



Master in Innovation, Human
Development and Sustainability

Future Cities & Regions Specialization

Workshop 2

URBAN FUTURES WORKSHOP

Co-designing the city





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— Course at a glance

- 12 credits
- 136 hours : 12 weeks/2 days (Thursday and Friday)
- Collaborations with urbaMonde and UrbaSen, French Research Institute for Sustainable Development (IRD), French Development Agency (AFD), Territory Department of Geneva State, OpenStreetMap, University Cheikh Anta Diop (Dakar), Cabanon Vertical, Mauvaise Herbe, ARVe, etc.
- Participation at C40 Competition "[Students Reinventing Cities](#)"
- Workshop team : Armelle CHOPLIN, Raphaël LANGUILLON, Eloïse PELAUD

Objectives

This course is designed to address the several challenges at stakes in thinking through and implementing the SDGs while planning, managing and organizing 'city-life', crossing Global South and North experiences.

How to integrate urban planning in SDGs? How to ensure environmental and climate change practices and policies to promote sustainable cities? How to empower inhabitants to build the city from in a bottom-up approach?

In this workshop, students will be part of two original professional dynamics:

- A collaborative project held by Agence Française du Développement (AFD) dedicated to Dakar tactical urbanism: "[Urban Fabric Initiative](#)"
- A student competition organized by C40 network "[Students Reinventing Cities](#)"

Through AFD's development project and C40 students competition, the course aims to:

- critically analyze and question the variety of terms, concepts, semantics and practices of temporary and participatory urban planning;
- explore and produce an international benchmark of transitional/tactical/agile/co-designed urban planning initiatives implemented in different countries/cities of the Global South (Asia, Latin America, Africa....), analyzing transfer skills and knowledge sharing
- develop a hand-on approach, applying these theories and concepts in two selected sites, in Dakar (Senegal) and another one, by implementing co-design initiatives with and for the inhabitants.
- participate at AFD's "[Urban Fabric Initiative](#)"
- participate at C40 competition "[Students Reinventing Cities](#)"

Guiding principles

In concrete terms, students will be required to take part in weekly classes from **February 25th to May 27th, 2021.**

This workshop is an 'experimental lab' for generating innovative ideas and creative thinking towards the building economic, social and infrastructural potentials of urban futures.

Students are also invited to experience professional life: replying to terms of references, experiencing collective thinking, etc. Starting from a multi-disciplinary standpoint, the collective projects produced will combine both theoretical knowledge and technical skills.

The workshop will be held **every Thursday and Friday** with substantial seminars providing conceptual and practical knowledge on interrelated issues such as urban planning, sustainable planning, participative and collaborative approach, co-design, sustainable mobility, urban brownfields.

The workshop will provide practical trainings on concrete tools: Online Design / infographics (InDesign, Crello, Picktochart, etc.) Kobo Toolbox Collect, JOSM (OpenStreetMap opensource software), Mapillary, collaborative white board (Klaxoon, Miro, etc) , etc.

PART 1

Urban Fabric Initiative

The workshop will be part of AFD's "Urban Fabric Initiative" project (Projet Pépinières Urbaines). This project is implemented by [urbaMonde](#), [urbaSen](#), [Cabanon Vertical](#), [IRD](#) and [GRET](#), to develop public space initiatives, co design and urban fabrics in cities of the Global South (Ouagadougou, Tunis, Dakar, Abidjan). Special attention will be put on the final results of the students' projects, that might contribute to the development and shared experiences of *The Network of Urban Fabric Initiative*.

Workshop participants will mobilize multiple stakeholders, based in Geneva and Dakar : NGOs (Urbamonde, GRET), academics (IRD, Cheikh Anta Diop University), donors (AFD), the OpenStreetMap Community, local authorities (Etat de Genève) and local Makerspaces, etc.

The benchmark part will support the open-data platform development that urbaMonde is developing on urban fabrics initiatives and will strengthen *The Network of Urban Fabric Initiative*.

A presentation to the Network will conclude this workshop.



PART 2

C40 Students Reinventing Cities Competition

C40 competition is a global event for students to share their vision for green & thriving city neighborhoods. Students Reinventing Cities provides a unique opportunity for academics and students to collaborate with global cities. Together they will imagine a more sustainable and inclusive vision for cities everywhere, by rethinking how neighborhoods are planned and designed.

The Students Reinventing Cities competition aims to harness new models for green and thriving city neighbourhoods, that embrace both:

- the imperative of emissions reduction. Teams are invited to consider operational emissions, embodied emissions and consumption-based emissions
- the critical goal to ensure quality of life for local communities. Teams are invited to consider models such as the '15-minute City' which is increasingly adopted as a valuable urban planning principle.

This competition comes at a key moment – we know that the next decade will determine whether we can avoid runaway climate change. Across the world, cities are strengthening their climate commitments and actions. They are developing an ambitious agenda for a green and just recovery from the COVID-19 crisis and building a broad coalition with youth climate activists, representatives from labour, business, academia and civil society

These two main objectives must be approached in an integrated way. To help with this, the competition defines ten design principles that the teams are invited to consider when developing their project:

- Close to home;
- People-centred mobility and thriving streets;
- Connected place;
- A place for everyone;
- Clean construction;
- Energy and buildings;
- Resource management;
- Green space, climate resilient and nature-based solutions;
- Sustainable lifestyles;
- Green economy.

The teams are invited to consider all 10 principles while developing their project. However, it is important for teams to focus on the principles that are most appropriate for the site. Each city has indicated specific environmental priorities and objectives for its site.

In the workshop, the students will participate at this competition by groups, working on Dakar and possibly other cities that have been selected by C40 Team.

Expectations / Deliverables

Expected competencies

At the end of the course, students will be able to:

- implement a methodology to identify creative experiences of co-producing and co designing urban spaces;
- analyse the contradictions and debates underlying the notions of 'competitive cities' and 'inclusive cities', with its social and spatial justice objectives;
- collect and analyse data in urban areas;
- realize benchmark diagnosis;
- organize meeting with local stakeholders;
- follow terms of reference;
- produce global and local innovative solutions to improve urban living conditions;
- co-design participative and collaborative spaces;
- critically discuss and debate about concepts as the frugal urbanism (how it might be or not transfer? how experience exchange and peer learning strengthen capacities?);
- use open data softwares and collaborative tools to document and connect community-led projects;
- participate to international collaborative urban & action research;
- participate to international competition on urban future development in global cities.





Outputs and Evaluation

Individual work (50%):

Production of a benchmark work

Group work (50%):

Students will be organized in groups. The final project will be a collective work based on data collection and field work plus the answer to C40 call. This final work will be presented to a steering committee at the end of the semester.

A final production is expected in May (presentation might take the form of a report, a video, a webdoc...) and will be integrated into students' projects portfolio.

Activities

Classroom activities are divided in two large blocks, each comprising six weeks.

Each class start with a guest lecturer and followed by students' hands-on activities and digital tutorial.



Schedule

WEEK 1 25th February

Co-designing the city

Presentation of the Workshop + C40 Competition
+ Terms of References (urbaMonde and IRD)
Presentation in 3 slides

Activity: Training with *Klaxoon/Miro* – and others
collaborative tools + Webinar C40 Competition – Buenos
Aires case study

WEEK 3 11th March

Tactical Urbanism

Temporary / Tactical urbanism - Definition and concepts

Guest lecturers: Researchers on tactical urbanism

Activity : Identifying experiences for the Benchmark –
Portfolio

WEEK 2 4th March

Open Platform and collaborative urbanism

Benchmark Methodology; Debrief on Dakar and Buenos
Aires webinars ; collaborative Platform on Urban Fabric
Initiative.

Activity: Benchmark methodology and template - debate
on urban fabric initiatives.
+ Dakar Webinar C40 Students Competition
+ work on a Glossary on temporary urbanism

WEEK 4 18th March

Participatory Urban Planning

Introduction to C40 competition design principles (1/4) :
Close to home ; A place for everyone

Guest lecturers: Canton de Genève + urbaMonde/
urbaSEN

Activity : Benchmark

WEEK 5 25th March

Presentation and Evaluation

Presentation and Evaluation of Benchmarks

Presentation of Dakar + other case study for C40 competition

WEEK 6 15th April

Transport and sustainable mobility

Introduction to C40 competition design principles (2/4):
People-centred mobility and thriving streets;

Guest Lecturers: IHDS and IRD

Activity: Urban Planning Tools (maps, masterplan)

WEEK 7 22th April

Green City /Green Building / Green Economy

Introduction to C40 competition design principles (3/4) :
Sustainable construction / Local material
construction (Latin America and Africa examples)

Guest Lecturer: urbaMonde, Seed NGO

Activity: Training session with Open Street Map and/or
CartoONG + Design work on cities project.

WEEK 8 29th April

Social Inclusion

Introduction to C40 competition design principles (4/4)

Activity: Design work on cities project.

WEEK 9 6th May

Develop your proposal

Group work - Design work on cities project.

WEEK 10 20th May

Develop your proposal

Group work - Design work on cities project.

WEEK 11 27th May

Finalize your proposal

Final presentation and submission of the Final Project for
C40 competition.

Logistics

Because of the pandemic situation, the first part of the Workshop will be online (zoom).

Depending on the pandemic situation, activities will take place at the Geneva SDG Solution Space after Easter Holidays. Students are expected to attend all the sessions, on Thursday for lectures and activities. On Fridays groups will work by themselves.

IHDS Masters students have a number of resources they can call upon:

MOODLE

The [MOODLE page](#) of the workshop hosts a list of references related to the course, all the paper that will be discussed during the seminar format, the syllabus and a diverse resource to be uploaded during the progress of the program.

Guidelines

The workshop team is making customized resources available in this handbook and on Moodle for each exercise and deliverable. These should be considered as guiding frameworks for our minimum desired standard and not binding or limiting in any way.

University of Geneva library

The readings we suggest can be found in the online repository. Library training and workshops are provided regularly:

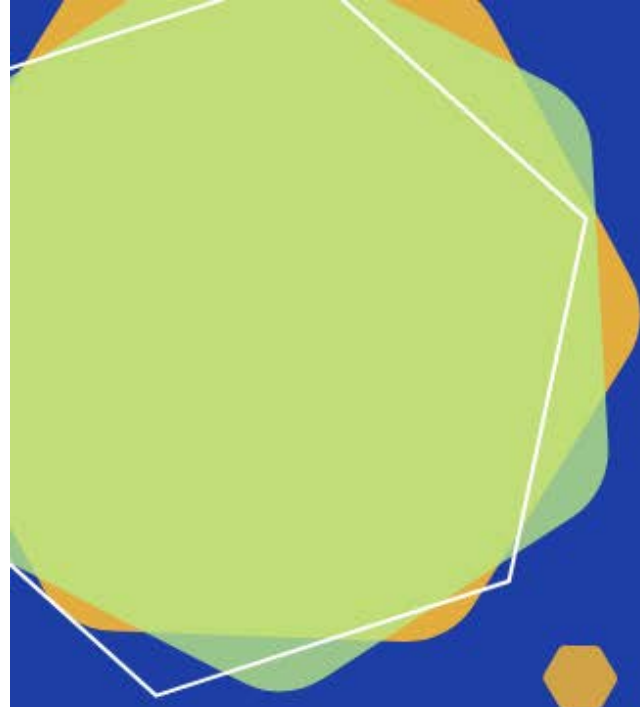
www.unige.ch/biblio/en/training.

FabLab resources

The whole IHDS master's programme, encourages students to concretely show their ideas. In particular, creativity is expected from students for the pitching sessions.

To support such endeavour, the FabLab at SDG Solution space offers students the following resources:

- 3D printer (Ultimaker2+) using Cura software equipped to print PLA recyclable (corn, etc.) & ABS petrol
- Vinyl cutter (RolandCMM-1GS24)
- Laser cutter (TROTECSpeedy360): can engrave & cut plastic, glass (engrave only), acrylic, MDF, different plywood and denim among other things.
- CNC Milling Machine (RolandMDX40A) used for prototyping, molding & to make PCB Electronics
- 3DScanner
- 4GoPros
- Two4K Sony televisions (75inches projector, surround sound.
- PlotterHPT790A0(see below)
- HPLaserColorA4
- Arduino electronic prototyping platform
- General electronic equipment
- General prototyping kitsFor any technical needs, please get in touch with Jean-Marie Durney, FabLab manager: Jean-Marie.Durney@unige.ch.





ECO-BARRIO 7 DE AGOSTO

PRODUCTIVO, VERDE
E INCLUSIVO



C40 STUDENTS REINVENTING BOGOTÁ PROPOSAL

Katherine HUANG - Inge BAAK - Tessa HARRIES - Melissa CASTILLO SUÁREZ - Gabriela CASTRO ORTEGA



At Plaza Distrital de Mercado 7 de Agosto (Yuruten, 2019)

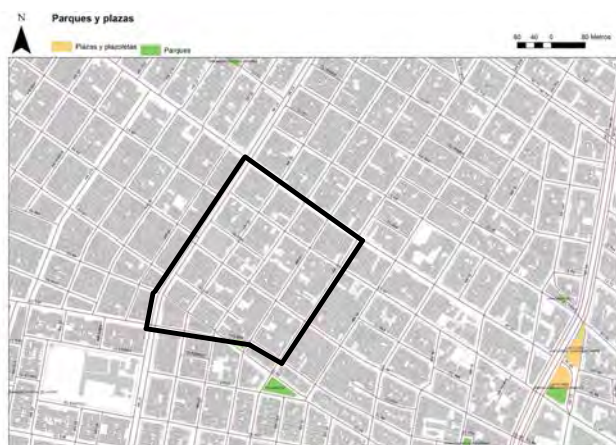
ECO-BARRIO 7 DE AGOSTO

VISION FOR A PRODUCTIVE, GREEN AND INCLUSIVE NEIGHBORHOOD

Whether parking your bike at the upcycled bike rack to buy some *aguacate* or snapping a photo of your favorite eco-mural at the *parqueadero de bolsillo*, the sense of local pride is felt on every street corner of this **productive, green, and inclusive** eco-neighborhood. The smell of freshmade *buñuelos* emanates from the bustling *plaza de mercado*, now attracting nearby Las Colmenas business owner-residents to dine and relax in the adjacent InnovaPlaza. *Vallenato* buskers serenade children reading at the Paradero Paralibro Paraparque. An elderly couple meets friends at the wheelchair-accessible picnic tables and admires the *caucho sabanero* trees that their neighbors planted in last year's community planting program. In the evening, the *talleres* workers, students, and international tourists stroll along the solar panel-lit and litter-free sidewalks or cycle down the new glow-in-the-dark bike path to reach home, the Transmilenio station, or a nighttime outdoor Zumba class in InnovaPlaza - all within a 20-minute radius. Welcome to el Eco-Barrio 7 de Agosto in 2035.



Graphic Deliverable #1: InnovaPlaza [created by Katherine Huang]



Site map depicting (lack of) green and public spaces
[created by Melissa Castillo Suárez]

CONTEXT

BACKGROUND AND CHALLENGES

Located at the heart of the Barrios Unidos locality, in the Alcázares Zonal Planning Unit (UPZ), the **plaza de mercado** and the **industrial workshops** are the area's main drivers of the local economy. The *plaza de mercado* is also a source of local cultural and historical pride, offering a wide variety of local food and artisanal products and serving as a local meeting spot for connecting with community members. However, various challenges are hindering these disparate sectors from reaching their full potential of urban activity at neighborhood level. The **traffic congestion, disorganized street parking, and inefficient goods delivery system** make the market exterior inaccessible and uninviting. Here and throughout the rest of this four-by-five block area, **litter, inconsistent sidewalks, and insufficient street lighting** make unmotorized vehicle transport nearly impossible and dangerous, with consequent worsening road conditions, residence abandonment, and noise/air pollution.



Cl. 66 con Cra. 23 - Bogotá, Colombia (Google Maps, 2019a)

APPROACH

OPPORTUNITIES FOR REVITALIZATION

Productive atmosphere: Currently, the area is dominated by vehicle repair and manufacturing commercial activity, and opportunities for such productivity can also extend to other sectors that meet retail, dining, and medical needs, allowing the area to offer residential comfort and convenience, as well as more socio-economic inclusion.

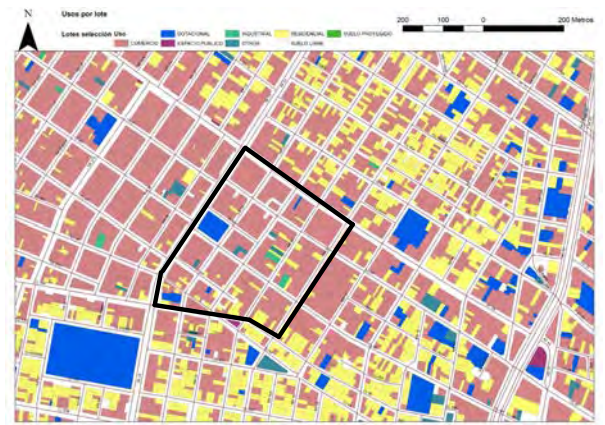
Vertical space: The site area is densely constructed, and most buildings have 1-2 floors. Taking advantage of the vertical (above and underground) space will allow for new green and cultural public spaces to be built with limited displacement.

Local arts and cycling culture: Bogotá is home to flourishing and pioneering painting and *cicloruta* (bike route) initiatives, increasing the likelihood of familiarity and interest in such interventions for 7 de Agosto community members.

Ongoing urbanism innovations: Similarly, tactical urbanism projects are making waves across the city, therefore mobilizing this already-active community will introduce vetted, successful approaches to community participatory neighborhood reinvention.

Climate for renewable energy: Bogotá has great potential for solar energy sourcing due to its high elevation, and it is also on track to expand its capacity and support for low emissions, climate resilient neighborhoods.

Existing infrastructure and resources: Reuse and upcycling of old car and bicycle parts can be incorporated into new leisure and recreational equipment (i.e. benches, bike racks, etc.) to fuse the mechanical and artistic character of the area. Rather than demolition and reconstruction, interventions can focus on renovation and innovation of useful infrastructure.



Site map depicting type of property uses/activities
[created by Melissa Castillo Suárez]



Site map depicting number of constructed floors in buildings
[created by Melissa Castillo Suárez]

MASTER PLAN

This proposal suggests an innovative and comprehensive plan for reviving Bogotá's Plaza de Mercado 7 de Agosto and the surrounding catchments largely home to automotive and bicycle *talleres* (workshops) and severely lacking in cultural, green, and public spaces. In alignment with the action units "Barrios Vitales" and the city's Climate Action Plan (CAP), the recommended interventions intend to accelerate Bogotá's climate agenda by decarbonizing this dense, urban area, and improve the quality of life for its local community by transitioning the area to a collectively residential, commercial, recreational, and cultural eco-neighborhood. Each intervention proposed for cultivating el Eco-Barrio 7 de Agosto is characterized according to the three iconic characteristics of this neighborhood:



Master Plan Map of Eco-Barrio 7 de Agosto [computer drawing by Katherine Huang]

PRODUCTIVO

Capitalizes on the thriving productivity of the area, increases the efficiency of mobility, and diversifies commercial activities

VERDE

Creatively incorporates greenery into new public spaces, strengthens the sense of ownership and agency, encourages healthier mobility, and powers its productivity with renewable energy

INCLUSIVO

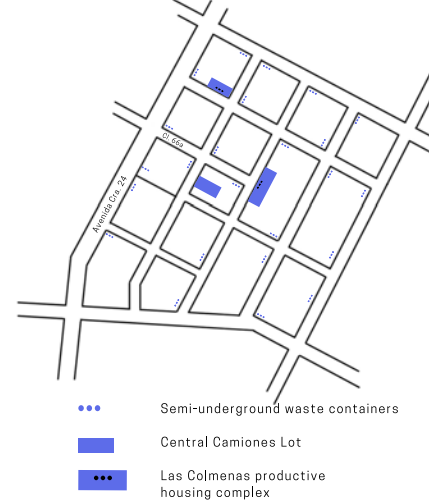
Builds safe, multi-functional outdoor spaces to host cultural activities that welcome and mobilize visitors, residents, and workers of different ages, abilities, gender identities, and socio-economic strata

UN BARRIO PRODUCTIVO

LAS COLMENAS

PRODUCTIVE HOUSING COMPLEXES

New productive eco-housing complexes will complement the thriving commercial and industrial activities with integrated **residential opportunity** by emulating the dynamic, unified, and productive atmosphere of beehives (*colmenas*). This project expands and diversifies an iconic Colombian model of **utilizing vertical space** for residents to **make a living close to home (C40 Principle 1)** and cater to the diverse needs of a self-sufficient *eco-barrio*, exploiting the existing entrepreneurial spirit emanating from the *mercado* and the *talleres*.



The Provider Productive Center - Montalvo, Ecuador © JAG Studio

Charters for all Colmena complexes will foster **sustainable lifestyles (C40 Principle 9)** and require the inclusion of older, disabled, varying-income residents to stimulate **social diversity**. Rooftop solar panels will power at least 50% of each complex's electricity. Community or public access roof gardens will increase the Eco-Barrio's **green and public spaces**.

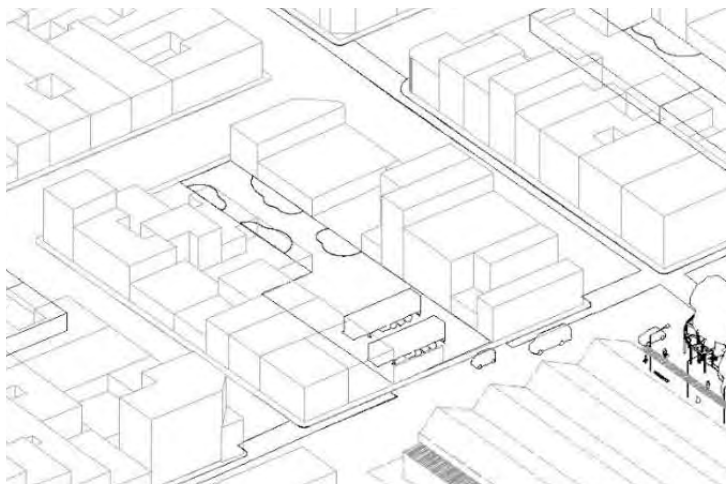
Establishing the first pilot Colmena complex can begin in Phase 2 (and a second complex in Phase 3) by **renovating unused or abandoned properties** and relocating some businesses. Similar successful productive housing can, for example, be found in Montalvo, Ecuador with "The Provider Productive Center" (ArchDaily, 2020).



6740 Cra. 21 - Bogotá, Colombia (Google Maps, 2019b)



Graphic Deliverable #2: Las Colmenas Productive Housing Complex [created by Katherine Huang]



Aerial view of Central Camiones Lot [CAD sketch by Gabriela Castro Ortega]

at the grassroots level; allows **more sidewalk pedestrian mobility**; and **enhances the accessibility** to the *mercado*'s entrances, surrounding shops, and mural art exhibits. This project can start in Phase 1 ahead of turning Calle 66 (between Cra. 23 and 24) into the InnovaPlaza outdoor leisure space.

CENTRAL CAMIONES LOT

EFFICIENT GOODS DELIVERY

To eliminate the **traffic congestion** and lower **air and noise pollution** immediately around the *mercado*, the *parqueadero* on Carrera 23 will be converted into a central delivery truck lot. By **reusing the current infrastructure** as much as possible, this project requires minimal construction, and maintenance will be part of the 7 de Agosto Cash for Work (CFW) program under the facilitation of IPES (Instituto para la Economía Social).

According to an organized, coordinated schedule among all *mercado* vendors, trucks park here temporarily, offload their goods and truckers can take a break. This system **increases the productivity and efficiency of goods delivery**; ensures **sustainable maintenance** of the space at

UN BARRIO PRODUCTIVO

COMPREHENSIVE WASTE MANAGEMENT

SEMI-UNDERGROUND WASTE CONTAINERS

Essential waste management infrastructure should be installed in Phase 1, consisting of **semi-underground dumpsters** for collecting individual trash and large residential or *mercado* vendor trash bags, **minimizing spatial and olfactory pollution**. Successful implementations can be found in cities around the world, like Florence, Italy's COVID-friendly containers with foot levers (Nord Engineering, n.d.); or in Rotterdam, the Netherlands, where the platforms discourage disposal outside of the containers (Gemeente Rotterdam, 2018). The Bogotá Limpia waste collection service must work with la Unidad Administrativa Especial de Servicios Públicos de Bogotá to facilitate **capacity-building** for adjusting to **new collection services** and installing the most **efficient equipment**.



Underground waste containers on platea - Rotterdam, the Netherlands (Gemeente Rotterdam, 2018)

- Semi-underground waste containers
- Central Camiones Lot
- Las Colmenas productive housing complex



Underground waste system (Formato Verde, n.d.)



Waste container with foot lever - Florence, Italy (Nord Engineering, n.d.)

¡ASÍ RECICLAMOS! COMMUNITY RECYCLING SOCIAL MEDIA CAMPAIGN

To engage the barrio community in keeping their **streets free of litter** and **scale up recycling (C40 Principle 7)** the social media campaign “¡Así reciclamos!” will encourage people to participate in a periodic online contest by posting photos of themselves properly recycling for a coveted prize (i.e. *mercado* vouchers). This campaign can start after the installation of the semi-underground waste containers, and later on, the barrio can **partner with smart recycling companies** to offer immediate automated rewards for proper plastic disposal, like Ecobot has done in multiple locations around Bogotá and also with schools in the area to **raise awareness about the importance of recycling among young people**.



Encouraging recycling - Cali, Colombia (soyecobot, 2016)



El compostaje - Bogotá, Colombia (Más Compost, Menos Basura, 2020)

ORGANIC WASTE SEPARATION FOR COMPOSTING

In Phase 2, the *mercado* will transform its organic waste into **circular resources (C40 Principle 7)** by partnering with La Union Temporal de Residuos Verdes and UNU-FLORES to design and implement a **composting program** based on experience from previous projects (i.e. in Cajicá, Colombia (Rivera Machado, 2019)) in a pilot program for separating unsold/rotting fruits and vegetables from general trash for special incentives (i.e. lower *mercado* stall rental fees). This **multi-stakeholder initiative** can expand to the Eco-Barrio's restaurants and residences in Phase 3.

UN BARRIO VERDE

SOLAR ENERGY

In addition to low-emissions mobility, the Eco-Barrio will actively join Bogotá's **low-emissions renewable energy revolution** set out in the Climate Action Plan by incentivizing businesses and residents to retrofit for **solar energy systems (C40 Principles 5-6)**. Under the incentive, energy suppliers will buy any excess electricity the solar panels produce and pump it into the energy grid.

Las Colmenas complexes and the *mercado* roof also offer opportunities for **localized energy consumption**. In implementing solar panel power, local students specialized in green energy (i.e. from la Universidad Distrital Francisco José de Caldas) will have an opportunity to get involved and help design the solar energy systems and partner with local energy firms (i.e. Greencol Energy SAS).

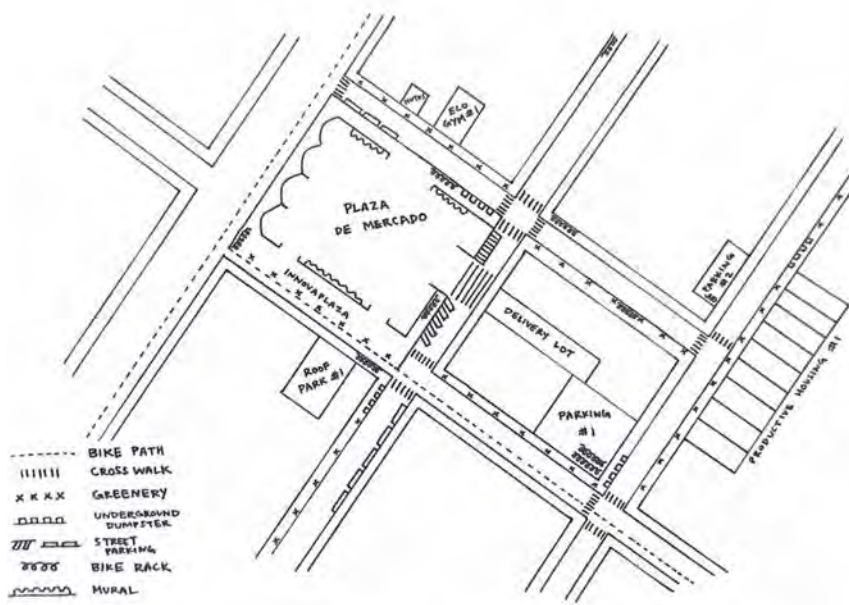
Solar Street Light
(Tianxiang Electric Group Co., n.d.)



- Tree benches
- Parqueadero de bolsillo
- Glow-in-the-dark bike path



Edificio de Barcelona con placas solares en el techo - Barcelona, Spain
(Cortadellas, 2018)



Overview of Interventions surrounding Plaza de Mercado 7 de Agosto
(hand drawing by Katherine Huang)



BICICLARRIO

As part of the barrio-wide transition to low-emissions mobility, also driven by the Secretaría Distrital de Movilidad in Bogotá, cycling will gradually become the dominant form of vehicle transportation. To attract more bicycle traffic and facilitate local bicycle use within this 20-minute neighborhood, two perpendicular **bike lanes** will be built along Cl. 66 and Cra. 24 to connect to the Cicloruta on Cl. 68 (Phase 1). A safe and green solution is a **glow-in-the-dark bike path** (i.e. once tested in Poland (Chow, 2016)), which uses material that emits light after being charged by the sun. Moreover, at least 50% of streets will host **bike rack stations**, which will be made of old bike and industrial parts reflecting the original **industrial character** of the neighborhood. Inspiration was drawn from the reuse of bicycles as gates in Reykjavik, Iceland (Wallpaper Flare, n.d.). This type of **people-centered mobility (C40 Principle 2)** will provide quick parking for shoppers and encourage private and secure bicycle ownership. By applying the same light-emitting material as for the bike paths, safety measures will continue to be implemented.



Blue bicycle gate at daytime - Reykjavik, Iceland (Wallpaper Flare, n.d.)



The first bicycle path that lights up at night - Poland (JagielloPawel, 2016)

UN BARRIO VERDE

COMMUNITY PLANTING PROGRAM

Studies show community gardening improves the health and wellbeing of people of all ages (Lovell et al., 2014). In becoming **an eco-barrio for everyone (C40 Principle 4)**, 7 de Agosto will gradually increase the **greenery lining streets** every few years with a community planting program. Inspiration for this intervention was drawn from the student planting program in Virginia, U.S.A., which was dedicated to increasing and maintaining urban green spaces as a way to give back to the community (VCU Office of Sustainability, 2020). The Jardín Botánico and **tactical urbanism** organizations and initiatives, such as #BogotáReverdece, can partner to provide materials and to guide and educate participants in the planting of **local flora** such as **caucho sabanero** and **chicalá amarillo** trees (right). Each Phase will target new streets without greenery to eventually reach **70% of street coverage**.



- Tree benches
- Parqueadero de bolsillo
- Glow-in-the-dark bike path



Virginia Commonwealth University students plant containerized trees - Virginia, U.S.A. (VCU Office of Sustainability, 2020)



Caucho Sabanero (civcobogota, 2015)



Chicalá Amarillo (Gov.co, 2018)

PARQUE(ADERO)S DE BOLSILLO

UNDERGROUND PARKING GARAGES
BELOW POCKET PARKS

A major parking project will transform the Eco-Barrio by converting the existing *parqueadero* on Cra. 22 into an **underground parking garage**, topping it with **street-level greenery (C40 Principle 8)** in the form of "**pocket parks**." The first Parque(adero) de Bolsillo will offer an oasis of green around 7 de Agosto and combine beauty and utility as well as enhance car noise abatement and reduce heat islanding. An example of the envisioned *parqueadero de bolsillo* was designed for the existing lot located at 2231 Cl. 66 (right).

In Phase 1, local residents will be consulted while considering the technical feasibility of the project. When all preparation is done, construction of the first Parque(adero) de Bolsillo will start in Phase 2 and the construction of a second *parqueadero* will begin at the end of Phase 2. Having local architects and construction firms as well as experts for underground construction interplay with landscape gardeners, residents, and the Jardín Botánico de Bogotá, will ensure a holistic approach and help create more **natural space** in the area.



2231 Cl. 66 (Parqueadero) - Bogotá, Colombia (Google Maps, 2013)



Graphic Deliverable #3: Parqueadero de Bolsillo [created by Katherine Huang]

UN BARRIO INCLUSIVO

INNOVAPLAZA

OUTDOOR LEISURE SPACE



Calle 66 - Bogotá, Colombia (Google Maps, 2019c)

An iconic feature of Eco-Barrio 7 de Agosto is the abundance of public, cultural, and green spaces. As a bold first step, Cl. 66 between Cra. 23 and Cra. 24 will become a **pedestrian zone** serving as an outdoor leisure space, called InnovaPlaza. Residents, workers, and tourists can gather here to relax, connect, dine and celebrate holidays. This area will be furnished with **solar-powered, age-friendly** and **ability-inclusive** green furniture that incorporates upcycled bicycle or car parts. A diverse team of architects, urban planners, municipality representatives, and 7 de Agosto community members will **co-design and co-implement** a feasible layout for this outdoor plaza.

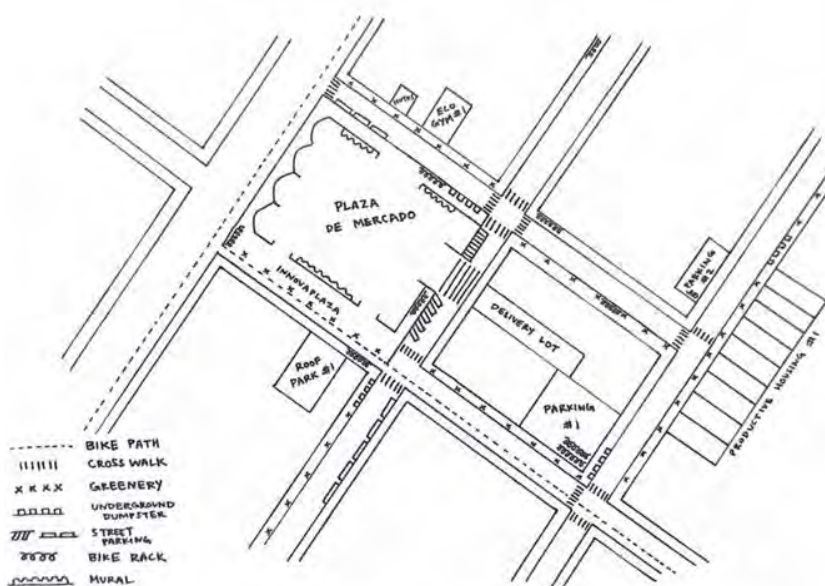


Graphic Deliverable #1: InnovaPlaza [created by Katherine Huang]



Kids at a Paradero Parolibro Paraparques - Bogotá, Colombia (Lastreto, 2019)

Construction, installation, and maintenance will operate within the CFW program. Every year, IPES can collaborate with Bogotá's many tactical urbanism organizations such as Bicistema, Barrio Vitales, or independent groups of Bogotanxs to support the community in painting beautiful designs for crosswalks and kids games and in planting greenery, perhaps with the support of the Jardín Botánico. Other features include a **performance area** for buskers or events (e.g. during the Festival de Eco-Murales), wheelchair-accessible picnic tables, tree benches, and a **Paradero Parolibro Paraparque** (outdoor public micro-library). A bike lane will increase visibility of the mercado and plaza and connect the area via bike transit to the main **cicloruta** on Cl. 68. This pedestrian area could serve as a **pilot project** for other street-to-plaza areas in Bogotá. Construction of InnovaPlaza should start in Phase 2 or sooner, to maximize the economic growth and recreational enjoyment to follow.



Overview of Interventions surrounding Plaza de Mercado 7 de Agosto [hand drawing by Katherine Huang]



Repurposed bicycle parts (The Owner-Builder Network, n.d.)



Green city tire installation (Masetto, 2011)

UN BARRIO INCLUSIVO

FESTIVAL DE ECO-MURALES

Exploiting the vibrant local Bogotá mural art culture, 7 de Agosto will revitalize the barrio's wall spaces by hosting an annual **eco-mural painting festival and competition** that awards local artists with publicity via prime location wall spaces to be featured year-round and during the festival. To curb paint-related pollution, artists can be encouraged to use **air-cleaning photocatalytic paint** (Ozdemir, 2020), as implemented in Poland's Converse environmental campaign (Hagopian Arts, n.d.). The festival will bring **environmental education through art** during **daytime and evening events**. Each year as the festival evolves, local artists, students, and community members will be the main drivers of cultural expression, professional development, and enjoyment of the activities.

In Phase 1, 2-4 mercado (interior and exterior) wall spaces will be awarded to **local artists (at least 50% women)**, featuring interpretations of socio-environmental themes like "Bogotá's Endangered Species" or "Visions of a Green Colombia." In Phase 2 and Phase 3, minor participation will extend to **national and international artists**, partnering with Bogotá-native organizations like GraffitiStreet. Local students and volunteers will be invited for **workshops and apprenticeships** to encourage **diverse participation and professional opportunities in the arts**. Wall canvases will increase in number and be designated in spaces across the neighborhood to **decentralize tourism and economic activity**. To increase nighttime safety and promote the murals, **solar-panel spotlights** could be installed.

This event will aim to be as inclusive as possible: free of charge, with reserved spaces for informal street vendors to sell snacks, and with food truck discounts. It will be an opportunity for the local "eco-residents" to share the area's **historical, productive independence** to the world and that modern sustainable 20-minute cities are possible without gentrification and invasive reconstruction. A planning committee of local artists, Las Colmenas residents, mercado vendors, environmental organizations, and the municipality can work with IPES and sponsors, such as Tag Colors, to organize this low-cost, profitable series of events. Visitors from around the neighborhood, city, and beyond will be able to admire and learn from **free public art**, similar to the Wynwood "urban graffiti museum" in Miami, U.S.A. (The Next Miami, 2018).



A mural in Wynwood on marine life extinction - Miami, U.S.A. (Gamboa, n.d.)



Women rock Wynwood Walls at Art Basel - Miami, U.S.A. (Cooper, 2013)



Wynwood Walls - Miami, U.S.A. (The Next Miami, 2018)



Typhoon Cleanup Cash For Work program - Tacloban, The Philippines (The New Humanitarian, 2013)

coordination, this program grants the community with **a sense of ownership and agency**. They will also have access to temporary employment opportunities for learning **transferrable skills for green jobs (C40 Principle 10)**, while building and maintaining beautiful, comfortable spaces. The program will be launched in Phase 1 and continue throughout Phase 2 and Phase 3.

CASH FOR WORK PROGRAM

The construction, maintenance, and repair processes of these proposed interventions will use an adapted form of the Cash for Work Program (CFW), which is typically applied around the world for labor-intensive disaster relief projects. In the 7 de Agosto context, the municipality and construction companies will provide **temporary employment to unskilled and semi-skilled workers** throughout the process of transforming the neighborhood and periodic road maintenance. This initiative will offer income and upskilling opportunities for **unemployed** and/or **informal workers**.

Successful CFW projects have **mobilized vulnerable communities** in Takhar and Badakhshan, Afghanistan for building roads, bridges, water supplies, as well as in Tacloban, the Philippines for survivors cleaning up typhoon debris (Harvey et al., 2009; The New Humanitarian, 2013). Repairing the Eco-Barrio's streets and sidewalks, renovating the *parqueaderos*, and constructing InnovaPlaza require a large workforce to complete efficiently and successfully. Through effective

ENVIRONMENTAL ASSESSMENT

In alignment with the development of Bogotá's **Climate Action Plan**, the Eco-Barrio 7 de Agosto proposal suggests various interventions to lower emissions and to address potential climate change impacts. To offset the lack of green spaces, high emissions and poor waste management, and to make this important neighborhood compatible with a sustainable city model and better living conditions for the community, a *Soluciones Basadas en la Naturaleza* approach has been followed.

GOALS

ACTIONS

EXAMPLES

Reduced air & noise pollution

- Gradual **reduction of motor vehicles** passing through the neighborhood and contributing to air/noise pollution by transferring parking areas to underground garages
- Improved **mercado access** and **alleviated traffic congestion** with centralized delivery truck lot of heavy load vehicles



Lower GHG emissions

- Incorporation of significantly **more local flora** into the urban landscape for health and aesthetic benefit
- Activating **environmental literacy and awareness** among the community especially with regards to waste management, biodiversity, and climate change



Higher CO2 absorption

- Providing safe, convenient **bike paths** that connect to the main transit system and transition the community to using bicycles rather than motor vehicles as preferred transportation
- Using/building furniture made of industrial and **upcycled parts**



Less heat islanding

- Implementing a comprehensive **waste management system** including recycling, waste separation, and access to receptacles
- Hosting **composting initiatives** to prevent more organic waste ending up in landfills and to enrich soil



Preservation & efficient use of resources

- Encouraging residents, businesses, and the *mercado* to **retrofit roofs for solar energy systems** to cover own usage and pump back remaining energy in the centralized energy grid



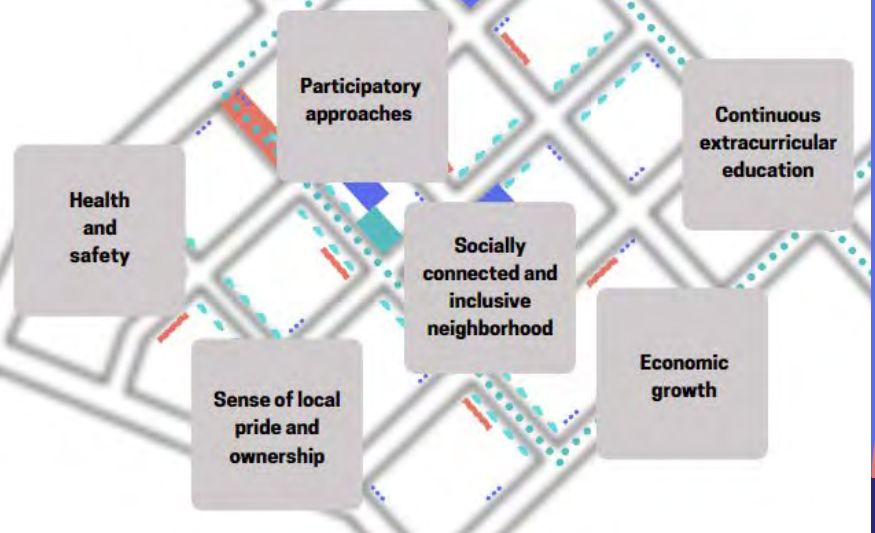
CONCLUSION

UN ECO-BARRIO THAT BENEFITS THE WHOLE COMMUNITY

Greener streets, better waste management, centralized delivery lot and increased focus on soft mobility, improved quality of the streets and street furniture such as bike racks, benches, waste bins and lamp posts will directly and indirectly improve people's **health and safety**. Greenhouse gases will be reduced, thus improving air quality. Cleaner streets and a more aesthetically attractive neighborhood will attract people to cycle, walk and relax outside. Lit-up and more aesthetically attractive areas are also suggested to have lower crime rates (AGORA, 2018; Naik et al., 2015) thus improving the safety of the residents. The Festival de Eco-Murales, entrepreneurship, and business incentives through the productive housing will show the residents, workers and newcomers that it is worth investing in their neighborhood and will help them connect to their cultural heritage thus instilling a **sense of local pride and ownership**. It will also strengthen relationships across sectors and among diverse residents, and create a more **socially connected and inclusive neighborhood**.

Engaging the local residents through short and long-term participatory approaches will also give community members agency as **active decision-makers in the design process** for their own public spaces, such as InnovaPlaza, and are stimulated to invest their time and energy by helping to **plant trees, rebuild, paint and beautify the neighborhood**. The Cash for Work Program is another way to involve the community to rebuild their own neighborhood as well as educate and **equip workers with transferrable skills** to find suitable long-term employment.

Everyone can feel at home and welcomed to this beautiful newly thriving, self-functioning 20-minute neighborhood. Here, people meet and connect, disparate sectors can reach their full potential of urban activity at the neighborhood level, and a holistic nature-based transformation has culminated in new sustainable **economic growth** driven by the commercial diversity offered by the productive housing complexes, the upskilling and employment opportunities, and increased tourism attracting visitors to witness the artistic, industrial, and eco-friendly character of the neighborhood.



Plaza de Mercado (Bogota.gov.co, 2015)



Pintura colectiva de portadas (Cartonera 2016)



Local residents of 7 de Agosto - Bogotá, Colombia (Morón, 2021)

Welcome to el Eco-Barrio 7 de Agosto,
a **productive**, **green** and **inclusive**
neighborhood in 2035!



APPENDIX 1

BIBLIOGRAPHY - TEXT SOURCES

- AGORA. (2018). *Understanding the Needs of Urban Refugees and Host Communities Residing in Vulnerable Neighbourhoods of Kampala*.
<https://www.kcca.go.ug/media/docs/Kampala%20Urban%20Refugees%20And%20Host%20Community%20Needs%20Report.pdf>
- ArchDaily. (2020, February 20). *The Provider Productive Center / Natura Futura Arquitectura*.
<https://www.archdaily.com/934082/the-provider-house-natura-futura-arquitectura>
- Chow, L. (2016, October 5). *Poland's New Solar-Powered Bike Path Glows Bright Blue at Night*. EcoWatch.
<https://www.ecowatch.com/solar-powered-bike-path-poland-2031343702.html>
- Gemeente Rotterdam. (2018, July 13). *Minder afval naast de containers bij proef in de Tarwewijk*. Persberichten Rotterdam.
<https://persberichtenrotterdam.nl/blog/persbericht/minder-afval-naast-de-containers-bij-proef-in-de-tarwewijk/>
- Hagopian Arts. (n.d.). *ECO MURAL PROJECT*. <https://www.hagopianarts.com/eco-mural-project>
- Harvey, P., Lamade, N., & Börgel, H. (2009). *CASH FOR WORK A Contribution to the International Debate based on Lessons Learnt in Northern Afghanistan*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).
<https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/CASH%20FOR%20WORK%20A%20Contribution%20to%20the%20International%20Debate%20based%20on%20Lessons%20Learnt%20in%20Northern%20Afghanistan.pdf>
- Lovell, R., Husk, K., Bethel, A., & Garside, R. (2014). What are the health and well-being impacts of community gardening for adults and children: a mixed method systematic review protocol. *Environmental Evidence*, 3(1), 20. <https://doi.org/10.1186/2047-2382-3-20>
- Naik, N., Kominers, S. D., Raskar, R., Glaeser, E. L. & Hidalgo, C. A. (2015). *DO PEOPLE SHAPE CITIES, OR DO CITIES SHAPE PEOPLE? THE CO-EVOLUTION OF PHYSICAL, SOCIAL, AND ECONOMIC CHANGE IN FIVE MAJOR U.S. CITIES*.
https://www.nber.org/system/files/working_papers/w21620/w21620.pdf
- Nord Engineering. (n.d.). Underground street containers. Retrieved May 4, 2021, from
<https://www.nordengineering.com/en/underground-containers/>
- Ozdemir, D. (2020, August 25). *This Eco-Friendly Mural Cleans Air Pollution as Much as 780 Trees*. Interesting Engineering.
<https://interestingengineering.com/this-eco-friendly-mural-cleans-air-pollution-as-much-as-780-trees>
- Rivera Machado, C. (2019, February 12). *Composting: Learning from Cajicá, Colombia*. United Nations University.
<https://flores.unu.edu/en/news/news/6850.html>
- The New Humanitarian. (2013, December 2). *Typhoon Cleanup Cash For Work program - Tacloban, The Philippines*.
<https://www.thenewhumanitarian.org/news/2013/12/02/cash-work-cleanup-tacloban>
- The Next Miami. (2018, December 12). *Photos: Wynwood More Alive Than Ever During Art Basel This Year*.
<https://www.thenextmiami.com/photos-wynwood-more-alive-than-ever-during-art-basel-this-year/>
- Wallpaper Flare. (n.d.). *HD wallpaper: blue bicycle gate at daytime, bike, reykjavik, iceland, barrier*.
<https://www.wallpaperflare.com/blue-bicycle-gate-at-daytime-bike-reykjavik-iceland-barrier-wallpaper-ulybf>

APPENDIX 2

BIBLIOGRAPHY - IMAGES

Bogota.gov.co. (2015). [Online photo of Plaza de Mercado - Bogotá, Colombia]. <https://bogota.gov.co/mi-ciudad/turismo/las-tradicionales-plazas-de-mercado-se-convierten-en-un-atractivo-turi>

Cartonera, A. (2016). *Proyecto LIBRO CONTABLE pintura colectiva de portadas, plaza de mercado 7 Agosto, Bogotá*. [Online photo - Colombia]. http://amapolacartonera.blogspot.com/2016/01/blog-post_10.html

Cívico Bogotá. [@civicobogota]. (2015, February 27). [Tweet: Caucho Sabanero]. Twitter. <https://twitter.com/civicobogota/status/571303152466722817>

Cooper, M. (2013). Women Rock Wynwood Walls at Art Basel [Photograph - Miami, U.S.A.]. Retrieved from <http://www.brooklynstreetart.com/theblog/wp-content/uploads/2013/12/brooklyn-street-art-kashink-martha-cooper-wynwood-walls-2013-miami-web-1.jpg>

Cortadellas, J. (2018). *Edificio de Barcelona con placas solares en el techo* [Online photo - Barcelona, Spain]. <https://www.elperiodico.com/es/barcelona/20181228/energia-renovable-fotovoltaica-barcelona-7221928>

ECOBOT. [@soyecobot]. (2016, September 9). [Tweet: Encouraging recycling - Cali, Colombia]. Twitter. <https://twitter.com/soyecobot/status/774272107442212864>

Formato Verde. (n.d.). [Online photo of underground waste system]. Retrieved 31 May, 2021, from <https://www.formatoverde.com/en-GB/soterrados/que-es-un-soterrado.aspx>

Gamboa, Reinier. (n.d.). *A mural by Reinier Gamboa in Wynwood* [Online photo - Miami, U.S.A.]. <https://www.nytimes.com/2019/10/23/arts/design/miami-murals-wynwood.html>

Gemeente Rotterdam. (2018). [Online photo of underground waste containers on plateau - Rotterdam, the Netherlands]. Persberichten Rotterdam. <https://persberichtenrotterdam.nl/blog/persbericht/minder-afval-naast-de-containers-bij-proef-in-de-tarwewijk/>

Google Maps. (2013). [Google Maps screenshot of 2231 Cl. 66 (Parqueadero) - Bogotá, Colombia]. <https://www.google.com/maps/@4.6566144,-74.0698514,3a,75y,31.71h,99.24t/data=!3m7!1e1!3m5!1s7lwxx1EN5vuu9QISIL74kQ!2e0!5s20131101T000000!7i13312!8i6656>

Google Maps. (2019a). [Google Maps screenshot of Calle 66 con Carrera 23 - Bogotá, Colombia]. <https://www.google.com/maps/@4.6568531,-74.0701753,3a,75y,312.26h,97.7t/data=!3m6!1e1!3m4!1slzPfqDFi7t9ImcQTy0XXhg!2e0!7i13312!8i6656>

Google Maps. (2019b). [Google Maps screenshot of 6740 Cra. 21 - Bogotá, Colombia]. https://www.google.com/maps/@4.6575438,-74.0681103,3a,75y,124.35h,90t/data=!3m8!1e1!3m6!1sOEhrkTQ0TRdUrBhR5za6Xw!2e0!5s20150101T000000!6shttps:%2F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fpanoid%3DOEhrkTQ0TRdUrBhR5za6Xw%26cb_client%3Dmaps_sv.tactile.gps%26w%3D203%26h%3D100%26yaw%3D124.436966%26pitch%3D0%26thumbfov%3D100!7i13312!8i6656

Google Maps. (2019c). [Google Maps screenshot of Calle 66 - Bogotá, Colombia]. https://www.google.com/maps/@4.6570646,-74.0704739,3a,75y,309.69h,85.07t/data=!3m7!1e1!3m5!1s4fRs0ja_Dm8X9zMUkzLZyg!2e0!5s20190501T000000!7i13312!8i6656

Gov.co. (2018). [Online photo of Chicalá Amarillo]. <https://jbb.gov.co/index.php/noticias-del-jardin/item/283-las-20-especies-de-arboles-aptas-para-plantar-en-el-espacio-publico-de-bogota>

Jagiello, P. [@JagielloPawel]. (2016, October 3). [Tweet: The first bicycle path that lights up at night - Poland]. Twitter. [https://twitter.com/JagielloPawel/status/783000451151175684?](https://twitter.com/JagielloPawel/status/783000451151175684?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E783000451151175684%7Ctwgr%5E%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fwww.ecowatch.com%2Fsolar-powered-bike-path-poland-2031343702.html)
[ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E783000451151175684%7Ctwgr%5E%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fwww.ecowatch.com%2Fsolar-powered-bike-path-poland-2031343702.html](https://twitter.com/JagielloPawel/status/783000451151175684?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E783000451151175684%7Ctwgr%5E%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fwww.ecowatch.com%2Fsolar-powered-bike-path-poland-2031343702.html)

JAG Studio. (n.d.). *The Provider Productive Center / Natura Futura Arquitectura* [Online photo]. ArchDaily. Retrieved May 3, 2021, from <https://www.archdaily.com/934082/the-provider-house-natura-futura-arquitectura>

Lastreto, R. (2019). [Online photo of kids at a Paradero Paralibro - Bogotá, Colombia]. Soy Bibliotecario. <https://soybibliotecario.blogspot.com/2016/08/paraderos-paralibros-paraparcos.html>

Más Compost, Menos Basura. (2020). *El compostaje permite convertir los restos de comida en abono para aportar nutrientes a la tierra y disminuir la contaminación*. [Online photo - Bogotá, Colombia]. ambientebogota.gov.co
http://ambientebogota.gov.co/zh/web/sda/archivo-de-noticias/-/asset_publisher/5PPa/content/una-heroina-que-reduce-la-disposicion-de-residuos-organicos-en-el-relleno-sanitario?redirect=http%3A%2F%2Fambientebogota.gov.co%2Fzh%2Fweb%2Fsd%2Farchivo-de-noticias%3Fp_id%3D101_INSTANCE_5PPa%26p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-1%26p_p_col_pos%3D1%26p_p_col_count%3D2

Masetto, A. (2011). [Online photo of green city tire installation]. Verde Innovativo. <https://verdeinnovativo.wordpress.com/2011/02/27/invasion-verde-genaro-alva-claudia-ampuero-denise-ampuero-gloria-rojas/>

Morón, P. (2021). [Online photo of local residents of 7 de Agosto - Bogotá, Colombia]. RCN Radio. <https://www.rcnradio.com/bogota/mas-sectores-comerciales-de-bogota-se-manifiestan-contr-restricciones-decretadas>

Nord Engineering. (n.d.). [Online photo of woman depositing her trash in a waste container with foot lever - Florence, Italy]. Retrieved May 4, 2021, from <https://www.nordengineering.com/en/underground-containers/>

Recycle for Greater Manchester. (2014). *Student recycling #Rubbish Selfie* [Online photo]. <https://upandforward.recycleforgreatermanchester.com/rubbish-selfie-gallery/l-r-laura-bella-geoffrey-ochola-and-mayanka-jairath-rubbish-selfie/>

The New Humanitarian. (2013). [Online photo of Cash-for-work program in Tacloban]. <https://www.thenewhumanitarian.org/news/2013/12/02/cash-work-cleanup-tacloban>

The Next Miami. (2018). Wynwood Walls [Online photo - Miami, U.S.A.]. <https://www.thenextmiami.com/photos-wynwood-more-alive-than-ever-during-art-basel-this-year/>

The Owner-Builder Network. (n.d.). Repurposed bicycle parts [Pinterest post]. Pinterest. Retrieved May 12, 2021, from <https://cz.pinterest.com/pin/328199891576183670/>

Tianxiang Electric Group Co., Ltd. (n.d.) [Online photo of Solar Street Light]. Txzmlamp. Retrieved May 31, 2021, from <https://www.txzmlamp.net/>

VCU Office of Sustainability. (2020). *Virginia Commonwealth University students plant containerized trees*. [Online photo - Miami, U.S.A.]. Chesapeake Bay Program. https://www.chesapeakebay.net/news/blog/an_urban_forestry_collaborative_plants_deep_community_roots

Wallpaper Flare. (n.d.). *Blue bicycle gate at daytime* [HD Wallpaper - Reykjavik, Iceland]. Retrieved May 30, 2021, from <https://www.wallpaperflare.com/blue-bicycle-gate-at-daytime-bike-reykjavik-iceland-barrier-wallpaper-ulybf>

Yuruten, A. [Anouche]. (2019). *At Plaza Distrital de Mercado 7 de Agosto in Bogotá, Colombia, 2019*. [Pinterest post]. Pinterest. Retrieved April 18, 2021, from <https://nl.pinterest.com/pin/568649890450342839/>

APPENDIX 3

GRAPHIC DELIVERABLE IMAGE COLLAGE SOURCES

#1 - INNOVAPLAZA

Google Maps:

https://www.google.com/maps/@4.6570646,-74.0704739,3a,75y,309.69h,85.07t/data=!3m7!1e1!3m5!1s4fRs0ja_Dm8X9zMUKzLYg!2e0!5s20190501T000000!7i13312!8i6656

Green benches: <https://www.streetlife.nl/us/green-benches-tree-isles-podiums>

Woman in wheelchair: <https://www.istockphoto.com/de/fotos/person-in-wheelchair-white-background>

Picnic table: <https://www.streetlife.nl/us/products/solid-meetwork>

Musicians: <https://www.bigstockphoto.com/image-325761616/stock-photo-bogota%2C-colombia-february-6%2C-2017-%3A-musicians-playing-at-mercado-de-las-pulgas-de-usaquen-free-market-in-bogota-capital-city-of-colombia-south-america>

Waste containers: <http://www.sbwire.com/press-releases/underground-waste-containers-in-2017-what-does-the-year-ahead-hold-875960.htm>

Paradero Parolibro Paraparques: <https://elplaneta.co/diez-nuevos-puntos-leer-libros-gratis-parques-bogota/>

Caucho sabanero trees: <https://www.reddearboles.org/ficha-tecnica/nwcproduct/818/arbol-nativo-caucho-sabanero>

Blue bike lane: <http://blog.publicbikes.com/2016/03/celebrating-green-bike-lanes/>

Light gray waste containers: <https://www.environmental-expert.com/products/geotainer-model-gt-770-2-1100-2-underground-parking-waste-bins-547335>

Blue bike racks: <https://www.wallpaperflare.com/blue-bicycle-gate-at-daytime-bike-reykjavik-iceland-barrier-wallpaper-ulybf>

Woman reading book: <https://www.westend61.de/en/imageView/GIOF001097/young-woman-sitting-on-park-bench-reading-a-book>

Street light solar panel: <https://www.txzmlamp.net/>

#2 - LAS COLMENAS

Google Maps:

https://www.google.com/maps/@4.6575438,-74.0681103,3a,75y,124.35h,90t/data=!3m8!1e1!3m6!1s0EhrkTQ0TRdUrBhR5za6Xw!2e0!5s20150101T000000!6shttps%3F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fpanoid%3D0EhrkTQ0TRdUrBhR5za6Xw%26cb_client%3Dmaps_sv.tactile.gps%26w%3D203%26h%3D100%26yaw%3D124.436966%26pitch%3D0%26thumbfov%3D100!7i13312!8i6656

Solar Panel Lamppost: <http://recw.in/SOLAR-STREET-LIGHT.html>

Boutique shopper: https://www.freepik.es/foto-gratis/vista-frontal-mujer-centro-comercial_5671707.htm

Chicalá Amarillo Tree: <https://jbb.gov.co/index.php/noticias-del-jardin/item/283-las-20-especies-de-arboles-aptas-para-plantar-en-el-espacio-publico-de-bogota>

Honeybee: https://www.kindpng.com/imgv/hiRxbwh_bee-traceable-heraldic-art-honey-bee-hive-clip/

Waste containers: <https://www.formatoverde.com/en-GB/soterrados/que-es-un-soterrado.aspx>

Aqua mural: <https://www.universitycity.org/blog/porch-30th-gains-colorful-new-eco-mural-hagopian-arts>

Street vendor: https://www.flickr.com/photos/pat_ossa/6268017027

Restaurant: <http://www.yourneighbourhood.com.au/best-cafe-design-shortlist-eat-drink-design-awards-2020/>

Person looking out window: <https://www.alamy.com/stock-photo/person-looking-out-window-exterior-view.html>

Person looking through window: <https://www.alamy.com/stock-photo/person-looking-through-window-exterior.html>

Kids: <https://www.gettyimages.ch/fotos/boy-girl-bench>

#3 - PARQUEADERO DE BOLSILLO

Google Maps:

<https://www.google.com/maps/@4.6566144,-74.0698514,3a,75y,31.71h,99.24t/data=!3m7!1e1!3m5!1s7lwxx1EN5vuu9QISIL74kQ!2e0!5s20131101T000000!7i13312!8i6656>

Street vendor: <https://www.las2orillas.co/como-logran-ganarse-la-vida-40-mil-vendedores-de-aguacates-en-las-calles-de-bogota/>

Left mural: <https://www.sophie-rae.com/decorative-murals>

Right mural: <https://clevelandtraveler.com/cleveland-mural-guide/>

Parking tunnel entrance: <https://www.istockphoto.com/de/search/2/image?phrase=car+tunnel+entrance>

Green isle bench: <https://www.streetlife.nl/us/products/mobile-green-isles-oval>

Girl taking photo: <https://www.twenty20.com/photos/382e3aaf-1e64-4684-bcf9-9caf4f151720>

Couple: <https://www.shutterstock.com/pt/video/clip-8703652-tourists-couple-taking-selfie-self-portrait-photograph>

Bottle cap mural: <https://www.meteomedia.com/ca/nouvelles/article/artist-uses-200000-plastic-bottle-caps-to-create-stunning-eco-mural-in-venezuela>

ECO-BARRIO 7 DE AGOSTO

PRODUCTIVO, VERDE
E INCLUSIVO



C40 STUDENTS REINVENTING BOGOTÁ IMPLEMENTATION PLAN

Katherine HUANG - Inge BAAK - Tessa HARRIES - Melissa CASTILLO SUÁREZ - Gabriela CASTRO ORTEGA



At Plaza Distrital de Mercado 7 de Agosto (Yuruten, 2019)

TIMELINE

PHASE 1: 2022-2026

CASH FOR WORK PROGRAM

1 year setup (continuous)

- Program design
- Establish sponsorship/partnership
- Enrollment
- Training
- Employment
- Program evaluation/adjustment

ECO-MURALES COMPETITION

1 year setup (recurrent)

- Committee formation
- Wall canvas selection
- Establish sponsorship/partnership
- Open call for mural idea submissions/publicity
- Painting and workshops
- Publicity

BICICLARRIO

1 year

- Bike path installation
- Bike rack installation
- Maintenance via Cash For Work

COMMUNITY PLANTING PROGRAM

1 year setup (recurrent)

- Greenery selection
- Establish partnerships
- Recruit volunteers
- Planting + publicity

WASTE MANAGEMENT INFRASTRUCTURE

2-3 years

- Capacity-building
- Adjustment of collection services
- Selection of semi-underground waste containers
- Installation
- Educational campaign

¡ASÍ RECICLAMOS! SOCIAL MEDIA CAMPAIGN

6 months (recurrent)

- Establish partnership with Ecobot (or other)
- Installation of recycling bins
- Publicity and competition

CENTRAL CAMIONES LOT

1-2 years

- Selection of semi-underground waste containers
- Installation
- Maintenance via Cash For Work

PARQUEADERO DE BOLSILLO #1

1-2 years

- Resident consultation
- Site selection and owner compensation
- Excavation/garage construction
- Park installation

INNOVAPLAZA OUTDOOR LEISURE SPACE

2 years

- Local business adaptation period
- Shut down Cl. 66, Cra. 23-24
- Construction of pedestrian zone
- Installation of green furniture, bike racks, PPP, etc.
- Publicity + grand opening events
- Maintenance via Cash For Work

FESTIVAL DE ECO-MURALES

1-2 year setup (recurrent)

- Eco-Murales Competition (extension to national and international artist)
- Recruit participation of local businesses/sponsors
- Publicity
- Event execution

SOLAR PANEL INSTALLATION/RETROFITTING

3-5 years

- Cost-effective, area-appropriate system selection
- Partnership with students
- Installation in Las Colmenas (pilot program)
- Retrofitting incentives for businesses & other residents
- Installation on mercado roof

PARQUEADERO DE BOLSILLO #2

1-2 years

- Site selection and owner compensation
- Excavation/garage construction
- Park installation

LAS COLMENAS PRODUCTIVE HOUSING COMPLEX #1

2-3 years

- Site selection/incentives for property owners
- Renovations/retrofitting
- Business owner incentives/applications

MERCADO COMPOSTING PILOT PROGRAM

1 year setup (continuous)

- Establish partnership with collection/composting entities
- Mercado (vendors) capacity-building
- Education
- Program execution

PHASE 3: 2032-2035

LAS COLMENAS PRODUCTIVE HOUSING COMPLEX #2

2-3 years

- Site selection/incentives for property owners
- Renovations/retrofitting
- Business owner incentives/applications

ECO-BARRIO COMPOSTING PILOT PROGRAM

1 year setup (continuous)

- Scale up Mercado Composting program and setup process

CONSIDERATIONS

FINANCIAL

- Low-cost vs. high-cost interventions (Figure 1)
- Complex multi-layered interventions that require relatively large initial investments (e.g. underground waste collection system)
- Medium- and long-term benefits can outweigh costs and pay off (e.g. a solar retrofit can turn the area into a green energy neighborhood lowering carbon emissions and feeding back excess energy into the power grid)
- Low-cost, easy to implement interventions for fast action (e.g. community planting programs)
- Incentive programs (e.g. for solar panels)

TECHNICAL

- Different levels of technical feasibility and complexity
- For example, constructing underground with residents close by requires plenty of research, many experts, heavy machinery, and risk assessments
- For example, the Mural Festival or community planting programs will not require much technical complexity in their concrete planning and implementation
- Re-routing traffic for ongoing construction works
- Maintenance of interventions once implemented
- Integration of informal street vendors and the informal economy
- Logistical and organizational challenges

LEGAL

- Land use policies and the basic structure of the Zonal Planning Unit of Los Alcázares (Decree No. 262 of 2010)
- Improve quality of public spaces by involving citizens and offering community benefits on different levels, including holistic mobility systems and mixed use housing
- Existing Land Use Plan (Plan de Ordenamiento Territorial, POT) of Bogotá that defines the urbanistic norms which regulate land use, occupation and leveraging
- Interventions, such as InnovaPlaza, cycling lanes, street-level parks, solar energy systems and mixed-use housing, fit into the structures (ecological, functional and services, socio-economic and spatial) laid out by the POT
- They cover urban and eco-parks, mobility, urban equipment, power, economic and services activities, and social cohesion
- Since the city of Bogotá is in the development process of a new POT, some of the urban planning solutions and their approaches proposed in the Eco-Barrio proposal could be considered as well
- The idea is to include innovative paths to urban planning and development, possibly serving the Barrios Vitales approach and leading towards setting examples for other areas in Bogotá

LOW	Central Camiones Lot
HIGH	Las Colmenas Productive Housing
HIGH	Waste Management Infrastructure
LOW	Recycling and Composting Services
LOW	Biciclarrio Cycling Infrastructure
HIGH	Solar Panel Installation and Retrofitting
HIGH	Parqueaderos de Bolsillo
LOW	Community Planting Program
HIGH	InnovaPlaza Outdoor Leisure Space
LOW	Festival de Eco-Murales
LOW	Cash For Work Program

Figure 1. Low-cost vs. High-cost Interventions for el Eco-Barrio 7 de Agosto [created by Inge Baak]

STAKEHOLDERS

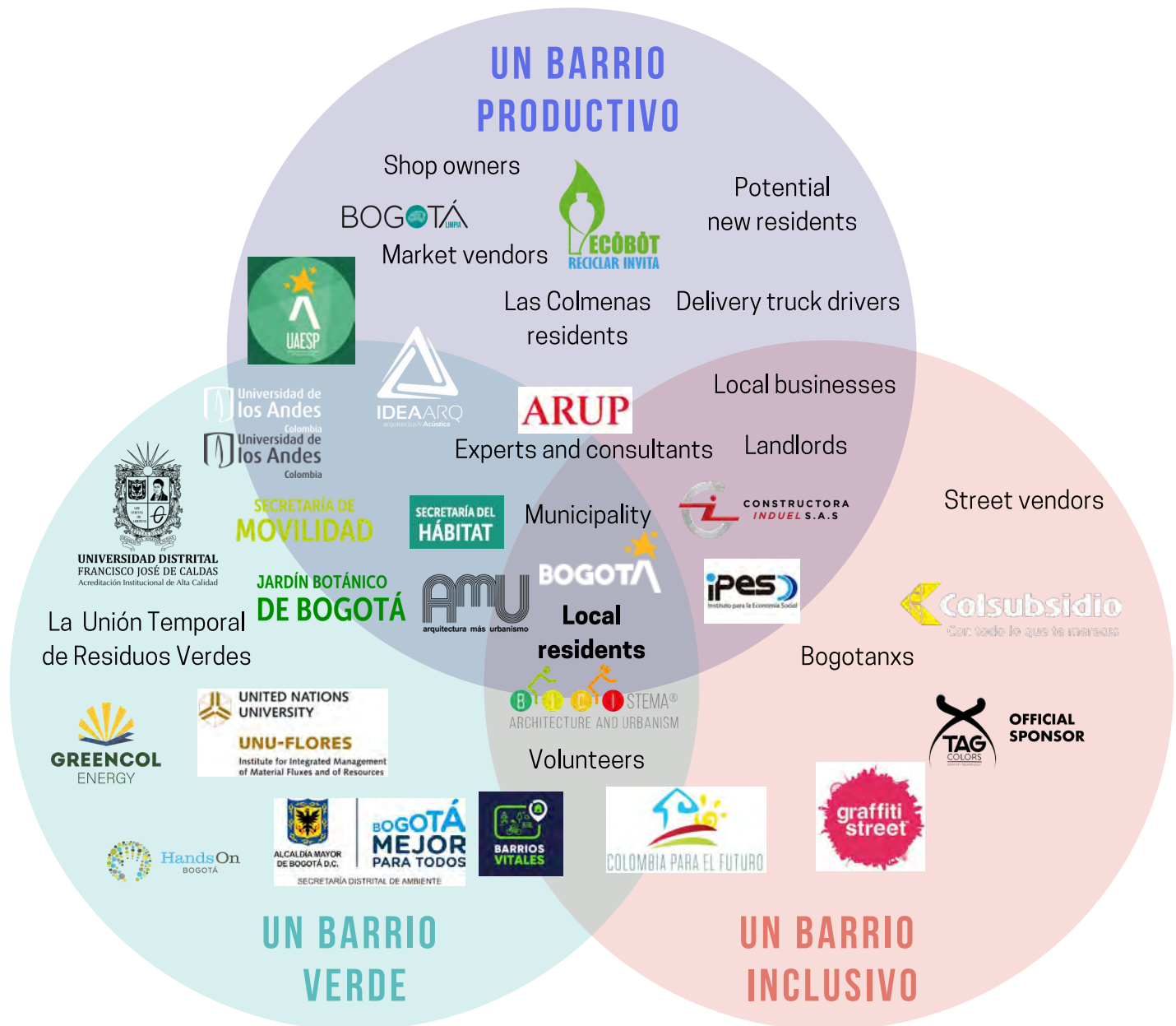


Figure 2. Eco-Barrio 7 de Agosto Stakeholder Mapping [created by Inge Baak]

For all the proposed interventions to happen, many actors will be involved. Figure 2 gives an overview of mostly local stakeholders matched with the three neighborhood themes. Participatory approaches and collaborations play a key role in realizing the Eco-Barrio 7 de Agosto. Local residents are placed at the heart of this diagram as they are involved in almost every intervention, local residents are involved as consultants, co-creators or co-executors. For example, local residents will actively be consulted on the design and implementation of InnovaPlaza and can participate in tree planting programs happening in the neighborhood.

The municipality is also at the heart of every intervention as they are in charge of all the plans including funding, organization and implementation thereof. Everything needs to be evaluated and approved by the municipality before it can be carried out.

Relevant stakeholders have been selected for every intervention, consisting of official bodies, such as the Secretaría de Movilidad, often paired with local organizations, such as Bicistema. Some stakeholders are relevant across neighborhood themes, in having similar interests, useful resources, and responsibility (e.g. Jardín Botánico).

The diagram is evolving and gives a sense of what types of stakeholders need to be involved in each intervention set out in the three different barrios for the successful implementation a **productive, green and inclusive neighborhood, el Eco-Barrio 7 de Agosto**.

UN BARRIO PRODUCTIVO



Waste Management,
Recycling Campaign,
Composting Program



Map Legend

- Blue line: Street/Highway
- Blue square: General Camioneta lot
- Red line: Eco-Market
- Red dashed line: Recombining road waste processing
- Green square: Producers de barrio
- Blue square: Los Camiones produce housing vehicles
- Red star: Show in the deck bar path
- Red line: Intermodal



UN BARRIO VERDE



Welcome to el Eco-Barrio 7 de Agosto,
a **productive**, **green** and **inclusive**
neighborhood in 2035!

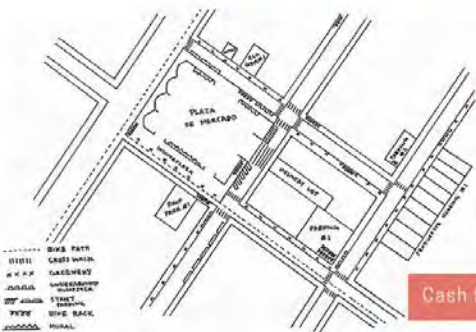


**ECO-BARRIO
7 DE AGOSTO**

**PRODUCTIVO,
VERDE E INCLUSIVO**



C40 STUDENTS REINVENTING BOGOTÁ



Eco-Murales Festival
& Competition



Cash for Work Program



**UN BARRIO
INCLUSIVO**



InnovaPlaza - Outdoor
Leisure Space







-CHICAGO-

PERSHING ROAD CENTRAL MANUFACTURING DISTRICT

URBAN RENAISSANCE

1-2

THE DISTRICT REGENERATION

A connected, carbon-free and cohesive home

3-10

TOWARDS THE FUTURE

Cohesive Building

- Renovation for Employment
 - Renovation for Cultural District
- Connected Community
Carbon-free Neighborhood

11

REFERENCES

12-16

APPENDIX

The Pershing Road District with a glorious industrial past declines in the historical process, while the long-lasting urban innovation spirit of the District and Chicago will gestate a new life for the site. The scenario of renaissance is expected to shape the District as 3C community: a **cohesive, connected and carbon-free urban model for neighborhood development**. Therefore, the team develops people-centered services in three directions of **building renovation**, **mobility** and **green resilience** targeting local sustainability issues such as land use inefficiency, residents' socio-economic opportunities, auto-dependence and GHG emission."



The clock tower in the District (Source: C40 Dataroom)

3C home: connected, carbon-free, cohesive

THE DISTRICT REGENERATION

1.1 CONTEXTS: THE PAST AND PRESENT

The City of Chicago: the third most populous city in the United States

- Famous for its **commodity markets and historic manufacturing industry** here (E.g. food processing)
- Several plans / policies for **green and low-carbon development** (energy, air, GHG, storm water & flooding etc.), like the Climate Action Plan in 2008, Sustainable Chicago Action Agenda in 2015 and Resilient Chicago in 2019.
- A **city reinvention history**: the City Beautiful movement in 1890s and Burnham's Plan of Chicago (1909).

The Pershing Road Central Manufacturing District was **one of the first planned manufacturing districts** in the United States, and one of the largest industrial parks in the world with one dozen industrial buildings **built around 1918**, taking advantage of its adjacency to railways (CNT, 2016; Chicago Site Form, 2021)

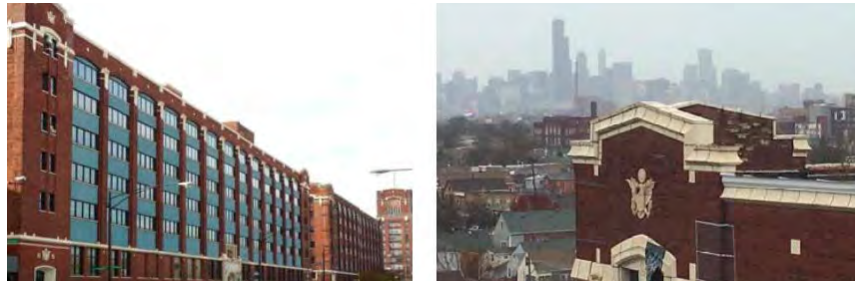


Figure 1. View of the District

(Sources: C40 Dataroom, and Center for Neighborhood Technology)

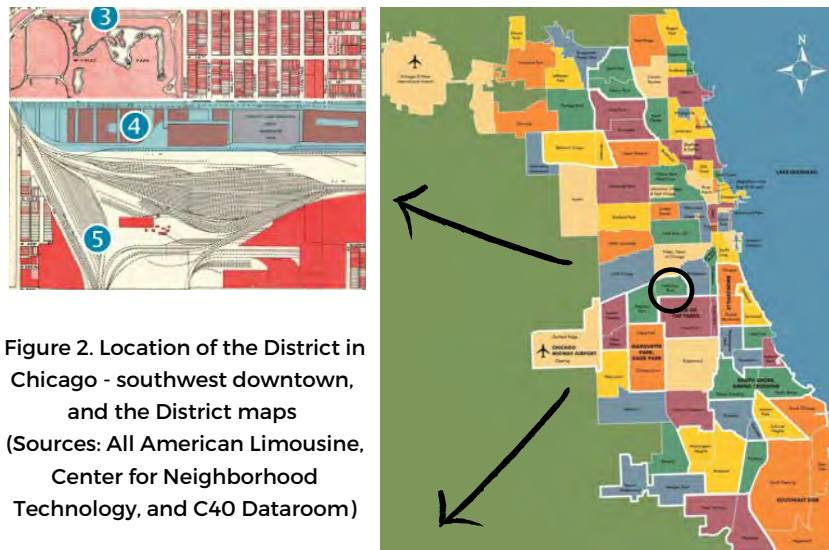


Figure 2. Location of the District in Chicago - southwest downtown, and the District maps
(Sources: All American Limousine, Center for Neighborhood Technology, and C40 Dataroom)

However, due to the decline and fall-off of manufacturing in Chicago, **today many of the District buildings are underutilized**. The District is now located in an **area of transitioning land uses**:

- with active industrial to the south
- residential neighborhoods & a destination park to the north (Chicago Site Form, 2021).

Though several buildings have redeveloped into non-industrial uses with original advantages of the District, the efforts on **green and inclusive transformation** have been fragmentary and context-disconnected.



1.2 SITE DIAGNOSIS

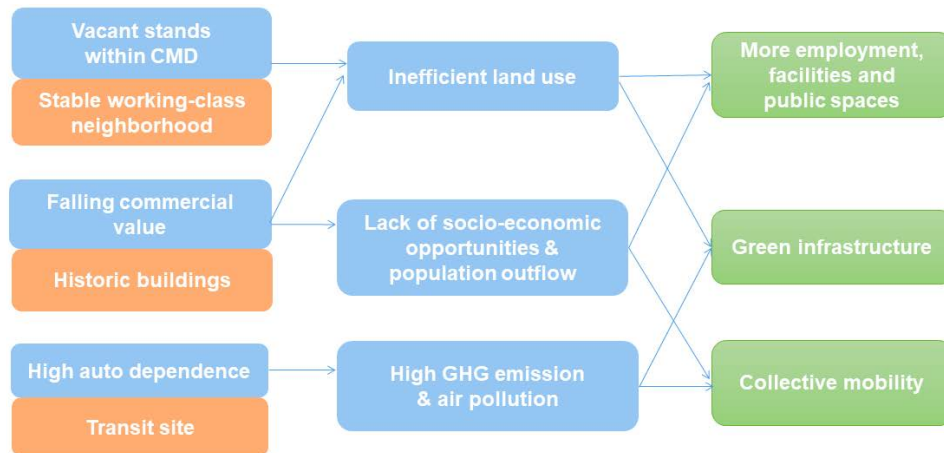


Figure 3. Issue identification (Note: strengths in orange blocks, weaknesses (issues) in blue, and strategies in green)

1.3 FUTURE: A 3C HOME

Building the District into 3C community - **cohesive, connected and carbon-free urban model**

A cohesive home as a place for everyone:

- Engaging all groups' needs inclusively with local development
- Reuse and renovation of the lands and buildings
- Residents enjoying sufficient socio-economic opportunities

A spatially and temporally connected community bridging with convenient lives:

- Efficient transit system as a fundamental composition
- Smart support from digital infrastructure
- More than physical links among different places
- Bringing people, society and environment together

A carbon-free neighborhood ensuring easy access to green environment:

- Limited greenhouse gas emission and air pollution
- Abundant green spaces
- Resilience to local climate events

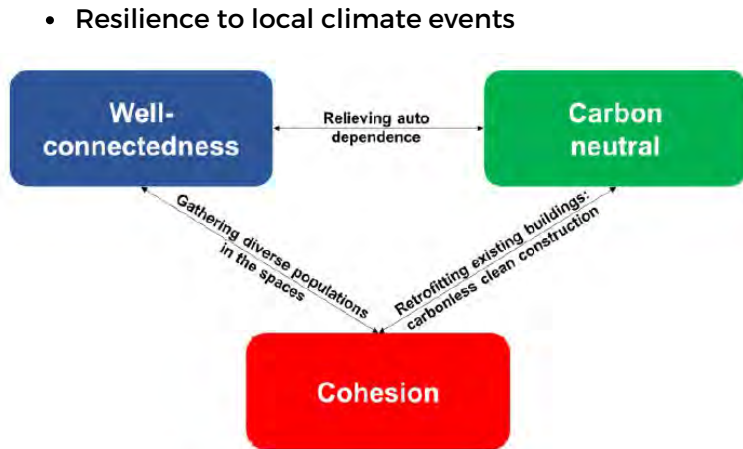


Figure 4. 3C are interconnected: An example



Figure 5. Projects with 3 directions:

Rather than being regarded as purely infrastructure or goods

2.1

COHESIVE BUILDING

The project will renovate the given buildings, including the 12-story clock tower by dividing two sections: three six-story industrial buildings and a clock tower for the local economy and six connected private buildings for cultural development.

BUILDING FOR EMPLOYMENT



Figure 6. 3D map of Pershing District (Source: Google Earth)

Objective

- To preserve exterior design of industrial structures by reusing them as **mixed-use buildings** for social cohesion and employment opportunities
- To promote **tailored industries** and **green manufacturing** with **training programs**
- To provide **three services - Amenity, Office, and House**

Principle

- **"A place for everyone"** - a cohesive place where everyone can fully use and where the community develops itself sustainably
- **"Clean construction"** - utilizing existing buildings instead of constructing new structures to preserve historic values, and reduce GHG emissions and resource waste
- **"Green economy"** - small-sized business related to service sectors and light-manufacturing rather than heavy polluted industries



Figure 7. Clock Tower (Source: C40 Dataroom)

Action #1

: Activate spaces

*Block A, B, and C will be applied same actions

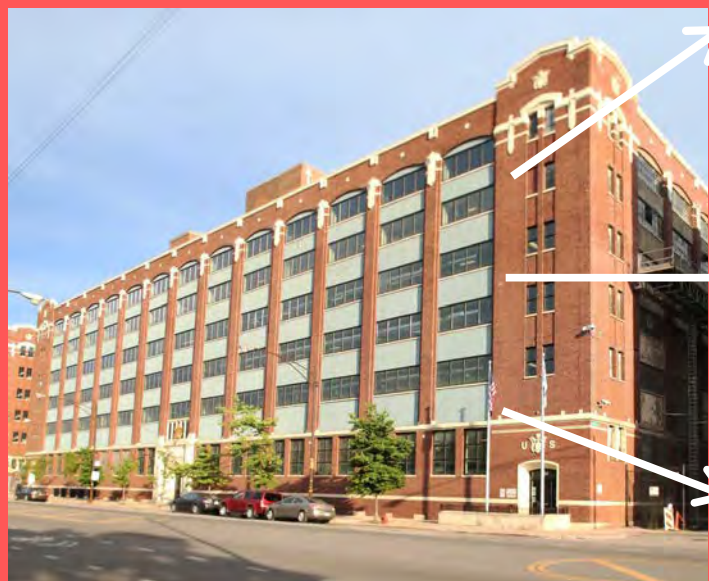


Figure 8. Picture of Block A
(Source: C40 Dataroom)

5th and 6th floors

- Rent as shared houses or studios
- Offer of rooms to workers at a discounted price

3rd and 4th floors + Basement

- Industry incubators for digital and small-sized manufacturing sectors including high-tech / IT companies, custom fabricator, house goods, and food manufacturing, with shared facilities
- Hold training programs or community college sessions on entrepreneurship, trade, employment skills and ICTs for both labors and residents

1st and 2nd floors

- Open pop-up maker spaces, retails, markets, and restaurants to attract visitors and potential entrepreneurs

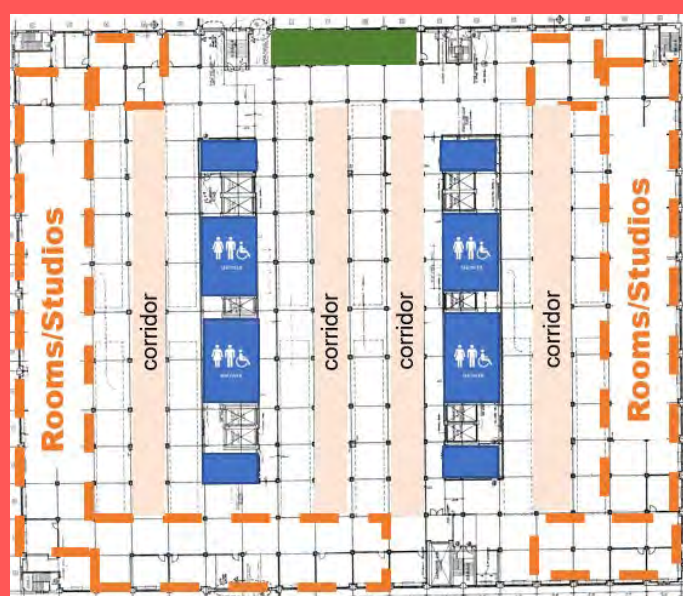


Figure 9. Examples of 4th floor plan for Block C (left) & 6th floor plan for Block B (right)
(Source: self-created with floor plans from C40 Dataroom)

Action #2

: Promote spaces

- Focus on generating engagement, investment, and cooperation from **a global network with supportive policies for start-ups**
- Invite a hotel and fancy restaurant to activate **the Clock Tower**
- Devise website or mobile application for the community to digitally **smartly manage** available spaces and participate in workshops

Outcomes

- Reduce commute time of residents to improve **convenience** and **the quality of life**
- Establish **an industrial hub in Chicago**, providing **job opportunities** for all age groups with the support for new skills and green businesses
- Invigorate **local economy** with **resource efficiency**

2.1

COHESIVE BUILDING

BUILDING FOR CULTURAL DISTRICT

Inspirations



Figure 10. 798 Art district (source: baidu picture)

- 798 Art District was originally the **old factory site** of electronic industry
- **Artists and cultural institutions** renovated the vacant factory buildings
- 798 has become a **new landmark** of Beijing urban culture.

Objective

- To **reuse the vacant land** by developing the old manufacturing site into cultural and art district
- To promote **the tourism, cultural and creative industries**
- To provide **art** related activities, **public spaces**, artistic **decorations** to public

Principle

The principle is “**A place for everyone**”

- If the District is renovated into art district, it can **provide jobs** for local people
- People can take part in **art related activities**, such as art and music festivals
- The characteristic of **multiculturalism** is considered. Arts in different cultures are encouraged in the district

Action

Before the renovation



Figure 11. Vacant spaces between buildings in the District
(source: arcchicago.blogspot.com)



Figure 12. Old buildings in the District
(source: arcchicago.blogspot.com)

Phase #1: Renovate old buildings to art galleries and industrial museum

- Invest in nearby communities, including art and performance studios, music studios, commercial offices, exhibition spaces etc.
- Decrease the costs of art companies such as reducing rent and tax, and providing artists and artistic companies with low interest or discount loans.

Phase #2: Establish public spaces

- Art squares can be built in vacant spaces between buildings
- Invite artists and inhabitants to co-design, providing the place with more artistic decorations



Figure 13. 3D map of Pershing District
(Source: Google Earth)

Phase 1:
Renovate these old
buildings to art
galleries and studios

Phase 2:
Establish public spaces

Phase 1:
Renovate these old
buildings to industrial
museum

Outcomes

- Improve the **live quality** of local people: take part in art related activities, improve entertainment standards and art tastes
- Promote the **economy** growth and **employment** rate
- Promote **tourism and cultural industries**, which are also relatively eco-friendly
- Enhance **social links** through participatory approach for space creation

2.2

CONNECTED COMMUNITY

Chicago: transportation hub

- 2nd largest public transportation system in the US
- Chicago Transit Authority serves 1.4 million rides each average weekday (Chicago Transit Authority, 2020)

Good access to public transit

- The CTA Orange Line Station at 35th-Archer
- 3 CTA bus routes (#9, #39 and #49)
- Several properties **eligible for Transit-Oriented Development** under Chicago TOD ordinance

The 35th-Archer station

- Connecting the McKinley area with the rest of Chicago
- Bringing dynamics to the businesses of the neighborhood with large passenger volume
- A bit far (about a mile) from the District, inconvenient for CTA rail riders to reach their final destination



Figure 14. Train passing by buildings in Chicago. (Source; Pexels, by Alex Powell)



Figure 15. The location of the 35th-Archer rail station and the District (Source: self-created based on City of Chicago Interactive Mapping)

Objective

- To encourage residents' use of **public transit**
- To **redress the "last mile" issue**
- To provide **multiple options for travelers**
- To **reduce energy demand and air pollution**

A connected place and people-centered mobility

Principle

- People with **various transit needs and preferences** can find an alternative
- The action plans will also **bond people with each other** in the community

Action #1 : For cyclists

- Extend bike lanes to connect with the 35th-archer station
- Expand the bike parking and storage capacity (E.g. bike racks and shelters)
- Promote shared biking & parking, and buffered bike lanes
- Offer discounted Divvy membership for transit users

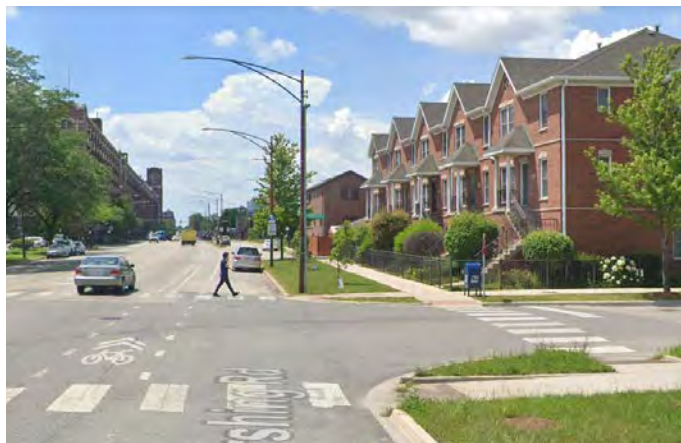


Figure 16. Buffered bike lanes and sidewalk at Pershing Road
(Source: from Google Map)



Figure 17. Street plans
(Source: Self-created via Streetmix)

Action #2 : For pedestrains

- Add countdown signals and clear signs along the road
- Equip sidewalks with trees, resting furniture and drinking fountains
- Place temporary, low-cost & small-scale art installations on the street to make pedestrians' presence more conspicuous to foster communication and connection within the community

Action #3 : For bus-riders

- Extend the frequency and punctuality of current CTA bus route #39. Bus #39 provides an alternative for those who cannot or do not want to walk, cycle or drive, including the aged and the disabled. We can capitalize on the route by increasing bus frequency and matching the departing time of the bus with the arriving time of the CTA rail to accommodate the needs of the commuters.

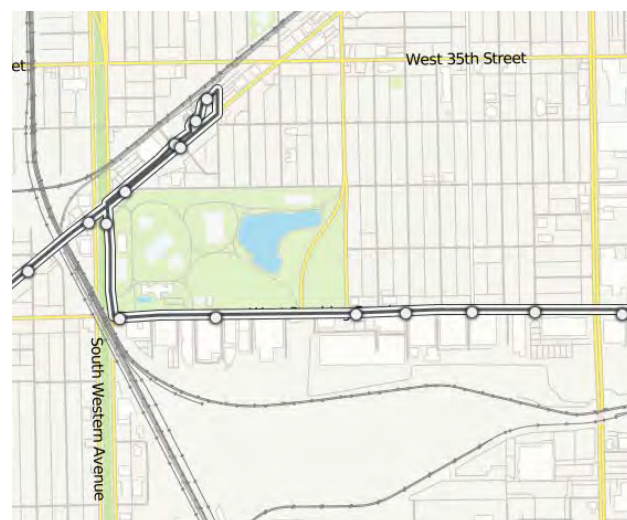


Figure 18. Stops of CTA bus route #39 in McKinley Park.
(Source: Regional Transportation Authority Mapping and Statistics. (2021).

Outcomes

- Reduce transportation cost; boost visitor volume for retail and food businesses;
- Reduce GHG emission and air pollution, increase energy efficiency
- Promote healthier lifestyle, enhance communication and connection in the community

2.3

CARBON-FREE NEIGHBORHOOD

The District is positioned to be the first carbon-free neighborhood in Illinois and green transition pioneer of manufacturing district in America. The whole initiative consists of clean industrial processes, green building retrofits, and public green space construction.

Current situation

- Nearby manufacturing companies was criticized as major source of pollution by local citizens.
- Built environment is responsible for nearly 50 percent of all GHG emissions in large cities such as Chicago (Rocky Mountain Institute, 2017)
- Despite the nearby McKinley Park, the District lacks public green space inside the neighborhood and looks like grey area in satellite map.

Objective

- Reduce energy demand and resource consumption
- Promote fuller transition to a circular economy
- Foster carbon transition to Net-Zero emissions
- Create green, sustainable, and liveable community

Principle

- **Green energy and buildings:** reduce energy demand and de-carbonize both industrial and household activities
- **Circular resources:** Scale up reuse and recycling to increase resource efficiency
- **Green space, climate resilient and nature-based solutions:** provide all residents access within a 15-minute walk or bike ride to a high-quality open green space

Action #1

: Eco-industrial park transition

- **Electrified solutions and cleaner production enhancement** towards major manufacturing companies (i.e. MAT Asphalt, New Star Lighting, R & B Powder Coating, Tulsa Power Service Inc., etc.)
- **Shared infrastructure construction:** biogas plant, recycling center, waste treatment plant, power generation
- **Sustainable symbiosis promotion through shared industrial flows:** material, energy, waste, water, etc

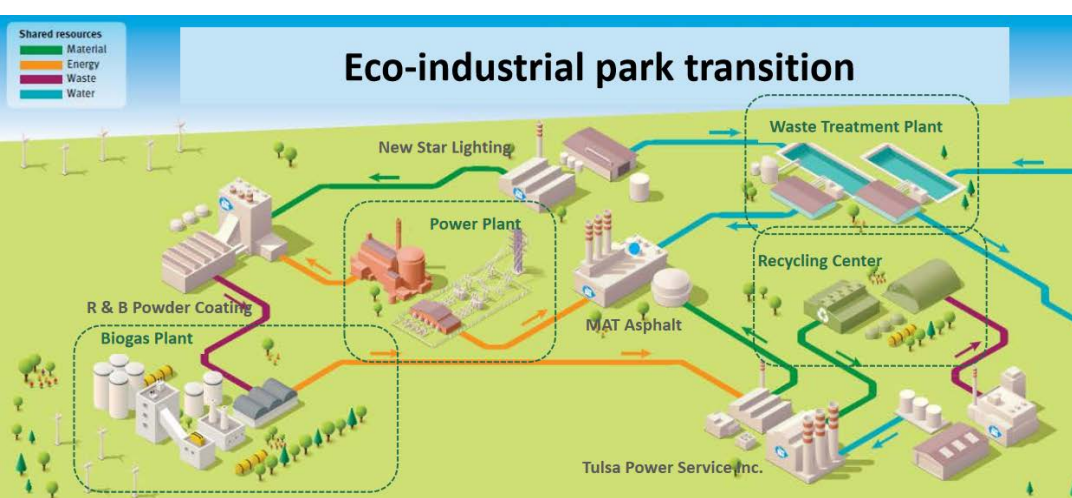


Figure 19.

Eco-industrial park transition plan
(Source: self-created with reference to
UNIDO model of Eco-Industrial Parks)

Action #2

: Green building retrofits

- **Improved envelope:** insulation, air tightness and waterproofing enhancement to minimize energy use for heating/cooling
- **Rooftop PV system:** solar power production with thermal energy storage to support domestic hot water and other power demands;
- **Autonomy window:** minimize artificial light use during daylight hours to decrease energy consumption
- **Domestic energy efficiency improvement:** including energy star appliances, energy efficient lighting, etc.
- **Water recycling system:** including grey water recycling system and hot water re-circulation
- **Wind-solar hybrid street light:** street lighting powered by hybrid sustainable energy, coherent with “Windy City” plan

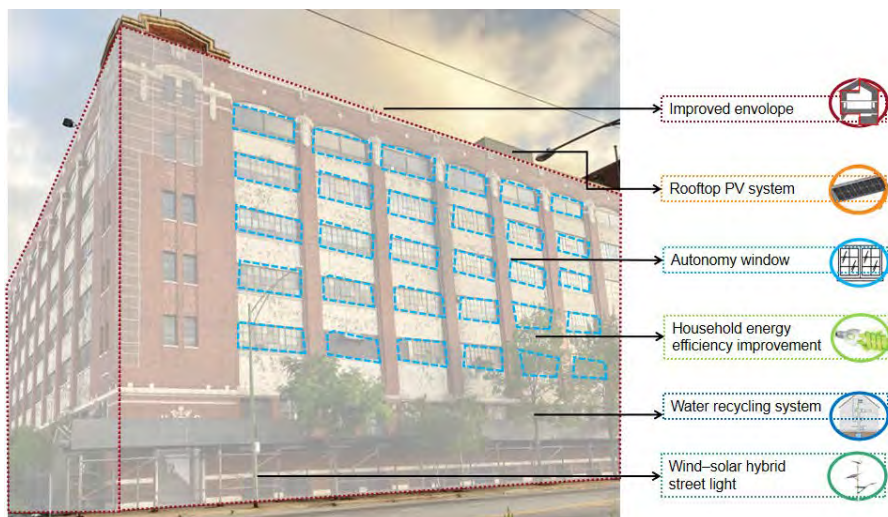


Figure 20. Clean construction and building retrofits example
(Source: self-created)

Actions #3

: Public green space construction

- **The McKinley Park** fully utilizes to create powerful carbon sinks to remove carbon from the atmosphere and offset emissions
- **A chain of pocket parks** and landscape garden is created to act as landscape buffers between freight intensive activities and residential areas
- **The rooftop rainwater garden** is constructed as part of local climate coordination system with the function of holding and soaking in rainwater and reducing temperatures of roof surface through evapo-transpiration, also serving as neighborhood sharing platform to create a livable community which co-exists seamlessly with nature



Figure 21. Public green space construction example
(Source: self-created with reference to Shelterness)

Outcomes

- **Environment:** including GHG emission reduction, air pollution and heat island effect mitigation, energy efficiency improvement, rain water management, etc
- **Health:** including improved air quality, greater opportunities for physical activity, etc
- **Aesthetics:** including city beautification and greenscapes, cleaner streetscapes, architecturally refreshed building stock, etc
- **Community Service and Equity:** including broader access to public green space (especially for low-income residents), expanded options that empower residents in green space co-creation
- **Economy:** including energy cost savings, reduced operation and maintenance costs, etc

REFERENCES

1. C40 Students Reinventing Cities. (2021). Chicago Site Form.
https://www.c40reinventingcities.org/data/uni-competition_3ef69/fiche/239/chicago_-_site_form_-_final_c8be1.pdf
2. Center for Neighborhood Technology (CNT). (2016). Chicago's Central Manufacturing District: The Past and Future of Urban Manufacturing.
<https://www.cnt.org/sites/default/files/publications/Chicago%27sCentralManufacturingDistrict.pdf>
3. Chicago Metropolitan Agency for Planning. (2021). City of Chicago McKinley Park Neighborhood Plan. https://www.cmap.illinois.gov/documents/10180/862186/FY21-0016_McKinley_Park_Plan.pdf/bfbc8002-13cd-e88e-160f-22c7f60c2e0a?t=1613513625398
4. Chicago Transit Authority. (2020). Annual Ridership Report Calendar Year 2019. Retrieved from https://www.transitchicago.com/assets/1/6/2019_Annual_Ridership_Report.pdf
5. Rocky Mountain Institute. (2017). The Carbon-Free City Handbook. <https://rmi.org/wp-content/uploads/2017/11/the-Carbon-Free-City-Handbook-1.0.pdf>
6. Shelterness. 28 Rooftop Gardens That Inspire To Have Your Own One. Retrieved May 18 from <https://www.shelterness.com/rooftop-gardens/>
7. United Nations Industrial Development Organization. (2021). An International Framework for Eco-Industrial Parks. <https://www.unido.org/sites/default/files/files/2021-04/An%20international%20framework%20for%20eco-industrial%20parks%20v2.0.pdf>

APPENDIX - TIMEFRAMING

COHESIVE BUILDING - EMPLOYMENT & CULTURAL DISTRICT

Short-term

The district will **activate three six-story buildings** opening the lines of pop-up maker spaces, markets, restaurants, and workshops. This aims to **demonstrate the site's potential and appeal to visitors or entrepreneurs** to build a network and envision the opportunities. They will be led by the local people working in service or food industries or by **36Squared Business Incubator**, which encourages entrepreneurs to grow small businesses with networks between business owners and resources. The **Industrial Council of Nearwest Chicago (ICNC)**, a partner agency of the city's Local Industrial Retention Initiative (LIRI) program, also introduces employees to training programs and financial resources to start a new small business. With their strategies and support, the site can design **lease plan** at a reasonable price for shared workplaces or housings.

For cultural aspect, **Department of Cultural Affairs and Special Events** sets up **the art district office**, which is responsible for the detailed work of renovating the art district. It redesigns the district and the buildings are divided into galleries, industrial museums, art studios, squares etc. Also, **School of the Art Institute of Chicago (SAIC)** invites **graduates to exhibit their artistic work** providing them with opportunities to work in the district as interns and communicate with artists.

Mid-term

It focuses on **promoting the site, building a global network with the support for more start-ups**. At this moment, the **clock tower** is renovated as a hotel with restaurants. **World Business Chicago (WBC)** works between public and private sectors to help companies select locations for their business. As WBC agrees that advanced manufacturing is a top transformative strategy for Chicago, it can make a bridge with external opportunities, including the IT sector to utilize Internet service and **devise a website or a mobile application** for buildings. Moreover, **Chicago Sister Cities International (CSCI)**, a part of WBC, contributes to developing global networks with Chicago. This also can promote the site in the international field.

The Terra Foundation invests in **"Creative Cultural and Art Festival"**, and The art district office **organizes and publicizes the festival**. Art galleries, studios, and artists are encouraged to take part in this festival. The art district office promotes the festival on social media platforms. Green plants should be planted in the public areas, and artists and inhabitants are invited to **co-create in the public areas**.

Long-term

The main objective is **monitoring for sustainability**. The community maintains the site as a leading commercial center. Inhabitants continuously fully use buildings by requiring their needs and tracking possible inefficiencies. **The McKinley Park Community Center** can take the lead to collect opinions through regular surveys and communicate with partners for further projects. The art district office also introduces foreign art institutions and exhibitions, and provides opportunities to **communicate with foreign artists**.

APPENDIX - TIMEFRAMING

CONNECTED COMMUNITY - TRANSIT-ORIENTED DEVELOPMENT

Short-term

A comparison of different routes connecting the station and the Pershing Road will be conducted, the district will also need to conduct **feasibility analysis** to select the best street to add bike lanes. A working team should **reach out to Divvy** and negotiate with them to see the possibility of adding bike racks for private bikes to current bike stations. For the walking environment improving projects, **field review** should be carried out to decide where pedestrian signals are needed. **An advertisement plan** should be made to inform the inhabitants of the notion of **tactical urbanism practices**. For the bus service project, the team could **resort to CTA** to seek to change the operating schedule of CTA bus #39.

Mid-term

Bike lanes, signages and pedestrian signals will be designed and constructed. Bike station extension and sidewalk improvement plans will **be constructed**. The operating schedule of CTA bus #39 will be changed to provide convenience to bus riders.

Long-term

The facilities will need regular operation and maintenance efforts, and their performance as to the ridership volume, financial revenues and environment shall **be evaluated**. The working team could consider transform some installations into permanent ones based on their effects.

Stakeholder

Key stakeholders include **government agencies, the company Divvy and the inhabitants**. on transportation including the Regional Transportation Authority (RTA), the Chicago Transit Authority (CTA) and the Chicago Department of Transportation (CDOT). The working team would apply for permission to extend bike lane and add new facilities along the streets from the government after feasibility analysis, and would negotiate with CTA on the possibility of changing the CTA bus timetable to coordinate its operation with the rail. We would need to reach out to **Divvy, the sole provider of shared bike services in Chicago**, to seek opportunities to expand parking capacity of current stations and provide shared parking services. We would also like to **encourage the inhabitants to take the initiative to add art installations** on the street to make their own place.

APPENDIX - TIMEFRAMING

CARBON-FREE NEIGHBORHOOD

Short-term

The eco-industrial park transition will be kicked off with **electrified solutions and cleaner production enhancement**. The pocket parks and rooftop rainwater garden will be activated with **community building activities as technical urbanism**.

Mid-term

The **shared industrial infrastructure** will be constructed for biogas and power generation, waste treatment, and recycling. Clean building retrofits will be implemented for **city-owned building**. And **McKinley Park** will also be deeper utilized to create powerful carbon sinks.

Long-term

The **sustainable symbiosis** will be achieved with **shared industrial flows** regarding material, energy, waste, water, etc. And clean building retrofits will be extended to **other types of buildings besides city-owned ones**.

Stakeholder

The McKinley Park Development Council, the Chicago Department of Planning and Development, and the Chicago Metropolitan Agency for Planning will take the lead in collaboration with major manufacturing companies, construction units, local residents, non-governmental organizations, and other stakeholders. Neighborhood citizens will be encouraged in co-creation process of pocket parks and rooftop rainwater garden. **Local NGOs such as NeighborSpace and Openlands** could act as partner and provide assistance such as initiative organization, technical assistance, etc. The McKinley Park and Hoyne Park advisory councils and the Friends of the Parks will also participate in all park-related issues.

In addition to **municipal budget and issuance of municipal bonds**, the project can unlock **additional financial incentives** which may include utility energy efficiency programs, Community Choice Aggregator programs, Energy Performance Contracts, and commercial Property Assessed Clean Energy, which can help to leverage **third-party capital** to finance turnkey energy improvements while the project is guaranteed energy savings cover the cost of financing.

APPENDIX - TABLE

Table 1. Site diagnosis: SWOT analysis

	Strengths	Weaknesses	Opportunities	Threats
Location	Important transit site: proximity to expressways and CTA stations Central location in the heart of a metropolitan market		Connect communities via improved public transit	Commodity price and economic cost
Environment	Next to McKinley Park	Air Pollution due to heavy traffic	Chicago's Mayor Rahm Emanuel announced that the "Windy City" will make the transition to 100 percent clean, renewable energy in buildings community-wide by 2035. Pocket parks and more green space; The Building as a Service: Introduce and apply clean energy	Trade off with its industrial and commercial businesses
Neighborhood	Stable and working-class	70% of residents leave for employment	Reuse of lands and buildings to provide local job vacancies	
Commercial Value	Pre-established foundation and infrastructure with manufacturing history North of the freight rail	Mostly vacant CMD stands	Potential advantages from renovation and collocation	Gentrification
Culture	Historic building: one dozen industrial buildings built around 1918		As a landmark for future tourism	

Table 2. Benchmark

Topic	Project Name	Location	Short introduction	Lessons learned
Cohesive Building - Employment	Industry City	New York, The United States	Industry City has 16 buildings. Since 2010s, it has been working as an industrial village with events, green spaces, retails, and art installations.	This site is a successful case that revived its past hub of manufacturing area by offering enough job opportunities with various industries to local community
Cohesive Building - Culture	798 Art District	Beijing, China	<ul style="list-style-type: none"> 798 Art District was originally the old factory site of electronic industry Artists and cultural institutions renovated the vacant factory buildings 798 has become a new landmark of Beijing urban culture. 	Both 798 district and CMD used to be old industrial districts with vacant buildings and spaces. 798 attracted artists and companies to the area. CMD can learn some strategies from the renovation of 798.
Connected Community - Transit	The Village of Mount Prospect	Chicago, united states	The site expanded 60 new bicycle parking spaces at the Mount Prospect Metra station, and improved access to Pace Routes #234 and #694. The facilities are popular among bicyclists since opening in the fall of 2017. They improved multi-modal access to the businesses in the Rand Road Corridor.	When working to improve the mobility of an area, planners could focus on how to capitalize existing transit resources rather than constructing new facilities. Small scale infrastructure could benefit bicyclists and pedestrians, and improve overall traffic flow.
Carbon-free Neighborhood	zHOME Multifamily Complex	Washington, U.S.	Completed in 2011, zHome was the first zero net energy project of its kind in the United States. The complex is made up of 10 units and a shared community area.	<ul style="list-style-type: none"> Establish early project goals and embracing a fully integrated design process Reduce occupant-driven energy by both direct (e.g. education and feedback) and indirect (e.g. operable windows, daylighting and natural ventilation) approaches
Carbon-free Neighborhood	King Open/ Cambridge Street Upper Schools and Community Complex	City of Cambridge, U.S.	Guided by the Net Zero Action Plan of Cambridge city council, the complex was redesigned to maximize efficiency through the building configuration and integrated energy reduction strategies, which are expected to result in 43% less energy than the average regional school.	<ul style="list-style-type: none"> Take advantage of the site's resources by capturing daylighting, shading, and on-site energy optimization, and other passive design strategies Conduct feasibility studies and interviews to gain insight into occupant needs and unique needs Carefully investigate daily and seasonal use patterns, and ask about equipment needs in case they can be combined and shared Allow future occupants to be part of the design process created ownership of the building, encouraging them to participate in maintaining the building during occupancy
Carbon-free Neighborhood	Shenzhen Bay Science and Technology Ecological Park	Shenzhen, China	Shenzhen Bay Eco-Technology Park was established to hold the headquarters and R&D bases of high-tech listed companies and was a national-level low-carbon ecological park.	<ul style="list-style-type: none"> Take energy-saving and environmental protection technology as the core Introduce AI operation and other eighteen major green technology systems which fully guarantee the low consumption, low emission, high performance and high comfort of the park

APPENDIX - TABLE

Table 3. Solution proposals

Topic	Issues	Solutions	Goals and outcomes	Principles
Cohesive Building - Employment	<ul style="list-style-type: none"> • Inefficient land use • Lack of economic opportunities & population outflow 	<ul style="list-style-type: none"> • Action #1: Activate spaces of buildings • Action #2: Promote the spaces 	<ul style="list-style-type: none"> • Economy: more job opportunities, especially for manufacturing, digital, and service sectors, to invigorate the local economy • Environment: encourage green business to consume resources efficiently and reduce pollution from industries • Increase the quality of life with improved convenience 	<ul style="list-style-type: none"> • A place for everyone • Clean construction • Green economy
Cohesive Building - Culture	<ul style="list-style-type: none"> • Under-utilization, vacant land 	<ul style="list-style-type: none"> • Phase #1: Renovate old buildings to art galleries /studios and industrial museum • Phase #2: Establish public spaces 	<ul style="list-style-type: none"> • Reusing existing stock • Promote the economic growth by tourism, cultural and creative industries • Provide art related activities, public spaces, artistic decorations to public • Job opportunities, art tastes, multiculturalism, and recreational entertainment 	<ul style="list-style-type: none"> • A place for everyone
Connected Community - Transit-Oriented Development	<ul style="list-style-type: none"> • "Last mile" transit access • High auto-dependence 	<ul style="list-style-type: none"> • Provide multiple mobility choices for commuters with a focus on public transit 	<ul style="list-style-type: none"> • Economy: reduce transportation cost; increased foot traffic could boost visitor volume for retail and food businesses • Environment: reduce GHG emission and air pollution, with increased energy use efficiency • Social: promote healthy lifestyle, enhance communication and connection within the community 	<ul style="list-style-type: none"> • People-centered mobility and thriving streets • Connected place
Carbon-free Neighborhood	<ul style="list-style-type: none"> • Air pollution and greenhouse gas • Insufficient community opportunities (public green spaces) 	<ul style="list-style-type: none"> • Action #1: Eco-industrial park transition • Action #2: Clean construction and building retrofits • Action #3: Public green space construction 	<ul style="list-style-type: none"> • Environment: GHG emission reduction, air pollution mitigation, energy efficiency improvement, etc. • Health: improved air quality, greater opportunities for physical activity, etc. • Aesthetics: city beautification and green landscape, cleaner streetscapes, architecturally refreshed building stock, etc. • Community Service and Equity: broader access to public green space (especially for low-income residents), expanded options that empower residents in green space co-creation • Economy: energy cost savings, reduced operation and maintenance costs, etc. 	<ul style="list-style-type: none"> • Green energy and buildings • Circular resources • Green space, climate resilient and nature-based solutions • Sustainable lifestyles

Table 4. Emission-based environmental assessment

	Cohesive Building - Employment	Cohesive Building - Culture	Connected Community - Transit	Carbon-free Neighborhood
Operational Emissions	Green building retrofits increase energy efficiency (with the help of smart management) and the use of clean energy, reducing GHG emissions	Green building retrofits increase energy efficiency and the use of clean energy, reducing GHG emissions	Collective mobility including cycling and walking helps reduces emissions associated with private vehicles	The use of clean energy decreases GHG emissions; green vegetation absorbs emissions
Embodied Emissions	Less emissions from renovation of buildings (reuse of existing stock) than new construction	Less emissions from renovation of buildings (reuse of existing stock) than new construction; public space construction	Street plan construction	Green infrastructure and green space construction
Consumption-based Emissions	Eco-industrial park transition contributes to the reduction of resource consumption	N/A	N/A	N/A

-CHICAGO-

PERSHING ROAD CENTRAL MANUFACTURING DISTRICT

URBAN RENAISSANCE

IMPLEMENTATION PLAN

- 1** **TIMELINE**
- 2** **STAKEHOLDERS**
- 3** **FINANCIAL SOURCES**

For a cohesive, connected and carbon-free home

"Considering the need for further sustainable development and residents' benefits, it is urgent to redevelop this site to improve its service function, strengthen community connections, stimulate economic growth and enhance eco-friendliness."



The clock tower in the District (Source: C40 Dataroom)

SHORT-TERM

RENOVATION OF BUILDINGS FOR EMPLOYMENT

- Activate places and attract businesses
- Lease plan to workers at a discounted price
- Hold training workshops

CONNECTED COMMUNITY

- Conduct field review and feasibility analysis
- Initiate negotiations with Divvy
- Advertisement for tactical urbanism inhabitants
- Liaise with the CTA

RENOVATION OF BUILDINGS FOR CULTURAL DISTRICT

- Set up the art district office
- Develop different functional spaces, and attract artists and businesses
- Invite graduates to exhibit their artistic work

CARBON-FREE NEIGHBORHOOD

- Promote electrified solutions and cleaner production enhancement in major manufacturing companies
- Co-construct pocket parks and rooftop rainwater garden

MID-TERM

RENOVATION OF BUILDINGS FOR EMPLOYMENT

- Invite hotel and fancy restaurant for the clock tower
- Build a global network for investment and cooperation
- Create a website and mobile application for building management

CONNECTED COMMUNITY

- Street project construction for cyclists and pedestrians
- Improve the schedule of CTA bus #39

RENOVATION OF BUILDINGS FOR CULTURAL DISTRICT

- "Creative Cultural and Art Festival"
- Publicity and promotion
- Green plants and art making in the public areas.

CARBON-FREE NEIGHBORHOOD

- Constructi shared industrial infrastructure
- Implement clean building retrofits for city-owned ones
- Conduct McKinley Park enhancement

LONG-TERM

RENOVATION OF BUILDINGS FOR EMPLOYMENT

- Conduct regular surveys for feedbacks and adjustments

CONNECTED COMMUNITY

- Operation and maintenance
- Performance evaluation
- Transform into permanent installations

RENOVATION OF BUILDINGS FOR CULTURAL DISTRICT

- Introduce foreign art institutions and exhibitions
- Exchanges with foreign artists

CARBON-FREE NEIGHBORHOOD

- Promote sustainable symbiosis with shared industrial flows
- Implement clean building retrofits for the others

STAKEHOLDERS

RENOVATION OF BUILDINGS FOR EMPLOYMENT

- **Government:** Department of Commerce and Economic Opportunity
- **NPO:** 36Squared Business incubator, World Business Chicago (WBC), Chicago Sister Cities International (CSCI)
- **Others:** The McKinley Park Community Center

RENOVATION OF BUILDINGS FOR CULTURAL DISTRICT

- **Government:** Department of Cultural Affairs and Special Events
- **NPO:** The Terra Foundation
- **College:** School of the Art Institute of Chicago (SAIC)
- **Others:** The art district office

CONNECTED COMMUNITY

- **Government:**
- Chicago Transit Authority (CTA)
- Chicago Department of Transportation (CDOT)
- Regional Transportation Authority (RTA)
- Chicago Metropolitan Agency for Planning (CMAP)

CARBON-FREE NEIGHBORHOOD

- **Government:** the McKinley Park Development Council, the Chicago Department of Planning and Development, the Chicago Metropolitan Agency for Planning, and the McKinley Park and Hoyne Park advisory council
- **NPO:** NeighborSpace, Openlands, the Friends of the Parks
- **Others:** major manufacturing companies, construction units, local residents, etc.

FINANCIAL SOURCES

RENOVATION OF BUILDINGS FOR EMPLOYMENT

- State and municipal governments
- The industrial Council of Nearwest Chicago (ICNC)
- World Business Chicago (WBC)
- Small Business Improvement Fund (SBIF) programs

RENOVATION OF BUILDINGS FOR CULTURAL DISTRICT

- State and municipal governments
- The Terra Foundation

CONNECTED COMMUNITY

- Federal Transit Administration
- Programs provided by RTA and CMAP (Access to Transit; Surface Transportation Program)
- Farebox revenue through increasing ridership

CARBON-FREE NEIGHBORHOOD

- Municipal budget and issuance of municipal bonds
- Energy Performance Contracts
- Community Choice Aggregator (CCA) programs
- Property Assessed Clean Energy (PACE) programs

#Chicago Team: My Kind of Town

Urban Renaissance Project: A cohesive, connected and carbon-free Central Manufacturing District

Another option for the Industrial Museum (the left), and art & cultural studios / galleries (the right)



Master Plan

- 1: Six buildings for Industrial Museum + Art studios/galleries
- 2: Open public space (square) with art flavor
- 3: Six-story buildings (with rooftop gardens) for mixed uses, and clock tower for hotel & restaurant
- 4: Public green spaces: pocket gardens
- 5: Sidewalk, bike lane and bus lane
- 6: Bike parking
- 7: McKinley Park
- 8: Residential housing with energy transition and rooftop gardens (long-term)

Cohesive Building - Renovation for Employment

Mixed uses under three services - amenity, workplace and house

Cohesive Building - Renovation for Cultural District

- Art studios, galleries and industrial museum;
- Open public spaces with art flavors

Connected Community

- Soft mobility enhancing for pedestrians and cyclists;
- Public transportation system improvement for bus-riders

Carbon-free Neighborhood

- Clean industrial processes for eco-industrial park transition;
- Green building transition with energy efficiency;
- Public green space construction

Marketing Strategies

- Designed district business tours;
- Social media promotion;
- QR code, mini program and app;
- Physical signs, posters and billboards;
- Campaigns and festivals under cooperation with local stakeholders and marketing firm





West Pershing Road



DÉLAIS DE MISES EN OEUVRE

Phase 1

2021-2025

Phase 2

2025-2034

Phase 3

2035 +

Dakar Open Hub

- Ouvrir un centre de R&D (2 ans)
- Navette de bus (1 an)

Dakar Open Hub

- Programme de mentorat en matière d'entrepreneuriat (4 years)

Dakar Open Hub

- Elargir ces 'Plateaux d'Innovation' à Dakar (10 ans)

Station de train

- Revalorisation du site: appel d'offres (2 ans)
- Tuk tuks électriques: Lancer un projet pilote & infrastructure de charge (3 ans)

Station de train

- Revalorisation du site à l'extérieur: Lancer un réseau de foot truck (2 ans)
- Site extérieur: Arts events (1 an)
- Transport: Voies piétonnes et services de bus express (3 ans)

Station de train

- Revalorisation du site à l'intérieur: Construction d'un centre commercial (4 ans)
- Tuk tuks électriques: Etendre à Dakar (3 ans)

Place de l'indépendance

- Appel d'offres (1 an)
- Recherche de matériaux de construction (clay, tyfa) (2 ans)

Place de l'indépendance

- Site renovation (30% de l'espace) (4 years)
- Voies piétonnes (20% de l'espace)
- Navette de bus (1 an)

Place de l'indépendance

- Renovation du site: 50% de l'espace (4 ans)
- Amélioration esthétique (fleurs, baobabs) (1 an)

Musée & Port

- Peintures murales: Projet pilot (2 mois)
- Parcours d'art: appel d'offres (1 an)

Musée & Port

- Fashion Week: Lancement du projet au port (3 mois)
- Parcours d'art: Implémentation (2 ans)

Musée & Port

- Parcours d'art: Etendre les tours en dehors du site (2 ans)

PARTIES-PRENANTES & STRATÉGIE FINANCIÈRE

Sous-interventions	Parties-Prenantes & Responsabilités	Financement
Entrepreneuriat Innovant		
1. <i>Dakar Open Hub</i>	<ul style="list-style-type: none">• Mairie de Dakar : investisseur, partenaire• Université Cheikh Anta Diop (UCAD): collaborateurs et étudiants• Union des chambres de commerce et start-ups sénégalaises: consultants et investisseurs partenaires, ciblant les entreprises des secteurs de l'architecture durable, de l'énergie marine (ElemenTerre).• Ker Thioissane & DefkoAkNiep Lab: partenaires d'affaires	<ul style="list-style-type: none">• <i>Partenariats public-privé entre la ville de Dakar et les entreprises sénégalaises.</i>
2. <i>Intérieur de la gare</i>	<ul style="list-style-type: none">• Mairie de Dakar: obtention des permis d'installation et de vente• Conseil Executif des Transports Urbains de Dakar (CETUD): entretien des chemins de fer et des installations• Business locaux du Plateau: vendeurs et investisseurs	<ul style="list-style-type: none">• <i>Remise en état et entretien des installations par la DCG et le CETUD pour les louer à des vendeurs privés.</i>
3. <i>Extérieur de la gare</i>	<ul style="list-style-type: none">• Mairie de Dakar: obtention des permis d'installation et de vente• Chambre de Commerce, d'Industrie et d'Agriculture de Dakar : vendeurs et investisseurs	<ul style="list-style-type: none">• <i>Reconditionnement et entretien des installations par DCG et CETUD pour les louer à des vendeurs privés.</i>
Mobilité intégrée		
1. <i>Service de tuk-tuk électrique</i>	<ul style="list-style-type: none">• Ministère des infrastructures et des transports: autorisation d'installer un service de location à la gare de Dakar et une station de recharge• Start-ups sénégalaises: produire les electric tuk-tuks	<ul style="list-style-type: none">• <i>Partenariats public-privé entre la ville de Dakar et des start-ups technologiques sénégalaises</i>
2. <i>Service de bus</i>	<ul style="list-style-type: none">• Ministère des infrastructures et des transports: l'autorisation de consacrer une voie de bus sur les routes• Dakar Dem Dikk: routage pour les bus électriques	<ul style="list-style-type: none">• <i>Financement par l'État ou attraction d'investissements étrangers</i>
3. <i>Elargissement des trottoirs</i>	<ul style="list-style-type: none">• Ministère des infrastructures et des transports: permission d'élargir les trottoirs existants• Entreprises de construction de clôtures	<ul style="list-style-type: none">• <i>Parrainage par des entreprises et des donateurs locaux</i>
Résilience verte		
1. <i>Réduire les émissions de carbone et les ilots de chaleur</i>	<ul style="list-style-type: none">• Ministère de l'environnement et du développement durable , Mairie de Dakar: octroi des permis pour l'implémentation des corridor de bougainvilliers	<ul style="list-style-type: none">• <i>Discuter des contrats à long terme, y compris l'achat de produits à des prix préférentiels.</i>
2. <i>Végétalisation & redynamisation de la Place de l'Indépendance</i>	<ul style="list-style-type: none">• Element Terre Sarl/Worofila: designs pour les constructions écologiques• Jardin du Senegal: partenariats pour le développement d'espaces verts• Toits Du Senegal: partenariats pour les toits végétalisés• UrbaSen: partenariats pour la végétalisation des espaces	<ul style="list-style-type: none">• <i>Lancer des appels d'offres formels pour les projets de réaménagement des corridors de bougainvilliers et de la Place de l'Indépendance.</i>
Arts participatifs		
1. <i>Parcours historique et culturel</i>	<ul style="list-style-type: none">• Musée des Civilisations Noires : collaborateurs & hôtes d'évènements• Galleries locales (Le Manège, Galerie C. Fakhoury, La Galerie Antenna): sponsors, artistes et MBC pour des expositions en plein air• Playwall Dakar: Chef de projet pour la création de fresques murales et de parcours artistiques• Yataal Art & Mamadou Boye: collaborateurs, installations artistique• Local Guides: guides pour le parcours historique et culturel• Office du Tourisme : ventes des tickets et gestion logistique	<ul style="list-style-type: none">• <i>Parrainage par des entreprises locales et des ONGs ; utilisation d'une approche participative et d'urbanisme tactique pour la mise en œuvre.</i>
2. <i>Le Port x Dakar Fashion Week</i>	<ul style="list-style-type: none">• Autorités du Port Autonome de Dakar : hôte, autorisation pour utiliser les installations• Adama Ndiaye: chef de projet de l'événement• Artistes et designers locaux : participants, aide pour le marketing de l'événement	<ul style="list-style-type: none">• <i>Parrainage par des entreprises et des donateurs locaux</i>
3. <i>Explosion d'Art x Dak'Art</i>	<ul style="list-style-type: none">• Office du Tourisme: Marketing événementiel et collaborateurs pour la logistique des événements• Ministère de la Culture et de la Communication: manager du projet• Business locaux du Plateau: sponsor/investisseur ; exposition d'art et hôte• Artistes et designers locaux : participants, aide pour le marketing de l'événement	<ul style="list-style-type: none">• <i>Investissements et parrainages régionaux ; collaboration avec les entreprises locales et les espaces publics</i>

RÉGULATIONS & DÉFIS POTENTIELS

Règles de planification juridique



Défis liés à la mise en oeuvre

- Difficultés d'accès à des experts techniques :
 - Pour la **production et l'offre de TukTuks électriques**.
- Population urbaine dense :
 - Difficultés de **réaménager les routes** et les **passages piétons** car Le Plateau est très peuplé et dynamique.
- Changements de comportement :
 - Convaincre d'utiliser des **matériaux locaux et éco-responsables** et trouver des fournisseurs au Sénégal qui s'approvisionnent en matériaux locaux pour des projets de grande envergure.
- Difficultés juridiques pour l'accès au terrain :
 - Difficulté d'obtenir l'**accès aux toits** des bâtiments privés et diplomatiques pour la mise en place de corridors de bougainvillées.
 - Les **projets culturels et artistiques du port** dépendent de son déplacement dans le nord de la ville, qui est un processus à long terme.
- Insuffisance de l'espace disponible pour l'**énergie solaire** en raison de l'ombre créée par les hauts bâtiments et difficulté lié à l'entretien du **système de gestion de l'énergie** sur le long terme.

TIMESCALE OF IMPLEMENTATION

Phase 1

2021-2025

Phase 2

2025-2034

Phase 3

2035 +

Dakar Open Hub

- Open an R&D centre (2 years)
- Shuttle bus line (1 year)

Dakar Open Hub

- Entrepreneurship mentoring program (4 years)

Dakar Open Hub

- Expand as 'Plateaux of Innovation' in Dakar (10 years)

Train station

- Site upgrades: project tenders (2 years)
- Electric tuk tuks: Launch a pilot fleet & charging infrastructure (3 years)

Train station

- Site upgrade outside: Launch a foodtruck network (2 years)
- Site outside: Facilitate art events (1 year)
- Transport: Pedestrian lanes & express bus services (3 years)

Train station

- Site upgrade inside: Commercial hub construction (4 years)
- Electric tuk tuks: Expand in Dakar (3 years)

Place de l'Indépendance

- Project tender (1 year)
- Sourcing construction materials (clay, tyfa) (2 years)

Place de l'Indépendance

- Site renovation (30% of the space) (4 years)
- Pedestrian lanes (20% of the space)
- Shuttle bus line (3 years)

Place de l'Indépendance

- Site renovation (50% of the space) (4 years)
- Aesthetic enhancement (flowers, baobabs) (1 year)

Museum & Harbour

- Mural paintings: Pilot project (2 months)
- Art Parours: Project tender (1 year)

Museum & Harbour

- Fashion Week: Program launch at the harbour (3 months)
- Art Parours: Implementation (2 years)

Museum & Harbour

- Art Parours: tours: Expand Parours programs outside le Plateau (2 years)

STAKEHOLDERS & FINANCE STRATEGIES

<u>Sub-interventions</u>	<u>Stakeholders & Responsibilities</u>	<u>Financing</u>
<u>Economic Empowerment</u> 1. <i>Dakar Open Hub</i> 2. <i>Train Station Interior</i> 3. <i>Train Station Exterior</i>	<ul style="list-style-type: none"> Dakar City Hall: investor, collaborator University Cheikh Anta Diop (UCAD): collaborators and students Union of Chambers of Commerce & Senegalese start-ups: expertise consultants & partner investors, targeting companies in sustainable Architecture, Marine & Tidal Energy industries (ElemenTerre) Ker Thioissane & DefkoAkNiep Lab: Business partners <ul style="list-style-type: none"> Dakar City Government: approval to use facilities and vendor permits Executive Council of Urban Transport in Dakar (CETUD): reactivation of railroad and facility maintenance Local Businesses of the Plateau: investing vendors <ul style="list-style-type: none"> Dakar City Government: approval to use facilities and vendor permits Chamber of Commerce & Local Businesses of the Plateau: investing vendors 	<ul style="list-style-type: none"> <i>Public-private partnerships between Dakar City Government & Senegalese businesses</i> <ul style="list-style-type: none"> <i>Facility reconditioning and maintenance by DCG and CETUD for rent to private vendors</i> <ul style="list-style-type: none"> <i>Facility reconditioning and maintenance by DCG and CETUD for rent to private vendors</i>
<u>Expanded Mobility</u> 1. <i>Electric tuk-tuk Service</i> 2. <i>Bus Service</i> 3. <i>Expanded Safe Sidewalks</i>	<ul style="list-style-type: none"> Ministry of Infrastructures, Land Transport and Opening up: permission to install a renting service at Dakar's train station and charging station behind it Senegalese tech start-ups: Building electric tuk-tuks <ul style="list-style-type: none"> Ministry of Infrastructures, Land Transport and Opening up: permission to dedicate a bus lane on the roads Dakar Dem Dikk: routing for electric buses <ul style="list-style-type: none"> Ministry of Infrastructures, Land Transport and Opening up: permission to expand existing sidewalks Fence construction companies 	<ul style="list-style-type: none"> <i>Public-private partnerships between Dakar City Government & Senegalese tech start-ups</i> <ul style="list-style-type: none"> <i>Financing from the state or attracting foreign investment</i> <ul style="list-style-type: none"> <i>Sponsorships via companies and local donors</i>
<u>Resilient Greenery</u> 1. <i>Reducing embodied emissions & heat islands</i> 2. <i>Greening and revitalizing Place de l'Indépendance</i>	<ul style="list-style-type: none"> Ministry of Environment and Sustainability, Ministry of Renewable Development, Dakar City Hall: granting permits for the establishment of bougainvilla corridors <ul style="list-style-type: none"> Element Terre Sarl/Worofila: designs for eco-constructions Jardin du Senegal: partnerships for green spaces to be developed Toits Du Senegal: partnerships for the vegetated roofs UrbaSen: partnership for greening 	<ul style="list-style-type: none"> <i>Discuss long-term contracts including the purchase of products at preferential prices</i> <ul style="list-style-type: none"> <i>Issue formal tenders for the Bougainvilla Corridors and Place de l'Indépendance Square re-development projects</i>
<u>Participatory Arts</u> 1. <i>Historical and Art parcours</i> 2. <i>The Port x Dakar Fashion Week</i> 3. <i>Explosion d'Art x Dak'Art</i>	<ul style="list-style-type: none"> Museum of Black Civilizations: Investors collaborators & event hosts Local Galleries (Le Manège, Galerie C. Fakhoury, La Galerie Antenna): sponsors; artists and MBC to create open-air exhibitions Playwall Dakar: Project lead on creating wall murals and art parcours Yataal Art & Mamadou Boye: collaborators for art installations Local Guides: guides for historical parcours Office of Tourism: Tickets and guides logistics <ul style="list-style-type: none"> Dakar Port Authority: host; need approval to use facilities Adama Ndiaye: project manager; key organizer of the event Local artists and designers: participants; can assist in event marketing <ul style="list-style-type: none"> Office of Tourism: Event marketing & collaborators on events logistics Ministry of Art and Communications: Project manager Local businesses of the Plateau: sponsor/investor; art display & host Local, regional, and international artists: Participants of the event 	<ul style="list-style-type: none"> <i>Sponsorships via local businesses and non-profit organizations; use a participatory, tactical urbanism approach to the implementation</i> <ul style="list-style-type: none"> <i>Sponsorships via companies and local donors</i> <ul style="list-style-type: none"> <i>Regional investors and sponsorships; collaboration with local businesses and public spaces</i>

REGULATIONS & POTENTIAL CHALLENGES

Legal Planning Rules



Implementation Challenges

- Accessing technical expertise:
 - For the **production and supply of electric TukTuks**.
- Large urban population:
 - Difficulty to **redesign roads** and **pedestrian crossings** since Le Plateau is very crowded.
- Behavioural changes:
 - Convince the public to use **local and eco-responsible materials** and find suppliers in Senegal procuring local materials for large-scale projects.
- Legal challenges in access to land:
 - Difficulty in obtaining **access to the roofs** of private and diplomatic buildings for the implementation of bougainvillaea corridors.
 - **Cultural and art projects at the port** depend on its displacement in the north of the city, which is a long-term process.
- Insufficient space available for **solar energy** due to the shade created by high buildings and difficulty in maintenance of the **energy management system** over the long term.









ECONOMIC EMPOWERMENT

Innovation Made In Africa

RESILIENT GREENERY

A large, ancient baobab tree with a thick, gnarled trunk and a wide, spreading canopy of green leaves, set against a bright sky. The tree's trunk is exceptionally thick and textured, with many smaller trunks branching off. The canopy is dense and green, filling much of the upper frame. The sky is a pale blue with some light clouds. The overall image conveys a sense of resilience and longevity.

Nos espaces verts et résilients

[illegible]

Un plateau de rencontres

A line of purple delivery vans parked on a street in front of a building with a red roof. The vans are arranged in a row, and the driver of the front van is visible. The license plate of the front van is 'BES 1234'.

Mobilité pour tous

Le plaisir de partager

"An innovation, mobility, social and cultural hub where people and ideas meet"



RETROUVE MOI AU PLATEAU

Un plateau de rencontres

**NIOUN NIEUP
NGUIR DAKAR**

**Reinventing
Cities** Students



**ENSEMBLE
POUR DAKAR**

Notre Vision

**Mettre en réseau les
citadins**

Mobilité pour tous

Entrepreneuriat innovant

Innovation Made In Africa

**Célébrer la culture de la
Teranga**

Le plaisir de partager

**Profiter des espaces
verts**

Nos espaces verts et résilients



UN PLATEAU DE RENCONTRES

RETROUVE MOI AU PLATEAU

Notre proposition s'appuie sur la notion de "Yendou" pour conceptualiser le plateau de Dakar comme "un plateau de rencontres". Nos interventions s'articulent autour de 4 idées principales : élargir l'offre de transport, encourager l'entrepreneuriat innovant, valoriser la culture sénégalaise de la Teranga et décupler la végétalisation du quartier. Cet aménagement urbain est un point de départ pour reproduire à plus grande échelle des quartiers éco-responsables, prospères et en accord avec les besoins locaux.

***Un pôle d'innovation, de mobilité social et culturel,
où les gens et les idées se rencontrent.***

DIAGNOSTIQUE DU SITE

Le Plateau est une zone administrative et économique de 5 km² à Dakar. La zone abrite principalement des ambassades, des bureaux gouvernementaux et banques, mais très peu d'emplois. Ce quartier occupe une place essentielle dans la planification de la mobilité urbaine de Dakar. Le défi du réaménagement du Plateau réside dans la manière d'intégrer ces infrastructures dans la conception d'un environnement bâti convivial, dynamique et à faible émission de carbone.

La pollution d'air et les îlots de chaleur figurent en tête du tableau des défis environnementaux de Dakar ainsi que l'utilisation de véhicules et la forte dépendance au ciment dans la construction.

Parallèlement, le manque de cohésion sociale et d'opportunités d'emploi à Dakar met en péril l'intégration sociale des jeunes Sénégalais qui revendiquent leur appartenance à la ville.

Rejoins moi au
Plateau!



D'accord!
J'arrive en train!

Oumar a invité Sophie, son amie à se retrouver au Plateau pour passer la journée et faire un *Yendou*. Rejoignez-les pour explorer tous les sites passionnants...





- Entrepreneuriat innovant
- Mobilité intégrée
- Résilience verte
- Arts participatifs

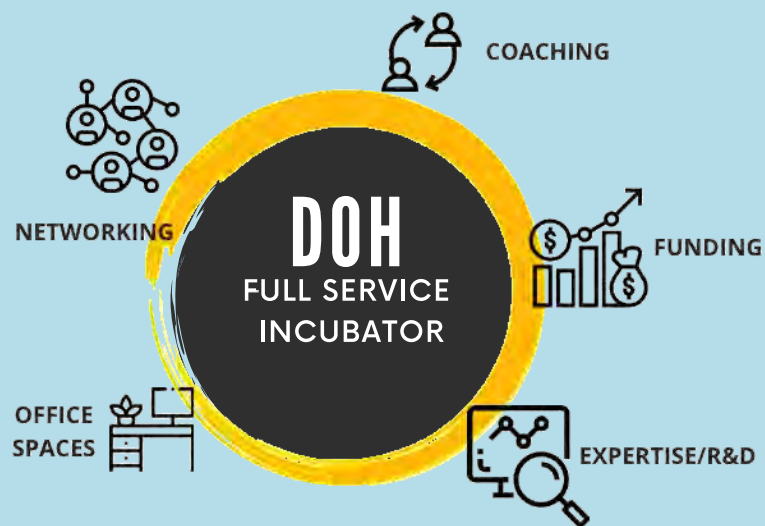
ENTREPRENEURIAT INNOVANT

*Rendez-vous au Plateau pour réinventer
l'innovation Made in Africa*



Dakar Open Hub (DOH)

- Espace ouvert pour développer la science, l'entrepreneuriat et l'esprit d'entreprise
- Incubation complète pour les jeunes entreprises
- R&D de pointe dans le domaine des sciences marines
- Toit du bâtiment avec une alimentation en énergie solaire estimée à 112,5 KWp (voir annexe)
- S'étendre à travers Dakar en tant que "mini" plateaux d'innovation



Solutions existantes



Fablab Defko Ak Niëp

Made in Senegal



© Afrilabs, 2021

ENTREPRENEURIAT INNOVANT

Retrouve moi au Plateau pour découvrir les trésors culinaires du Sénégal et soutenir les entreprises locales.

Revalorisation de la gare de Dakar - **intérieur** du bâtiment

- Nourriture et magasins essentiels ouverts 24h/24
- Salle d'exposition pour les artisans locaux
- Fournir des flux de revenus aux municipalités et aux autorités ferroviaires.



Revalorisation de la gare de Dakar - **extérieur** du bâtiment

- Espace d'exposition en plein air pour les artisans locaux
- Réseau formalisé de food trucks avec un design uniforme
- Proposer un financement par micro crédit pour l'achat des food trucks en échange d'une assurance maladie.



Solutions existantes



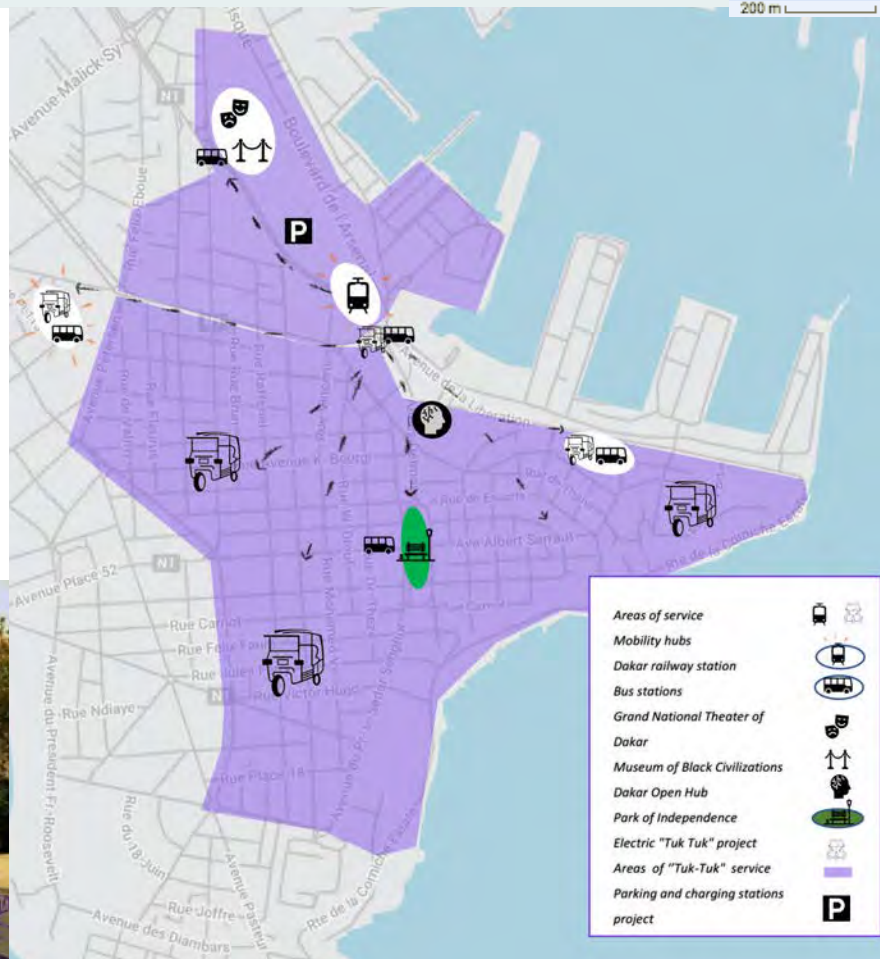
MOBILITE INTEGRÉE

Retrouve moi au Plateau, pour un trajet en sécurité et rapide.

De multiples modes de transport relient le Plateau à la banlieue de Dakar et à la ville de Diamniadio, notamment les trains au départ de la gare de Dakar et le futur BRT.

Service de bus

- Mettre en place un service public de navettes électriques à haute fréquence à partir de :
 - La gare de Dakar
 - Hôtel de Ville
 - Place de l'Indépendance
 - Grand Théâtre et Musée des Civilisations Noires
- Voies réservées aux bus



Solutions existantes:



Kiira Motors
electric bus
(Uganda)



© PML Daily, 2020



Sokowatch
commercial electric
tuk tuk fleet
(Uganda)



© Gayam Motor Work, 2020

Service de tuk-tuk électrique

- Mettre en place une flotte pilote de véhicules électriques de type tuk-tuk sur le Plateau
- Service de location à la gare de Dakar
- Station de recharge derrière la gare
- Inclure les start-ups sénégalaises

MOBILITE INTEGREE

Retrouve-moi au Plateau, pour un trajet en sécurité et rapide.



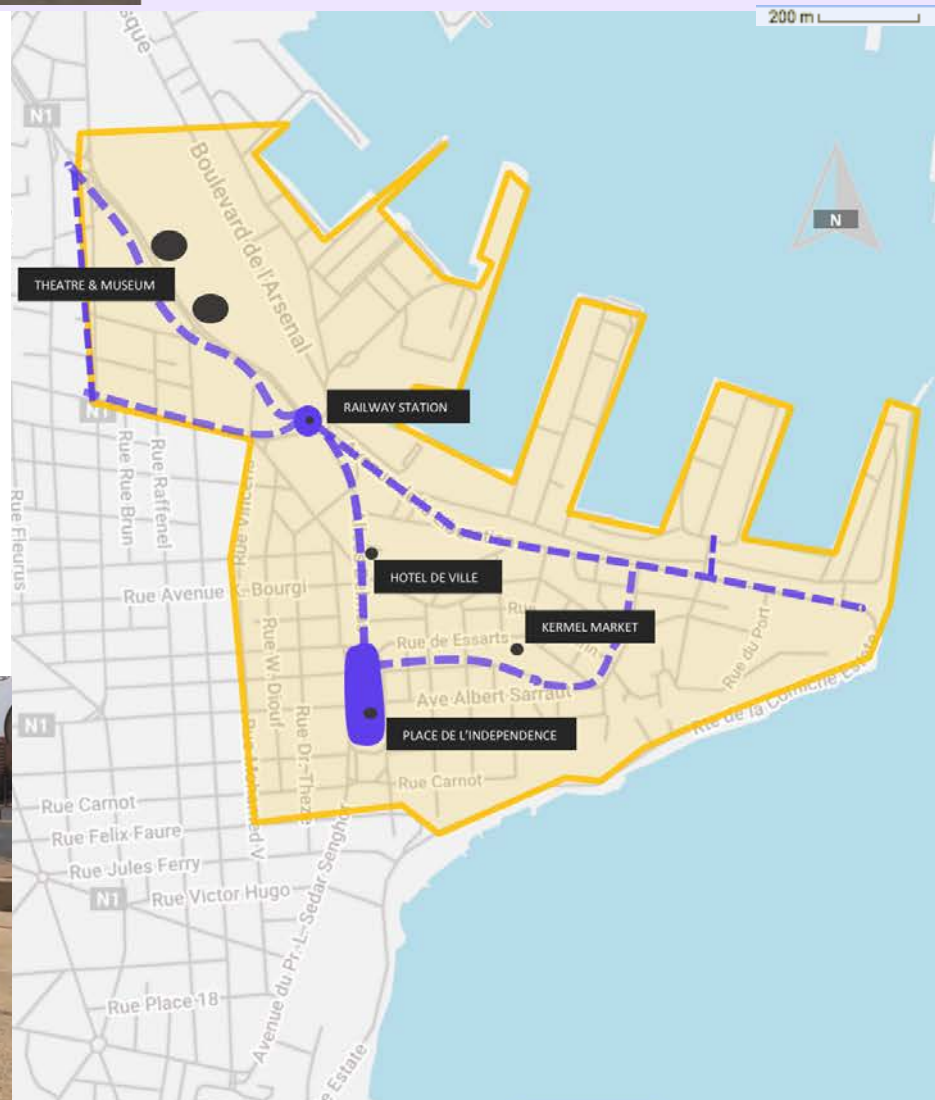
Design by: Nioun Nieup Nguir Dakar

Elargissement des trottoirs

- Aménagement optimal des rues pour encourager la marche à pieds
- Installer des clôtures et élargir les trottoirs existants des principales routes du Plateau :
- 1. Gare de Dakar
- 2. Hôtel de Ville
- 3. Place de l'Indépendance
- 4. Grand Théâtre et Musée des Civilisations Noires



© ITDP Africa, 2019



Design by: Nioun Nieup Nguir Dakar

RÉSILIENCE VERTE

Retrouve moi sous les bougainvilliers pour une pause régénératrice, à proximité de la corniche



La place de l'Indépendance sera réaménagée pour lutter contre les îlots de chaleur, encourager la marche et offrir un lieu de loisirs multifonctionnel.

Rafrâichir Le Plateau

- Rénover le site avec une architecture rafraîchissante et ombragée
- Utiliser des matériaux écologiques et locaux dans la construction :
 - Typha
 - Briques en terre cuite
- Toits végétalisés et peints
- Fixer des exigences obligatoires en matière d'analyse du cycle de vie pour la construction de nouveaux bâtiments
- Réduire les émissions carbonées.



Végétalisation & redynamisation de la Place de l'Indépendance

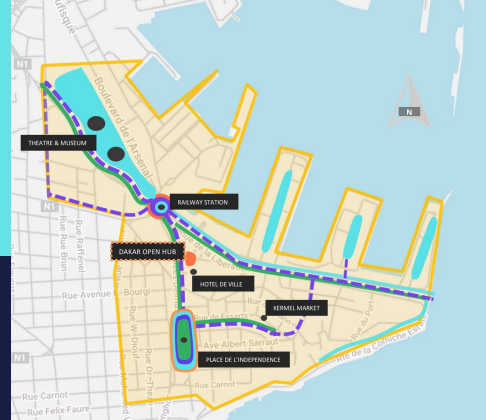
- Comme 70 % des déplacements domicile-travail à Dakar s'effectuent en marchant (CETUD, 2017), nous proposons un parcours pédestre ombragé avec des bougainvilliers.
- Mise en valeur esthétique de la place avec :
- Des baobabs à la Place de l'Indépendance
- Une œuvre d'art fleurie indiquant la date de l'indépendance du Sénégal (voir Horloge Fleurie, Genève).
- Facilités informatiques (spots Wi-Fi gratuits, vélos de recharge...)



Design by: Nioun Nieup Nguir Dakar

ARTS PARTICIPATIFS

Retrouve moi au Plateau pour célébrer la culture de la Teranga



Parcours historique et artistique

- Parcours artistiques guidés menant aux lieux historiques du Plateau.
- Promouvoir l'art mural et les événements temporaires pour engager et inspirer les résidents.
- Proposer une visite gratuite mensuelle pour découvrir l'art (de rue) et l'architecture du Plateau, en partenariat avec des associations d'architectes.



Xibaaru Mbedd Campaign: The Playwall x IOM & EU

Le Port X Dakar Fashion Week

- Renforcer les efforts d'embellissement du port avec la Dakar Fashion Week.
- Les défilés de mode auront lieu dans des bâtiments portuaires, les bateaux et les docks.
- Relier les pôles économiques à la scène florissante de la mode et de l'art de Dakar.



Venice Fashion Week: Photos @ Roberto Rosa and Marta Formentello

Explosion d'Art! x Dakar Biennale

- Un concours d'art d'un mois fonctionnant en tandem avec Dak'Art au Plateau.
- Les artistes sont invités à concourir et à exposer leurs œuvres.
- Attirer les habitants et les touristes sur le plateau pour stimuler l'économie locale.

Design by: Nioun Nieup Nguir Dakar
"Elephant Walk" by Fredrick Prescott
"Nouba - Wrestling Couple" by Ousmane Sow





PRESTATIONS COLLECTIVES

Nos 11 interventions contribuent à la création d'un Plateau prospère et incluant la population, conformément au programme de réduction des émissions de carbone du Sénégal.

- Nos initiatives **d'entrepreneuriat innovant** fournit l'infrastructure et l'expertise qui génèrent l'innovation au coeur de la ville.
- A travers la **mobilité intégrée**, on encourage le voyage actif, la sécurité des piétons et réduisant les embouteillages.
- En introduisant des **espaces verts résilient**, les communautés peuvent accéder à des espaces publics végétalisés et confortables.
- Les **programmes d'art participatifs** renforcent l'identité du Plateau comme un quartier prospère avec une scène artistique florissante.

DYNAMISATION DE L'INDUSTRIE DU TOURISME

PRISE EN COMPTE DES ENFANTS

ESPACES VÉGÉTALISÉS

INCUBE DES EMPLOIS & COMPTÉTENCES VERTS

SÉCURITÉ DES PIÉTONS

SCÈNE D'ARTS ET CULTURE FLORISSANTE

ENGAGEMENT DES COMMUNAUTÉS



EVALUATION ENVIRONNEMENTALE

Notre évaluation environnementale:

1. **Lutte contre la pollution d'air**, proposant des options de mobilité douce (tuk-tuks électriques, trottoirs élargis et amélioration des services de bus) ;
2. **Atténue les îlots de chaleur**, utilisant le refroidissement naturel et architecture ombragée ;
3. **Réduit les émissions incorporées**, utilisant des matériaux éco dans la construction et en fixant des exigences obligatoires en matière d'ACV pour la construction de nouveaux bâtiments.

OPTIONS DE MOBILITÉ DOUCE

OMBRAGE ET ARCHITECTURE NATURELLE

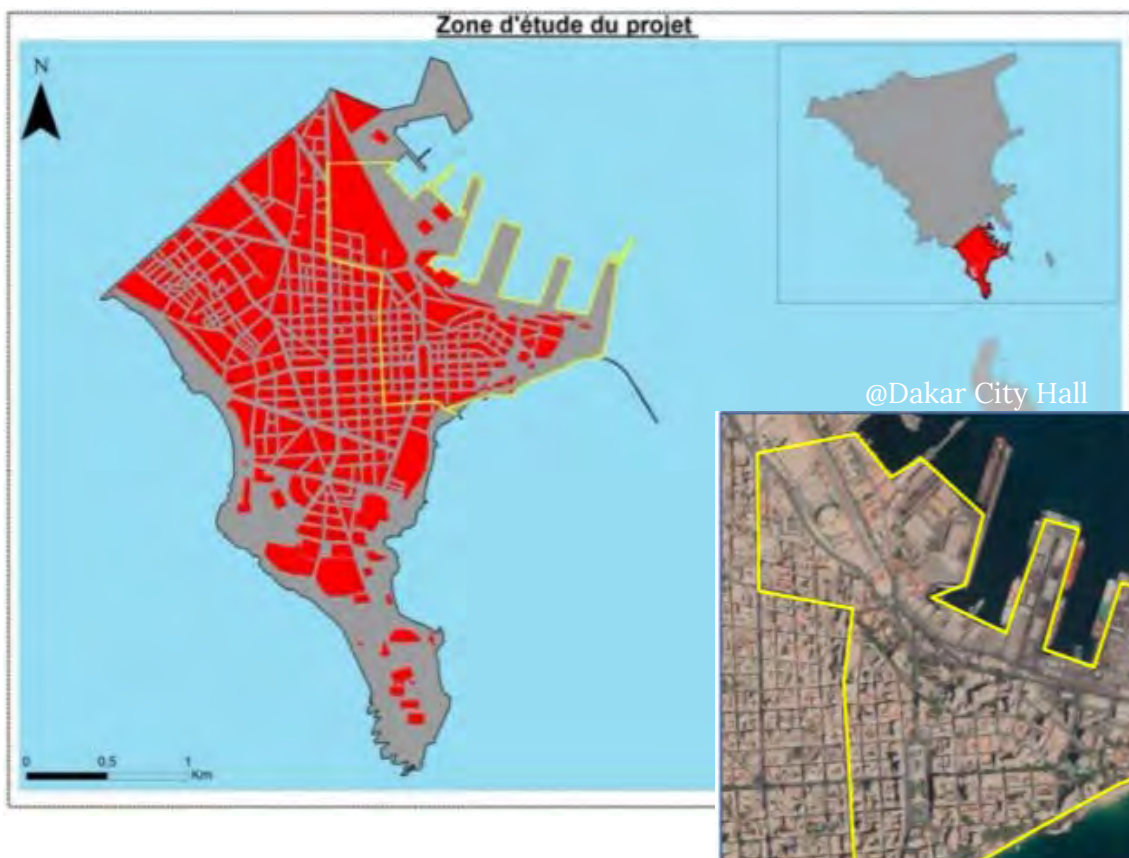
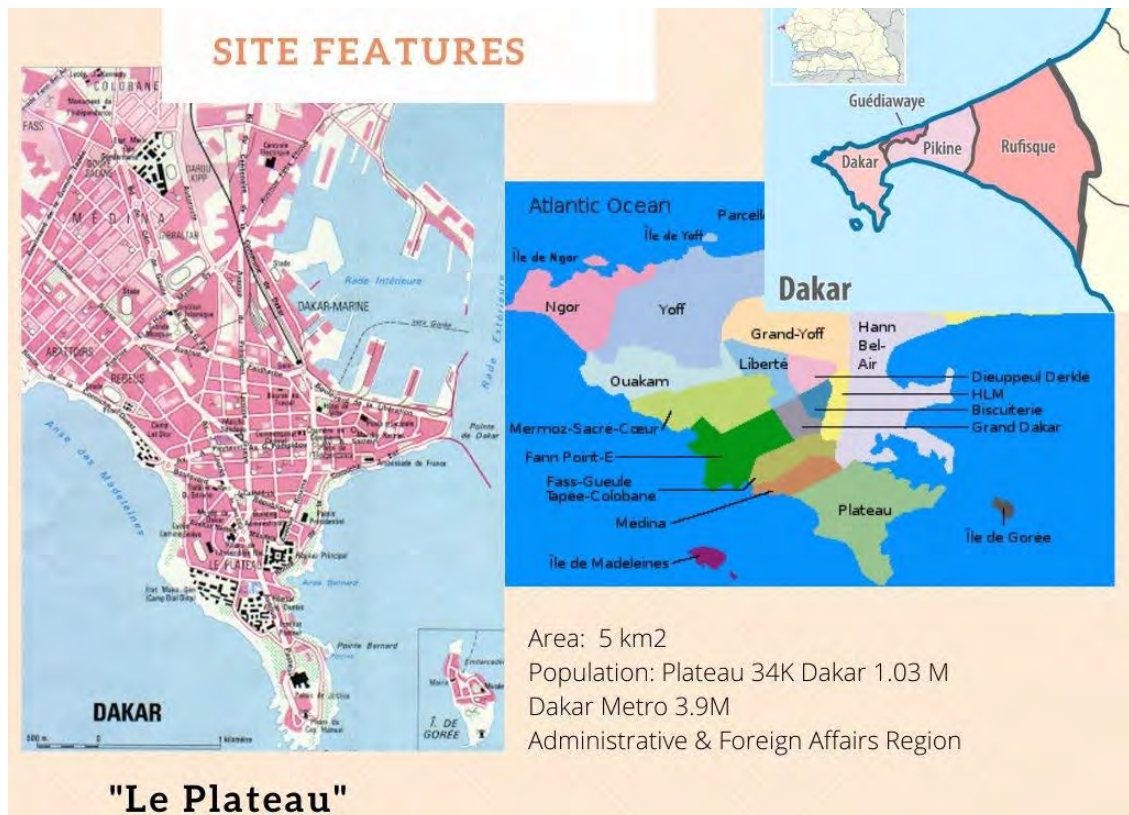
REDUCTION DES EMISSIONS INCORPORÉES

ÉCO MATÉRIAUX DE CONSTRUCTION

ACF POUR LES NORMES DE
CONSTRUCTIONS

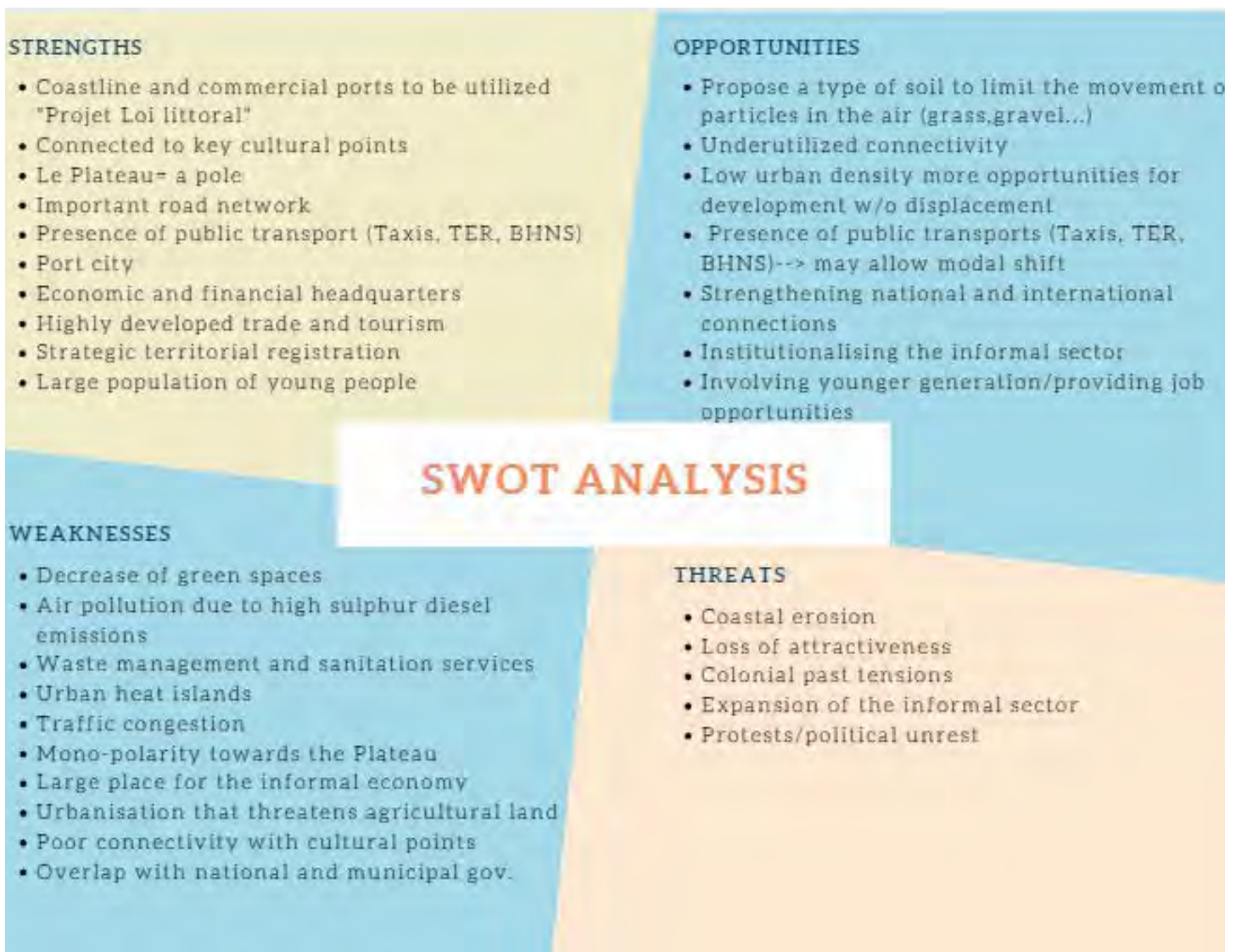
Appendix

Site diagnosis



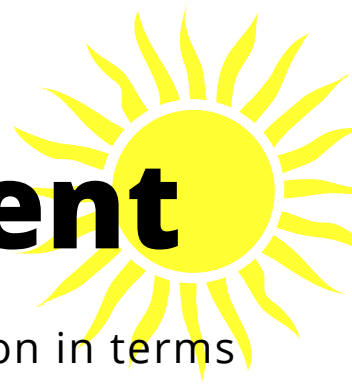
SWOT Analysis

As part of our site diagnosis, the team created a SWOT analysis to highlight the strenghts, weaknesses, opportunities and threats related to the implementation of an urban project in Le Plateau. Based on these results, we defined our 4 interventions and our long-term vision for this neighbourhood.



Internal team

Energy Management



The Dakar Open Hub will also be a place of innovation in terms of its energy supply since it will be a self-sufficient building. In fact, after discussing with a renewable energy engineer, the team computed the potential energy supply from a solar installation.



Self-sufficient building energy calculation

Area: $20\text{m} \times 30\text{m} = 600$ square meter
Knowing that a 300 W panel has a dimension of 1600×992 mm = 1,6 square meter
We can have 375 panels on the roof :
 $600 / 1,6 = 375$ panneaux
So, the DOH roof can produce 280,8 kWp :
 $375 \times 300 = 112'500$ Wp = 112,5 KWp

Added to this, we will need to set in place a battery system for the stockage and energy management.

Cost



Solar panels
Inverters and battery system
Installation cost
Long-term labour cost for the maintenance



@Francis Kéré



MEET ME AT THE PLATEAU

Un plateau de rencontres

**NIOUN NIEUP
NGUIR DAKAR**

**Reinventing
Cities** Students



**TOGETHER
FOR DAKAR**

Our Vision

Connecting People

Mobilité pour tous

Empowering entrepreneurs

Innovation Made In Africa

Celebrating Teranga culture

Le plaisir de partager

Encountering nature

Nos espaces verts et résilients



UN PLATEAU DE RENCONTRES MEET ME AT THE PLATEAU

Our proposition builds on the notion of a "Yendou" to conceptualise Dakar Plateau as "un plateau de rencontres". Our interventions strategically connect people by expanding mobility options, empowering entrepreneurs and innovators, celebrating *Teranga* culture and greening the landscape. This urban vision serves as a blueprint for what at a large scale, a close to home Dakar can welcome: transit-oriented yet green and thriving neighbourhoods.

*An innovation, mobility, social and cultural hub
where people and ideas meet*

SITE DIAGNOSIS

The Plateau is a 5 km² administrative and economic area in Dakar. The area houses mainly embassies, governmental offices, and banks, but home to very few jobs. Located by the Dakar train station and bus lines, the area is also essential in Dakar's urban mobility planning. The challenge in re-designing this site lies in how to integrate these infrastructures into the design of a user-friendly, low-carbon and dynamic built environment.

Air pollution and heat islands top Dakar's chart of environmental challenges. Combustion-powered vehicles and a heavy reliance on cement in construction further add pressures to these.

Simultaneously, the lack of social cohesion and employment opportunities in Dakar are challenging Senegalese's youth social integration.

Meet me at the plateau!

Ok, I'm coming by train!

Oumar invited Sophie, his friend to meet at le Plateau and spend the day having a *Yendou*. Join them in exploring all the exciting sites...





- Economic Empowerment
- Expanded Mobility
- Resilient Greenery
- Participatory Arts

ECONOMIC EMPOWERMENT

*Meet me at the Plateau to reinvent
innovation Made in Africa*



Dakar Open Hub (DOH)

- Open hub for science, policy and entrepreneurship
- Full-service incubation for start-ups
- Leading R&D into marine science & tidal energy
- Building's roof with an estimated solar power supply of 112,5 KWp (See appendix)
- Expand across Dakar as 'mini' plateaux of innovation



Existing solutions



Fablab Defko Ak Niëp

Made in Senegal



© Afrilabs, 2021

ECONOMIC EMPOWERMENT

Meet me at the Plateau to experience Senegal's culinary treasures & support local businesses

Upgrading Dakar's train station - **inside** the building

- 24-hour food and basic needs shops.
- Exhibition room for local craftsmen.
- Providing revenue streams for promoters, municipalities and railway authorities.



Upgrading Dakar's train station - **outside** the building

- Open-air exhibition space for local craftsmen.
- Formalised food trucks network with a uniform design concept.
- Offer micro-credit financing for a food truck for women in exchange for health insurance.



Existing solutions



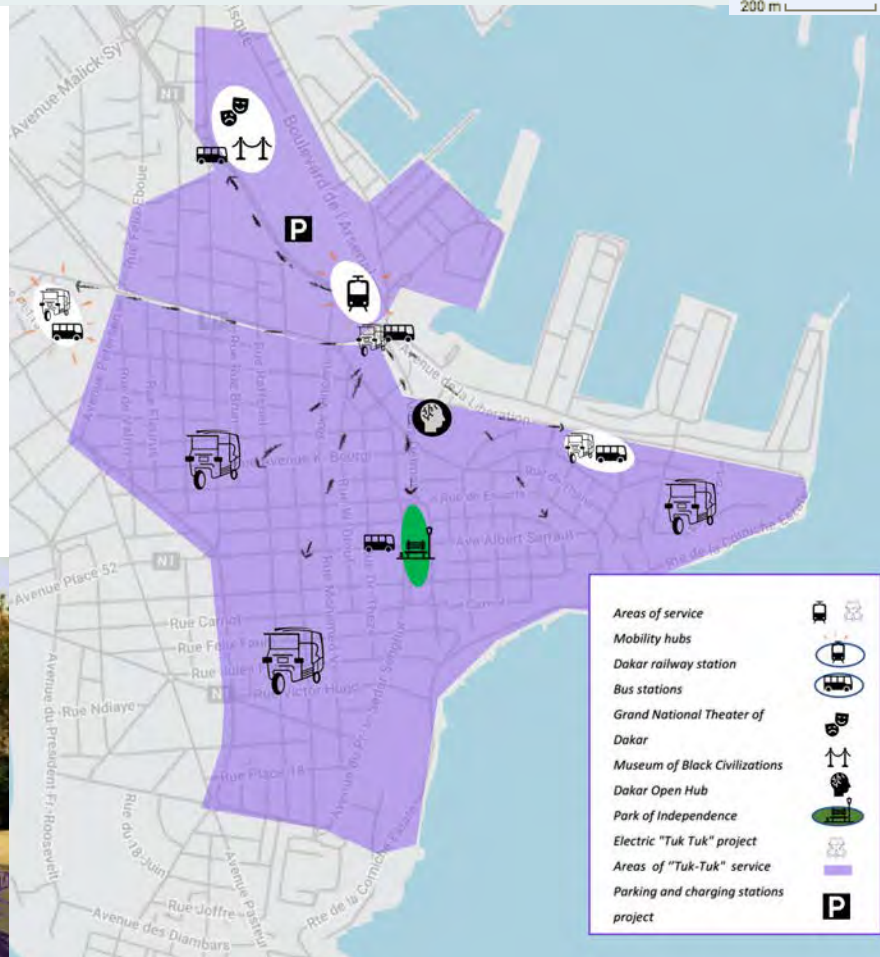
EXPANDED MOBILITY

Meet me at the Plateau, commuting easily, safely and quickly

Multiple transport modes connecting the Plateau to Dakar's suburbs, the city of Diamniadio, using Dakar railway station and the future BRT.

Bus service

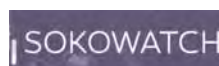
- Introduce a public electric shuttle bus service with high frequency from:
 - Dakar train station
 - Hôtel de Ville
 - Place of Independence
 - Grand Theatre and Museum of Black Civilizations
- Dedicated bus lanes



Existing solutions:



**Kiira Motors
electric bus
(Uganda)**



**Sokowatch
commercial electric
tuk tuk fleet
(Uganda)**



Electric tuk-tuk service

- Implement a pilot tuk-tuk electric vehicle fleet on le Plateau.
- Renting service at Dakar's train station
- Charging station behind the train station
- Include Senegalese tech start-ups

EXPANDED MOBILITY

Meet me at the Plateau, commuting easily, safely and quickly



Design by: Nioun Nieup Nguir Dakar

Expanding sidewalks

- Using good street design to make walking a transport mode of choice.
- Install fences and expand existing sidewalks of major Plateau roads:
 1. Dakar train station
 2. Hôtel de Ville
 3. Place of Independance
 4. Grand Theatre and Museum of Black Civilizations



© ITDP Africa, 2019



Design by: Nioun Nieup Nguir Dakar



RESILIENT GREENERY

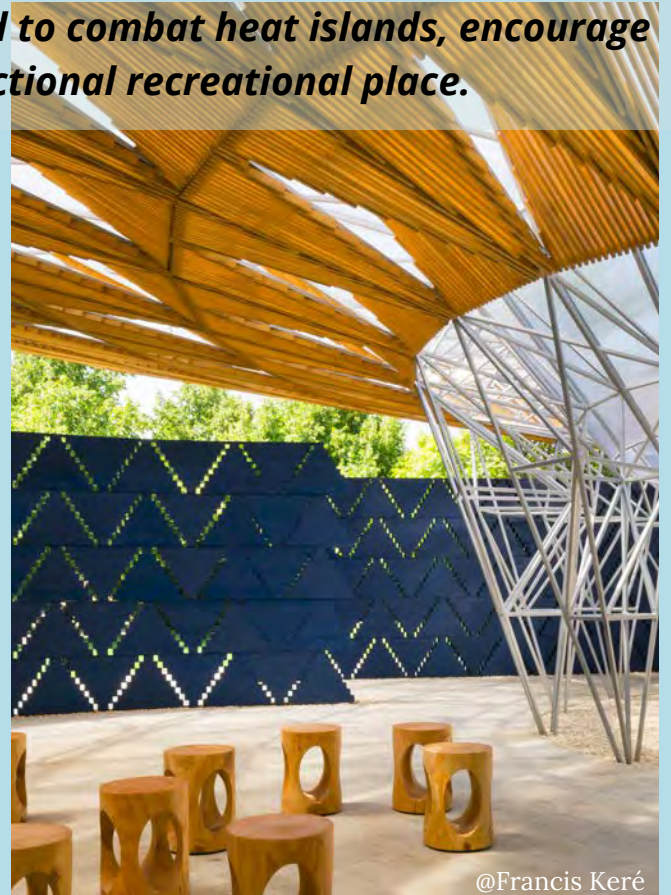
Meet me under the shaded trees for a rejuvenating break, close to the sea



Place de l'Indépendance will be redesigned to combat heat islands, encourage walking and provide a multi-functional recreational place.

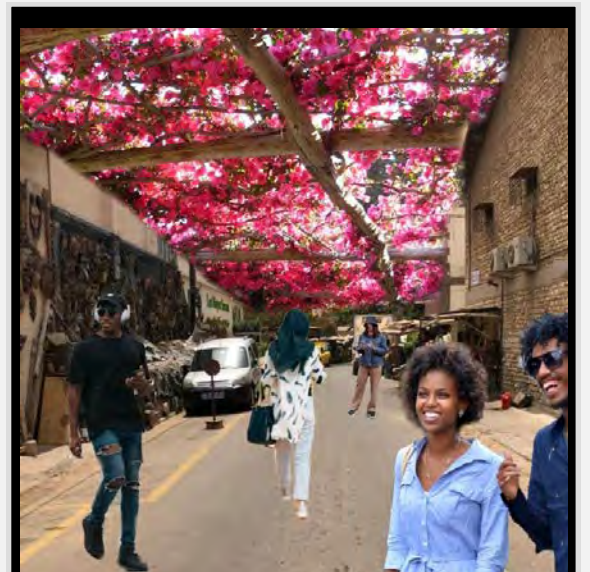
Cooling Le Plateau

- Renovate the site with shaded cooling architecture
- Employ eco-materials used in the construction:
 - Typha
 - Clay earth bricks
 - Vegetated & painted roofs
- Setting mandatory LCA requirements for new buildings' construction
- Reducing embodied emissions



Greening & revitalising Place de l'Indépendance

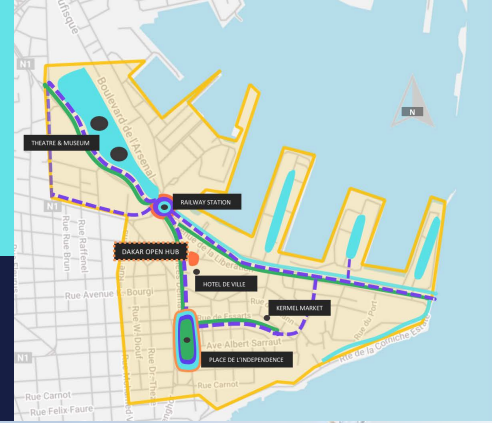
- With walking accounting for 70% of commutes in Dakar (CETUD, 2017), we incentivise alternative active transport with a "Cool" walking Parcours using bougainvillea.
- Aesthetic enhancement using:
 - Baobabs at Place de l'Indépendance
 - Flowered pieces of art as reminders of Senegalese independence day (See: Horloge Fleurie, Geneva)
- IT facilities (free Wi-Fi spots, charging bikes...)



Design by: Nioun Nieup Nguir Dakar

PARTICIPATORY ARTS

*Meet me at the plateau to
celebrate Teranga culture*



Historical Art Parcours

- Guided Art Parcours leading to Le Plateau's historical places.
- Using temporary mural art and events to engage and inspire residents.
- Providing once a month a free tour to discover (street) art & architecture in le Plateau, in partnership with architects associations.



Xibaaru Mbedd Campaign: The Playwall x IOM & EU

The Port X Dakar Fashion Week

- Scale-up beautification efforts at the port with the annual Dakar Fashion week.
- Fashion shows will take place in repurposed port buildings, boats, and docks.
- Linking the economic hubs with Dakar's flourishing fashion & art scene.



Venice Fashion Week: Photos @ Roberto Rosa and Marta Formentello

Explosion d'Art! x Dakar Biennale

- A month-long art competition operating in tandem with Dak'Art taking place over the Plateau.
- Artists are invited to compete and display their work.
- Will attract locals and tourists to the plateau, thus stimulating the Plateau's economy.

Design by: Nioun Nieup Nguir Dakar
"Elephant Walk" by Fredrick Prescott
"Nouba - Wrestling Couple" by Ousmane Sow





COMMUNITY BENEFITS

Our 11 spatial and scalable interventions help shape a thriving people-centered Plateau, in line with Senegal's low-carbon agenda.

- Our **economic empowerment** initiatives provide the hard infrastructure and expertise fostering innovation and entrepreneurship at the city's heart.
- In **expanding green mobility**, we improve active travel and pedestrian safety, reducing traffic congestion.
- By introducing **resilient green spaces**, communities can access cooled and comfortable public spaces.
- **Participatory art and culture** programs will strengthen the Plateau's identity as a thriving neighbourhood with a flourishing fashion and art scene.

BOOSTED TOURISM INDUSTRY

GENDER & CHILDREN-FRIENDLY

GREENED PUBLIC SPACES

INCUBATING GREEN JOBS & SKILLS

PEDESTRIAN SAFETY

FLOURISHING ARTS & CULTURE SCENE

ACTIVE COMMUNITY ENGAGEMENT



ENVIRONMENTAL ASSESSMENT

Our environmental assessment strategically:

1. **Tackles air pollution**, by offering soft mobility options (electric tuk-tuks, expanded sidewalks and improved bus services);
2. **Mitigates heat islands**, by using natural cooling & shaded architecture;
3. **Reduces embodied emissions**, by using eco-construction materials and setting mandatory LCA requirements for new buildings' construction.

SOFT MOBILITY OPTIONS

NATURAL SHADE & VEGETATION

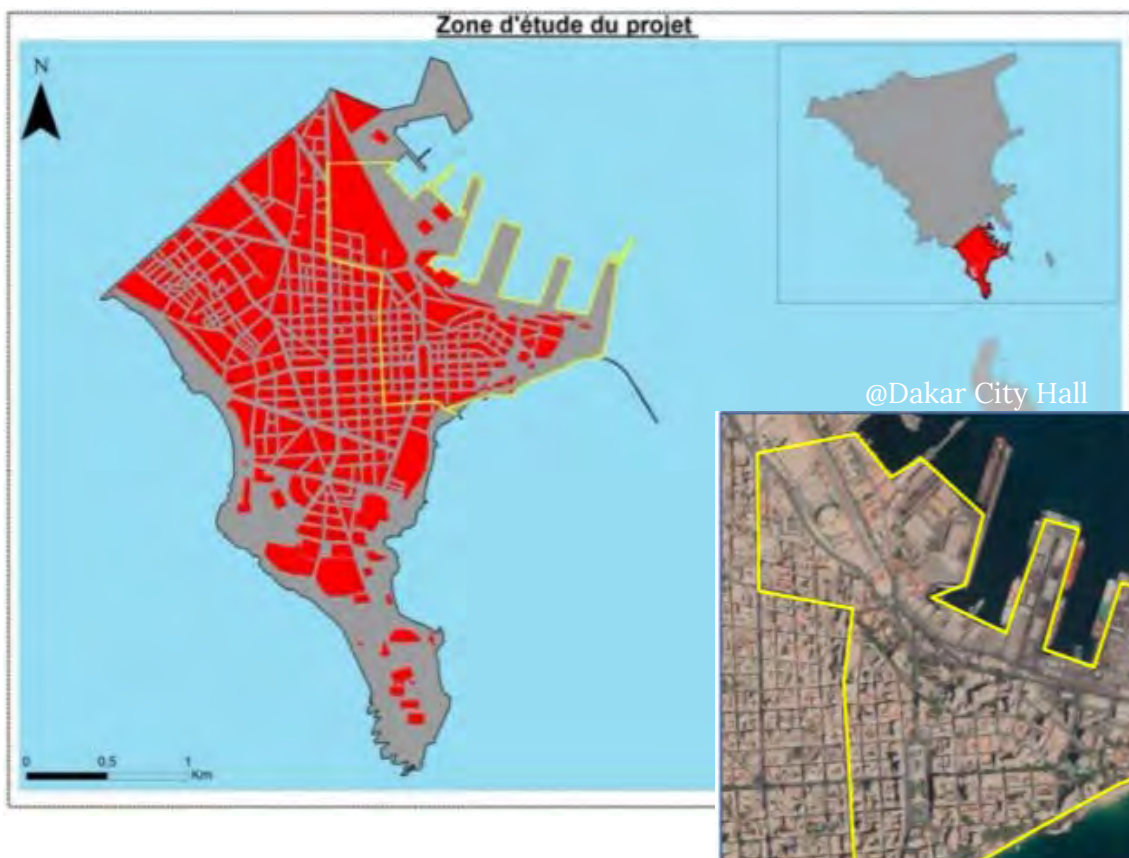
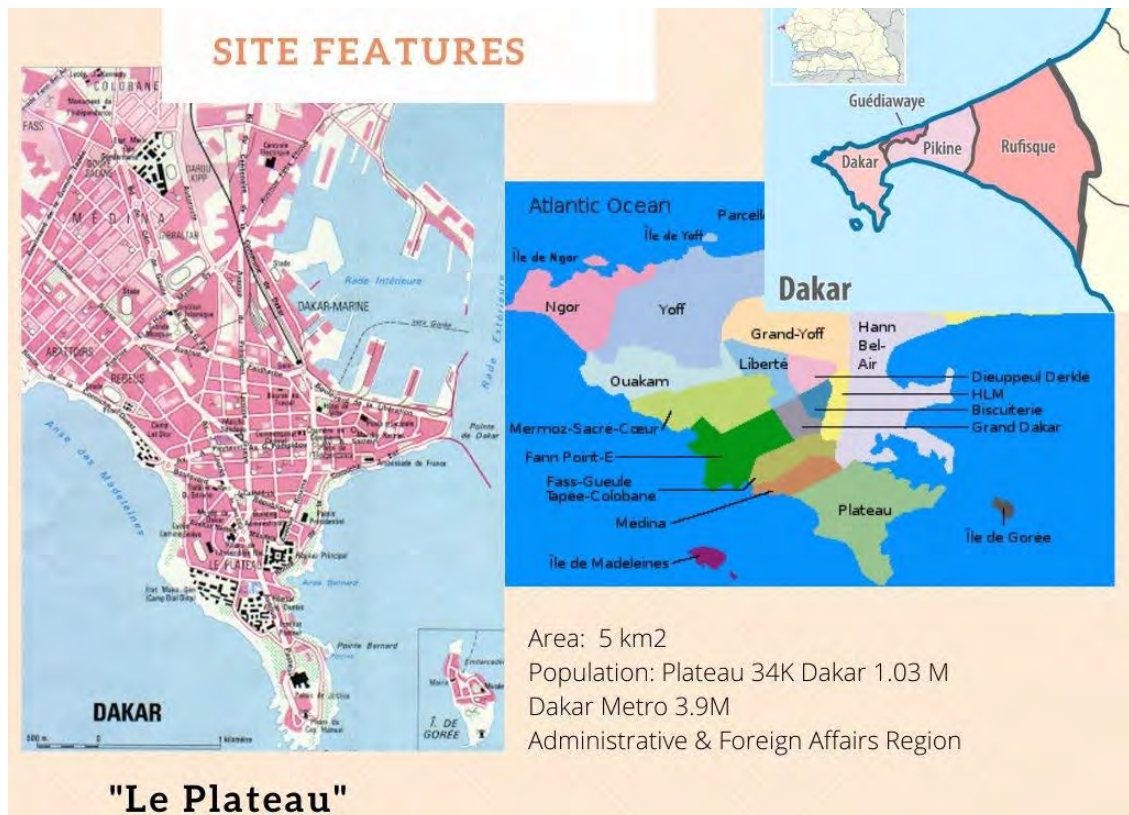
REDUCED EMBODIED EMISSIONS

ECO-CONSTRUCTION MATERIALS

LCA FOR BUILDING STANDARDS

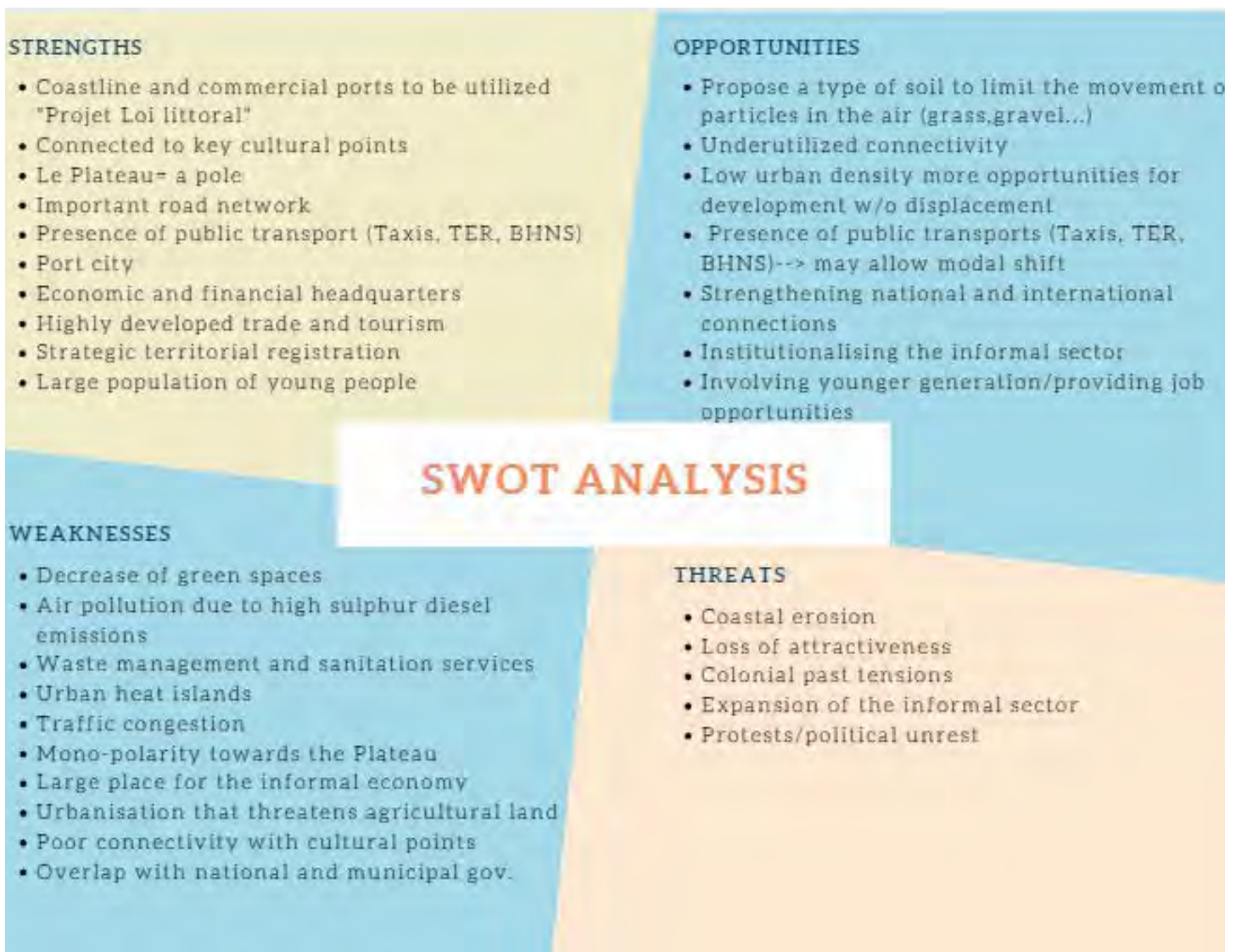
Appendix

Site diagnosis



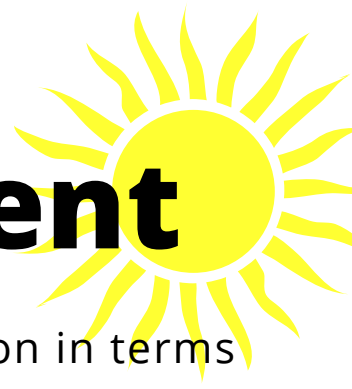
SWOT Analysis

As part of our site diagnosis, the team created a SWOT analysis to highlight the strenghts, weaknesses, opportunities and threats related to the implementation of an urban project in Le Plateau. Based on these results, we defined our 4 interventions and our long-term vision for this neighbourhood.



Internal team

Energy Management



The Dakar Open Hub will also be a place of innovation in terms of its energy supply since it will be a self-sufficient building. In fact, after discussing with a renewable energy engineer, the team computed the potential energy supply from a solar installation.



Self-sufficient building energy calculation

Area: $20\text{m} \times 30\text{m} = 600$ square meter
Knowing that a 300 W panel has a dimension of 1600×992 mm = 1,6 square meter
We can have 375 panels on the roof :
 $600 / 1,6 = 375$ panneaux
So, the DOH roof can produce 280,8 kWp :
 $375 \times 300 = 112'500$ Wp = 112,5 KWp

Added to this, we will need to set in place a battery system for the stockage and energy management.

Cost



Solar panels
Inverters and battery system
Installation cost
Long-term labour cost for the maintenance

