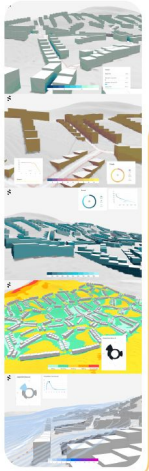
URBAN OASIS

Tijuana, Mexico receives migrants predominately from three sources: within Mexico - escaping cartel violence, from Central America - escaping political unrest and economic crises, and those deported from the US.

The Covid-19 pandemic exacerbated the rise in migrants at the Mexico-US border. Both worsening the economic crisis in the south and providing justification for changes to asylum laws in the north. A Trump-era policy, Migrant Protection Protocols, or Remain in Mexico, extended by the Biden administration, has meant US asylum seekers are no longer accommodated in the US during processing. Instead, a record number of migrants have been forced to find accommodation in border cities, such as Tijuana. They will wait indefinitely for processing, clarity on whether they will be allowed in the US, or, in some cases, until the immigration rules are changed.

Existing shelters, built to house migrants seeking to enter the US, are above capacity. Tent cities have sprung up in parks, roadsides, and other publicly available space. Concerned over safety, hygiene, and sprawling growth - recent National Guard action has forced the closure of these informal settlements. Without adequate shelter migrants are faced with hardships - not least of which is safety as they have become easy targets for kidnapping, violence, and theft.

Previous affordable housing projects in Mexico have failed repeatedly. These projects focused only on the unit cost. Resulting in micro-house, cookie-cutter developments, which were situated on the far-flung outskirts of cities -none of which considered the environment which surrounds a house that makes it a desirable home. These developments have been abandoned, left to decay they have invited rampant crime and led to a collapse in property values. All of which have contributed to a stark shortage in affordable houses in Mexican cities, including Tijuana.



Although this is an initial urban draft, the circular arrangement of units already throws interesting results, as graphic shows:
Our urban design optimises both daylight and sunlight, assuring exposures of 80% on the surface of each unit. The proposed arrangement also optimises privacy and explores the development across a hill, taking into consideration wind dynamics and other comfort and sustainability related metrics.

6

We explore the concept of Complete Streets. Those are designed to priorities safety and create an inclusive environment, particularly for those which cannot afford traditional transportation vehicles (e.g. cars and motorcycles). This approach also strengthens a healthy community

a holistic community

1

Using Dunbar's Number as an approximation, our circular clusters will house between 100-200 individuals, this is the limit on the number of relationships humans have been found to be able to maintain over time. By restricting the size, and enabling a sense of community, we mitigate against a sense of disconnection reducing the likelihood of abandonment and instill a sense of ownership and, as combined with other lifestyle elements, desirability.

2

The urban arrangement allows expansion by circular cluster over time. This expansion, which is modular self-assembly, and the extension of existing units - is a potential economic opportunity for existing households. By building adjacent clusters we allow mobility by foot - exploring the modern principles of the "20-min walking city". Additionally, key access to main avenues of the city are provided, to facilitate the social and economic integration of the Urban Oasis within the fabric of Tijuana

3

The cellular design of the urban areas explore an inclusive arrangement of areas, mitigating the sense of social hierarchy, promoting connection, but allowing for privacy. Connection in this context is fundamental, as migrants within the city their understanding of opportunities and US legal processes is limited - word of mouth from those in similar situations provides a valuable source of such information.
Our proposal departs from the traditional urban squared blocks, pursuing the benefits of circular cells. As a result, multiple polygonal shapes define the urban fabric, allowing for linear streets still delimiting centric spaces.

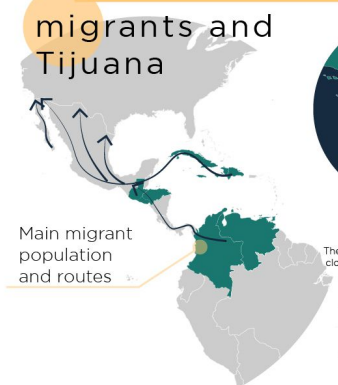
4

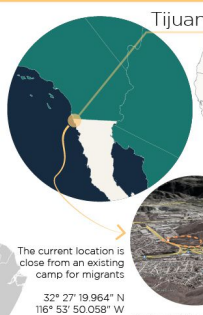
Several communal spaces were conceptualized including sports fields, parking lots, food gardens and other urban areas suitable for gatherings. By varying the centers, we encourage inhabitants to wonder across the entire urban landscape. This generates foot traffic for spaces delineated to formalize the economic opportunities which have been seen to arise in other settlements - convenience stores, barber shops, food stalls, etc.

5

The community administration and the ownership model of the the housing units is based on a cooperative model. Sense of ownership and community means all will have an incentive to contribute to the upliftment of the collective. Contribution to basic services support the management of public spaces and quality control of the built elements. Those unable to afford rents can subsidize their costs by contributing to the community - cleaning, maintenance, painting - in a practical sense this will raise the value of the community as a whole.

migrants and Tijuana





The current location is close from an existing camp for migrants

32° 27' 19.964" N
116° 53' 50.058" W

Given the migrant flows, Tijuana, Mexico has been selected for our project. In consultation with Tijuana Development Council - a non-profit that collaborates across private, public, and academic sectors to improve urban conditions in TJ - empty federal land (migrants are a federal concern) alongside the Tijuana River has been identified as a potential construction site. This location is in close proximity (10minutes) to factories and labor demand, which offers households potential economic opportunity. And is located in the path of the direction of urban sprawl, likely resulting in increased property value over time.

Los Angeles Times

Asylum seekers at San Diego border wonder and wait amid inconsistent policies

The San Diego Union-Tribune

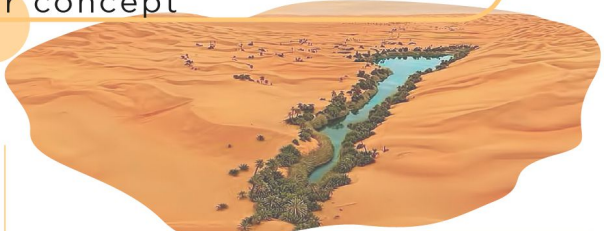
Migrants stranded in Tijuana living in fear amid growing violence

Migrant encounters at U.S.-Mexico border reached their highest level on record in 2021

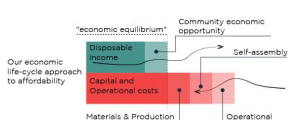
REUTERS

EXCLUSIVE U.S. urges Mexico to clear migrant camps near border -sources

our concept



An oasis is a miraculous expression of life, life which somehow **thrives despite existing in very harsh conditions**. This is our interpretation of housing affordability for minorities and social excluded groups, such as the migrants in Tijuana, Mexico. Our approach - which focuses on a community-level solution - is replicable to other social contexts in which housing becomes a consequence of a failed socioeconomic system.



Our solution has three layers that shall be aligned to address the complexities of affordability in the context presented, but generally as a socioeconomic challenge.

Layer 1

Foundation - The foundation of our solution lies on the sense of belonging and identity perceived when living in community. Our interpretation takes into consideration the technical aspects of an efficiently designed communal urban space but also features an optimal size and density to promote a balanced economic environment.

Layer 2

The element house - Our community is a strategic composition of a single but flexible typology, exploring modularity and replicability to address the needs its users, over time. The following board explores in detail the measures taken to promote affordability and sustainability.

Layer 3

Roof (just like an arrow point upwards) - Roof - Because our solution is centered on people, we conceptualized an socioeconomic arrangement that creates opportunity. A key aspect of affordability is its relationship with the disposable income of its users. The location of the community has taken into consideration the employment offer in Tijuana. Additionally, the urban arrangement and the flexibility of the built elements allow for the creation of small jobs, to be provided within the community.

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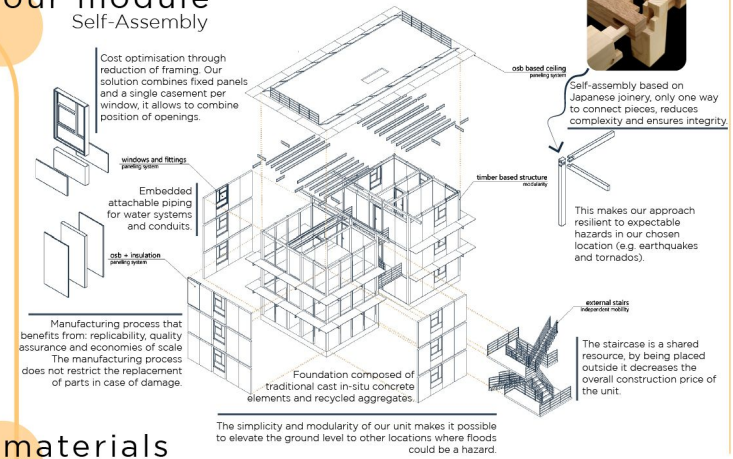
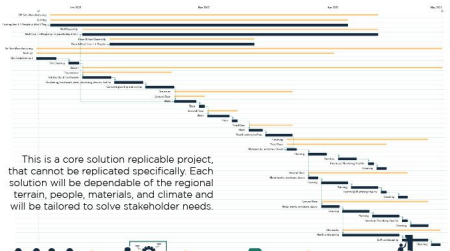
our module
Self-Assembly



Self-assembly based on Japanese joinery, only one way to connect pieces, reduces complexity and ensures integrity.

This makes our approach resilient to expectable hazards in our chosen location (e.g. earthquakes and tornados).

The staircase is a shared resource, by being placed outside it decreases the overall construction price of the unit.



This is a core solution replicable project, that cannot be replicated specifically. Each solution will be dependable of the regional terrain, people, materials, and climate and will be tailored to solve stakeholder needs.

process

materials

The building system consists of wooden panel frames and insulating natural wood fibres which are enclosed within OSB sheets. Wood and wood waste are used to lower embodied carbon relative to many other construction materials and are locally sourced to reduce transport emissions. OSB panels are made with compressed wood residuals, further reducing the CO2 footprint of construction.

The thermal properties of the construction materials satisfy the insulation requirements of the chosen location which allows for the inhabitants to live in comfort.

The flexibility inherent to our solution is represented in the configurations show in the floor plans. A combination of residential and commercial spaces allow for the generation of income within the community, decreasing dependencies to the larger economic system of the city. To better cater to everyone's needs and economic context our solution is also flexible vertically, allowing for the installation of upper floors at different moments in time.

a versatile unit → makes a resilient community

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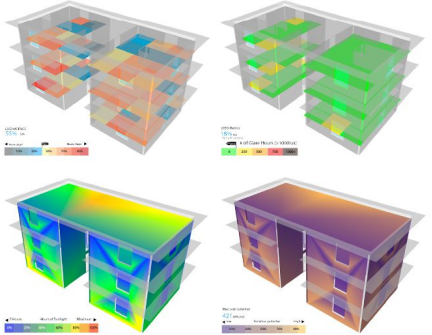
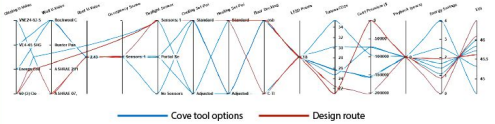
responsible approach

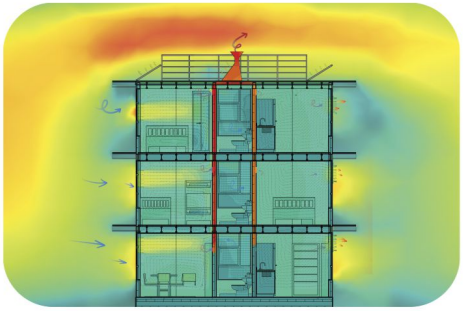
cove.tool 3d analysis has validated our model's luminance parameters according to LEED metrics. sDA achieves the natural light requirement for interior spaces with 55% and glare ASE reduced to 18%, both considered adequate low values for interiors.



Based on the cove.tool simulation, the EUI of our building unit was lower than the 2030 baseline. This is due to passive strategies - natural ventilation and thermal mass in the envelope - without the need for expensive, active approaches (e.g. HVAC, occupancy sensors, etc.)



The windows are designed to face different orientations to allow natural luminance throughout the day and crossed ventilation irrespective of wind direction. Air vents connect internal spaces to pipes located within prefabricated wall panels, generating a stack effect from the ground floor to the solar chimney. Further promoting natural ventilation without electrical energy.



Our approach reduces operational CO2 emissions by 48% relative to the cove.tool baseline - the equivalent of 1 truck of ice per year. Material selection and construction techniques further contribute to lower embodied carbon relative to traditional building methods.

We believe it is possible to create a community - not just an affordable house - at a construction price point of USD250 per square meter with even lower lifetime-use costs from passive designs and community-driven maintenance. We achieve costs that are far below the Mexican average.

A community-level approach designs for the lifestyle around the house - e.g. economic opportunity, low transport requirements, unique household expansions, safety, and a sense of belonging. This generates a sense of ownership and desirability, which mitigates against decay, abandonment, and crime - the key points of failure for previous projects which sought to only to minimize unit costs.

For migrant populations that rotate frequently, we dignify their stay. Those that remain, we offer a community.

Urban Oasis - Narrative

Affordable housing cannot seek the lowest unit production cost in isolation. Consideration must be given to running costs, transport costs, and, perhaps most importantly, the quality of life that arises around the house. Why are so many houses sitting empty on the city outskirts while miniscule spaces in NY City fetch millions? The community, opportunities, and services available to a household contribute to *quality of life* which in turn creates desirability, increased property value, and successful housing projects.

Urban Oasis is a community-level approach to sustainable and affordable housing for migrants within the chosen location of Tijuana, Mexico. This approach benefits from economies of scale, reduced transport costs, community safety, service delivery, and opportunity generation. Each of which contribute to affordability and sustainability as well as quality-of-life improvements – a metric previously ignored in several, now-abandoned, Mexican affordable housing projects.

Affordability is both cost and revenue. We solve for lifetime costs of the house, namely the larger cost items of energy, maintenance, and heating/cooling. By providing commercial space within each unit, we provide the opportunity for the house to be a revenue generating asset – whether a shop, workshop, school, or rental space. This allows the community to provide for itself. Combined with a desirable location, selected in consultation with the Tijuana Economic Development Council, in proximity to factory job opportunities, commute costs are minimized. Participation in community projects – gardens, construction, maintenance – is how lower-income residents subsidize rent while increasing the value of the community.

A tiered construction methodology provides a framework for further growth and expansion with lower upfront cost. Each household can grow in a unique way according to individual needs. The framework for growth offers opportunities within the community to build/adapt/expand the base models. It is based on self-assembly principles, avoiding heavy machinery, and inspired by traditional techniques such as Japanese joinery.

Sustainability is considered holistically, across economic, environmental, and social dimensions. Economically, the affordable units are wealth generating assets, situated in value enhancing neighborhoods. Environmentally, low carbon embodiment and emissions are achieved through construction, materials, passive thermal strategies, and low transport costs from meeting basic community needs from within the community. Socially, having learnt from previous affordable housing attempts, for the project itself to be sustainable it must be desirable. Households need more than a house; they require the surrounding quality-of-life. This is achieved through a community-level focus which solves for economic opportunity, safety, self-expression, and well-being.

A community-level approach is achieved through active participation from stakeholders. Asking and answering the questions: what needs aren't being met? How to meet these in a sustainable way? It comes with scale benefits – from economies of scale in construction to mini-grids for renewable solar generation – and with the right training and equipment, greater water and waste recycling opportunities. Importantly, community engagement delivers proven wellness benefits and can add to both real and perceived levels of security. Altogether these serve to make housing projects *desirable,* creating demand and, over time, value. This value creates resilience as households see and value the space they occupy which in turn prevents the abandonment and decay commonly seen in other affordable housing projects.

Nuances of this project will not be replicable. We believe that this is appropriate. There will never be a one-size-fits-all solution to affordable housing as the terrain, people, materials, and climate will differ at every location and solutions should be tailored to solve unique problems. What is replicable is our core solution - a community-level approach that focuses on more than just the housing unit in isolation. This is combined with modular buildings with a framework for extensions to suit the household and its location. Finally, the prefabricated panels, constructed from wood waste, are suitable across most global locations with local labor easily capable of assembly.

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4,053,995.166

drawing.tool online link:

https://app.covetool.com/login/?next=/project/48134/drawing-tool/

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