIC



Moravia is located in Communa 4 of Medellín and is made up of approximately 42 thousand inhabitants. It is a neighborhood that was formed in the 1960s after the arrival of many families who migrated to Medellín in search of opportunities. Moravia was not a planned neighborhood, rather it was formed informally by displaced migrants from different regions of Antioquia and other regions of Colombia.

It has 5 sectors including: El Morro, Central Moravia, El Bosque, El Oasis, and La Herradura. Undoubtedly the biggest landmark is the “morro” (Spanish for hill) because it went from being a wetland, to an artificial mountain formed completely by years of garbage piling up. Today the morro is open garden for the city today as

it has undergone decades of transformation. This transformation reflects a very important history of resilience, community leadership, and processes of struggles to save the area and various cultural manifestations that make Moravia a dynamic neighborhood. The success of the transformation is due in large part to the active social participation and tireless management of its community leaders.

Up until 2004, the community was in large part built atop a mound of garbage. The garbage was brought to the neighborhood by five separate municipalities and was dumped without any prior sorting or precautionary measures around toxic or dangerous waste items. Migrants looking



Many homes remain, in protest, in areas designated by the government as uninhabitable. The residents who were relocated suffer from issues of violence and poverty. Moreover, there is much concern that any proposals outlined in this plan will not actually serve these populations who are perhaps most at need as the government cannot condone developmental projects in the areas deemed by them as uninhabitable.

While the relocation has stressed relationships within the community and its leadership, the Moravia community still maintains an impressive capacity to organize and lead themselves to protect their rights and promote positive social and environmental transformations.

for economic stability in their new neighborhood of Moravia developed systems to receive, sort and sell recyclable materials. They built their entire community of the waste materials and enmeshed themselves into the dumpsite. Layers of years of waste pile-up can be seen in the homes that remain today.

After 2004, Moravia underwent a process of urban renewal that was initiated when Municipal project, the Macro Project for Territorial Reorganization, began. This project is still in the process of being executed by the Municipality. This Municipal initiative has resulted in the relocation of a large part of the Moravia community to distant sectors of the city and to two high-rise buildings within the Moravia neighborhood boundaries. The relocation uprooted residents from valuable support systems and social networks. Additionally, it has generated social conflict within the community as well as a major shift in the community's identity.

Today, the Moravia population in general faces several health risks due to poor urban infrastructure, environmental contaminates and socio-economic issues including illiteracy, poor air quality, unsafe mobility options, inadequate waste collection, little to no public space, inadequate housing, lack of housing titles, and perhaps the most serious, the imminent relocation of up to two thirds of the remaining population.

The initial relocation efforts were arguably necessary due to the risk associated with spontaneous explosions in the Morro sector. These explosions were due to the mixture of waste materials with rainwater and oxygen, which essentially created bomb-like conditions and were extremely dangerous to the residents who lived on the dumpsite. The Municipality partnered with the University of Antioquia's GIEM research group to successfully mitigate the risk of explosions through the installation of

a water-proof cement seal over the dumpsite as well as several ventilation systems to allow gas to safely release. The soil and air quality on and around the dumpsite are still highly toxic and in need of intensive bioremediation. However, the remaining targeted areas for relocation are disputable.

A message from the community leaders - "We would like to thank you for your willingness to work with us and dream together, and to work together to make these dreams a hopeful reality for our Moravian community. Moravia needs and deserves opportunities to continue generating development through its community leaders."



DIAGNOSTICS

BIOLOGICAL & GEOLOGICAL CHARACTERISTICS



ENERGY



The vast majority of homes have consistent and affordable electrical and gas service. Most residents have prepaid energy, some pay with a traditional bill system and others have access to power through illegal connections.

The majority of EPM's (the Medellin public/private energy and water provider) electricity is generated via hydroelectric, but EPM also produces energy via natural gas and coal.

There are solar streetlights in El Morro and Las Escaleras, but most streetlights use electricity from EPM, which is included in the Moravia residents' electric bills.

Currently, the sector known as the Morro lacks adequate street lighting, which has generated concern for the community since this condition has been lent to unusual activities outside the law.

An exciting pilot project, led by the GIEM research group at the University of Antioquia, collects and uses organic waste produced at the local supermarket and several restaurants into a small anaerobic digestion system that converts organic materials into biogas energy and organic fertilizer. They hope to expand the scope of this project.

SOLID WASTE/MATERIALS

Due to its history, Moravia is a neighborhood that has solid waste management in its blood. At some point waste went from being just waste to becoming the livelihood of many families in the community. “Garbage” was seen as an opportunity not only for commercialization, but also a source for building materials, children’s toys, clothes, books and food.

This perception of and closeness to waste is an important component of people’s day to day lives and leads many residents to proudly state that their children went to college thanks to recycling! Community members jokingly and in a nostalgic fashion at the notion share that the collection truck originated as “Baby Jesus”.

There are different dynamics woven into the waste issues in Moravia. The people who have always done a wonderful job at recycling and also understand the type of recycling addressed in this text. Today many residents in Moravia still afford a livelihood through recycling and/or through the transformation of recyclable materials into crafts, jewelry, furniture and paint! The city and it’s citizens in large part acknowledge the important work that these recyclers contribute to Medellín.

Furthermore, the knowledge needed to initiate a community-wide recycling program already



exists within the population. 79.4% of the people surveyed know the proper way to separate waste. This indicates that separation is not the main cause of the problems associated with waste. Some of the disadvantages affecting poor separation might be the lack of residential receptacles and the long wait times for waste to be picked up by the recycler or Municipality.

Today, 69.6% adequately separate their waste. However, the community



generally thinks that doing the separating at home is not enough because the Municipal collector cars end up mixing all the materials together if they pick up the waste before the informal recyclers.

The Municipality has not adequately designed its collection service. 91.3% of the people state that the solid waste collector car has access to the sector their home is located in, however, in some sectors the community has implemented an additional waste collection system between their house and and the designated truck pick-up spots. 76.5% of people have identified places where solid waste is inappropriately disposed of within the neighborhood. These critical dumping sites are not only created because of the lack of collector car access in some sectors, but because of an economic association with gang activity in the neighborhood.

Some existing neighborhood organizations have been creating processes for interventions at these critical sites, but this does not tackle the root of the problem and the sites only get moved to another place.

The poor disposal of waste is a problem that affects public health, mobility, pollutes water sources, generates bad odors and more.

Since its inception the houses in Moravia have been built by their owners. They used and continue to use all kinds of materials (plastic, wood, brick, etc.) found in the river or in the dump to build and make improvements to their homes.

Currently we should talk about housing in Moravia by sectors, because construction varies from sector to sector. In the Oasis sector the predominant material used for home building is wood, in El Morro it's a mix of recycled, often ineffective, materials, and in the remaining, more mod

SAFE AND SUSTAINABLE BUILDING



housing in Moravia by sectors, because construction varies from sector to sector. In the Oasis sector the predominant material used for home building is wood, in El Morro it's a mix of recycled, often ineffective, materials, and in the remaining, more modern sectors there is a predominance of brick.

Some areas are more vulnerable than others to different risk factors such as weather, flooding, earthquakes, and fire.

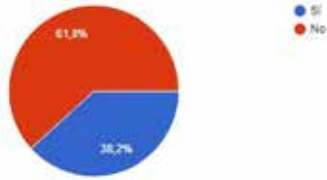
The community itself states that "the houses are considered safe depending on the sector, because they have been built for more than 20 years and were made empirically." This is in large part due to the economic status of the residents of each construction.

Income directly correlates with the material used for building of their homes. Most homes were built by the community members who have no formal architectural or construction training and the homes are without proper ventilation, foundations, water proofing and natural lighting.

In a survey conducted in all sectors of the neighborhood we found that most of the homes are owned, however, 61.8% do not have the property title. Furthermore, many families share buildings and the residents have demonstrated conflicting views around ownership of their buildings and the surrounding outdoor space.

On the other hand, the community does not consider these homes

Do you or the owner of your home have the title?



Ecocity Builders, Urbinsight-Medellin Project, Original Graphic, 2018

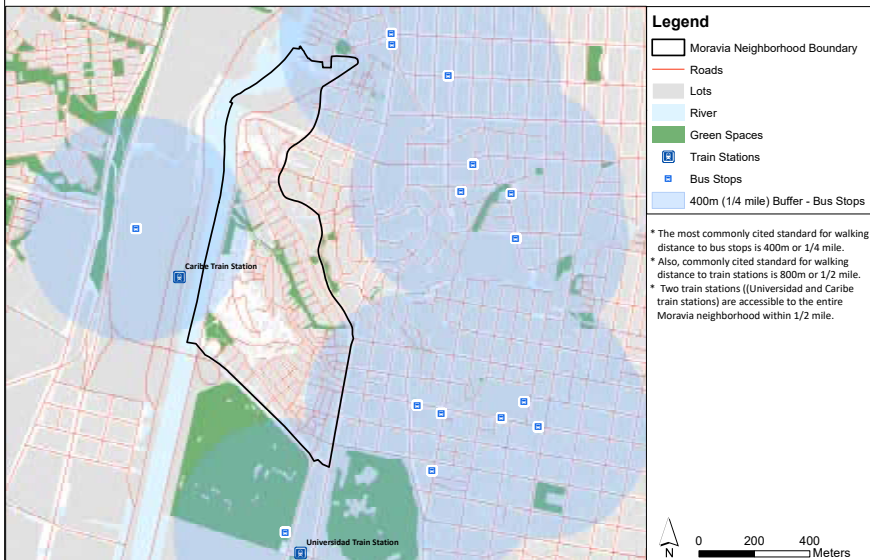
affordable because of the way they are built and finished. Many people live in rented homes that are built illegally, not well distributed spatially, and do not have adequate lighting and ventilation.

ACCESS BY PROXIMITY

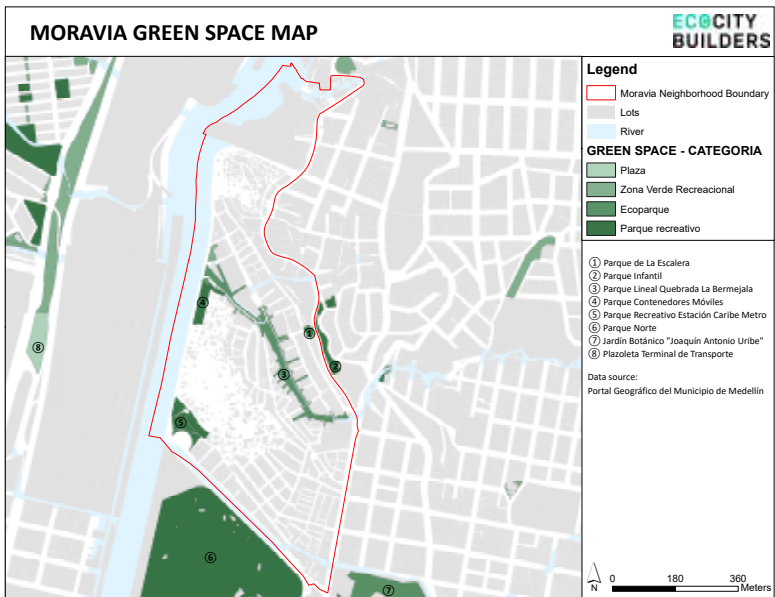
The Moravia community lacks adequate green spaces, mobility, educational centers, cultural and economic centers within the community.

MORAVIA ACCESS BY PROXIMITY MAP - PUBLIC TRANSIT ACCESS

A distinguishing feature of ecocities is that they enable "access by proximity". This is important for quality of life and reducing automobile reliance. When the transit service is frequent and drop-off points are located just a few minutes walk from your departure and destination points, residents can get wherever they go more fast and effectively.



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

The community, however, is centrally located and has many nearby urban services. Moravia has two metro stations, several bus stops, and a bike trail bordering their community and connecting residents to the rest of the city. The community is also bordered by a river path, the Medellín Botanical Garden and Parque Explora (a park with greenery and amusement rides). Just outside of the community, there are several universities, theaters, museums and restaurants. Many of these urban services are nearby but still inaccessible to the community members for economic reasons.



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

FOOD



From 2010 to 2015, food insecurity fell more than 3% in Medellín while increasing by over 5% in Comuna 4-Aranjuez (where Moravia is located). The need to address food insecurity is aligned with the challenges posed in the Medellín Development Plan 2016-2019, but results aren't visible as of yet.

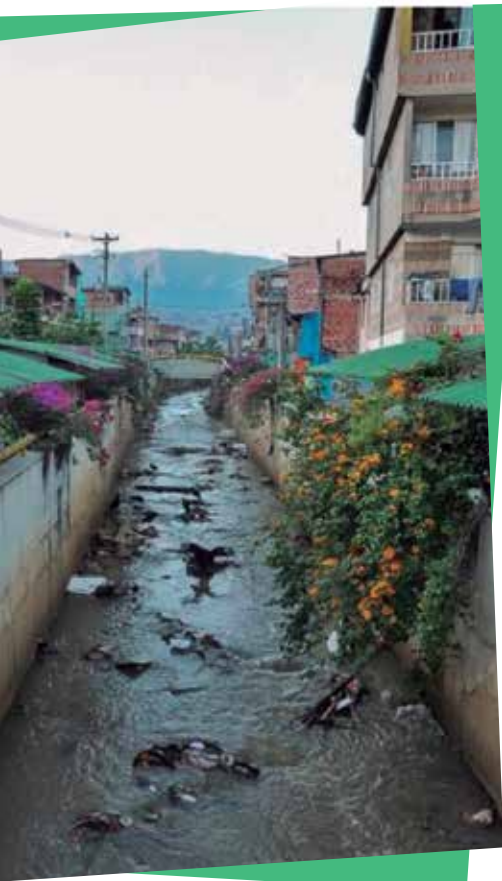
Also, in Medellín, there was an increase in people affected by extra weight and obesity, a trend that has been occurring since 2005. In the case of extra weight, 32.3% were affected in 2005, 34.6% in 2010, and 37, 7% in 2015. With regards to obesity, 13.7% suffered from it in

2005, 16.5% in 2010, and in 18.7% in 2015.

Women play a critical role in determining the diet of their families and are often disproportionately affected by hunger, food insecurity and poverty. Children are especially vulnerable to the lack of adequate nutrition, since they need nutritious and healthy food to grow physically and mentally.

Also, adolescence is accompanied by significant emotional and social transformations that will affect habits and lifestyles. Thus, both family and school environments

WATER



Quebrada La Bermejala

According to technical studies, the quality of natural waterways, several streams and the Medellín River, in the Moravia neighborhood is poor. They contain a high pollutant load generated by carriers like excrement, organic waste from domestic activities, and solid waste disposed in canals. Furthermore, the solid waste build up causes blockages in the passage of water and contributes to the environmental and landscape

deterioration in the neighborhood.

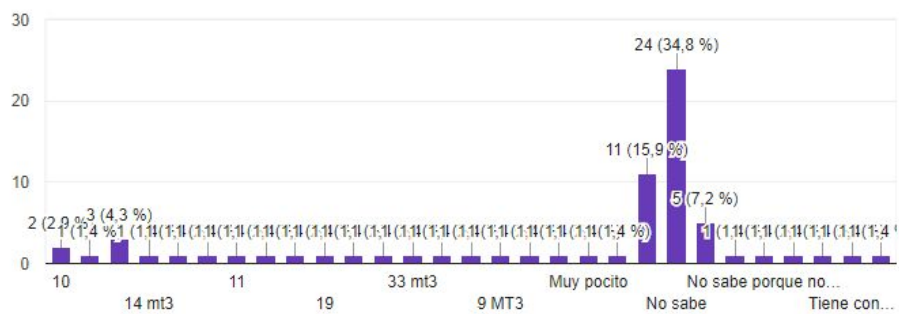
Superficial drainage systems are constituted by the currents of the El Molino, La Bermejala, El Tetero and La Herradura natural streams.

The La Bermejala stream has been channelized with concrete and a linear pedestrian and bicycle pathway has been built along it. The natural ecosystem of the stream has been completely destroyed in the channelization process. Its waters circulates from east to west along the northeastern slope of the Aburrá-Medellín River. La Bermejala stream has several tributaries: La Piñuela, La Máquina in its upper part, La Raizala in the south joining La Tebaida, and the aforementioned El Tetero, which was artificially added.

The provision of public services in Moravia is the responsibility of the Municipality of Medellín through its public service company, Empresas Públicas de Medellín (EPM). The availability of the aqueduct and sewage service differs from sector to sector depending on the zoning in each sector. For example, El Oasis and Curva del Diablo are declared areas of non-mitigable risk. This prevents the EPM from completing service works in these places and as a result, many people are without adequate water service. These residents often fulfill their water needs by illegally tapping into existing systems through hoses or

PVC pipes. This is reflected in the the inconsistent service throughout the community.

The sewage system is a combined one that receives both residential sewage and rainwater runoff. This system today has hydraulic deficiencies that cause flooding, becuae it consists of PVC pipes that do not comply with standard specifications, which generates health problems in the community and instability of the land.



Graph 1. Estimated Monthly Water Consumption in Cubic Meters

Ecocity Builders, Urbinsight-Medellin Project, Original Graphic, 2018

In a citizen survey, the following information was generated by the Moravia community responses:

99.9% of the people surveyed have access to drinking water and 98.6% of them have water available 24 hours a day.

Only 29% of the population knows how much their monthly water consumption is.

97% of people have access to the sewage network and 65.4% do not pay for this service.

65% of community members have never used rainwater for their domestic activities.

33.3% of the surveyed population knows some measure to reduce water consumption in their homes.

59.4% of them reuse laundry water for other uses around the home

91.3% neither have nor know of any water saving system to install in showers or faucets around the home

SOCIO-CULTURAL



Healthy Culture / Governance

Moravia is one of the 14 neighborhoods of Comuna 4 in Medellín. It has a population of 42,000 people. The community is known for its cultural diversity resulting from the displacements throughout the country. The neighborhood has been significantly transformed over the last decades by several community struggles, resulting in various social and cultural organizations that support the community. Although the neighborhood is no longer defined by the dumpsite, extreme poverty, and an unhealthy environment, there are still problems of poor education, unemployment, and public infrastructure. Today, the community suffers from issues such as domestic violence, inadequate schooling, high rates of illiteracy, low rates of higher education and little access to cultural spaces.

Organizations:

Moravian Cultural Development Center

The existence of the Moravian Cultural Development Center is the result of a 10-year community struggle. The community and its leaders saw the need for a community space and see the Center as a 'dream of the territory'. In 2018 the Center celebrated its 10 year anniversary. It serves the entire Comuna 4. Their mission & vision is to "empower culture rather than 'create culture'. The cultural diversity of the neighborhood is a unique asset and the Center looks at culture as a tool for social transformation. 'Transform lives through art, culture, citizen participation and territorial appropriation.'"

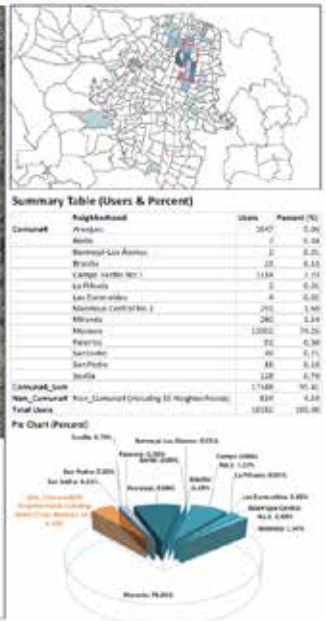
- Promotion of creativity
- Artistic and cultural training
- Dialogue and cultural exchange
- Cultivation of ideas
- Identity and territory
- Communications

MORAVIA COMMUNITY CENTER USERS IN COMUNA 4



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

Mocavía Community Center Users in Medellín



The Center produces an annual strategic plan that identifies the major issues and challenges it will focus on during the year. It has a weekly Academic Committee to provide feedback and plan activities. The Center operates from its central building in the center of the Moravia district, where most of its courses and presentations take place, and where the administration is located. The building and the surrounding area function as a public space to promote the the community's stake in the city. It is a place for meeting

and well-being. In addition, the Center has environmental education nodes near the Morro de Moravia that they built for the appropriation of public space and the inclusion of all residents. The Center also organizes decentralized events to include residents of neighborhoods that are far from the Center.

Challenges / Ideas for the future:

- The demand for courses at the Center is much greater than what's on offer - 40% management.

For the courses (open to all inhabitants of Medellín), registration is through the roof. People wait outside the Center all night to enroll.

- Include environmental awareness as a permanent topic.
- Grow opportunities for national and international exchanges between artistic groups and leaders.
- Grow the influence of the center as a reference for other places. Make a strategic model so that others can replicate it. Be part of a worldwide network of similar cultural initiatives.



The Community Action Board (JAC) Moravia

The JAC serves as an intermediary between the Comuna and the mayor's office. Its current president is José Agustín Londoño. Services include activities for senior citizens, space to vote during elections, public health, free veterinarian, community events, low cost hairdressing, marriages, and public

announcements.

The building is owned by the Municipalidad of Medellín. The Headquarters pays for maintenance and public services.

JAC used to be in 3 sectors of the Moravia neighborhood (Moravia, El Bosque and El Oasis), but now is only functioning in Moravia.

The JAC - El Oasis has not been in service for 2 years. Community leader Feliciano Córdoba who served 3 terms as president of JAC El Oasis is in the process of reusing the JAC space that is now used as a parking lot and it is unclear where funds generated from parking are going.

The sector El Oasis has several very serious problems with infrastructure, poverty, and access to services. El Oasis was not planned and that is why many of the houses are in poor condition and do not have access to sewage or potable water.

· According to Mr. Córdoba, the El Oasis population feels isolated from the activities of the CDCM and there is a great need to have a space only for this sector to serve as an intermediary between residents and governmental organizations and to defend their rights.

There were 2 fires (in 2014 and in 2017) in the same part of El Oasis hill that destroyed all the houses. Now there is a large space without constructions. According to Mr. Córdoba, this space needs a plan or be closed off to prevent informal settlements from encroaching again.



Corserba

Corserba is a community organization founded by 15 displaced women who are still members. The objective of Corserba is to create employment and social cohesion in Moravia through the history of the territory and resources of the Morro. Corserba serves around 1000 people annually and has 50 employers. Luz Marina Aguilar has been the director of the organization since its inception 21 years ago.

The main activities of Corserba are recycling workshops, other cultural activities such as dance and music classes, and the tutelage of workshops throughout the city. The biggest challenge according to Luz Marina is that it lacks resources, more than a space, for its workshops. They now conduct workshops on the street in front of the Corserba office. Luz Marina wants to expand training workshops to create more employment opportunities in the neighborhood and beyond.

Education

Educational institutions

In Moravia, there are 2 Jardines de Buen Comienzo with space for around 500 children. Jardines de Buen Comienzo was a project of the Mayor's Office to promote initial education up to 5 years of age. Jardines de Buen Comienzo's centers exist for families in social strata 0, 1, and 2.

Since there is not enough space for all children in the neighborhood, the others are taking care of by "community mothers".

Schools

1. Alegre Fey

Founded in 1978 as the first Educational Institution in the neighborhood. It has \pm 1000 students.

2. United People

3. The Forest.

It has \pm 1000 students.

Other educational initiatives include

'Los Guardianas del Morro' -

A social, environmental and educational program of the Ministry of Environment. The focus of the program is the environment and coexistence. They try to unify local and global knowledge of environmental issues. The program serves 45-50 children and is open to inhabitants of El Morro sector that are between the ages of 2-13. When space is available, the program is also open to children from other sectors of Moravia.

Tatiana Mosquera (the program's instructor) indicated that she often feels unable to deal with the mental and social problems that children have. It deals with serious



situations with intrafamily violence, psychological traumas and lack of a stable home, which needs the support of a psychologist.

Economy

With Moravia's transformation brings great tourism potential. There are already several operators offering tours in the neighborhood (Colombian Immersion, Real City Tours: 'Barrio Transformation Tour'). In addition to having incorrect information about the territory, these organizations outside the neighborhood create very few resources that remain in the neighborhood.

The Centro Cultural also organizes neighborhood tours with leaders (without paying them) or with employers from Coomfenalca.

Several Moravian community leaders are currently working to develop a Moravia-based tour agency. This agency would be a way to create resources for the leaders in a sustainable way and ensure that they can tell their own story. In addition, the agency creates employment opportunities within Moravia (guides, products, administration).

Now a group of leaders is in a community tourism course of the SENA (Medellin Community College). During the course, they will build a business plan for the agency 'Moravia Tours'.



ECOLOGICAL IMPERATIVES



The Moravia neighborhood has very limited vegetation cover. The majority is found in the El Morro sector. Other green spaces are along the stream in small planters and in household garden spaces.

The green space in the El Morro sector is on top of the old dumpsite. Today, many native and non-native plant species cover the hill and attract several butterfly, bee, and bird species. There are many public spaces that are currently underutilized as green space. In many cases a public walkway is large enough to support large trees and gardens, but instead the space with a small planter with one to two plants. The canalized stream that runs through the center of the community lacks any of the plant or animal life that was originally present before the stream was

canalized. This stream and the other streams in Moravia present large opportunities for habitat restoration that could support many plant and animal species.

The lack of green space within the community contributes to the intense hot micro-climate of Moravia. There is little to no shade and hardly any plants or trees to cool the air.

Many community members feel that their community has no green spaces and more than half of the population does not understand the concept of biodiversity. 77% of the inhabitants of Moravia, consider El Morro as the main green space of the neighborhood. 81% of respondents would like to learn how to plant at home. Many community members would like to see their neighborhood with more greenery.

AIR

The Moravia neighborhood suffers from poor air quality. The neighborhood is surrounded by a beltway that is formed by Carrera 52, Calle 77, Calle 92, Carrera 53, Carrera 53, Carrera 55 and La Av. Regional. All of these roadways have a constant traffic flow which contributes to high levels of air pollution from the emissions generated by the abundant automobiles.

The most representative area of Moravia is the site known as El Morro, a human-built hill located in the foothills of the northeastern slope of the municipality of Medellín / Antioquia. Between 1960 and 1980, it became an outdoor dumpsite that received all types of waste from the city of Medellín, without any treatment or sanitary and environmental regulation.

The decades of unregulated dumping created a toxic blend of waste materials that off-gas and contribute to air pollution in the community.

Several technical studies have been carried out in El Morro de Moravia, taking into account social and environmental aspects. They have led to valuable results — identifying the high chemical risk that the population might be affected by and the environmental and sanitary conditions required for safe livability (Sánchez, 2010).

In their 2015 evaluation of El Morro de Moravia's socio-environmental transformation, Yanneth Bibiana Daza Vargas and Sonia Yamile Rodríguez



Murcia write:

“There are high pollutant loads in this area. As demonstrated in different studies, the Metropolitan Area of the Aburrá Valley - AMVA shows the presence of toxic gases and heavy metals in leachates (Integral, 2000); likewise, the presence of high concentrations of Pb, Cr, Cd and Ni has been demonstrated.

The high-risk situation caused by toxicity in the rubbish pit is due in large part to the high levels of contamination and the lack of

an adequate management of the waters that converge in the area, where the constant infiltration of rainwater can be highlighted. Also, the surface runoff generated is an important part in the dragging of sediments with high polluting loads and contributing greatly to the destabilization of the land.”

Below is the result of a citizen survey related to air quality that was conducted on a group of inhabitants of the Moravia neighborhood:

- More than 90% of the Moravian population cooks with gas and 64% of the kitchens have good ventilation, which means that the factors that pollute the neighborhood’s air come from external sources.
- 33% of people have observed that their neighbors burn waste openly.
- More than half of the population does not know the meaning of biodiversity.

- 77% of the inhabitants of Moravia consider El Morro as the main green space of the neighborhood.

- 81% of respondents would like to learn how to plant at home.

Advances for the Remediation of Air Quality Issues in the El Morro Sector

In the El Morro sector of Moravia, air quality research and interventions have been carried out by the Research Group of Molecular Studies GIEM with funding from the Municipality of Medellin Ministry of Environment. The GIEM group determined methods to reduce the entry of oxygen to the fumaroles that form in some sites of the Morro and cause explosions. It is noteworthy that with only 4% of oxygen and the presence of high temperatures and fuel in the vapor state (methane CH₄) create bomb like conditions and can cause spontaneous explosions and associated fires.





Table 1. Methane measurements in Morro Moravia, reports the results of the measurement of Methane in Morro de Moravia, reported measurements are high and in the presence of oxygen can generate fires.
Source: Ministry of the Environment, Municipality of Medellín, 2018

Punto	Temperatura °C	Oxígeno O2 %
1	29	20,9
2	31	20,9
3	31	20,9
4	31	20,5
5	31	20,9
6	30	20,9
7	29	20,9
8	40	19
9	45	19
10	35	20,9
11	30	20,9
12	40	19
13	29	20,9

Table 2. Oxygen measurements at Morro de Moravia
Source: Ministry of the Environment, Municipality of Medellín, 2018

PUNTOS	COORDENADAS			MEDICION DE GASES									
	Altura (m)	N	W	Julio 09 de 2016					Julio 17 de 2016				
				CH4 (%)	O2 (%)	CO (ppm)	H2S (ppm)	T Oc	CH4 (%)	O2 (%)	CO (ppm)	H2S (ppm)	T Oc
1	1489	06°16'766"	075°34'281"	0	0	0	0	28	0	20,9	0	0	26
2	1493	06°16'756"	075°34'260"	0	20,9	47	0,5	35	0	20,9	0	0	27
3	1500	06°16'766"	075°34'281"	0	0	0	0	27	0	20,9	66	0,5	45
4	1498	06°16'771"	075°34'287"	0	0	130	1	70	23	10,8	300	0,5	85
5	1498	06°16'771"	075°34'266"	0	0	230	1	85	0	28,9	80	0,5	60

Table 2 Gas measurements in the Morro de Moravia, reports the results of the measurement of gases in Morro de Moravia, reported oxygen values are high and in the presence of combustible gases can generate fires.
Source: Ministry of the Environment, Municipality of Medellín, 2018

Concentración de H2S en ppm								
	Punto 1	Punto 2	Punto 3	Punto 4	Punto 5	Punto 6	Punto 7	Punto 8
Medición 1	0	0,5	1	0	0	0	0	0
Medición 2	0	0	0,5	0	0,5	0	0	0
Medición 3	0	0,5	0	0,5	1	0	0	0
Medición 4	0	1	1	0	0	0	0	0

Concentración de CO en ppm								
	Punto 1	Punto 2	Punto 3	Punto 4	Punto 5	Punto 6	Punto 7	Punto 8
Medición 1	0	0	0	0	0	0	0	0
Medición 2	0	0	47	120	60	0	0	0
Medición 3	0	50	0	0	98	0	0	0
Medición 4	0	0	130	66	0	0	0	0

Table 4 Measurements of Hydrogen Sulphide and Carbon Monoxide
Source: Ministry of the Environment, Municipality of Medellín, 2018

INTEGRATED PROPOSALS

SUSTAINABLE MORAVIA



The four thematic axes referred to in these proposals are:

Introduction

The proposals presented below for the intervention and improvement of urban spaces located in the Moravia neighborhood of the city of Medellín, have been raised from the knowledge and arguments of the community members who inhabit Moravia, in addition to direct observation, surveying, and research by the Moravia Sustainable Neighborhood Plan Expert Team.

The general objective that is sought with these proposals is to improve the environment through interventions that are sustainable, demonstrate an integrated approach and are highly replicable in other regions of the city. The interventions seek to natural resources, without affecting the Environment and to carry out activities with teachers, students, authorities, leaders, parents and the community in general.

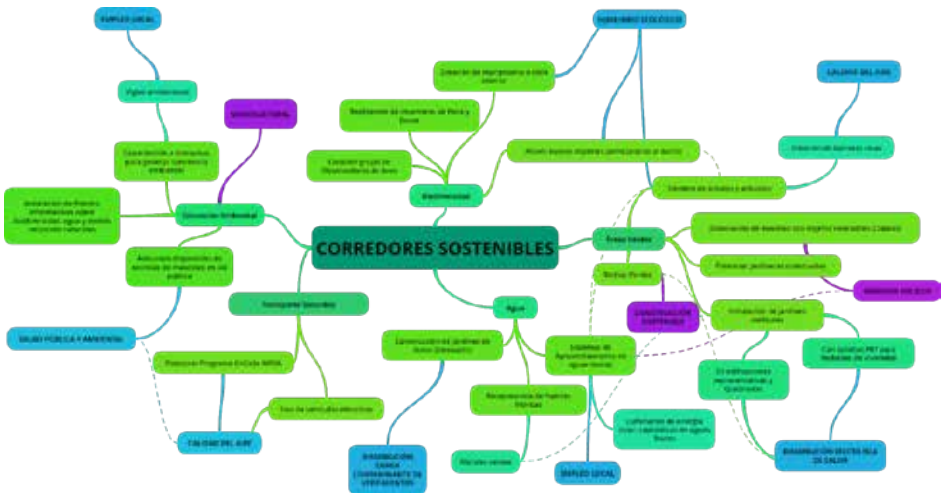
These proposals focus on 4 thematic axes that are linked together and support the other axes proposed by the professional leads.

- AIR
- WATER
- MOBILITY
- BIODIVERSITY

While each topic was developed by one professional lead, the final concepts were structured and approved by all team members before being resubmitted for analysis and approval by each project lead.

The team is grateful for the opportunity to develop these proposals and hopes that they will be adopted and implemented, for the benefit of Moravia residents as well as visitors. They also wish to see these kinds of proposals replicated in other neighborhoods, for the benefit of better management, appropriation and more effective/efficient use of available resources in these places.

HABITAT AND MOBILITY CORRIDORS



Ecocity Builders, Urbinsight-Medellin Project, Original Graphic, 2018

Proposal Description

The Habitat and Mobility Corridors proposal is a set of integrated interventions that aim to improve the quality of life of Moravia residents by implementing accesible, safe and universal mobility, increasing green spaces, promoting biodiversity and utilizing resource efficient technology for public lighting and irrigation systems. The proposal features a series of corridors or pathways that simultaneously solve mobility issues and address the lack of green spaces and biodiversity in Moravia. The corridors are specifically designed to solve these issues through various interventions within the neighborhood limits, but the design takes into consideration the context in which the neighborhood is located, and the corridors are proposed to connect to surrounding mobility nodes and public parks.

This proposal aims to improve mobility for all residents of Moravia through the extension road infrastructure to include amply lit bicycle and pedestrian pathways. These pathways will connect community members to the surrounding public transit such as the Caribe and Universidad metro stations, bus stops, and bicycle pathways that connect to the greater Medellin.

These corridors will be illuminated by solar powered street lights which will help reduce crime and increase accesibility to many community members in the evening hours.

The corridors will be planted with the maximum size trees possible and a variety of native plants that will

create habitat for a diversity of native animal species. The corridors will be designed with the consideration of the surrounding green spaces or as they are called by the Medellin Biodiversity Office, “green biodiversity islands.” Large green spaces such as the neighboring Botanical Garden and el Parqu Norte, the garden atop the morro, and the Parque Explora will be connected by habitat corridors that will strengthen animal populations and allow these species to travel throughout a larger area of the city.

A benefit of this integrated approach is that many of the designs will create a diversity of positive outcomes. For example, these habitat and mobility corridors will improve mobility for both humans and other species alike, and they will also connect recreational areas so that residents and visitors to the community can enjoy walks or bike rides to various assets of the area such as El Morro, the soccer field, the Bermejala Stream Linear Park, the Transformation Stairs Park, the Cultural Development Center. The proposed locations of these corridors are also taking into account planned future developments in the neighborhood such as the Herradura Environmental Park, the El Tetero Linear Park and the Oasis Recreational and Sports Park.

The additional planting throughout the community will have a positive impact on the community’s microclimate by reducing heat and creating shade.
Proposed Interventions:

- Increase existing green areas by replacing dead trees and planters without plants.

- Removal of paving stones from pedestrian paths, for planting trees and shrubs that attract pollinating species.

- Design and adaptation of dissemination posters, with themes alluding to biodiversity, care of it and the water sources that exist in the neighborhood.

- Construction of rain gardens (Bioswales) along the corridors and major streets which allow the capture of runoff water that filters through the ground, carrying with it contaminants that are found in public roads. (Annex 2 and 3)

- Replacement of the structures built in the Nodes by Tambos, as enclosures to enhance environmental education and encourage scientific knowledge of the population, taking advantage of the various ethnic knowledge that exists in the neighborhood.

- Planting of three rows of dense columnar tree species along the two major highways to mitigate air and noise pollution and serve as live barriers to protect the bike and pedestrian corridors as well as the general community from air pollution associated with the highways.

- Construction of open-air butterfly gardens.

- Generate a greater environmental and landscape impact, installing vertical gardens in the houses (Annex 4), the Center for Cultural Development (Construction of a garden with orchids), venues of the Communal Action Boards, other buildings representative of the neighborhood, in the concrete walls of the channelized Bermejala stream(Annex

5). These vertical gardens should be combined with wall murals that promote environmental knowledge.

- Convert roofs (terraces) of the houses into green roofs where viable.

- Build systems of capture and use of rainwater in homes, which use recyclable materials and labor of environmental corporations that exist within the neighborhood, for the preparation of gutters, downspouts, and other accessories that are require for its operation. (Annex 6)

- Generate biodiversity awareness in the child and adult population of Moravia through workshops and training and informative plant and animal identification signs.

The awakening interest around biodiversity in the Moravia community will generate the following positive outcomes:

- An inventory of flora and fauna: carry out a study where all species of amphibians, reptiles, birds and mammals are identified and listed, as well as the plant species that are present in the neighborhood.

- Moravia Nature Tours: generate community workshops and tours that train community members in species identificatin of birds that inhabit the neighborhood and their value and significance. This can ultimately result in job creation and boost the local economy as the tours and trainings require trained personnel, workshop space, and tools such as field guides and binoculars.

Distribution of solar powered street lights in corridor No. 1



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

DISTRIBUCIÓN

- C2-2 una lámpara.
- C2-3 una lámpara.
- C2-5 una lámpara.
- C2-6 una lámpara.
- C2-7 una lámparas.
- C2-8 una lámpara.
- C2-9 una lámpara.
- C2-10 tres lámparas.
- C2-11 dos lámparas.

Distribution of solar powered street lights in corridor No. 2



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

DISTRIBUCIÓN

- C1-1 una lámpara.
- C1-2 una lámpara.
- C1-3 una lámpara.
- C1-7 dos lámparas

- Establish a training process to educate the inhabitants of Moravia, about the adverse effects on the environment and human health, generated by the inadequate disposal of the excreta of pets on public roads.

- Moravia already has street lighting, supplied by solar energy. In El Morro there are 17 luminaires, installed in the year 2017 that make up 2 pedestrian paths; however there

are many more trails that could be illuminated with this idea to improve safety and visibility to public areas with vehicular, bicycle, and pedestrian traffic. This initiative will reduce the cost of public lighting, which is reflected in the bill for home public services.

- Intervene in the following existing mobility corridors to improve lighting and add vegetation:

- *The corridor that connects the Metro station of the Caribbean with the sector known as the Nodes*
- *The Art Corridor*
- *Access to the mountains by the small Choco sector*
- *80 Street (most commercial sector of the Forest)*
- *Have small electric vehicles that transit through some roads of Moravia and transform the roads into entry and exit corridors of the neighborhood that improve accessibility from the*

different sectors and to outside transportation nodes. These vehicles must use clean fuel, such as: electricity, biogas or biodiesel (Generated from the residual oil of homes and stores).

- *The following landmarks must be along these entry and exit corridor (these can be found on the map below in red):*

La Cancha, the Caribbean Metro Station, the Cultural Development Center, the Health Center, and the Schools.

The following suggested routes have been approved by the community leaders (these can be found on the map below in blue):

- *The Caribbean station of the Metro to Sector El Bosque.*
- *Along the Quebrada La Bermejala. The Route to the Oasis.*



Annexes

Annex 1. Pots made with tires



Source: <https://casaydiseno.com/neumaticos-viejos-decorar-jardin.html>

Annex 2. Bioprospecting of native plants for use in bioremediation processes: case *Heliconia psittacorum* (heliconiaceae)

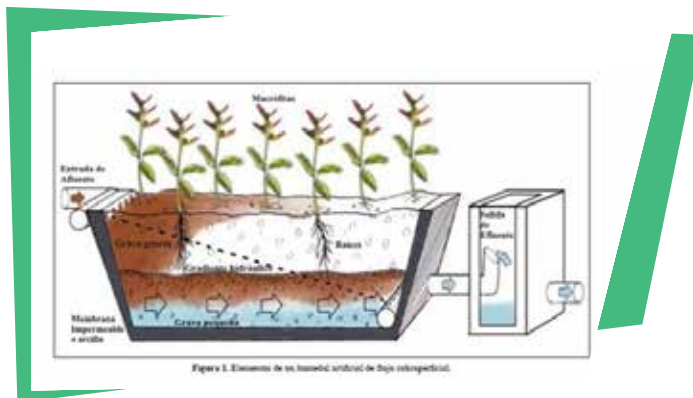


Figura 1. Esquema de un sistema artificial de bioremediación.

Source: Peña-Salamanca Enrique J., Madera-Parra Carlos A., Sánchez, Jesús M., Medina-Vásquez Javier [Internet] Disponible en: <http://www.scielo.org.co/pdf/racefn/v37n145/v37n145a04.pdf>

Annexes

Annex 3. Rain garden model



Source: <https://casaydiseno.com/neumaticos-viejos-decorar-jardin.html>

Annex 4. Vertical gardens to install in homes



Source: Mother nature network [Internet] Disponible en: <https://www.mnn.com/earth-matters/climate-weather/blogs/meet-the-bioswale-new-yorks-new-weapon-in-the-war-against-water>

Annexes

Annex 5. Vertical gardens for large structures



Source: Urban Therapy [Internet] Available at: <http://www.terapiaurbana.es/project/jardines-verticales-exteriores-oficinas-scotscape/>

Annex 6. Use of rainwater with recyclable material



Source: Ecological houses [Internet] Available at: <http://icasasecologicas.com/casas-bioclimaticas-iv-aprovechar-el-agua-de-lluvia/>

Annexes

Map of Proposed Habitat and Mobility Corridors:



Ecocity Builders, Urbinsight-Medellin Project, Original Map, 2018

THE PLURALISM POINT



The expert team conducted 10 interviews with the following groups: Moravia Cultural Center, Comuna 4 Cultural Network, presidents of JAC, Leaders, 2 artistic groups, professors, researcher, and a sociologist. Additionally the team visited houses, cultural events, schools, presentations of artistic groups, a refuge for Venezuelans, a class for single mothers, etc. Lastly, the team used data from the mayor's office, previous research, books, articles, and etc.

Our research questions are related to the Ecocity Framework & Standards. How does the neighborhood leadership work? What organizations and social networks are there in the community? Do they all have the same access to public services in the neighborhood: public spaces,

cultural and educational activities, healthy food, transportation, etc? Are there jobs in the neighborhood? In what way is local history part of education?

Undoubtedly, the Cultural Center already plays a very important role for the cultural and social development of the neighborhood and has contributed a lot in the 10 years that it existed. However, it is apparent that there exists a need for an additional community space for the various groups in the community. The cultural center courses have few places (people literally sleep on the street to obtain a room) and many artistic groups do not have access to the spaces to do their practices and they have to go to other comunas or practice in the street.

The expert team identified the JAC -

El Bosque center, which is currently abandoned in large part by the community for issues of violence, as a potential site for renovation and revitalization. This site could support the unmet needs of the community for additional space. The team worked with existing plans that were created in collaboration by the leaders of Moravia and Urban Lab (a Berlin based academic research group) to build on an existing community center proposal by Urban Lab. However, through conversations with the Medellín Planning Department, it became evident that the JAC - El Bosque building is not a viable option. The building is located in the El Bosque sector of Moravia and is designated as uninhabitable by the 2018 Plan Parcial of the Planning Department of Medellín. The city plans to relocate the El Bosque residents and undergo a major bioremediation of the land in the sector and transformation of the sector skyline and community.

The team and Municipality agreed that additional community spaces were imminently necessary and that these spaces could be helpful in reducing the social impact of a massive relocation and transformation project. The city suggested that the space could be physically spread throughout the Patrimonial zone of Moravia which is set out in the Plan Parcial to be protected and improved.

The proposed Pluralism Point, therefore, has a flexible design that could be built in a three story building (as defined here) or can be spread over three separate spaces

that follow the proposed Pluralism Point programming described below.

First, the team decided that the new community space should be central to the various sectors in order to support the idea of social inclusion. The fragmentation between the neighborhood sectors is already strong and the Pluralism Point proposal will aim to avoid worsening this competition and spatial inequality.

The Pluralism Point should be a space that is open for cultural exchange, a meeting place for Moravia to celebrate the pluralism of the neighborhood, the historical transformation of the territory, and support visioning for the future. The design and construction of the Pluralism Point will be executed through a community process, from programming to design, in collaboration with universities, the municipality and social organizations.

The goal is to unify a wide range of activities, community businesses, programs, stories, and ambitions for the neighborhood under one roof. A platform for vibrant culture in Moravia and a space to take the world to the neighborhood.

The existing, agreed upon ideas by the expert team and community members is described below. Again, these are initial programming and design ideas that are based on the Urban Lab proposal. These ideas are flexible and would likely change as the implementation process will include a participatory design process.

1st floor

A Space for Leaders

Programming:

1. Recognition of leadership: a space for them and their meetings.
 - Leadership training and strengthening: social skills and leadership training. Train leaders in community rights courses, laws, how to read a Partial Plan, etc. Document knowledge and experiences of leadership for future generations and other community groups.
 - Consolidate the construction of a local history library. The library would be open to the public, to include the different stories that coexist in the territory. The most important goal is to keep alive the history of the transformation of the neighborhood, its role in the social change of the city, and to show lessons for other neighborhoods, to make global connections through history.

2. Space for mental health counselor.

- It is important that this space exists in a building that does not connect with 'mental health' but with cultural expression, community, etc. to leave behind the taboo that exists around psychological support in the Moravia community.
- This support is needed by community leaders individually and as a group to aid with leadership dynamics. The support is also needed by children in the Moravia community as identified through conversations with leaders who work closely with the children in the neighborhood.

3. The **Community Kitchen** is a

space where the community can host cooking classes and events to promote healthy eating amongst the community. This kitchen could also serve as a unifying factor for the various migrant groups that are present in the neighborhood through food knowledge and recipe sharing events where community members highlight the diverse culinary traditions within the community. This kitchen would be home to a food security program for Moravia that develops a series of conversation sessions, practice, reflection and sharing in community about the cultivation, preparation and consumption of food, and the relationships that food has with the construction of a social, cultural and identity fabric and the development of human capacities for good living.

- Education:
 - Nutrition
 - Cooking Workshops
 - Buying Fresh Produce



The knowledge building activities in the Community Kitchen would improve access to healthy food through increased demand as well as through the local production of healthy food in the Moravia neighborhood.

2nd Floor

A Space for Workshops

Programming:

1. Focus on environmental and scientific education.
2. Young people have the privilege to reserve space for activities, workshops, practices and cultural and educational presentations.
3. Offer a space for organizations that already work well, but that lack resources. Specifically Corserba.
4. Exchanges with other communities.

Ideas for workshops / activities:

- Refugees
- Buildings

5. Diplomado Programs For example, in an effort to include community members in the design of the potential high-rise buildings that the city plans to build in Moravia, the space could be used to offer a diplomado in architecture and building design. A diplomado can boost community members CV's and increase their job opportunities. Furthermore, these educational events could have a positive impact on the community. For example, an architectural diplomado could result in the development of a group of defenders with practical knowledge across sustainable construction, home repair, risk reduction, and urban rights.

3rd Floor -

Residencies of artists, researchers, and/or architects can stay in this space in exchange for a contribution to the community. Contributions could include but are not limited to workshops, courses and projects for the sustainable transformation of

the neighborhood that relate to the resident's skill set.

4th Floor -

On the roof there is a roof top garden where community leaders can meet and work together.

Office of the Community Tourism Agency / 'Moravia Tours'

Moravia is becoming a tourist destination. As the community leaders of Moravia work to grow their own Moravia based tourism company, this proposal seeks to support this important initiative by include an office for this group in the community space. In this space, the leaders and community members could organize and prepare the following:

1. Tours - They can offer tours with different themes related to the neighborhood such as: recycling, food and social transformation, among others.
2. Products - They can sell food, crafts (products produced in the workshops of the space), and plants from the COJARDICOM green house inside and outside of the neighborhood. Cultural Network Comuna 4 already has plans for a 'Solidarity Store' where the products could be sold.
3. Workshops - Community leaders can facilitate workshops for tourists with experts from the neighborhood. For example, they could facilitate a workshop on creating products with recyclable material.
4. Services - The community can offer other types of services such as: homestay style lodgings and cultural and language exchanges.

RECONOMY



Promote a circular economy system within the Moravia neighborhood.

Moravia has historically been a neighborhood with sufficient technical knowledge of proper management of waste, and the community has a history of formalizing different types of organizations. Even at this moment some are still in operation. With an understanding of the community's history, it is important to generate strategies to promote the unification of people and organizations in order to improve the problems associated with waste within the neighborhood.

The Reconomy proposal aims to build on the existing community knowledge around recycling and waste issues to develop an improved waste collection program in Moravia. The proposal includes the development of micro-routes

for targeted waste collection by formalized recyclers. Formalization of their recycling work would lead to an increase in the income of the existing informal recyclers.

Reconomy is intended to link the community through an incentive program that seeks to engage community members in the separation of their waste so that it can be easily processed by formalized recyclers. In addition to generating a link with the recycler, it will help improve the quality of life of the residents through agreements with local distributors so that residents can earn points for their efforts and use those points to purchase products at lower prices. The above mentioned strategies totally align with the proposals

raised in the 2018 Plan Parcial of Medellin on education in proper solid waste management, training for formalization, and finally, the construction of a recycling center in the Moravia neighborhood.

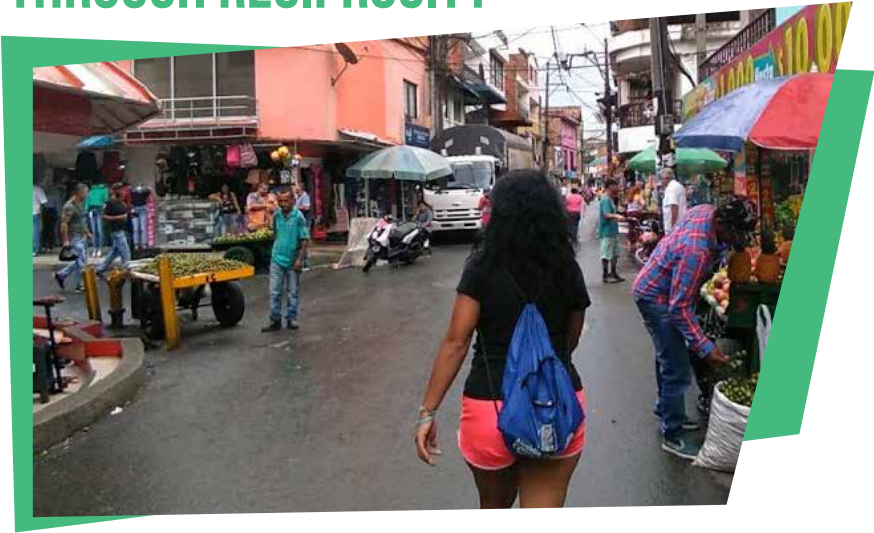
The Reconomy proposal seeks to improve the waste collection systems in Moravia in a sustainable and economy building way, and, in turn, eliminate problems associated with inadequate waste collection and subsequent issues of public health, mobility, pollution, among others. Additionally the proposal aims to recognize the work done by waste pickers in the neighborhood and improve the residents' quality of life by offering them opportunities

to obtain products in exchange for delivering their separated solid waste. Furthermore, Reconomy proposes that organic waste is separated by community members and utilized in the biogas energy production program of GIEM.

Lastly, the Reconomy proposes to transform public spaces into green spaces that promote the recycling identity of Moravia. This can be done through urban interventions generated with recyclable materials such as the construction of vertical gardens made with used bottles or planters made from old tires.



ARCHITECTURAL TRANSFORMATION THROUGH RECIPROCITY



The Architectural Transformation through Reciprocity proposal seeks to solve issues of informal, untitled, unsafe housing and to prepare residents for technical conversations around relocation and high-rise building design with the Municipality. The proposal can be realized through the development of architectural workshops and a longer-term certificate program. The proposal will be most effective if the interested residents of Moravia create a Construction Committee that can participate in the proposed trainings and thus coordinate directly with stakeholders to help the Moravia homeowners obtain titles for their homes, protect their homes from relocation, and communicate their preferences and ideas for incoming high-rise buildings.

The proposed architectural workshops and certificate program

would be a collaborative effort executed by the University of Antioquia and the National University of Medellín architecture programs, the Planning Department, and the community of the Moravia.

The proposal includes several home improvement workshops and ongoing courses aimed primarily at homeowner residents of Moravia. Residents would learn techniques to structurally improve their homes through sustainable architectural techniques. They first would need to learn how to improve natural lighting, waterproof roofing, increase ventilation, install vegetative roofs and walls, and realize required criteria in order to receive a title for their own homes. This knowledge would then be directly transferable to their fellow community members, and these new skills could result in employment opportunities.

In an effort to support community members in the process of obtaining the legal title for their homes, the proposal calls for a volunteer advisory group to teach various workshops in the community and teach people how to successfully update their homes in accordance with the Municipality's construction codes and community members will be accompanied throughout the process they must follow to achieve the legalization of their property.

Safe home workshops would identify existing risks and vulnerabilities and help generate awareness around risk aversion and preparedness.

Families could then reduce the risks and act proactively in a potential emergency.

Aiming to teach replicable architectural knowledge, these University run courses and workshops could be themed and focused on specific design projects for Moravia. For example, the workshops could focus on the design and construction of buildings such as the Pluralism Point community center or the dispersed Tambo classrooms.

Propuesta construcciones	Plan parcial Moravia
Socialización de régimen de propiedad horizontal	4. Desarrollar espacios de formación y capacitación a las familias, previos y posteriores al movimiento poblacional, para la apropiación en los nuevos lugares y espacio de reasentamiento
	24. Fortalecer y complementar los programas existentes para la capacitación de normas de convivencia en propiedad horizontal
Arquitectura bioclimática	21. mejoramiento integral de viviendas localizadas en áreas aptas o con restricciones moderadas del área de planificación
Asesorías en procesos de legalización y/o titulación de predios	22. legalización y titulación de predios
	3. legitimar el derecho a la tierra de la población original del barrio con "Bonos de ayuda mutua"
Diseño el Punto del Pluralismo	30. Relocalizar la Sede Social Moravia El Bosque
Hogar seguro	

A collage of 10 small images showing various types of waste and pollution. The images include: a pile of plastic bottles and other debris; a close-up of a plastic bottle; a pile of food waste and other organic matter; a pile of plastic bags and other waste; a pile of plastic bottles and other debris; a close-up of a plastic bottle; a pile of food waste and other organic matter; a pile of plastic bags and other waste; a pile of plastic bottles and other debris; and a close-up of a plastic bottle.

Problemática		RESIDUOS SÓLIDOS			
Impactos		Como se evidenció la problemática		Estrategias para superar el problema	
Falta de comunicación entre los líderes comunitarios	No se ponen de acuerdo, retrasan los procesos de avance comunitarios, se generan disputas internas entre las organizaciones	Diferentes reuniones con los líderes comunitarios		Fomentar el liderazgo saludable y la comunicación asertiva dentro de los líderes comunitarios y comunicación desde los líderes hacia la comunidad	
	Mala disposición de los residuos dentro de la comunidad	Recorridos por la comunidad		Diseñar programas que promuevan la apropiación de espacios públicos como bienes estratégicos de la comunidad	
				Sensibilización sobre los efectos adversos a la salud de la mala disposición de residuos	
				sensibilización sobre los efectos al medio ambiente de la mala disposición de los residuos	
				Promover la implementación de un sistema de recolección selectiva dentro de la comunidad	
El carro recolector no tiene acceso a todas las zonas del barrio.	Enfermedades asociadas a la mala disposición de los residuos	Los líderes comunitarios lo manifiestan		Diseñar estrategias para la recolección selectiva de los recicladores dentro de la comunidad	
	Aparición de plagas y vectores	Resultados parciales de la encuesta realizada dentro de la comunidad.		Socialización del Decreto 596 del 2016	
	Contaminación asociada a la mala disposición				
	La comunidad evita elaborar estrategias para eliminar los puntos críticos de mala disposición de los residuos por miedo a las represalias.	Los líderes comunitarios manifiestan que en ocasiones anteriores se han visto amenazados por parte de los miembros de la comunidad en relación a los residuos sólidos.		Crear una mesa de concentración barrial	
Los grupos armados del sector tiene dominados algunos puntos donde se arrojan los escombros				Identificar un líder que pueda hacer acercamiento a los grupos armados para fomentar el diálogo	

Actividad	Capacitación en comunicación asertiva	Capacitación en liderazgo saludable	Generar propuestas que sean acordes a las necesidades y expectativas de los integrantes de la zona.
	Realizar un diagnóstico participativo sobre la ubicación de los puntos críticos.	Identificar y mapear puntos críticos de mala disposición de residuos sólidos	Realizar un diagnóstico participativo sobre la ubicación de los puntos críticos.
	Realizar talleres de elaboración de suvenirs con residuos.	Sensibilización puerta a puerta de las problemáticas asociadas a la mala disposición de residuos sólidos.	Realizar talleres de elaboración de suvenirs con residuos.
		Diseñar estrategias para la recolección selectiva de los recicladores dentro de la comunidad	

SUSTAINABLE RUNNERS

[illegible]

INTEGRAL PROPOSAL CASA

MISIONES DE LOS						
Problemática identificada	Objetivo	Nombre de Propuesta	Iniciativa Comunitaria	Instalaciones e Infraestructura para la vivienda	Costo Estimado	Impacto Estimado
Viviendas que no se encuentran habitadas por sus dueños	Capacitar a la comunidad en técnicas de pintura, recubrimiento de paredes y techos para evitar la humedad y que se aprenden de los espacios	Apropiación de espacios				
	Capacitar a la comunidad en técnicas de carpintería para la construcción de alternativas (muebles y sistemas de construcción)	alternativas de construcción		Juntas de trabajo comunal. Mueve de trabajo comunitario, sistema comunitario relacionados,		
Las viviendas no cuentan con ventilación de paredes / techos de las viviendas	Aseorar a la comunidad frente al uso de materiales para la construcción de las viviendas y ventilación de paredes	Asignación y/o trabajo	1. Capacitar a la comunidad en buenas prácticas de construcción. 2. Definir roles específicos de construcción dentro del barrio con hombres y niñas. 3. Los trabajos de construcción de las viviendas deben ser realizados de manera conjunta y los recursos deben ser habilitados con la comunidad. (problemas) 4. Se debe establecer a la comunidad sobre la problemática de salud pública que genera la mala disposición de los residuos.	Juntas de trabajo comunal. Mueve de trabajo comunitario, sistema comunitario relacionados, Lavabios		
Las viviendas no son seguras estructuralmente	Analizar la comunidad para identificar herramientas que permita evaluar el estado de las viviendas y la emergencia o desastre.	Hogar seguro	1. creación de comité comunitario	Diálogo, para metropolitanas del valle de Aburrá		
Relajamiento en las viviendas	Generar en la comunidad sistemas de vivienda vertical	Hacer una vivienda vertical				

RESIDUOS SÓLIDOS				
Problemática	Impactos	Como se evidencio la problemática	Estrategias para superar el problema	Actividad
Las comunidades no cuenta con los títulos de las viviendas ni la legalización de predios	- inseguridad -	Encuestas realizadas	Buscar a la comunidad acompañamiento en los procesos de legalización de predios y titulación de viviendas	Acompañamiento en el proceso de legalización y titulación de predios
Las viviendas no cuentan con espacios bien aprovechados	- poca iluminación - hacinamiento - problemas de sanidad - problemas en las relaciones intrafamiliares	Encuestas y recorridos por el barrio	realizar talleres con la comunidad sobre aprovechamiento de espacios que permita tomar conciencia de los riesgos asociados a las viviendas con el fin de ser proactivos ante una emergencia.	capacitaciones en distribución y aprovechamiento de espacios en las hogares
Las viviendas no son seguras estructuralmente	Riesgo por fallas estructurales - aumento en la exposición de las familias	Encuestas y recorridos por el barrio		Talleres arquitectura bioclimática
				Talleres hogar seguro

BRIEF EXPLANATION

"The neighborhood approach: transformative and integrated urban sustainability at the community level"

The United Nations Environment Cities Unit believes that by working at the neighborhood level, communities can transform their cities. Communities have the power to test innovative solutions in their neighborhoods to some of the most complex and pressing challenges: equity, cross-sectoral integration, governance and finance, so that they respond better to their specific needs.

