

Under the constraints of poverty, health and safety, the majority of Siloe's inhabitants are extremely underprivileged. For architecture to be of relevance in a place where hope, commitments, and dignity are ignored, it has to be critical in how it engages and grows with the community from the initial ethos to the final implementation. This design project, at a fundamental level, aims to represent the subject of dignity for the people of Siloe through the physiological needs of housing. The investigation will be framed into constraints specified by Siloe by binding them into common architectural palettes of design; materiality, functionality and constructability. Hopefully, the designed outcome from these investigations will display architectural strategies and tactics with the potential and appropriateness to address safety, security, and dignity for the future of Colombian Slums.

A slum is a filthy and overcrowded urban area occupied by the underprivileged and the poor. The conditions in which these people live in are characterized by the lack of security in their residence and sanitation services, unsound housing structures, overcrowding, inadequate infrastructure, and high crime and violence rates. The substandard housings are constructed using unsuitable building materials and are built on ad hoc basis. The units are often small and are occupied by multiple inhabitants which provide very little privacy and protection from gang violence. Disregarding structural engineering requirements, most unit have poor ventilation and unsafe foundations that erode due to poor storm water management. With all the negativity surrounding slums, the incoming population to the city majority will be from the slums, the two facts that cannot be denied are they have great views of the city skyline and they have rich soil that is ideal for agriculture.

This project aims to utilize and leverage the positive attributes of the slums to incentivize private investors to inject their capital and revamp the economy of the slums. For the project to be successful, it requires the commitment and participation of all three domains - the private investors, the slum dwellers, and the government. Against a backdrop of ballooning government deficits and ever increasing demands on financial resources that are becoming scarcer, the likelihood that public sector funds will be allocated to a project of this nature is remote. Therefore, it is incumbent that planners account for private investment as the primary source of funding.

So why then would an individual or corporate entity with capital at their disposal and a multitude of investment proposals from which to choose—both domestic and abroad—look to the slums of Siloe as their next potential investment opportunity? Moreover, why Siloe when one considers that there are other ventures with a significantly lower risk profile, higher probability of success and greater return on investment. The reality is attracting private investment dollars for this project will be challenging and it will require a somewhat unconventional

investor who is patient, has a sense of community and has the foresight to look beyond just the bottom line. This said, for such an individual or corporate entity, the eventual payoff can be significant.

Most slums are located on the peripheral of city centres, by growing bamboo in the slums, it creates an opportunity for a micro economy with a very sustainable resource. Therefore slum dwellers will have an opportunity to prosper with minimal assistance from government to create their own income. For the investors, having tax breaks from the government allows for an opportunity to potentially reduce logistics and transportation cost for exporting the goods within the city. In theory creating an opening towards expanding within the bamboo industry that can be modelled anywhere in the world. Knowing that there are many other slums that fall within the same patterns and characteristics and Siloe.

To facilitate this, the government will award the investor payment-free, long-term leases to the land. Further incentives may be included such as the option for the investor to acquire the land at a fixed price significantly below fair market value provided the investor commits to the project for a specified period of time. This will be an attractive return on investment if the project does in fact succeed and the slums of Siloe are developed into a thriving urban centre.

For any business venture, variables that can adversely impact profit margins include labour costs and taxes. Keeping in mind the residents of Siloe only benefit from this project on a personal level (i.e. ownership rights, land entitlements, social benefits, etc.) if they are active participants in the program, it means potential private investors can be assured they have ready access to a highly incentivized and committed labour force that will not require any further cash outlay on their part. While this notion of "free labour" may raise questions on ethical and moral grounds, it must be noted that the workers are being compensated fairly and adequately—it is simply in the form of entitlements and social benefits instead of wages in the traditional sense. Moreover, the investor may want to provide further perks to workers in the form of shares or an equity interest in the project. It is undeniable that being an actual stakeholder with the potential for significant rewards if the project is successful is a far greater motivator than simply being hired as an arms-length employee. For the inhabitants of Siloe who could have only dreamed that, one day, they would be able to escape the poverty of the slums, that aspiration may seem that much more real if they have an equity interest in the redevelopment of Siloe.

In addition to free access to the land, the government will also forego the taxation of any profits that may be realized from the bamboo plantation. Clearly, a tax moratorium would be appealing for any potential investor.

While there is an attractive upside for private investment in the redevelopment of Siloe, there are also potential constraints. The project relies heavily on an accommodative government policy however, what happens if there is a policy shift or if future elections bring with it a change in the current administration? Risk is mitigated by certainty; any hint of political instability or lack of direction, is sufficient to scare away investors.

An additional risk that private investors face is that any potential profit may not be realized for a considerable period of time. A project of this nature and scale requires a long-term outlook. Of course, the longer an investor must wait to see a return, the greater the risk to which he or she is exposed not only from the perspective that the investment may not pan out in the end but also, in terms of opportunity cost. To which tying up significant capital in the redevelopment of Siloe for an extended period of time may mean the investor will have to overlook other—and possibly, more immediately profitable—investment opportunities that arise along the way.

Finally, provisions will have to be made for the ongoing maintenance and upkeep of a redeveloped Siloe. The initial capital expenditure to build the bamboo dwellings is one factor; supporting it in the years to come represents an additional cost paradigm. This will likely demand additional incentives to keep private investors engaged in the project beyond the initial phases.

For any private investors to consider injecting their capital for this project, they need to know there will be commitment and participation from the current slum dwellers. The biggest motivation for slum dwellers is the hope that they will be able to provide for their children to the extent that the next generation fares better in life than its predecessor. For the inhabitants of the slums of Siloe, this hope for a better life is all too often a distant and unattainable dream in the face of squalor, unsafe living conditions and bleak prospects. Restoring pride, dignity and a tangible vision for a better life to these individuals is among the primary incentives for the current slum dwellers of Siloe to embrace this project.

Their new housing will be structurally sound featuring privacy and proper ventilation. This will immediately improve sanitary conditions. In addition to segregated living spaces, the buildings will have commercial areas that can support services such as restaurants and barbers. It will also offer the opportunity for artisans and trades people—such as seamstresses, weavers and craftsmen—to ply their specialized skills in a safe environment and to offer their wares for sale within Siloe and to the broader market outside of the slum. With the reallocation of land to create a bamboo plantation, inhabitants will have direct access to employment and a steady income—perhaps, for the first time in their lives.

Education and proper medical and dental care, viewed as inalienable rights in developed societies, are luxuries that have been heretofore unimaginable for slum dwellers. Subject to adequate funding from the private sector and support from the government (whether financial or non-financial), the inhabitants of Siloe and their children will now have access to these important social services.

An escape route from a life of abject poverty and the prospect for a better life for current and future generations are powerful incentives for the population of Siloe to support the development of this project. This said, their acceptance is predicated on a dramatic shift in a collective mindset that, in some instances, has been ingrained over multiple generations and their buy-in into the value of the pride of community, ambition and dignity.

Another potential obstacle hinges on ongoing support from the government. If there is a change in the current administration or a change in policy by the existing government, what assurances will there be that this project will remain sustainable?

As much as the ultimate goal is to convert the slums of Siloe into an appealing urban centre, doing so does create challenges. If the existing squatters, who to this point have been devoid of status, are suddenly given land ownership rights and entitlements and are the beneficiaries of social services and significantly improved living conditions, what is to prevent an unmanageable influx of migration into Siloe from individuals currently living outside of this community, or even in other parts of the country? A gentrified Siloe will now be viewed as a land of opportunity and a chance for individuals to upgrade their prospects and to reap the benefits of this capital injection. While an increased interest in this redeveloped slum is welcomed, it must also be supervised and controlled to ensure the poor are not simply displaced to make room for new inhabitants.

This is where the government needs to step in and do their job. Fundamentally, the mandate of government is to provide for its citizens. The degree of care can range from providing basic services, such as education and medical care, and safe infrastructure to its residents to fostering an environment of growth to promote economic prosperity. While valid in principle, limited financial resources and competing interests make achieving these objectives more difficult in practical terms.

Given the current global climate, it would be exceedingly optimistic to expect the federal or municipal governments to bear the brunt of the costs relating to this proposed project or even to view the status quo of Siloe as necessitating an urgent change.

Frankly, any monetary contributions from the government should be viewed as a windfall. However, that does not preclude the government from playing an integral role in the redevelopment of Siloe. Its part will be in agreeing to use the land—and the incentives attached to it—as "bait" to attract private investors and the current slum dwellers to buy-in to the merits of this project.

The reality is that the current inhabitants of Siloe have claimed the land as their own through squatting. The government sees no benefit as things stand in the form of property tax revenue. In fact, the slums represent a significant cost to the government as they create major logistical and health concerns in addition to being a blight on the urban landscape ultimately compromising tourism. By offering the slum dwellers an opportunity to take an ownership interest in this land by redeveloping Siloe, the government is now reaching out in a constructive way for a potential win-win scenario.

In adjunction with providing incentive for private investors to invest their capital in the project, the government needs to provide a small tax cut for other residents to prevent them from feeling that their tax dollars are being wasted and for the benefits of the slum dwellers. The government needs to provide private investors confidence that they will not change the policy in the midst of their project. This will benefit both parties because the private investors will be exposed to less political risk and are less likely to pull out of the project and leaving the government with the maintenance requirements to prevent the return to slum conditions. There will be an increase cost for the government for providing social services, health services, education services, and sanitation services that are not covered by the private sector. This cost will be slightly offset by the income that comes from higher taxation revenue of industry such as tourism when the project is successful.

At a high level, the project requires multiple steps and can take decades to implement. First, the government needs to commit to this project and put a policy in place to generate interest from the private sector. Before any private investors are willing to inject their capital, the government needs to spend money on geological research to determine which area of Siloe is in the erosion zone. Once the erosion zone has been identified, the government needs to put a plan in place to relocate the dwellers that are currently occupying the erosion zone to prevent deaths caused by landslides. This is when the private investors' capital is required. With the injection of capital, the slum dwellers can buy materials to build new homes on top of the existing homes that are not in the erosion zones. The dwellers from the erosion zone will then be moved to the new dwellings. Once all dwellers have been evacuated from the erosion zone, the private investors can build their bamboo plantation in the erosion zone. For the dwellers that live outside of the erosion zone, they will be slowly moved to the new dwellings. The current slum dwellings will be demolished and the ground

floor of the new dwellings will be built in their places. When the economy of Siloe is established and has been pulled out of the slums, the plan is to expand the infrastructure to connect it to the main urban centre and formal city.

Initial Costing	Foundation	Structure	Floor	Roofing	Additional Unit
Dwelling Tower	1483500.00	467000.00	4400000.00	2600000.00	1100000.00
Commercial Tower	1318000.00	505000.00	3700000.00	2665000.00	3700000.00

All Currencies are in Colombian Pesos (COP)

Scenarios	Dwelling Floor	Dwelling + Commercial Floor	Dwelling Floor + 1 Dwelling Unit
Foundation	1483500.00	2801500.00	1483500.00
Structure	467000.00	972000.00	467000.00
Floor	4400000.00	8100000.00	4400000.00
Roofing	2600000.00	5265000.00	2600000.00
Additional Dwelling Unit	0.00	0.00	1100000.00
Additional Commercial Unit	0.00	0.00	0.00
Mark Up	1790100.00	3427700.00	2010100.00
Labour	0.00	0.00	0.00
Total	10740600.00	20566200.00	12060600.00

Scenarios	Dwelling + Commercial Floor + 1 Dwelling Unit	Dwelling Floor + 1 Commercial Unit	Dwelling + Commercial Floor + 1 Commercial Unit
Foundation	2801500.00	1483500.00	2801500.00
Structure	972000.00	467000.00	972000.00
Floor	8100000.00	4400000.00	8100000.00
Roofing	5265000.00	2600000.00	5265000.00
Additional Dwelling Unit	1100000.00	0.00	0.00
Additional Commercial Unit	0.00	3700000.00	3700000.00
Mark Up	3647700.00	25301000.00	4167700
Labour	0.00	0.00	0.00
Total	21886200.00	37951500.00	25006200.00

*Labour becomes and special case where slum dwellers do not have the time or knowledge in order to learn and build the houses.

Dwelling Floor	Family 1-3	Family 4 - 6	Family 7- 9	Family 10 - 12
Living Unit	2	3	4	5
Kitchen Unit	1	1	1	1
W/C Unit	1	1	2	2