

## **URBAN DEVELOPMENT OVER CANALS OF PRAIA CITY**

Praia is the capital city of the Cape Verde Islands, a dry tropical archipelago located 500 miles from the west Africa main land. To accommodate civil services and new comers as a result of Cape Verde independence from Portugal 1975, the city which historically was located in a plateau, in front of a beautiful bay, spread over night and over a series of other plateaus and valleys around it.

The banks of valley streams in cities are usually good opportunities for green parks. In this particular case, there are factors which indicate otherwise. In fact, in the past thirty years, over-building on that valley bank as well as the flooding of the stream during the rainy season have caused the inundation of homes in the neighboring areas. This has lead to the construction of retention walls along the entire length of the valleys, transforming it into an open canals. This fact and an inadequate level of civic engagement in the area made it extremely difficult if not impossible its transformation in a natural green area.

Our strategy of transforming the open channels of Safende, Calabaceira, Vila Nova, Lém Cachoro, Paiol, Lém Ferreira and Praia Negra into closed channels will allow for construction above their covered surfaces. This original concept has great potential especially in the resolution of serious environmental issues, the creation of new areas for urban development, the restructuring of the road network and the improvement of living conditions of local populations.

Our vision is to provide the city with urban corridors constructed in a sustainable environmental and financial way, over the covered zones which will allow for the construction of public and private structures, green areas and other infrastructural needs of the city.

### **CONTEXT**

1. The open canal of Safende, Calabaceira, Vila Nova, Lém Cachoro, Paiol, Lém Ferreira and Praia Negra are located in the East and South of Praia's Pateau, adjacent to the central part of the city and it spreads through an area of 16 hectares. The torrential nature of the floods originate in Trindade and Safende. Nowadays, they carry not only mud and boulders but also rubble and garbage which are the result of a vast population increase, lack of civic education, absence of city authority and deficit of urban infrastructure and facilities.

2. The social-economic conditions of the populations around the stream valleys are in general precarious. The adjacent constructions are of low standard and without sanitation. There is a poor road system which is clearly insufficient. These are the neighborhoods which have had the least benefits from the urban development of Praia.

3. The stream valleys have been used as public restrooms and trash dumps. It is noticeable the nauseating smell and the physical image of dirtiness and ugliness, to the extent of violating human dignity with the shocking view of lines of adults defecating in open daylight. It is not

exaggerated to classify them as open wounds in areas near the capital of the country and ways to contagious illnesses such as cholera which has affected the city in the past.

Garbage carried by floods goes directly into the city bay which as expected in thirty years has severely destroyed its maritime vegetation and animal species. The current youth generation did not get to see corals, algae and the abundant sea species that were found in Praia's sea waters. The city coastline which includes the beaches of Gamboa, Prainha and Quebra-Canela, some of the most beautiful sceneries of Cape Verde become dirty and contaminated during the rainy season. During the summer, public health services have been advising beach goers to not swim in those waters.

### **POTENTIAL BENEFITS OF THE CHANNELS TRANSFORMATION**

The most useful and valuable projects usually are the ones whose implementation solve several problems simultaneously. "A priori" everything indicates that this project belongs to this group although it is necessary to have specific studies done for its development. Some foreseen benefits of this project are the following:

1. Elimination of an open garbage dumping in a densely populated area close to the city center;
2. Elimination of a spreading source of illness and pollution;
3. Radical reduction of garbage to be carried by the stream to the bay area;
4. Recovering opportunity for bay corals, algae and the abundant sea species;
5. Creation of hundreds of permanent jobs;
6. Better health protection for the swimmers in the city beaches;
7. Allocation of 16 acres of prime urban area to build all missing public and private facilities in the areas such as green spaces, bathing places, sport complexes, cultural, conference and community centers, parking, commercial and office spaces, apartment complexes, etc ;
8. Opportunity to build new roads to better articulate the road network system and to relief overstressed intersections such as the Lém Ferreira and Vila Nova bridges.
9. Allocation of space for water, drainage, communication network system;
10. Improvement of the neighborhood quality and upgrade of the real estate value;
11. Adoption by the neighborhood of a new sense of place, city pride, especially by those most affected area of the intended upgrade.

### **CHALLENGES**

The obstacles to be overcome are the same ones which have been creating problems of poverty, endangering public health and disturbing urban organization, for the past thirty years and have not been addressed properly by Municipal and Central Government authorities. Fortunately, they are not insurmountable. Coincidentally, the need to solve those problems exposes those authorities and show paralysis in solving basic problems of erosion, sanitation and infra-structures in the capital city, which today requires vigorous investments to avoid

catastrophes tomorrow. These existing malaises require profound collaboration among different levels of government, especially between Municipality, Health and Agriculture Ministries.

1. **Rainfall** which washes the slopes and carries mud and all kind of garbage is the major challenge for this project. In recent past, Praia Municipality and the Agriculture Ministry, with the support of French Cooperation initiated a project to combat erosion in the slopes surrounding the canals, but unfortunately this project was discontinued. Conceptually, in a slope protection project against erosion, the inclusion of water harvesting, decantation, storage and its transportation to the proposed canal, can be an important part of its strategy. Keeping in mind that Cape Verde is a dry country, with a low rainfall level.
2. **Canal obstruction** must be avoided through the construction of dams and dikes upstream as well as filtering systems which can be built to reduce significantly mud which is transported by the water stream. However, our proposal was conceived to face the worst case scenario. In present conditions, without filtering systems and erosion protection the proposed canal will function, because its covering will be six meters high, with the possibility of enlargement at its central area. This will allow for the removal and cleaning of mud, detritus and garbage which are transported to the base of the valleys.
1. **Estimated budget** to build the canal is around \$116.5 million. This value reflects the construction cost of \$825 for square meter of the canal covering slab and its supporting structure. The current cost per square meter of a lot in the central city area is close to this value. Considering that any construction above the slab will exclude excavations, foundations, leveling and other costly works, it can be concluded that the per square meter cost of the canal is competitive. The alternative for buying lots in the neighborhood of the open canal will face the usual problems of property registration, logistic of population delocalization, and integration problems in a neighborhood without urban and organizational culture.
2. **Security and control** of the canal should be provided vigorously to avoid its utilization by anti social elements for their own objectives.
3. **Building canal** will be constructed in modules of 60x80 meters to make it flexible for construction, financial investment and general management.

## **ZONNING**

Among the most pressing objectives of the conceptual idea for the transformation of these valleys into canals is the need to close an open wound near to the city center and to allocate urban spaces for neighborhoods which were marginalized in the urban development of the capital city of Praia. Its implementation requires financial funds which are prohibitive for a Municipality such as Praia. Negotiation with private investors who would want to explore business opportunities in the central area of the city will be necessary.

However, the Municipality should use a sizeable portion of the canal covered areas for public infra-structures, including green areas and a new road system. The zoning should obey parameters of environmental sustainability.

## **CONCLUSION**

This present study is opportune and justifiable for the grave and urgent problems which it proposes to resolve. It is a feasible project from an environmental and financial perspective, even if one does not include major and unquantifiable benefits for correction of unhealthy conditions inland and at sea, as well as for the improvement of social conditions of citizens whose living standards are under the acceptable level.

The cities should be built to shelter and to facilitate the life of their inhabitants. Urban organization and social conditions have a profound impact in the consciousness of its inhabitants. For example, imagine a young person inviting his or her friend for a rendez vous, where there is no such a space for such social interactions.

My vision is that, on the top of the canal covering will be a healthy and vibrant urban corridor in the middle of the city which can improve the quality of local neighborhood, bring investments and jobs, create green spaces as well as social and cultural areas.

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