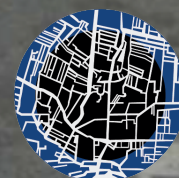


Habitat Unit

solutiona
plus

Urban Change Makers



Urban
Pathways

RETHINKING MULTIMODAL URBAN MOBILITIES
TU BERLIN - HABITAT UNIT - SOLUTIONS PLUS
SUMMER 2020

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Urban Change Makers

00. Terminology

BRT

Bus rapid transport

BOTTOM-UP

Grassroot lead process

CAR-CENTRISM

urban planning focused on the priority of car use

CC

Critical Cartography

DC

Direct Current

EV

Electric vehicle

E-BIKE

Electric powered bicycle

E-CARGO BIKE

Electric powered cargo bike

E-CARGO THREE WHEELER

Electric powered cargo three wheeler

E-MOBILITY

Electric mobility

FIG.

Figure

GENTRIFICATION

process where a housing or district renewal triggers the displacement of low-income residents through the arrival of higher-income ones.

HCQ

Historic centre of Quito

HOLISTIC PLANNING

a way of planning that considers the interrelation of components beyond the own discipline in a synergic process.

INFORMALITY

unofficial work condition without conditions that safeguard the safety and integrity of the individual

INTEGRATED TICKETING

Possibility of combining in a public transport journey different transport modes with a unique ticket

INTERMODAL HUB

place where different transport means conclude and passengers can easily change between them.

LAST MILE CONNECTIVITY

Final connection from the last public transport station to the final destination.

LEZ

Low Emission Zone

MODERATE SPEED ROAD

Road where vehicles do not exceed the 45 km/h

LOW-CARBON VEHICLE

vehicle with small CO² emissions

MICRO MOBILITY

small, lightweight vehicles reaching speeds typically below 25 km/h [bike, e-bike, cargo bike, e-threewheeler]

MIX-USE

Diversity of land uses

NMT

Non-motorized Transportation

NUA

New Urban Agenda

PARTICIPATORY PROCESS

an inclusive method where a wide set of actors is involved in the decision-making process

PESTLE

Political, Economical, Social, Technological, Legal, Environmental

SDG

Sustainable Development Goals

SOCIAL COHESION

Linkage of members from different social groups.

SPATIAL SEGREGATION

Visible or invisible division among the spaces that different social groups inhabit

SUSTAINABILITY

Capacity of satisfying the present needs without damaging future generations integrating environmental, social and economical aspects

SWOT ANALYSIS

Strengths, weaknesses, opportunities and threats' Analysis

TOD

Transport oriented development

TOP-DOWN

Process lead from above a vertical hierarchy, usually from the government without fully acknowledging the agency of further involved actors

TRANSDISCIPLINARITY

academic strategy where inputs of diverse disciplines frame a holistic approach

URBAN CATALYST

strategy that boosts urban developments

URBAN SPRAWL

disperse city expansion, usually with non official urban planning

Urban Change Makers

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01. Introduction

1.1 Project Frame

As the world is confronted with climate change and cities continue to spill beyond their boundaries, the Global Agendas uniformly recognise an urgent need for inclusive and sustainable urban development strategies.

The Urban Change Makers studio draws attention to current global transport challenges. Based on the notion that the provision of infrastructure promotes accessibility and that accessibility promotes equality, the studio has developed proposals for innovative urban mobility solutions in Quito and Pasig - two cities in the Global South that have been struck heavily by congestion and social divides.

In an aim to reduce individual transport modes in favour of higher public demand, the students investigate multimodal networks. A series of reading sessions formed the theoretical basis for the spatial interventions. Reaching beyond the infrastructural challenges these two cities are faced with, the Urban Change Makers studio addresses local identity, informality and social marginalisation in an attempt to develop holistic place-making strategies for the public realm and its nearby communities.

Thus, what once was a divider can soon become a threshold, a moment for activities, exchange and community.



FIG.1: CONGESTION IN THE GLOBAL SOUTH

1.2 Sustainable Transport

Transportation is a basic need for a meaningful and dignified life. Access to transport provides access to the labour market, health care, education and human interactions. Hence, transport mobility it is closely linked to social upward mobility.

The ability of a person to overcome spatial separation is conditioned by: income, gender, access to vehicles, physical ability, knowledge of transport and its path composition.

Pursuing the Global Agendas in transitioning towards sustainable transport, the following parameters be taken into consideration: access, equity, safety, efficiency, affordability, health and environment.

“Transport: a pre-requisite for a life of meaning and value”

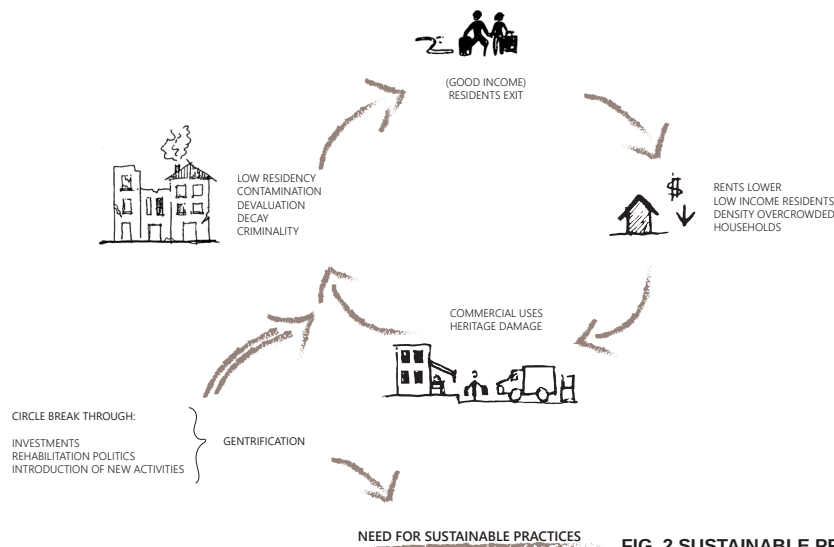


FIG. 2 SUSTAINABLE PRACTICE

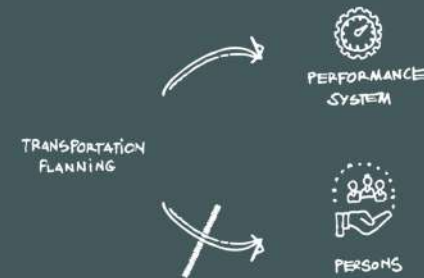


FIG. 3 PERFORMANCE-DRIVEN TRANSPORTATION PLANNING

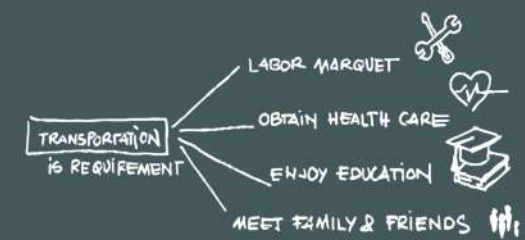


FIG. 4: TRANSPORT AS A REQUIREMENT

23%
CO₂ emissions worldwide caused by transport

4.2 MILLION
Deaths due to air pollution

1-10%
National GDP lost in urban congestion

75 MILLION
Cars purchased in 2019



FIG. 5: SUSTAINABLE TRANSPORT

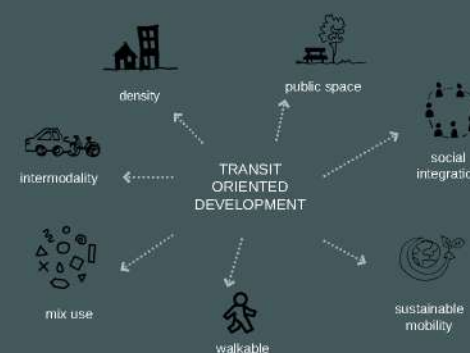


FIG 6: TRANSIT-ORIENTED DEVELOPMENTS

To reduce the share of private cars, Transit-Oriented Developments have found their way into city planning, whereby new developments or densification projects are located within walking distance of public transport hubs. Because offering a variety of transport modes will increase accessibility and the likelihood that people will choose public transport over private vehicles. While TODs do address problems relating to performance and feasibility, the perception of the end user, the human, is often sidelined in this approach.

1.3 SolutionsPlus

The studio 'Urban Change Makers' worked closely with the SOLUTIONSplus initiative, a global platform aiming to enable transformational change towards sustainable urban mobility through innovative and integrated electric mobility solutions. Through the lense of the Paris Agreement, the Sustainable Development Goals and the New Urban Agenda, SOLUTIONSplus fosters shared, public and commercial e-mobility projects in many partner cities across the world.

During the summer term of 2020, it was our task frame a low-emission mobility concept for specific zones of two partner cities: Quito and Pasig City. Throughout the process, we were in regular exchange with the SOLUTIONSplus experts' network and government representatives from both cities. The design output developed for each study case is now being considered by local actors and SOLUTIONSplus to trigger the implementation of electric and low-carbon mobility solutions in Quito and Pasig city.



FIG. 7 ACTIONS SOLUTIONSPLUS



FIG. 8 PARTNER CITIES SOLUTIONS PLUS

„Solutionsplus fosters shared, public and commercial e-mobility solutions in many partner cities around the globe“

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- 2.1 Project Outline
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- 2.3 Traffic Analysis
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- 2.5 Charging Infrastructure
- 2.6 Search for Suitable Hubs
- 2.7 Holistic Approach

02. Pasig City

2.1 Project Outline

How can we foster an inclusive transition towards a more sustainable and a more accessible transport network?

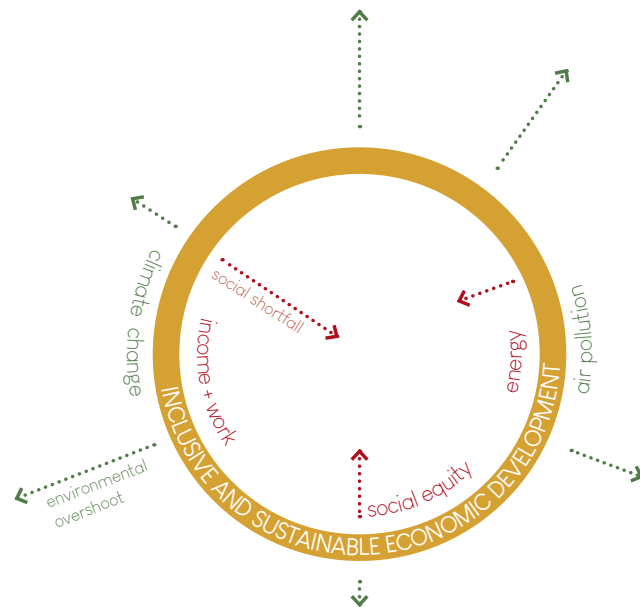


FIG.1: DOUGHNUT ECONOMY
Driven by the perfect equilibrium between basic human needs and the maximum pressures our planet is able to withstand, Kate Raworth's doughnut perspective on the global economy shows how we could strive towards more inclusive and more sustainable economic development strategies by balancing out human shortfalls and environmental overshoots. Among other topics, his model addresses economics, social equity, as well as climate change and air pollution.

In paving the way for a more sustainable future, we are working towards thriving resilience and wellbeing for our planet and our communities.

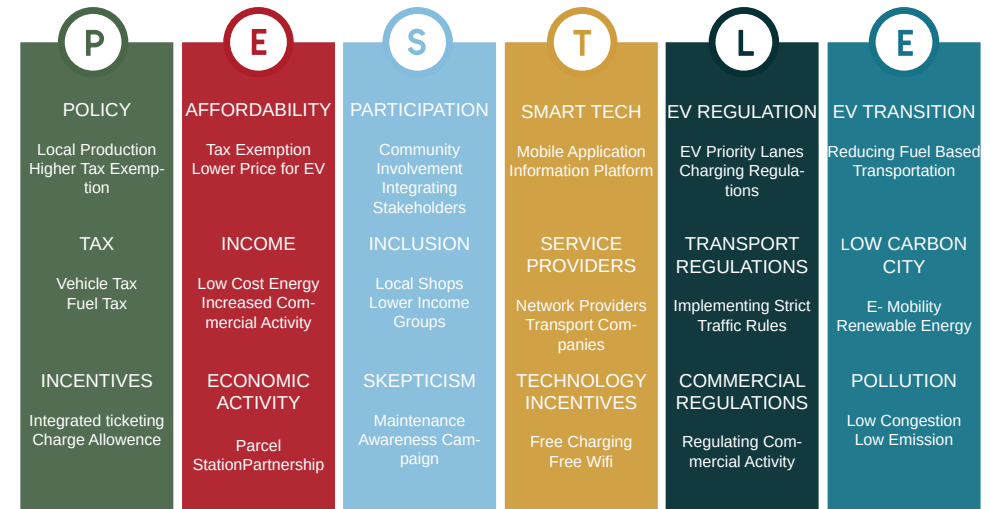


FIG.2: PESTLE ANALYSIS

Looking into factors that could influence the performance of the project on political, economic, social, technological legal + environmental scales

In this case study, we would like to show how a holistic approach to infrastructural and city planning can foster inclusion and accessibility for a large cross-section of the population, while opening up new economic opportunities. With private vehicle ownership on the rise and increased challenges concerning congestion and pollution, the Philippine government is committed to propelling the transition towards e-mobility. As part of our case study in Pasig City, we will be looking into the implementation of publicly accessible battery swapping and charging facilities for electric 2/3 wheelers across the city.

Searching for suitable locations across the city, we will strategically build a network of stations. In a further step, we will be showing how these facilities could work on a micro-scale and which benefits they could bring to the community as well as to public and private stakeholders.

The hubs we propose will have extended functions, such as parcel drop-off and pick-up stations operated by nearby shops and a smart technology platform that will serve the EV and public transport system and that will foster communication as a two-way transaction between the project and its users.

How can mobility and accessibility strategies improve specific areas? And how can infra- structural nodes double up as public realm, accessible to all? We see these new hubs as an opportunity to provide the city and its people with substantial added value.

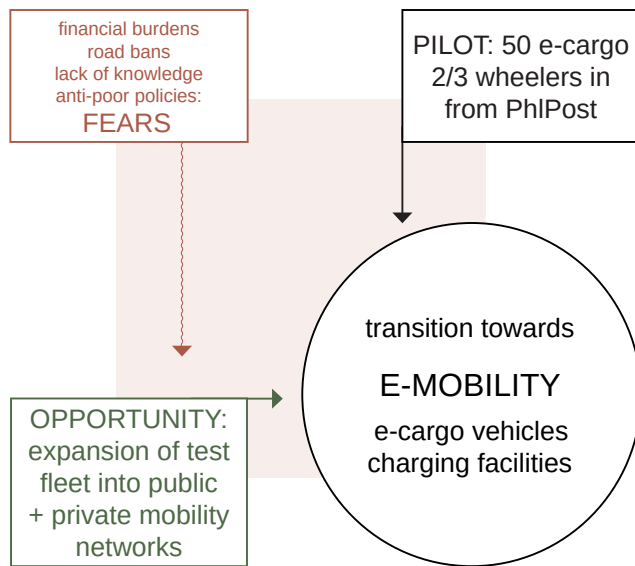


FIG.3:PILOT PROJECT: PHILPOST
Our study builds upon the test fleet of 50 e-cargo bikes implemented by the national postal service and their support for the new network of electricity facilities. Integrating this charging and battery swapping infrastructure into existing multimodal nodes is an opportunity to expand the e-mobility system into the public transport network, mitigating widespread skepticism among the population.

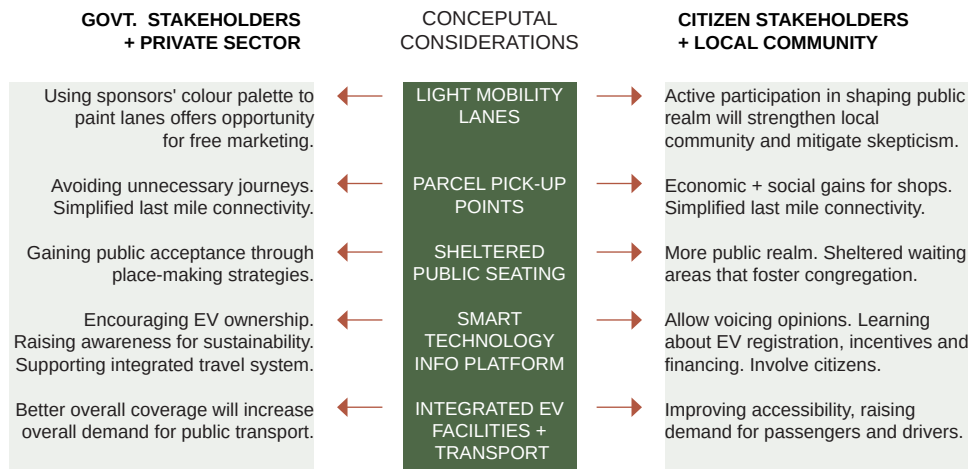
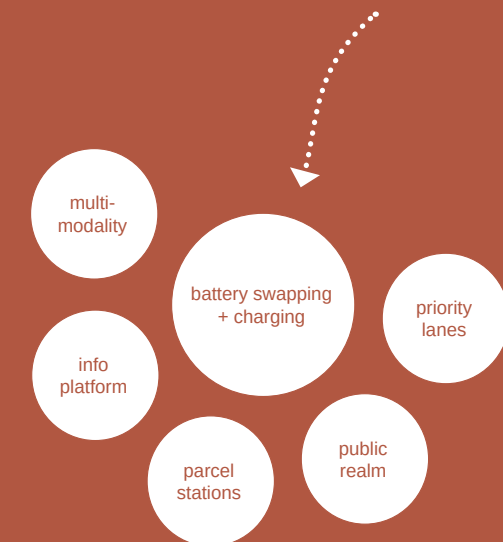


FIG.4: CO-BENEFITS

We emphasise the importance of working closely together in a government-neighbourhood partnership in order to build a successful project. To show how different stakeholders can support each other in achieving their respective goals, we set up a rational of co-benefits. Thereby the same conceptual considerations can have different gains for each stakeholder.

They can be so much more than chargers! These multi-modal hubs can double up as public realm with overall positive effects for stakeholders and communities alike.



2.2 City-Wide Analysis

Understanding the city of contrasting neighbourhoods to tackle their common challenge of traffic congestion.

FIG.6: ORTIGAS CENTER

As the business and smart city district, Pasig's wealthiest area is densely packed with high-rises. While congestion is a problem, light mobility lanes have been implemented to ease traffic.



FIG.7: NAGPAYONG

A populous neighbourhood in the south of Pasig, speckled with informal housing, this area is densely built up around a narrow road network. Nagpayong is somewhat geographically secluded from city.



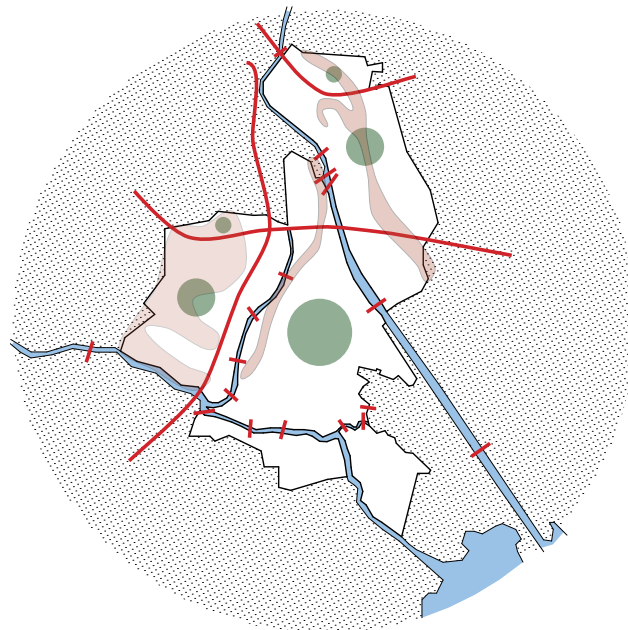
FIG.8: MANGAHAN

Mangahan is a moderately inhabited area in the northern part of the city. The neighbourhood has a mix of different residential types. Here, gated housing developments are on the rise.



FIG.9: CITY HALL

The administrative centre accommodates City Hall and the central post office. It is set around the central market of Pasig and is bustling with on-street activity, with many bus and jeepney lines terminating here.

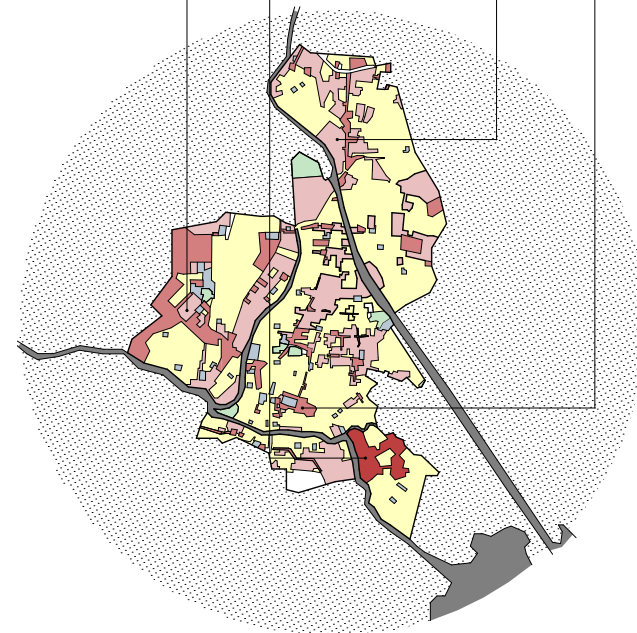


- city limits
- water
- flood-free zones
- connectors
- islands

FIG.5: ISLANDS AND BORDERS

Pasig, a highly urbanised city within the Metro Manila area of the Philippines, has a population of around 750,000. Rivers and floodways divide the city of Pasig into several islands. While they are reconnected via bridges, these waterways have a tangible effect on the formation and segregation of Pasig's neighbourhoods.

The wealthy streets of Ortigas Center in the west were formed within largely flood-free zones whereas less privileged neighbourhoods such as Nagpayong in the south-east are visibly less accessible.



- residential
- civic
- green
- mixed use
- commercial
- industrial

FIG.10: ZONING MAP

A brief look at Pasig's zoning map shows uses ranging from residential to industrial. Yet street views show a high variance in the spatial qualities of the neighbourhoods.

2.3 Traffic Analysis

Overlapping delivery routes, travel routes and zones as a basis for new multimodal transport nodes in Pasig

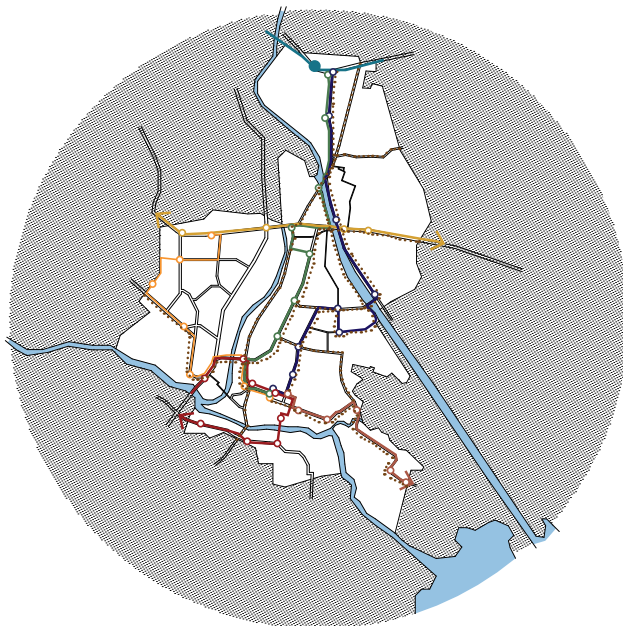


FIG.11: ANALYSIS OF ROUTES

Looking into the main bus and jeepney routes across the city, we found that many of the routes operated by buses were also covered by jeepneys as a more affordable option. Trikes operate on various routes within and beyond the bus and jeepney networks as they tend to be small enough to traverse the narrower alleys and paths within the neighbourhoods.

- LRT line
- Route 6: City Hall - Kenneth
- Route 5: City Hall - Kalawaan
- Route 4: SM City East - Meralco
- Route 3: City Hall - Medical City
- Route 2: City Hall - Ligaya PCGH
- Route 1: City Hall - Ligaya Rosario
- Jeepney Routes

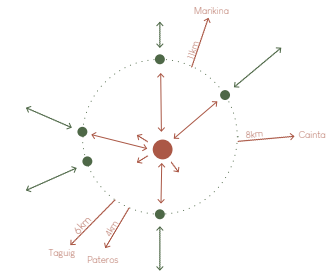
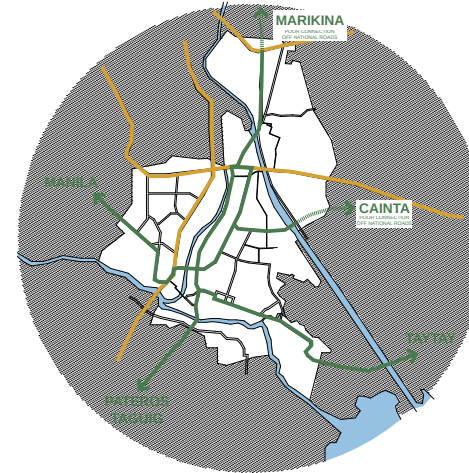


FIG.12: PHLPOST DELIVERY ROUTES

PhilPost's delivery area covering Pasig and nearby towns. There is a central post office at City Hall as well as logistic centres on the outskirts.

FIG.13: SECONDARY ROUTES

- national roads
- main routes towards nearby cities
- secondary routes

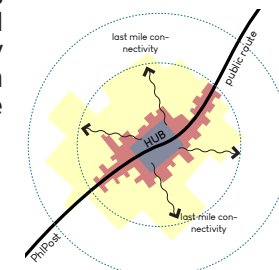
When it comes to public transport Pasig City offers a number of choices, ranging from an LRT line to buses, jeepneys and trikes. A small station-based bike-sharing system has been implemented, mainly covering Ortigas Center. Furthermore, there have even been recent attempts to overhaul the jeepney fleets and to exchange them for e-vehicles. However, these attempts have been deemed anti-informal and anti-poor and have sparked a series of strikes in the past, leaving the population with a feeling of wide-spread skepticism when confronted with the transition towards e-mobility.

We initiated our analysis by looking into main public transport routes with a focus on bus and jeepney routes that could profit from additional or improved last-mile connectivity by means of electric 2/3-wheelers. Next, we cross-checked these with the main PhilPost delivery route beyond the city limits to gain an understanding of which routes could be worth strengthening.

One main hindrance encountered in this approach, however, is the fact that electric 2-wheelers are currently banned from traversing national roads. This makes the journey to the vehicle registration office legally impossible for any new or potential buyer. With this in mind, we created to a secondary network of roads that followed the main public transport routes through the city. This way, there is still merely a poor connection towards Marikina in the north and Cainta in the west. Hence, it is recommended that the governing bodies clarify this status.

FIG.14: APPROACH TO HUBS

By overlaying main delivery routes with main public transport routes, we can integrate the charging facilities into dense areas to serve the general public.



2.4swot Analysis

Building upon the high level of multi-modality in Pasig's transport system

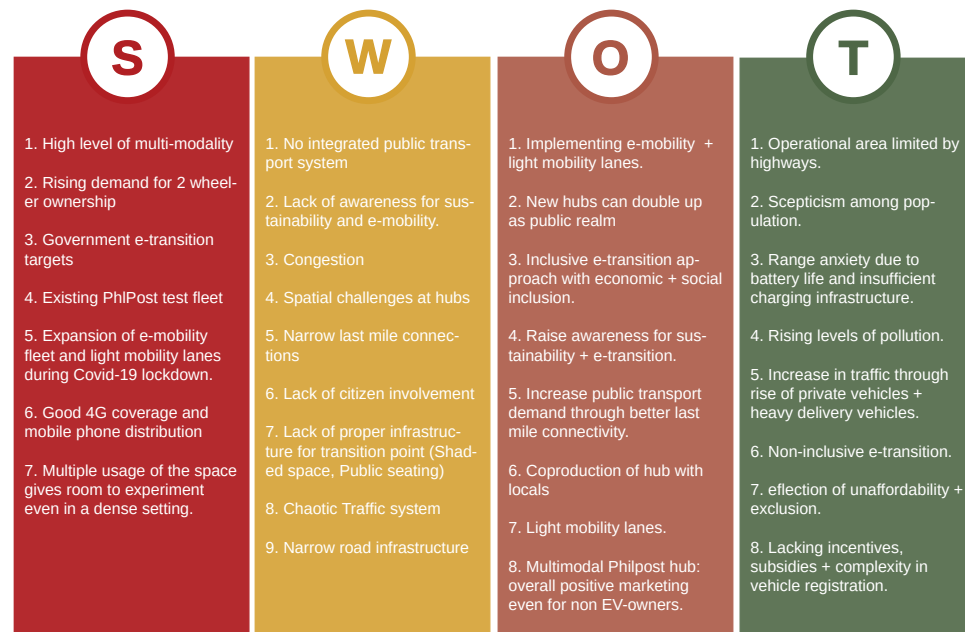


FIG.15: SWOT ANALYSIS

Strengths and weaknesses concerning the status quo in Pasig and opportunities and threats in connection with the e-transition.

To understand the city's position in terms of strength, weakness, opportunity, and threat on the transportation system; we applied a swot analysis on Pasig .

STRENGTHS

Pasig provides a wide range of transportation modes such as buses, jeepneys, trikes, hi-aces, bikes, and trains. Through the high levels of congestion citizens are becoming more enthusiastic about the use of 2-wheelers which can help to establish a light mobility system around the city and reduce CO₂ emissions. Moreover, to promote e-vehicle use in Pasig the city government is trying to encourage people further by running a test fleet of EVs with PHLPPost and have expanded light mobility lanes during the COVID-19 pandemic. Furthermore, the city has a good 4G connection throughout. Therefore, it could be said that Pasig is technically well equipped for the implementation of a sustainable transportation system.



FIG.16: THE CHALLENGE

Congestion is a pushing challenge. As journey times are hard to anticipate, many are resorting to private 2-wheelers.



FIG.17: STREET SCENE

A busy road in Pasig city where pedestrians dodge the traffic as the road is fully occupied by vehicles due to the haphazard traffic system.

WEAKNESSES

With an unintegrated transportation system, congestion on roads and around stations is a common scenario in Pasig. Many of these stops lack shaded space and public seating. Lack of indicators makes them user-unfriendly. A large number of roads in residential areas are narrow and thus are only accessible for 2/3-wheelers. To develop sustainable futures, citizen involvement must be taken into consideration as these are the end users. Another weakness is the population's lack of knowledge when it comes to e-mobility, its financing and registration schemes.

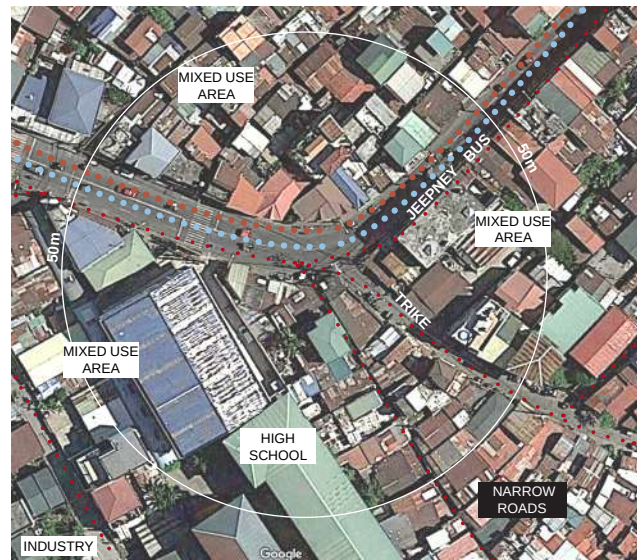
OPPORTUNITIES

Despite the weaknesses, Pasig presents several opportunities that can help to improve the current transportation system to a great extent. An integrated transport system could be introduced to the city to ease the high initial investments in EV fleets. Light mobility lanes could support the fight against congestion and pollution and would serve as an incentive to resort to electric 2/3-wheelers. New charging infrastructures could double up as public realm and a platform



ABOVE: FIG.18: TRAFFIC

A common scenario in Pasig's unintegrated transport system: Crowds of people waiting amidst the buses and jeepneys on heavily congested roads.



LEFT: FIG.19: AERIAL VIEW

A top view of the bus stop near Pinagbuhatan High School showing the dense setting of mixed use buildings and narrow roads that lead to residential developments

RIGHT: FIG.20: PINAGBUHATAN HIGH SCHOOL

Extract from our hub analysis (see section 2.6) that looks into the strengths and weaknesses encountered in our first test location.

for the exchange and production of knowledge. With private deliveries on the rise, nearby shops could offer parcel stations to reduce a portion of journeys.

THREATS

Threats can make strengths futile and opportunities unattainable if not addressed suitably. In the case of Pasig skepticism could be a big one as local drivers fear job losses through the e-transition. During a large-scale transition, supportive financial models, policies and incentives can become a defining factor for the outcome of the project. In terms of marketing and communication, people should be informed of the sustainable outcome of e-transition and should be invited to the table of decision-makers. Otherwise, rejection and further protests could become a severe threat to the project.

Finally, an insufficient initial network of hubs can lead to range anxiety and the subsequent failure of the project.



ABOVE: FIG.21: THE COMMUNITY

As traditionally practiced in the Bayanihan spirit, the implementation of new multi-modal hubs that double up as public realm could emerge as a community exercise.



2.5 Charging Infrastructure

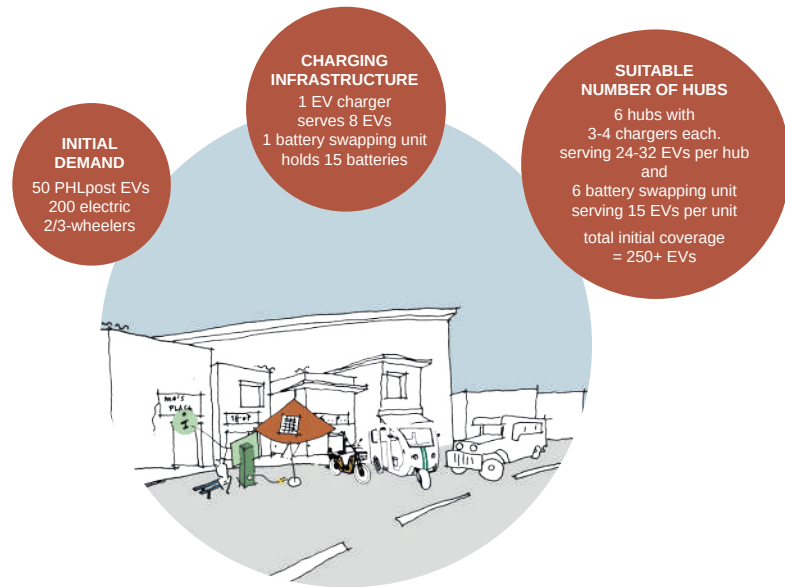


FIG.22: INFRASTRUCTURE
A diagram showing the calculations for determining the right number of charging facilities and locations needed.

To meet the future demand for charging of the PHLpost EV fleet as well as the increasing number of e-vehicles, Pasig needs to implement sufficient charging infrastructure around the city. But what kind of charging equipment do we envision for Pasig? How high is the demand and how many locations do we require?

Considering the increasing demand and future anticipations we came up with two plausible options for the new electric

infrastructure. One is a DC charging point and the other is a battery swapping station. As charging in the hub takes time and subsequently requires more space for parking, pairing charging hubs with battery swapping facilities could mitigate time losses.

One battery-swapping station can store up to 15 batteries at a time while an EV charging post can serve to 8 EVs on an average day. According to the project brief,

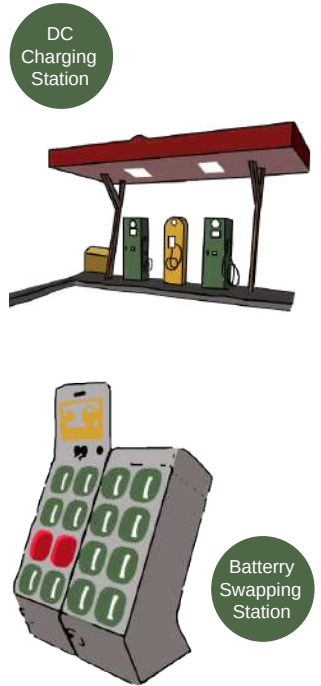
PHLPost has a fleet of 50 EVs for their operations within their last-mile delivery networks and there are more than 150 electric 2/3-wheelers on the roads of Pasig.

Marketing is key. By taking a holistic approach, we can ensure the success of the project. We propose an initial network of 5-6 hubs with our suggested extended functions such as shelter, seating, parcel stations and light mobility zones. This first network would cover more than 250 EVs. In a second step, the network can be gradually filled in with simplified facilities to serve the growing demand for EVs.

E-Transport

Pasig's administration has set admirable aims to reach higher sustainability standards and to strengthen multimodal infrastructures within the public transport sector.

To reach their targets the City of Pasig has introduced a test fleet of 50 EVs in partnership PHLPost for their last-mile delivery services. The driver of this project is to exhibit and inform people about the positive effect of e-mobility and to encourage them to use e-vehicles in the future. Currently, PHLPost delivers via electric 3-wheelers. There are plans to introduce further models to their e-fleet. The city government is also aiming to launch further public e-vehicle fleets to improve last-mile connections within the city.



ABOVE: FIG.23: CHARGING INFRASTRUCTURE
A visualization of two charging infrastructures: a DC charging hub and a battery swapping station.

BELOW: FIG.24+25: EV MODELS
PHLpost 50 EVs have served at the front line during the COVID-19 pandemic.



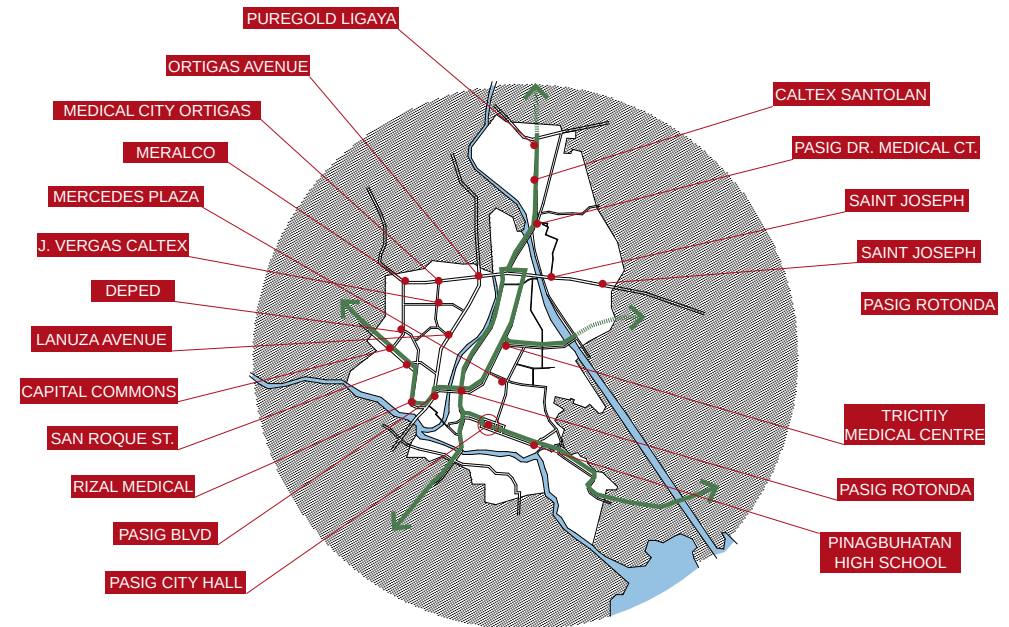
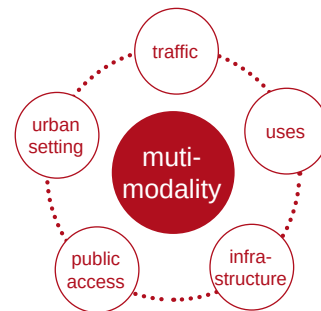
2.6 Search for Suitable Hubs

Which characteristics make a location suitable for the implementation of a hub?

During our analysis we developed strategies to pin-point suitable hub locations within the urban fabric of Pasig City. We investigated beneficiary settings in order to provide the best possible services to the end users. Following the project outline and the results from our city-wide analyses as well as the SWOT analysis, our next step was to explore possible locations at intersection points between PHLPost delivery network and existing public transport routes.

During our search, our aim was to ensure efficient delivery routes as well as a strengthened sustainable public transport system in the long run. This way, the hubs are sure to serve a large cross-section of

FIG.26: BENEFICIARY SETTINGS
Diagram showing the characteristics by which we analysed each location for suitability as a new multi-modal charging hub



the population. A total of 21 hub locations were described and compared. The selected hubs ensure the highest level of multimodality, easy access, sufficient road widths, and offer suitable space to intervene.

In a next step, we inspected the hubs further to select a list of favourites, spread evenly across the city. These hubs reflect qualities such as urban setting, traffic systems, use of the spaces, public access, right amount of infrastructure, level of multimodality, availability of buses and light mobility lanes, commercial activity, overall liveliness, parking possibilities, e-bike sharing or e-mobility services. The hubs are mainly situated along

FIG.27: HUB ANALYSIS
A map showing all the hub locations along the main road connections of Pasig City

the main roads, while avoiding national roads due to current restrictions. The selection offers nearby commercial units with an opportunity to more economic activity. Most hubs are currently lacking a dedicated bus or light mobility lanes and very few of them have an e-bike sharing system. Most are relatively pedestrian-friendly with space for footpaths, parking bays and zebra crossings, though all of the locations lack public seating as well as sheltered and shaded waiting areas.

	Purgold Ligaya	Rosario Market	Rizal Medical Center	Tricity Medical Centre	Pinagbuhatan School	Pasig City Hall
Urban Setting?	Edge of mixed use area-lively	mixed use area - lively	mixed use area - moderately lively	mixed use area lively	mixed use area lively. informal.	mixed use area very busy spread out
Multi-modality?	2 bus, Jeepney, bus	2 bus, Jeepney	2 bus, Jeepney	3 bus, Jeepney, ferry	bus, Jeepney.	all buses, Jeepneys etc
Light or E-mobility?	no	no	no	no	no	yes, in corona
Commercial activity?	yes	yes	yes	yes	yes	yes
Parking bay or similar?	yes + in front of shops/right turn bay	yes in front of shops + pedestrian	yes in front of shops + pedestrian	yes in front of shops	yes in front of shops in curve	surely
Pedestrian-friendly?	zebra + raised pedestrian crossings	zebra + raised crossings	zebra + raised crossings	no crossing	busy but zebra crossing	zebra + raised crossings
Bus lanes?	no	no	no	no	no	at hub
Traffic?	main road	highway	main road	main road	main road	main road

FIG.28: HUB CHARACTERISTICS

Lead by a number of beneficiary hub characteristics we set up a written analysis of possible locations that looked into multi-modality, traffic and urban setting among others.

AREA OF INTERVENTION

slow zone with priority lanes, battery swapping, parcel drop-off and pick-up stations, public realm

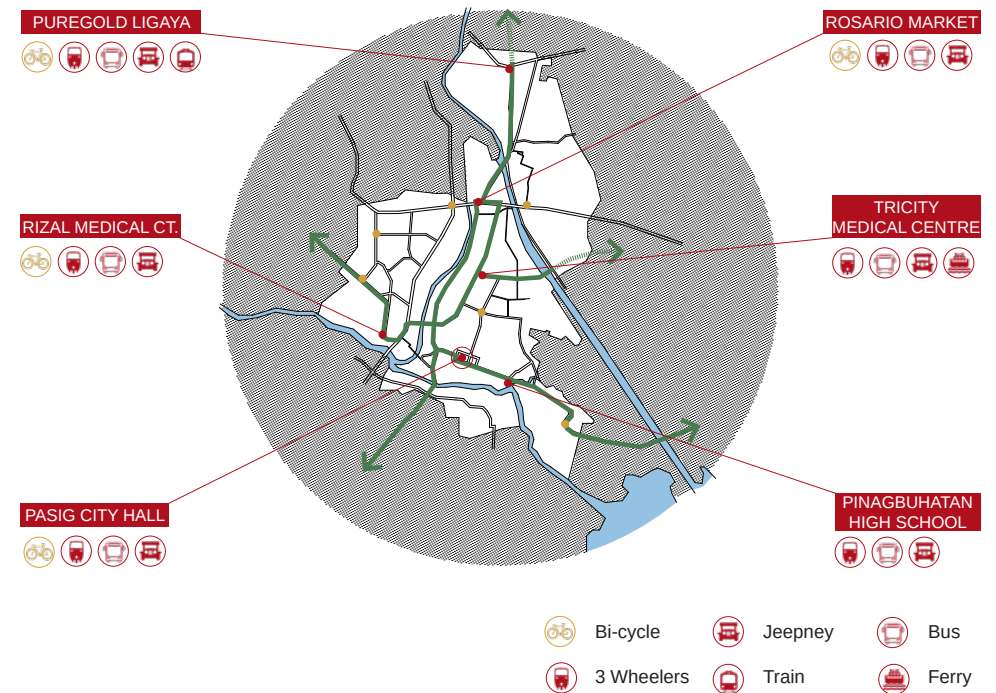
CHARGING HUB

multi-modal node for public transport and EV charging/battery swapping with public seating and shelter and an information platform



FIG.29+30: PUREGOLD LIGAYA

Our second test hub is situated in the north of the city. The vast context is challenging. However, there is an opportunity for an intervention within this commercial arrangement.



For our first set of hubs, we have sought out 6 locations that support the strengthening of inter-city networks, while steering clear of national roads. Namely: Pasig city Hall, Pinagbuhatan High School, Tricity Medical Center, Rizal Medical Center, Rosario Market and Purgold Ligaya. Among these, City Hall plays a key role as the central post office and market are located here. In addition, many of the transport lines terminate here, resulting in high levels of public transport. Pinagbuhatan offers a suitable high-density local setting to test our strategy. Tricity Medical Center offers the highest level of multimodality, while Rizal Medical Center has the largest space available for interventions with public service buildings nearby. Puregol Ligaya connects the city with LRT and highway. Rosario Market offers a good transition to the inner city. Following this selection, we developed schematic approaches to our spatial interventions at these locations.

FIG.31: PROPOSED NETWORK

Map of Pasig showing the first network of hubs in relation to the inter-city routes we intend to strengthen



FIG.32+33: TRICITY MEDICAL CENTRE

Situated in the geographical centre of the city, a mobility hub here could strengthen the various available transport modes nearby.



FIG.36+37: CITY HALL

Pasig city hall is the central hub for all the transports as well as it hosts the PHLPost central Pasig office (marked in green). With the central mall, the place is commercially very active.

AREA OF INTERVENTION

slow zone with priority lanes, battery swapping, parcel drop, public realm

CHARGING HUB

multi-modal node for public transport and EV charging/battery swapping with public seating and shelter and an information platform

BELOW: FIG.34+35: ROSARIO MARKET

This northern location presents an opportunity as a point of transition between the inner and the outer city.



BELOW: FIG.38+39: RIZAL MEDICAL CENTRE

This location is between Ortigas Centre and City Hall. It's bay typology is suitable for the implementation of our hub concept.



2.7 Holistic Approach

P

1. Strengthen investments in local design, R+D.
2. Vehicle tax exemption for electric 2+3 wheelers.
3. EV subsidies / funding schemes to buy e-vehicles.
4. Introduce fuel tax.
5. Explore partnerships for dual use of PhiPost EVs outside of shifts.
6. Introduce tax to discourage CBE vehicle registration
7. Clarify registration + road restrictions for electric 2/3-wheelers at national level.
8. Higher tax exemptions for public EVs, lower for private EVs
9. Explore financing schemes for lower income groups
10. Expansion of light mobility lanes

High initial investment costs, lack of familiarity with the topic as well as a sense of feeling excluded from the decision-making processes have led to wide-spread skepticism among operators when it comes to the transition towards e-mobility. We advocate taking a holistic approach from planning to construction to daily operation. One method to ensure the success of the project is to pass supportive policies and to develop a set of incentives in order to persuade buyers, retailers and drivers alike that there are many benefits that can come out of the e-transition.



I

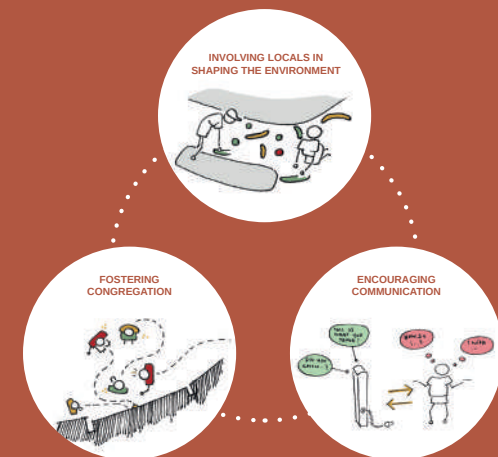
1. Encourage integrated ticketing through free charging.
2. Sponsor partnerships that enable customer advantages e.g. network providers.
3. Introduce charging allowance for PhiPost last mile delivery drivers using e-vehicles.
4. Facilitate introduction of EV sharing systems.
5. Target incentives / bonus systems in partnership with EV retailers.
6. Green credit scheme: points awarded for low-carbon purchases
7. Battery swapping infrastructure with deposit system could reduce EV acquisition costs by 50%
8. Public awareness campaigns.
9. Introduce special number plate options

FIG.40: POLICIES + INCENTIVES

A list of policies and incentives developed with the support of CleanAir Asia that could be implemented in the future.

RIGHT: FIG.41 HOLISTIC CITY

Through involvement and communication, we can develop successful place-making strategies for thriving cities and communities. And for the common good.



03. MOBILITY CONCEPT

40 - 51

- 3.1 Design Strategy
- 3.2 Hub Module
- 3.3 Spatial Solutions
- 3.4 Overall Benefits

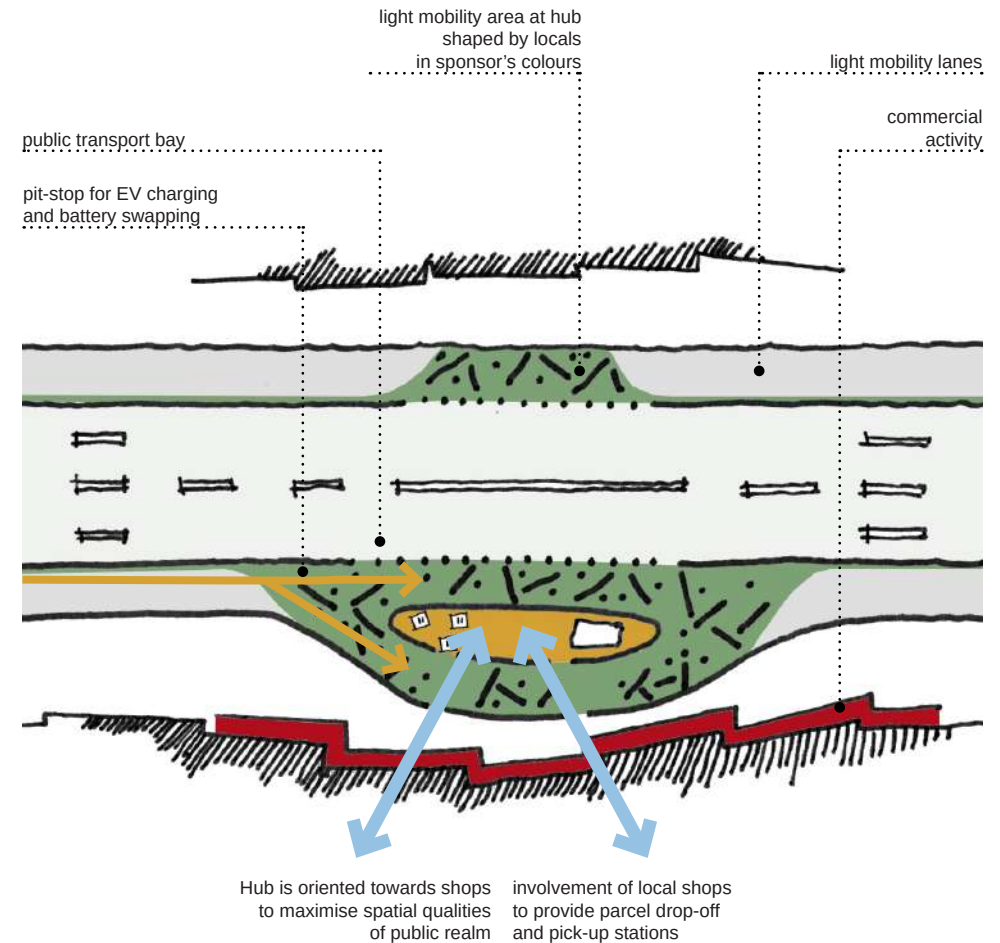
03. Mobility Concept

3.1 Design Strategy

During the analysis of the city and its stakeholders we recognised the importance of going beyond the mere implementation of charging and battery swapping facilities. Moreover, our design strategy shows how the hubs and its surrounding surfaces can address topics such as congestion, road safety and economic activity.

In a region where weather conditions oscillate between heavy rainfalls and hot sunshine, where public realm is scarce and where the car rules the road, our intervention entails a sheltered waiting area with seating, battery swapping and charging areas beneath. It is surrounded by a slow zone for light mobility, EVs and includes a bay for stopping public transport vehicles.

The sheltered area is shifted away from the nearby shop fronts, thus creating an interim space that is oriented both towards the street and towards the commercial facades. Around the sheltered area, we envision a light mobility area that is painted in the hub sponsor's colours. The exact pattern and appearance can be executed by locals, improving local identity and involvement. This area that stands out from the rest of the road, can have a slowing effect on traffic, thus improving road safety and opening up the zone as extended public realm.

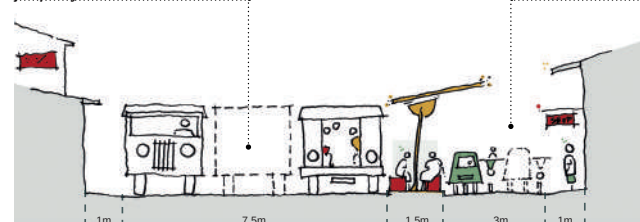


RIGHT: FIG.1: DESIGN CONCEPT

FIG.2: STREET SECTIONS

Suitable roads must have minimum widths that allow for smooth traffic flows. The hub then sections off a secondary part of the road that forms a slow zone.

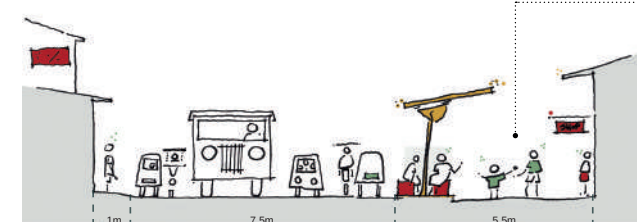
road width allows for jeepneys to overtake



slow zone: stopping, swapping + charging

LOWER
PUBLIC REALM USE

slow zone becomes extended public realm



HIGHER
PUBLIC REALM USE

3.2 Hub Module

The hub itself is made of lost-cost materials as a simple, self-build construction. In their initial implementation, all hubs follow a modular system - thus lowering investment costs. Beyond lowering construction costs, the assembly together with locals under the guidance of professionals can have positive effects on the way the community welcomes the project and the e-transition as a whole.

To date, the City of Pasig is confronted with unclear traffic and transport situations. Once constructed, the module will provide the hub with increased visibility, thus indicating EV facilities, parcel pick-up points and public transport nodes from afar. Furthermore, the lively hub will attract economic activity to the area.

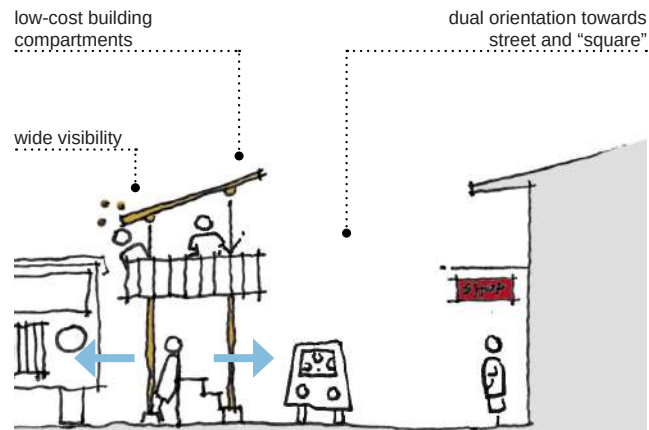


FIG.3: SELF-BUILD MODULE
simple self-build hub module
guided construction with locals

A congregation space on the upper floor offers opportunities for local groups to gather on the regular.

After initial construction, in a second step, the hub could and should be appropriated and adapted by its end users, thus creating a unique appearance for each hub. This way, the locals get to make their own public realm which will lower the risk of vandalism and make sure locals feel a sense of responsibility for their upkeep. The hubs will differ in terms of outer cladding and decoration, colour schemes and atmosphere - even though they are all originally made from the same module. For instance, one hub could gain added solar lighting, another might have a more closed facade over time.

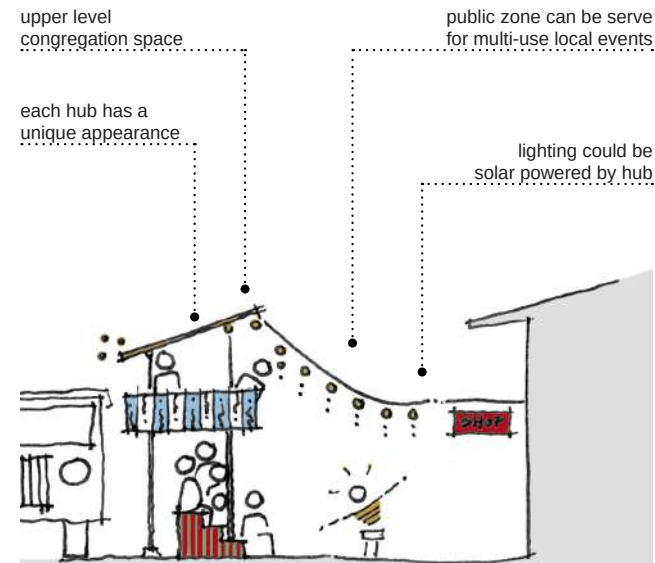


FIG.4: APPROPRIATION
adaptation and decoration by end users

3.3 Spatial Solutions

How can sustainable urban mobility and accessibility strategies specifically improve targeted neighbourhoods?



FIG.5: TEST LOCATIONS

As part of our design brief, the area around Pasig City Hall was suggested to us as a test area. However, for our test area, we would like to explore how these hubs can trigger benefits on a more local network and what the overall effects are if we offer extended functions such as parcel stations and locally co-produced slow zones.

Hence, within our network of suitable hubs, we are applying our design strategy to two hubs that differ largely in their urban contexts in terms of density, economic activity and multi-modality.

The first is set in the southern part of the city, in Pinagbuhatan and the second at Puregold Ligaya in the north.



FIG.6: FROM ABOVE

Our spatial approach is applied to Pinagbuhatan High School by nesting the scheme into the slightly wider bend of the road.

FIG.7: PINAGBUHATAN HIGH SCHOOL

In this low-rise high-density area in the south, we are able to imagine an array of opportunities for nearby shops and communities.



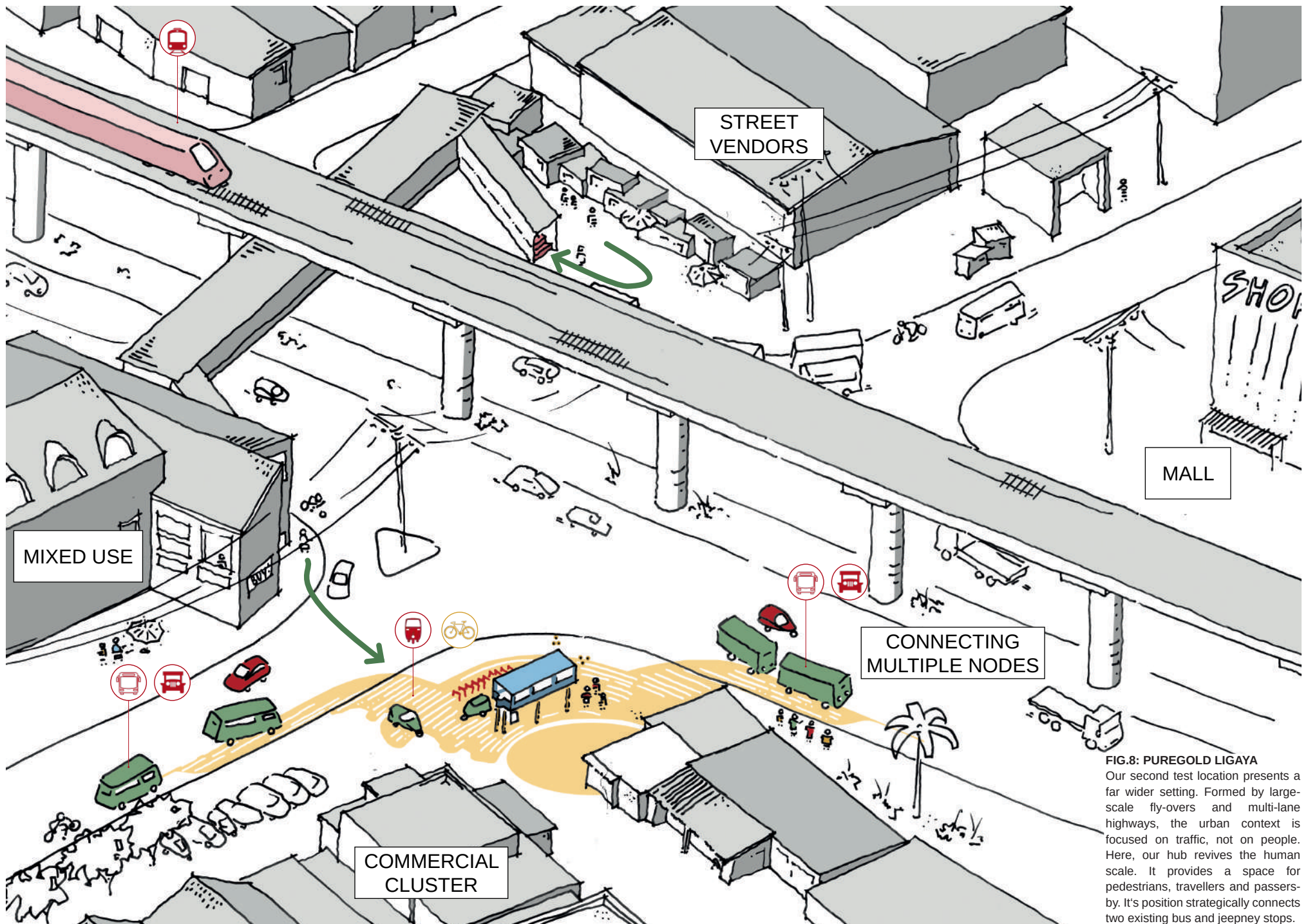


FIG.8: PUREGOLD LIGAYA
 Our second test location presents a far wider setting. Formed by large-scale fly-overs and multi-lane highways, the urban context is focused on traffic, not on people. Here, our hub revives the human scale. It provides a space for pedestrians, travellers and passers-by. It's position strategically connects two existing bus and jeepney stops.

3.4 Overall Benefits

By implementing several hubs across the city, we can ensure the acceptance of the project, while creating an array of economic and social opportunities along the way. Smart technology can be broadened as needed to serve as a communication and skill development platform. The module that is raised off the ground can even serve as an emergency and distribution shelter during risk scenarios such as floods and, most recently, pandemics.

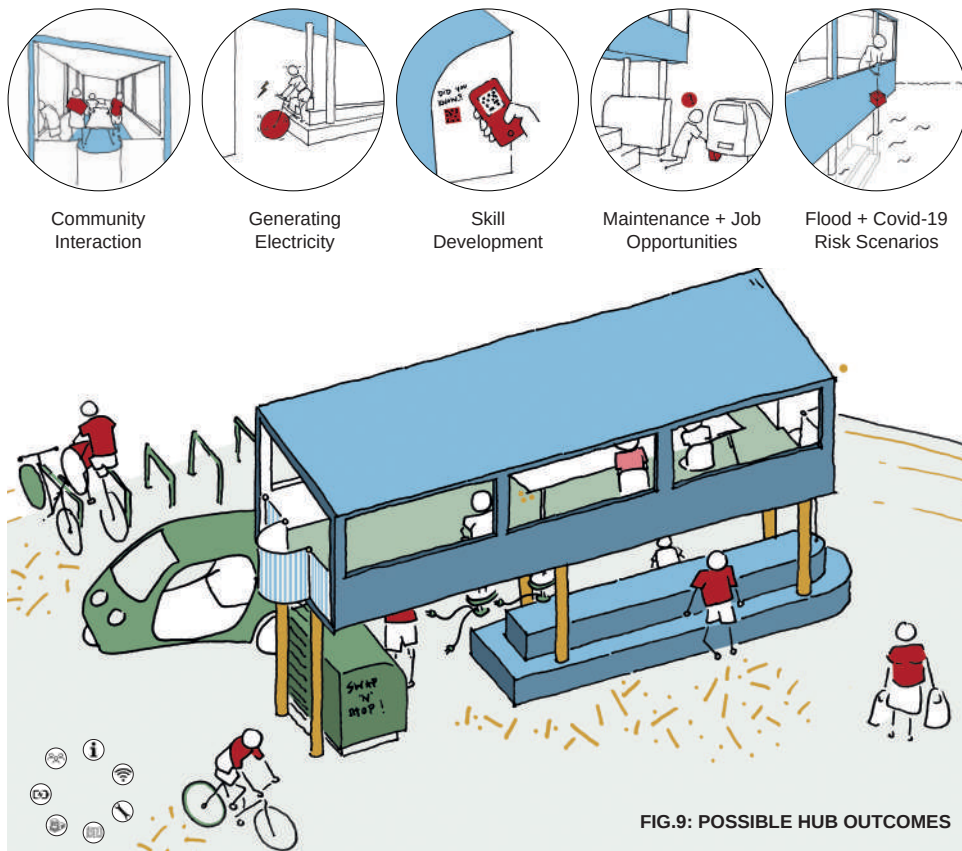


FIG.9: POSSIBLE HUB OUTCOMES

A network of hubs that reaches beyond the provision of charging facilities can have a wealth of possibilities with numerous direct and indirect positive effects.

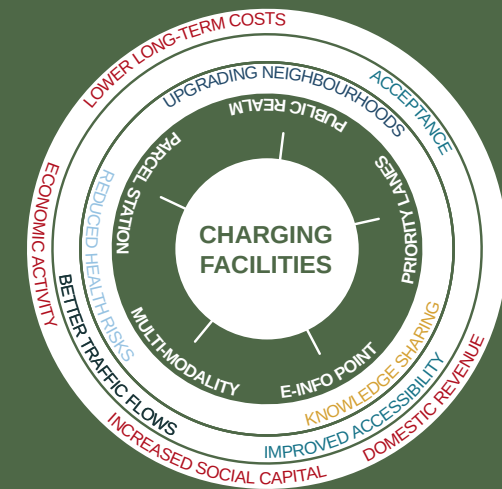


FIG.10: OVERALL BENEFITS

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02.MOBILITY CONCEPT

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Urban Change Makers

RETHINKING URBAN MOBILITIES

As the world is confronted with climate change and cities continue to spill beyond their boundaries, the Global Agendas uniformly recognise an urgent need for inclusive and sustainable urban development strategies.

The Urban Change Makers studio draws attention to current global transport challenges. Based on the notion that the provision of infrastructure promotes accessibility and that accessibility promotes equality, the studio has developed proposals for innovative urban mobility solutions in Quito and Pasig - two cities in the Global South that have been struck heavily by congestion and social divides.

In an aim to reduce individual transport modes in favour of higher public demand, the students investigate multimodal networks. A series of reading sessions formed the theoretical basis for the spatial interventions. Reaching beyond the infrastructural challenges these two cities are faced with, the Urban Change Makers studio addresses local identity, informality and social marginalisation in an attempt to develop holistic place-making strategies for the public realm and its nearby communities.

Thus, what once was a divider can soon become a threshold, a moment for activities, exchange and community.