

**Master en Medio Ambiente Urbano y Sostenibilidad**  
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**STRATEGIES FOR SUSTIANABLE LAND USE PLANNING**  
The case of Binictican Heights, Subic, Philippines

A Synopsis

The thesis presented in this synopsis deals with a situation that is presently reflected in the dynamic changes that the Philippines as a nation is experiencing. As with all parts of Asia, the Philippines is coping with its share of conditions set upon by the development process. The path to becoming a more industrialized nation is a challenge riddled with balancing economic gains along with other concerns such as environmental degradation and social/civic inequity. Proposing solutions to problems that is present because of these causes is now more important than ever. Amongst these problems is the one of the scarcity of land in the Philippines coupled by its exploding population growth. As policies and instruments for both land use and population control is either lacking or not in use, the Philippines have been facing a housing deficit. This thesis tries to provide direction and solutions for a balance that could be achieved between land use for housing and the natural environment where it is located.

The Binictican Heights and the SBFZ

The focus of the study is Binictican Heights (BH), a housing community which is inside the special economic zone known as Subic Bay Freeport Zone (SBFZ). SBFZ was a Military Naval Base of the United States before it was converted to a center that could house industrial, commercial and financial investments. The zone is adjacent to the city of Olongapo, Zambales. BH housing community is primarily composed of around 1200 individual houses scattered on a 14 hectare site. It was built during the time when the SBFZ was still a military base. Its role then was to provide housing for the military's hierarchy being situated far from the busy activities of the port and base. The role now it plays is one that provides housing to the investors and to the

workers of the zone. Thru the years, it has become apparent that with heightened economic activities in the zone and in Olongapo City, the need to study and propose housing solutions to feasible areas has been noted. In this line, BH is identified as a possible aggregate in developing more connected residential areas. The manner of which is the theme of this thesis.

The topic of study was chosen in the light of the need for case studies of housing communities in the Philippines that have integrated environmental planning as a basis for their development and physical growth. The problem of housing a population with a growth rate of 1.75% such as in Manila from 2005-2015, schemes for housing development are a welcome initiative. As the problem of the government is to address issues in a grand scale such as, spatial planning policies and environmental issues, this study is much more on a local scale. It is believed that action in the most basic social organization would encourage a series of interaction among local neighboring communities that also support sustainable urban housing schemes.

Enumerated objectives of the study

- To present land use solutions for a growing housing community that is under the perspective of sustainable urban design for the identified areas of study the housing community in Binictican Heights.
- To present a study that can be an aid for furthering strategies for urban spatial land use in the Philippine setting.
- To highlight areas in the framework of sustainable land use planning in the Philippines that could still be enhanced thru suggestions of viable options.

Areas of application

The above-said land use design solution aims to present schemes for land use in view of the need for accommodating future needs for housing in BH. The study is to explore ways on how this can be achieved while maintaining the environmental quality (built-up and natural) of the site. A mobility and transport component will also be explored so the site can be connected in a sustainable manner to the other spaces in SBFZ and Olongapo City. Lastly, an area for energy use will be discussed

as a component for resource conservation. The three areas of study makes-up a triangle of key elements that, given proper strategies and schemes, can practically alter significantly the course of BH's road to sustainability.

### Spatial Planning

The SBFZ has less than 15% of its 54,600 plus hectares within the 0-18% slope classification that is suitable for urban land use. This translates into a rough equivalent of approximately 8,000 hectares. The rest are classified into being restricted from development. With this limited resource, allocating land in the most appropriate approach is truly needed.

- Proposal for the development of 4 Sub-zones

...A Compact and polycentric city....., one of the 7 ideas that a sustainable city should have had incorporated as per Rogers and Gumuchdjian. In the words of the two authors, to be compact in form is the antonym of spreading out or to be sprawling horizontally. The physical development of BH as a residential community for this matter is to create an efficiency and effectivity in its form and design. By subscribing to this idea, it will make BH use its limited land resource strategically without being a hindrance to the development of the natural ecosystem that surrounds it.

One of the strategies that can be applied in this scenario is the “participative housing strategy” as philosophized by John F.C. Turner can be well suited to this specific scenario. It is a philosophy that puts the stakeholders of a housing program in the core of its initiatives by having them on board the phases of design and construction as well as in the management of the project itself. By integrating this participatory process, BH residents as well as targeted markets have a part in the overall scheme that will eventually see to its success. By having the process early on in the development, cohesiveness among residents and among the additional built up area will achieve more. It is therefore seen that these participatory phases will also include SBMA and Olongapo City authorities and will be done in phases.

Participative housing will also encourage the formation of the barangay system in BH. As stated before, there is a lack of a well imposed system of community in BH.

Identifying the possible areas for community building can help in this endeavor. The four sub-zones/ districts is envisioned to have a centric node in order to facilitate the

needs of each. The barangay system can have its start from these areas where they can grow with the community.

Besides the function of allotting space for a higher density residential area, there would be an effect of generating more spaces that can serve other functions as well, such as spaces for a “green network”. A “green network” component in the spatial development of BH would prove beneficial both to the ecosystem and the built up environment as well as the proposed higher density compact development.

BH has a lot of interesting physical features that gives planners the opportunity to develop sustainable strategies. Among the most important of these is the golf course behind it. The 18 hole gold course runs parallel to the direction of growth of BH and as so, gives BH an opportunity to grow in that direction. The golf course is seen as a buffer zone for the different uses of the juxtaposed spaces.

- Proposals for identification of areas for higher housing densification thru a more compact design.

It is proposed that the future land use of BH will require a more mixed use. It is deemed that light commercial and office space be integrated into the general scheme so that the community will be self-sustaining to a certain point. This is in line with BH being a polar node for SBFZ and Olongapo City. The proposed scheme will try to make BH a self sustaining community wherein the daily needs of the residents can be met. In order to do this, it is suggested that typical shops that are in high need for such a community be present in the centers of the sub-districts.

- Criteria for land identification

The task of identifying land that is suitable for housing purposes in the BH area would be determined by environmental factors as well as by evaluating the needs of the developing community. As a matter course the Environmental Impact Analysis is well placed in the documentation of criteria in allowing certain type of usage for a given tract of land. This process is a requirement in the construction industry in the Philippines. To evaluate the needs of the community so as to reduce travel times, to save on land usage and to achieve interconnectedness with the various biodiversity will be fundamental to land use identification. The ecological profile should include

land characteristics such as geography, geology and geomorphology, topography and soils as well as drainage patterns.

#### Mobility and transport

A well thought-of and “sustainability based” land use plan will not be effective without a congruent transport plan module. A module that would have been embedded and on board during the early planning stages will make it even more effective and produce more results. It is this network that will make it beneficial for land use networks and green/open space networks to interlink with each other.

Being a currently purely residential zone without the facilities typical of a community, a lot of possibilities can arise to create situations for mixed land use. The integration of other components for mixed land use will in turn create positive developments for minimized car usage. Daily and essential journeys to shops and groceries are particularly targeted in this case since there is a deficiency for such components. Thru the proposed 4 Sub-zones, local daily requirements are answered by local shops that minimize travel to Olongapo City or even downtown SBMA. There would be a lot of opportunities that could answer the daily needs of the proposed additional site and the existing development by providing not only shops but also light duty office spaces among others.

An opportunity to link the areas of mixed use by public transport would be complementary to the overall goals. Presently, there is virtually no public transport system in place. This is because of the low density population present in BH. In the near future when density rises, public transport should be in place to link the areas and spaces that residents use with much frequency. The distance to Olongapo City from BH is around 5 kilometers only. This small distance can be arranged with public transport from the City at arranged times and its stops located near the sub-district’s center.

#### Natural Resource and Energy Use

Basing on the present climate characteristics, it is seen that the following ideas should be considered as a partial solution of conserving energy. In designing the spaces for growth in BH it is desired that there would be as much outdoor shading as possible so there would be an improvement in ground cover. This could be done by planting trees with large tree crowns along open spaces to minimize exposed

cemented areas. It is also desired that it is optimal to create as many shading spaces as possible thru the design of the buildings. Another idea is to aggressively utilize the cooling effect of the latent heat of vaporization. This can be done by securing water impounding surfaces such as bare land. In saving energy in buildings for this matter, there are a lot of recommendable ideas that could be implemented. For the new development that is proposed, the buildings should have energy saving facilities. Higher efficiency in buildings and the appliances used in them, along with its proper use can increase the energy savings. New materials can also help in the quest by having an integrated heat load capacity so the designers can construct in a more green way. Materials like new technology roof and wall insulation, high reflection characteristics in paints and heat absorbing glass panels are among the building components that can reduce heat loads in houses. All these steps to save energy in the most basic unit of society can only be effective if the design and layout of the house did consider the right design priorities. It is noted that it is best to consider natural cross ventilation, for example, to halt the effects of tropical climate. A house that has all the energy saving appliances and high technology materials can only go as far as the basic design and layout can go. A parallel approach is the best way to achieve the goals of energy saving. Have the residential units designed so that cross ventilation is possible and have these built with heat absorptive or highly reflective materials.

To conclude, these 3 main important building blocks to sustainability that is applicable to BH. It is these 3 factors that influence BH a lot, due to its surroundings and location, that can give the advantage to the community in its goal to be sustainable. Through this we can see that land use planning has a lot to do with the existing conditions and from this we can derive and extract the best possible scenarios for the said community to develop.