A THESIS REPORT

ON

RAJI CULTURAL CENTER

SUBMITTED TO:

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SUBMITTED BY:

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074BAE210

A THESIS SUBMITTED AS A PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF BACHELOR IN ARCHITECTURE

MAY, 2023

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.....

Asst. Prof. Dr. Inu Pradhan Salike

(Thesis Supervisor)

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ABSTRACT

The aim of the project is to create a common cultural, social, and economic ground for Raji community where Raji people can come together, worki togher, and preserve their culture. The cultural center will create an inspiring placemfor both Raji and visitors, where visitors can explore the Raji culture. As, the major target group is Raji community, center is combination of natural landscape and rural context. The center is designed as a public and community platform, integrating the programs and functions of need of Raji people and visitors.

Cultural center not only exhibits the cultural and traditional heritage but also creates the interactive environment where the artist, visitors will get engaged and get experience firsthand. As the cultural and indigenous identity of Raji are on the verge of extinction due to lack of awareness, lack of infrastructure, lack of education and negligence of the authority. **Raji cultural center** is the important for the community to preserve, promote the culture. The major spaces like workshop, artist accommodation, formal and informal education, social and economic spaces are dedicated to Raji community. Gender based spaces for also provided for Raji man and woman.

The study uses both qualitative and quantitative research to understand the theoretical as well as the technical side of the project. The research includes the study of literature, case studies, site analysis, program formulation, and conclusion of the study. The study provides the design guidelines, spatial requirements and the functional relationships that needs to be realized in the indigenous cultural center.

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1 INTRODUCTION

1.1 Background

Culture is the characteristics of a particular group of people, defined by its language, religion, cuisine, social customs, music, and visual and performing arts. For its patrons, the cultural center is a place of learning, getting together, and exchanging ideas.

> *'Culture ... is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.' Tyler (British anthropologist) 1870.*

Nepal has diverse ethnicity and caste group of people as of its geographical landscape. Raji community is one of the indigenous ethnic group with their different socio-economic, culture, language, traditional law and value. Wild honey hunting, boating and ferrying people across the river, collecting roots, fishing is the main traditional occupation. The community is marginalized and neglected which have resulted the low literacy and poverty in the community. The population of this endangered ethnic group is only 0.1% of the total population, 5,200 in national wide and 7500 in global population. Largest Population is found in Surkhet and in Bardiya, Kailali, Baglung, Kanchanpur. The primary language the Raji community speak is Raji which is known as Tibeto-Burman language without a script with only 3,800 speakers (Joshua, 2020).

The project aims to design the cultural center for the Raji people by providing suitable space of 'Co-existence' for the Raji community, culture, and nature. The cultural center aims to create the cultural space like community gathering, celebrating, and learning by doing space, where the Raji people of Bhuruwa come together, work together to solve the common problem of community.

1.2 Project Justification

Architectural recreation can be the one of the best way of preserving and promoting the cultural heritage of the society by creating the responsive built space. The project can be major movement for the country's ethnic-identity preservation. Through the architectural design environment, most of the problem can be solved by designing Ethnic Culture Center which provide a platform for multi-functional cultural exchange place in order to increase the protection of the national cultural heritage, to strengthen the cultural relics, to take full advantage of the rich cultural resources minor ethnic group, and to deepen cultural exchange.

Considering the Raji ethnic group of Kailali as the target group, the project aims to bring the vanishing cultural diversity of Raji community forward by providing the platform. This project will explore design spaces and elements as a contributing to express the tangible and intangible culture of the Raji community. I believe designed space can provide physical, socio-economical, socio-cultural environments attributes that can contribute to preserve, flourish and celebrate the ethnic diversity. Cultural centers are a prime way to bring communities together in their learning, sharing, and transferring the cultural identity to next generation.

The designed built space proposed to facilitate the learning and oral teaching facility for the Raji Language, laboratory for the experimenting and preparing the medicine using indigenous knowledge and methods. Also, facility can be provided to train the new generation of the target community for making indigenous skillful artifacts, tools such as fishnet for the fish hunting, tools for money hunting, tools used for household and agricultural harvest, etc.

1.3 Importance Of Research

This project will be beneficial to the community as well as the people who research in this particular field. This study will also be useful for the architecture community to understand the spatial requirements for the different programs along with the supporting spaces for these programs and will explore different programs or amenities required for the project. Also this study will be useful to understand the design, and strategy for the cultural promotion and uplifting indigenous community. This study will also be useful for the locals and the authorities to understand the importance of such projects.

1.4 Problem Statement

"Raji culture on verge of extinction, lack of the cultural infrastructure"

Raji people are one of the 10 least known tribal people of Nepal living in inner Terai region. Rajis, the most endangered tribe of Nepal, are one of neglected ethnic group which are abandoning their culture, traditional practices and knowledge as they are on pressure due to increasing population, migration, urbanization, industrial bloom, modernization, and also due to lack of awareness in new generations. In current situation, the Raji communities are losing their indigenous identity that were inherited from the Raji ancestors.

The another major problem is lack of such Culture promoting and preserving platform. The government and no government sectors have investment for the Raji community development. For this Housing, sanitation, education, health and social development project and planning have been executed and implemented but there is no cultural center for the community where the Raji people can practice, promote, and transfer their culture to new generation and can evolved in income generating works.

1.5 Objectives

The main objectives of this study are:

- To understand current trend and scenario of the community development
- To provide better built environment and facilities to incorporate all the processes of education, production and exhibition, and promotion.
- To provide interaction and social ground for the community people, visitors, students and enthusiasts.

1.6 Research Question

1.6.1 Main Qusetion

- How can ethnic, cultural and spiritual values be best articulated in built form?

1.6.2 Specific Question

- How the culture and ethnic diversity can be revived, exhibit, and celebrate through architectural design approach?
- How the architecture design space brings the different patrons to communicate, learn, share the knowledge, and indigenous values?

1.7 Methodology

The methodology adopted for the proposed project includes case study. Various establishments will be visited to study the major determinant of the design. The existing feature will be analytically reviewed along with positive and negative aspects so as to provide application measure for the design component of the proposed building. The following process shall be adopted:

1.7.1 Theoretical Understanding and data collection

The required information for the project is gathered through the literature review of books, reports, articles, research works, surveys and other related documents regarding the data for the project. In the process of information collection required data are also revealed and analyzed. If needed survey work is also done for data collection.

A. Literature review

For theoretical understanding, the required information for the project was accumulated through the literature review of books, reports, articles, research works, surveys and other related documents regarding the data for the project. Research was carried out by collecting different primary and secondary sources. To understand the different aspects and the value of the project; book, articles, project works,

documents etc. related to the project was studied carefully.

I. Primary data collection

- Observation and surveys
- Interviews and questionnaires

II. Secondary data collection

- Book/ archive
- Newspaper
- Internet research

B. Case studies

In case study the spaces required for particular function, spaces interrelationships, functional relationship, built spaces and environment etc. are analyzed, synthesized and evaluated. Then those data are considered in the proposed design project. Case study was carried out in three level; Internal, regional, and national level.

C. Data Collection and Analysis

Necessary national and international standards related architectural books of standards were consulted. Statistical, demographic and other data was collected and analyzed.

D. Interviews

Required interview was taken with local people and some of the respected professionals.

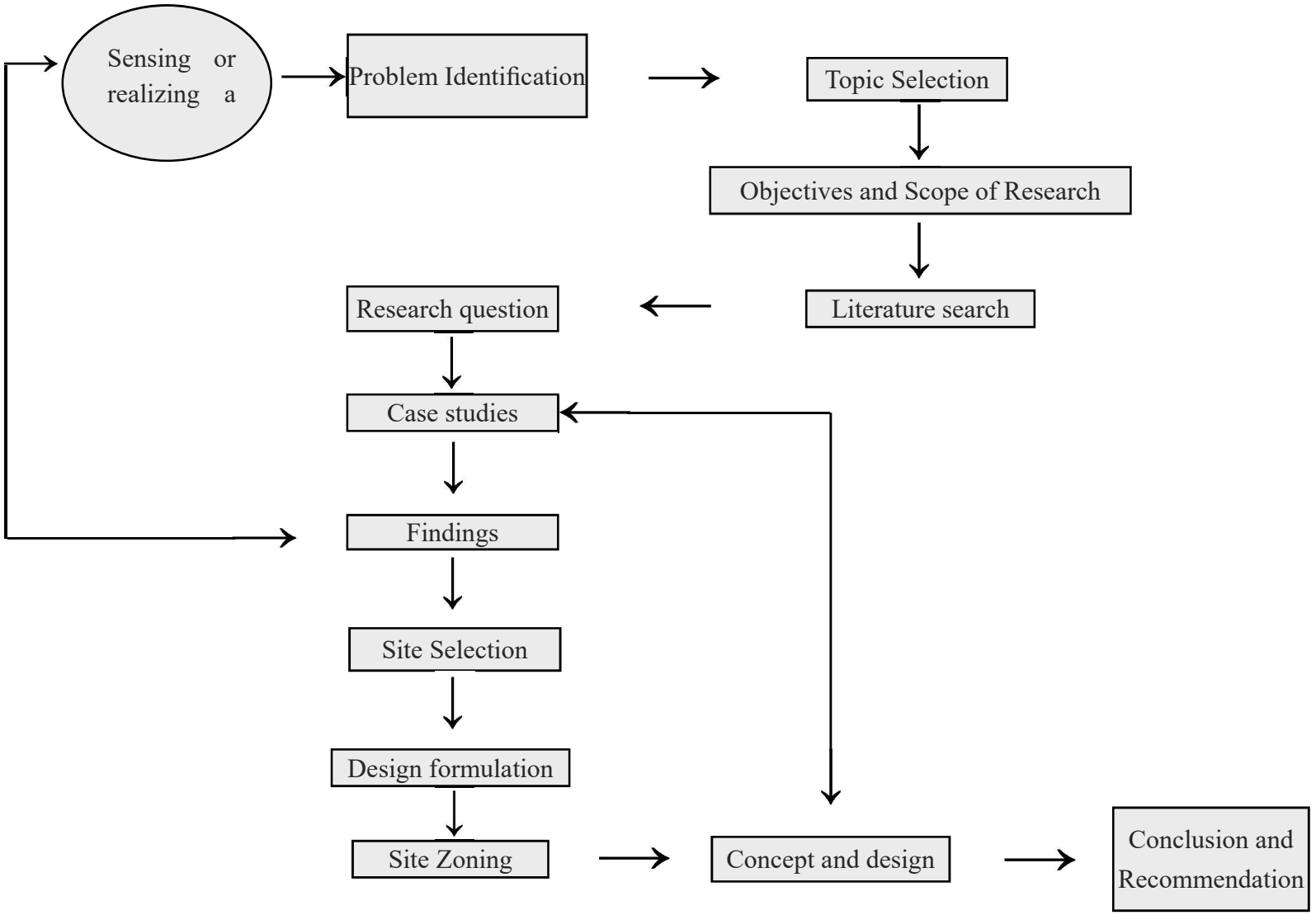


Figure 1-1 Methodological Process

2 LITERATURE REVIEW

2.1 Ethnography of Raji

2.1.1 Historical Background of Raji Tribe

Raji are one of 10 least unknown endangered indigenous group of Inner Terai of Western-Nepal. The alternate names are “Banrawat’’, ‘’Ben-Manas’’, Ban Raja, Ban Raji, Banmari, Jangali, Raute. Initially they were nomadic, cave dwelling ethnic group. In ancient time, Raji people were scheduled Nomadic tribe and used to leave the place as the smoke from kitchen stain the house. Later on, through the passage of time, the limited resources and restriction to access natural, Raji people change their nomadic life to semi- Nomadic. Then in present situation, they have completely become permanent resident in many areas, especially majority in Surkhet, Kailali, Kanchanpur followed by Bardiya. In current time, Raji people are scattered and permanently settled across 6 district of Nepal and they are Kailali, kanchanpur, Bardiya, Surkhet, Banke, and Dang.

There are many stories and myths on origin of Raji community, but there is no exact evidence of their origin and even Raji people and members of Raji Salma Samaj Surkhet branch are unknown about it. It is believed that the Rajis separated from Raute 100 years ago. Some people said initially Raji people used to live in the Shore of Rara Lake later due to bursting of Rara they were driven away by the water and later they began to live in the bank of these river (Paudel, 2015)

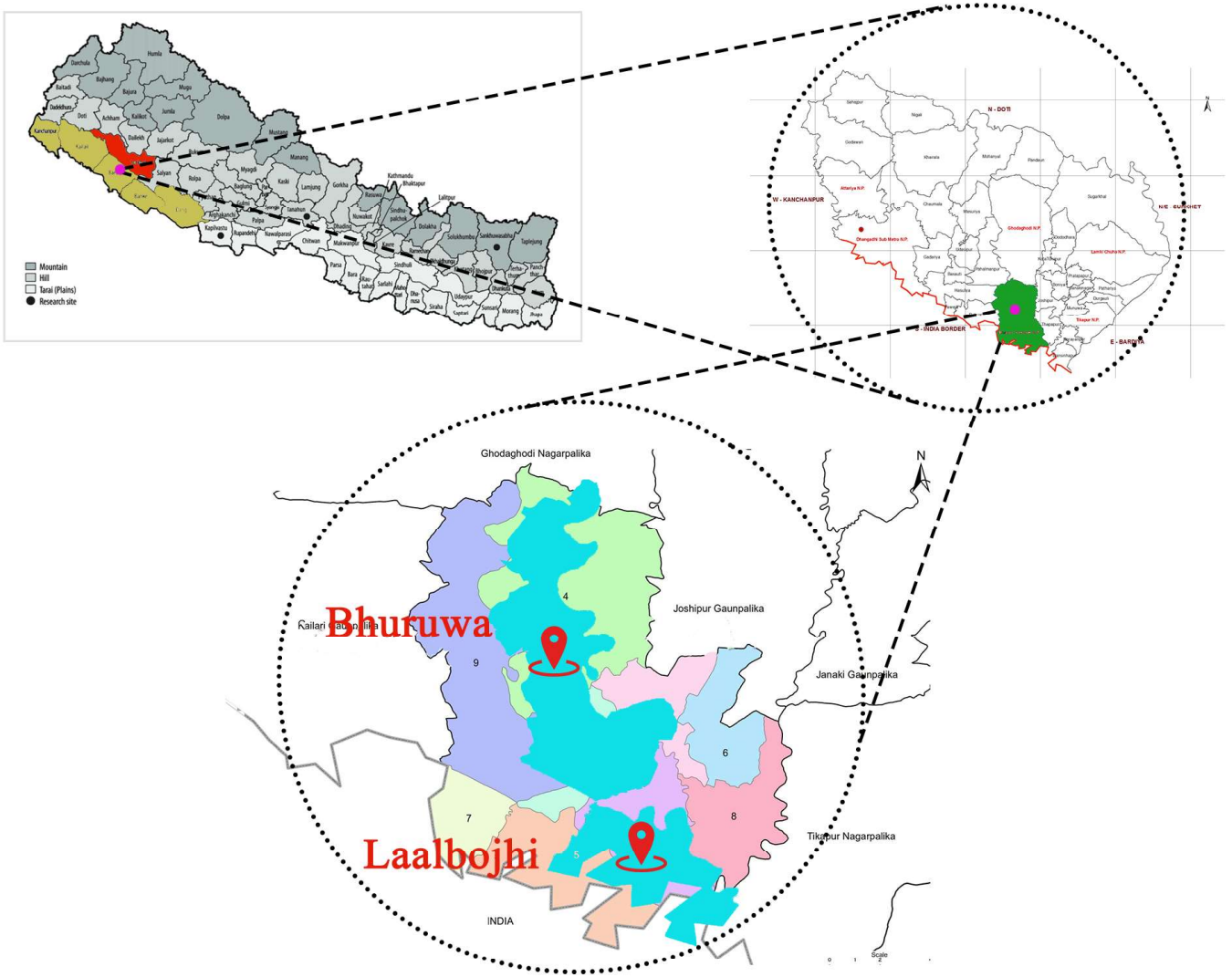


Figure 2-1 Location Map (Source: Source: google.com/)

2.1.2 Physical Feature

Rajis exhibit mixed physical traits of Aryans, Dravidians and Mongoloids. Most of them are of whitish complexion and a few of them have dark brown skin. They are of average height and have straight hair of blackish brown color. As of now they are intermediate headed type with medium nose, round to long face, small eyes with grey pigments.

2.1.3 Demographic Data of Raji In Kailali

In Far Western Raji population was 3,274 in 1991 dwindled to 2,399 (about 0.1% of the total population) in 2011. According to the data provided of January 2012, the Raji population in the Far Western Region totals 2,281 and is scattered across 10 VDCs of Kailali and two VDCs of Kanchanpur districts. According to an NGO2 working with the Raji community the total population nationwide was 4,646 in 2013. According to latest data the total population of Raji living far western is 2385 and national wide is 4875. While large no. of Raji people are now permanently settled in Kailali with Largest population of 1832. The household in Kailali district is 395, 205 in Bhajani and 90 in Laalbojhi. The literacy rate is 18% and land ownership is 5%.

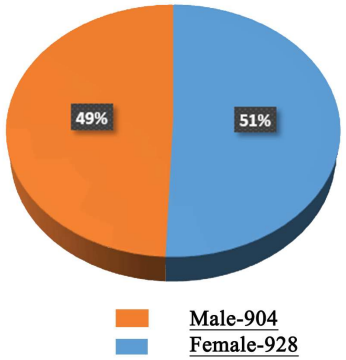


Figure 2-2 Sex Ratio

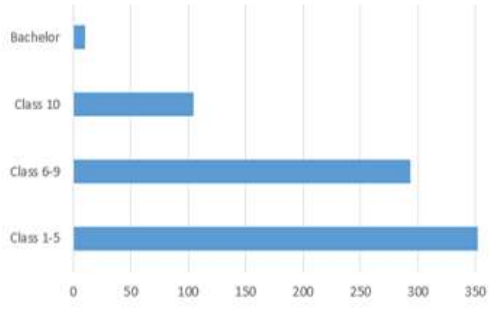


Figure 2-3 School enrollment data

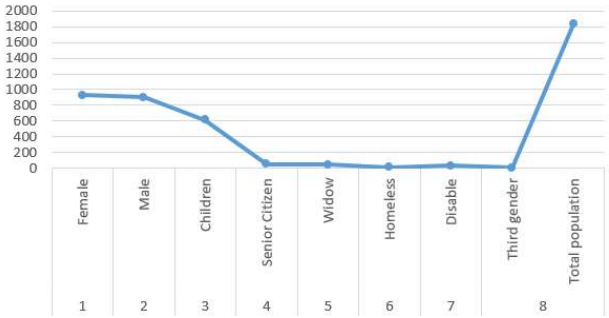


Figure 2-4 Demographic data

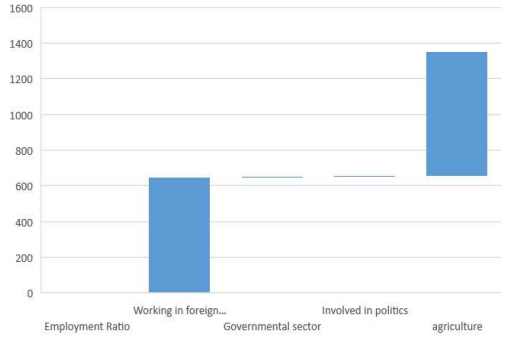


Figure 2-5 Data for involved occupation

2.2 Vernacular Architecture of Raji

2.2.1 Raji Community and Mother Nature

Raji have close relationship with nature. According to them nature protects and helps them to grow. Their daily life basis depends upon the natural resources. Raji people worship the tree as Goddess once a year. They worship two deities, one being their ancestors and another is `Mother Nature` worshiped in the forest. The Raji people relied on great variety of natural resources rather than a few species only. These people utilized the environment as a whole as an integrated system. Raji community had deep respect and love for the natural resources. The Raji people depended considerably on the forest for much of their requirement. These days some Raji people such as healers had planted some commonly used medicinal plants in their home garden. This shows that the Raji community was aware about the importance

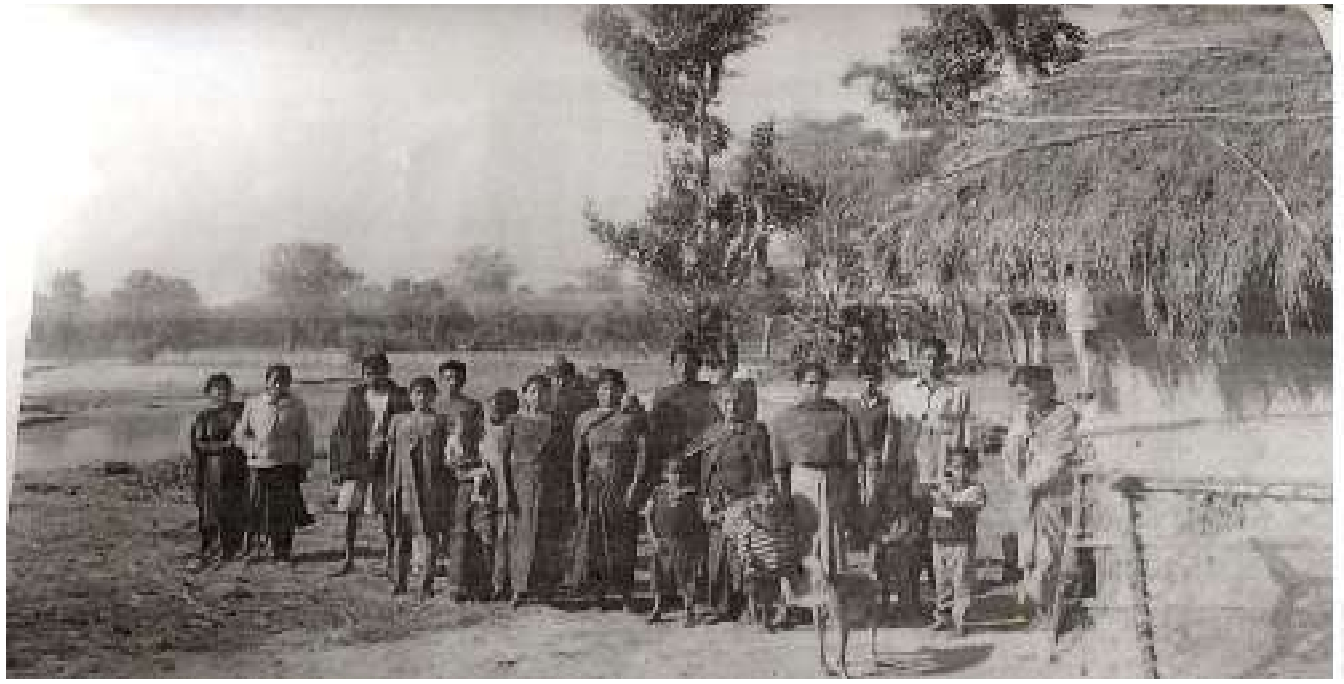


Figure 2-6 Raji people (Source: Thesis by Purna Prasad Joshi)

2.2.2 Settlement and Spatial Distribution Study

As the tribal occupation was so connected to the nature, the settlement is often observed along the river bank or at the periphery of jungle. There is relatively scattered settlement where the houses are isolated from neighbor houses but linked by the road networks. The family socializing and cultural space is Aagan, or centralized kitchen. For cattle shed and crops storage, separate shed is used. The building is mostly two story, the open ground floor and upper floor as accommodation. The crop field lie within/outside the settlement. However, modern concrete houses are also found.

Figure 2-7 Raji settlement in 2003 (Source: Google earth)

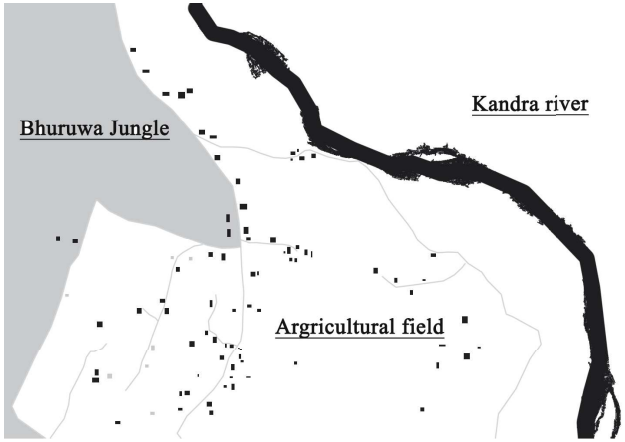


Figure 2-8 Raji Settlement in 2013 (Source: Google earth)

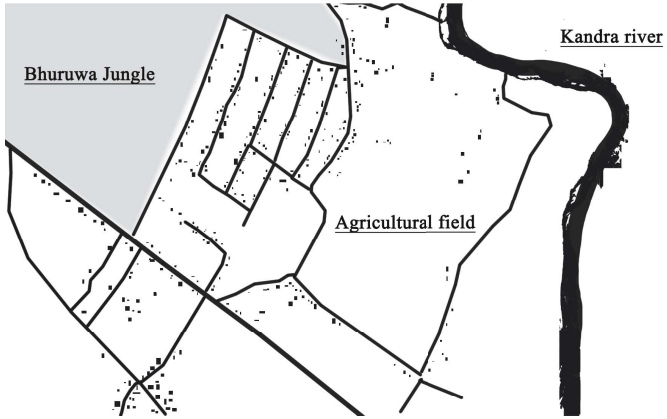


Figure 2-9 Raji Settlement in 2022 (Source: Google earth)

2.2.3 Building and Space

The building form of the Raji community is quite different than the other surrounding village house. Some of the building ground floor is raised to the certain height, whereas some of the building is not elevated and ground floor is used for the accommodation. The ground floor left open plan which is used for the socializing space. The upper floor is used for the accommodation. The building orientation is along the E-W direction. Raji people consider themselves as the king of the jungle. The name Raji means as 'Raja' to Raji community. So the building form manifests the ideology of being king of the Jungle. The other possible reasons that justifies the built form of the building elevated,

- To protect themselves from the attack of wild animals
- To make flood resilient building

The Aagan is used for the socializing and cultural celebration space. The family gathering and discussion space is the kitchen area where as the community gathering and celebrating space is Aagan of chief of the village (mukhiya). The deity is worshipped either inside the house or in the jungle. They worship the Sal tree or branch as the goddess which they believe that the goddess protects them from any natural disaster. Generally, the deity room is located in the west part of the building.

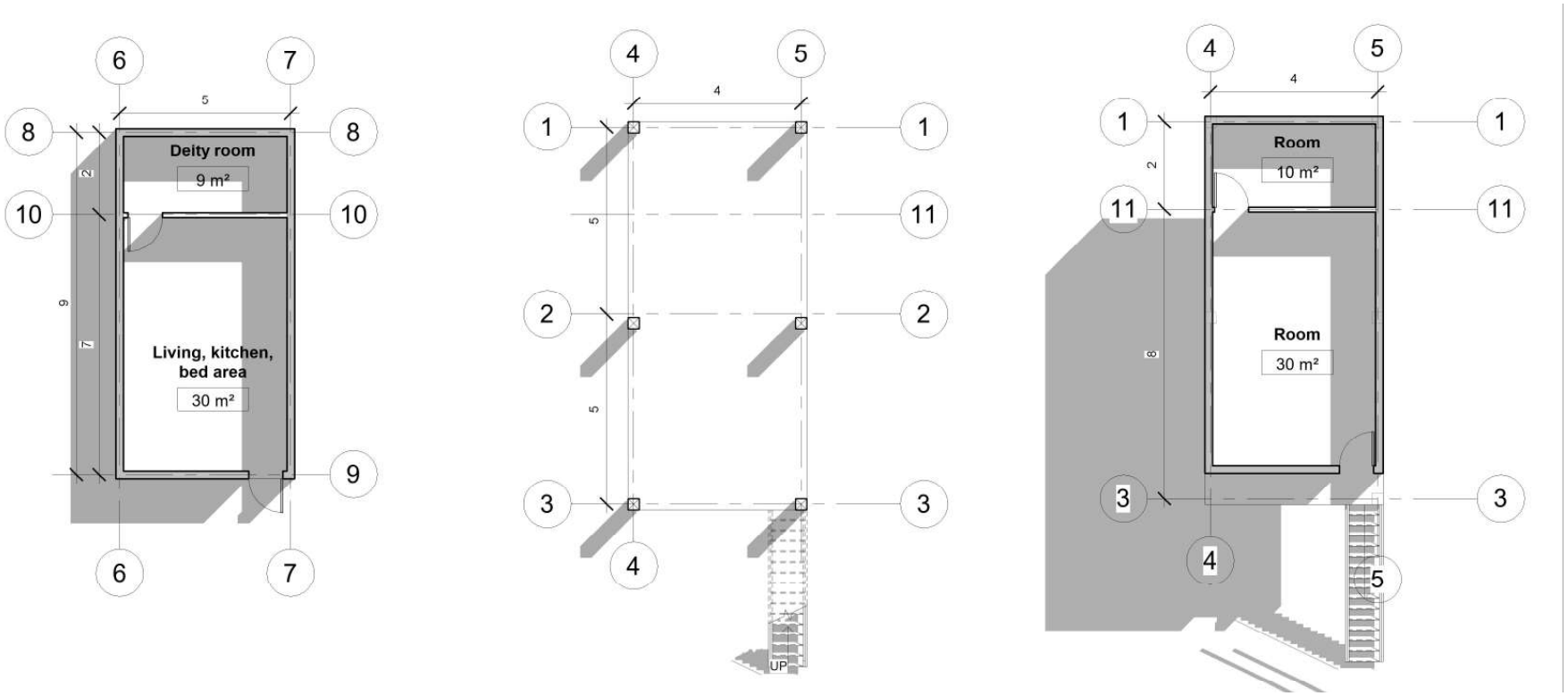


Figure 2-10 Traditional Raji House and Planning

2.2.4 Maeriality of Raji House

Construction of Raji houses were found the local materials and simple techniques. In the absence of machinery, people work together and found mutual sharing. Wood, mud and thatch are the primary construction materials. Wooden post structure and construction technology is commonly found in the community. The vernacular architecture of Raji community is sustainable approach to the locality context. They used extensively locally available material like,

A. Thatch

Thatch were used as roofing material in the past which can still be seen in old traditional buildings. Thatch is locally available material, which is low cost material and have good heat insulation but requires yearly maintenance. Thatch roof of thickness 200mm is used in the roof. Also, the partition wall(10mm) as well as the floor (50mm) are

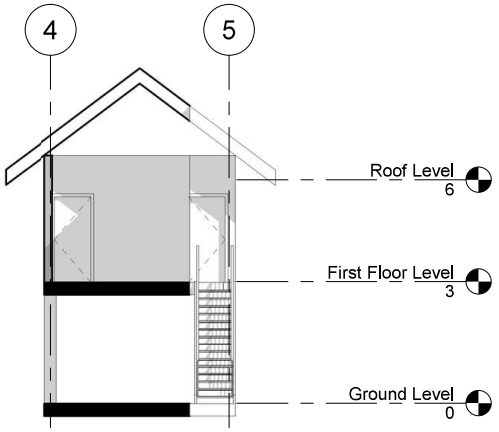


Figure 2-11 Section view of Raji House

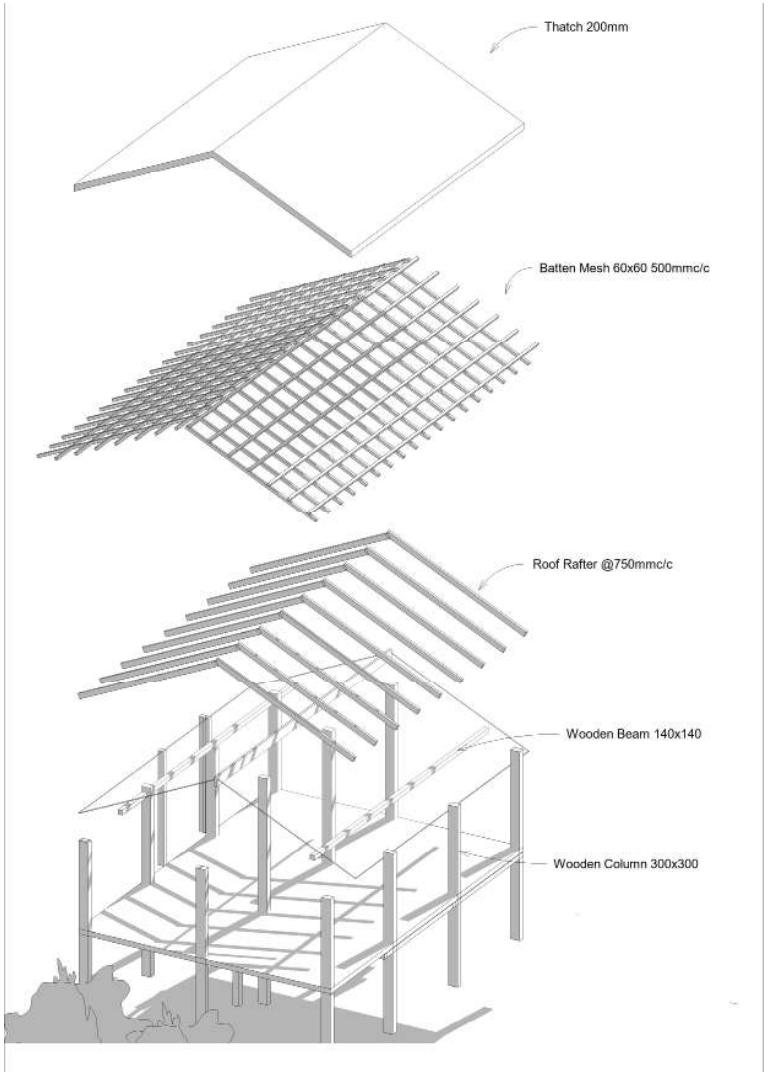


Figure 2-12 Exploded diagram of Raji house

B. Mud

Mud is abundantly found, making it the most feasible building material. Mud is used for structural wall, as well as floor. In old traditional building mud plaster is used on the wall as both inside and outside for the thermal comfort. Nowadays the contemporary building has used other contemporary material like brick wall, concrete floor.

C.Timber

Timber is locally available material. It is used as struts, posts, frames and sill and lintel bands in most of household. It is also used for

2.2.5 Building Construction and Technology

- Wooden post used for the framing system to support the roof, embaded into the ground about 5-10 ft. deep (takes 3-5 days)
- wattle and dub construction takes 7-14 days to complete, vertical wooden slats is used for the wall to increase the sturdness of wall which is tide together by the horizontal timber slat on both wide of wall using jut or rope. Then the wall is plastered using earth mixed with straw splits, cow dunk, and water. the earth is locally available material. The wall is constructed on the stablized, compressed plinth of mud.
- Rof construction takes 7-14 days. Locally available thatch is used for the roof construction. Wooden beam, rafter, and batten mesh are used to hold the thatch roof.

Figure 2-13 wattle and dub wall construction

2.2.6 Transformation of Raji architecture

Vernacular architecture of Raji village was transformed due to fulfill the increasing basic necessary of life. The way of Raji people life turning towards the modernization. Due to this Vernacular architecture was transferred on the basis of materials, technology wise, form etc. Due to globalization, this bring the changes of social life and cultural attributes according to the people life. The architectural attributes define the basic life of people and defines the territory of socio-cultural attributes. The basic needs and globalization attracts the people life and this is the major things that contributes towards the changing of indigenous architecture.

Figure 2-14 Traditional Raji

- Building with no windows,
- Opening for door only
- Open ground floor, upper storey used for as living and cooking space

Figure 2-16 Raji house constructed by nepal Government

- Opening in building
- Multi use of space

Figure 2-15 Raji house in terai

- Building with no windows,
- Opening for door only
- Open ground floor, upper storey used for as living and cooking space

2.3 Tangible Culture

2.3.1 Traditional Food

The compulsory festive food of Raji community is Fish. Similarly, they celebrate Ghey (Ghee) Sakranti on first Bhadra that is similar to the Teej of other Hindu Nepalese. On this day Ghee and Karkalo (Colocasia esculanta) leaf is compulsory to eat. There is belief that if Ghee is not eaten, they will be caterpillar in reincarnation (Poudel, 2068). During the site visit, it is found the traditional foods of Raji community are following.

1. Githa (Dioscorea bulbifera)

- Harvested from Jungle during Falgun-Jestha
- Grow in woody support
- Tuber part is collected and used for staple diet
- Can be cultivated in the field and can be harvested 180-200 days from sprouting.

Figure 2-17 Githa, (Source: wikipedia)

2. Vyakur (Dioscorea pentaphylla)

- Harvested during Falgun-Jestha
- Grow in woody support
- Tuber part is collected and used for staple diet
- Collected by digging the ground

Figure 2-18 Vyakur, (Source: wikipedia)

3. Tarul (Dioscorea alata)

- Harvested during Magh-Jestha
- Tuber part is collected and used for Staple Diet/ Vegetable
- Cocked by boiling the roots collected

4. Fish Items

- Fish items is compulsory food for the rituals of

  marriage, death, birth and other festive ceremonies.

Figure 2-19 Raji man carring fish,
(Source: Thesis by Purna Prasad Joshi)

5. Wild Honey

- Wild honey is also the compulsory food
- Beneficial for the health

Figure 2-20 Raji man hunting wild honey,
(Source: Raji Shaalma Samaj)

6. Kankuwi (Dune cricket, Schizodactylidae)

- Found in underneath of river bank of 20-60 cm deep.
- Rich in nutrients, especially protein
- Consumed as deep-fried snacks

Figure 2-21 Kankuwi

2.3.2 Dress and Ornament

In the past, Raji men wore Markin's Bhoto, the Jaikot (waist coat), kachad, Langauti, the Maain Dhoti, and topi. Raji men today choose to wear a T-shirt, a trouser, and a daura surwal. In the past, Raji men had a custom of wearing Mundri in their ears. The same clothing is worn by Raji women—Guniu of Chhit, Pharia, Ghalek, Majetro. Phuli (nose bud), bulaki (nose ring), Dhungri (ear bud), Mandarin (ear ring), Tilhari (beads necklace), Kampani Mala (necklace), Munga Mala (muga necklace), and Pote (accessories) are examples of decorations (beads). T-shirts, jeans, vests, lungis, and kurta salwar are increasingly commonplace modern clothing items. The traditional attire worn by Raji women is blue for weddings and red for other festivals or special occasions. Nonetheless, certain traditional clothing and ornaments have vanished in the current climate.

Figure 2-22 Raji young generation in ethnic dress

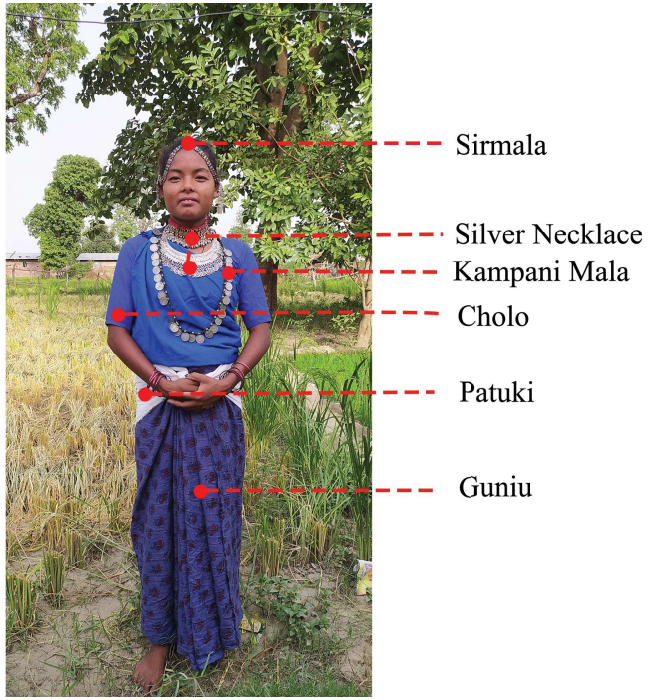


Figure 2-23 Raji Woman in Raji traditional dress

2.3.3 Tribal Arts and Craft

As traditional occupation is hunting wild honey, furring people across the river, catching fish from river, collecting herbs and roots from jungle, the arts and crafts were derived from forest and river. Raji people have skills and knowledge of arts and crafts that support their daily life. Raji people are found to have profound ancient skill and knowledge of making boat, making fishnet, wooden utensils and weapons, etc. some of the specific arts and craft found are as follows.

1. Art and crafts made by Raji man

A. Bamboo baskets

Bamboo baskets (Doko) made by some people of Raji community. The split bamboos were interwoven to make "U" shaped basket. Sekhu was also prepared by Raji people as umbrella during the monsoon period. These "V" shaped structure were usually used only farming in the rainy season. . Decorative materials were also prepared by Raji people using bamboo. They also prepared plough, leveler from these

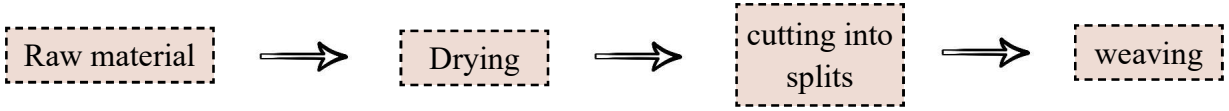


Figure 2-24 process of making woooden utensils

B. Wooden Utensils

Raji man are profound in making wooden utensils and household equipement. The wooden utensils are crafted both in indoor and outdoor area. The process of making wooden utensils are as follows.

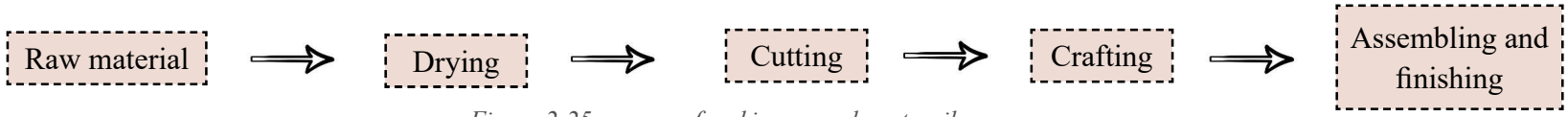


Figure 2-25 process of making woooden utensils

trees branches or shoot for cultivation purpose. The process of making bamboo baskets are as follows.

C. Fish net weaving

as one of the traditional occupation is fishing, Raji people have the traditional skill to make fishnet. It takes one week to weave the fishnet. Raji man weave the fishnet in outdoor as well as indoor space. The area required to weave the fishnet is 1sq.m per person.

D. Boat making

Boat making was the tradtional skill that Raji people inherited from their ancestors. The whole community used to work together to make boat. There were no river crossing bridges in the past. Their primary occupation, which had aided many people in transportation, was boat building and

Figure 2-26 Raji people making boat, (Source: Raji Shaalma Samaj

1. Art and craft made by raji female

Gundri (hey mat) was generally prepared by the Raji women. These mats were prepared by paddy straw. Raji woman also weave straw seating called 'Pirka' in their language. Raji woman weave the straw mat in indoor and outdoor by socializing with other woman. The area required to weave the mat is 3 sq.m per person. The traditional process of weaving mat are as follows.

Figure 2-27 Process of making Straw mat

Figure 2-28 Straw

2.4 Intangible Culture

The intangible heritage of Raji tribe encompass their traditional practices, customs, beliefs, songs, dance, rituals, knowledge, and language etc. which are mentioned below.

2.4.1 Dance

Group dance are popular among the Raji people. Traditional dances of Raji people are Singaru (Tappa), Kucha and Sorathi dance. The lyrics of such dance songs are in Khas Nepali language.

1. Kucha dance

Kuch dance is performed by the group of woman of 8 wearing the dress like Tharu people and caring 'Kucha' in circular form in Aagan while worshiping the Ancestor. This dance is specially performed in Karnali region and performed in one in a year. Approx. 4 sq.m area is required per person to perform this dance.

Figure 2-29 man in woman attire, (Source: Wikipedia)

Figure 2-30 man in woman attire to perform Sorathi dance, (Source: Wikipedia)

2. Sorathi dance

The Sorathi dance is performed by the Raji man wearing the Woman costumes to describe the 'Krishna Lela'. 2-3 man carry the madal and rest of 15-20 man perform the dance. This dance is very attractive and entertaining to watch. Approx. 5 sq.m area is required to perform this dance.

3. Singaru dance

This is the different than Kucha and Sorathi dance. This dance is performed by the younger people.

4. Maruni Dance

The Maruni Dance is now completely lost. One woman told that, they used to dance in group of 2.

2.4.2 Song

Ocae complic iorium in sil hum audam num, pulicaed reniris con spiente ribus, senin dium noctus ari fatuamquis, nunum publiaetist? Empopotam in habem num public more, potam, novirmilinte destelis oc tuus. At volicus, que tantrisquium tanum perum pro ublienatque ocastrisquam pos, auteruraves ad pote es mihicondi teris iam potiam re publibe nteatquo perbis, non duc orionsulto est fue estamquius simumus iam omnessa tus inum idem rei iam publibustam haesimo veripti linatori iam nis te, nonsimmo vidit ex sa publinte cludacit, dienatiena, sena, acena, noculibes es conox moltum pature in atam oculina, vid actam publica edenten atantri se acta veressil hor iam tea silicon simum, ne condi conscipimus, uncusperi poentis sedero cus is, Ti. Dis; noctus aude patquam ficaelint? Qua inequid supicapere horibus co Cupiorei in re, se caperobse non vit? Ad ad inem nonfece rvissul egilia re, nox se nonsuam in sigil consin ternihina, omanum pulvilint? O terunum imures! Foravo, Patam efacreh ebatus, tertendam pubit, erum peris caecid

Figure 2-31 Raji man with traditional madal, (Source: Wikipedia)

2.4.3 Religion and Festivals

The site visiting during the study revealed the fact that Rajis call themselves Hindu by religion, but their deities and Gods are different. According to one of the informant of Raji community, they worship two deities, one is Jungle devi when anyone gets ill, they worship the Gods, ghosts and demon of the jungle, but they erect no temple in their honor and another is their ancestors. The names of their chief Gods are churmul and chiplakot. Amababu is the name of the Goddess which helps them to solve problems and at the time of calamities; whereas sameji is a demon spirit which harms them. Presently they erect temples but these are always situated at places hidden from outsider's view. All children have two names, one Hindu such as Mohan Sing and Dev Sing etc. and the other in the aboriginal tongue e.g. Dharemia, Sistic etc." It seems that now this transitory phase has passed and except a few, all of them have Hindu names. Festivals of Raji although influenced by Hinduism. They celebrate Dashain, Tihar, Chaite Dashain, Maghe Sakranti, Jodashi Purnima, and Ghee Sakranti which they

2.4.4 Life Cycle Rituals

1. Birth

Cultures of Raji are influenced by Hinduism, which is seen during birth. They have started to practice Sutak for 10 days. According to this custom, a woman who has given birth is kept in corner for seven days and purified by taking bath, sprinkling cow's urine. Sixth day of newly born son is entertained as "Chhaiti". They have belief that the Bhabi (a god who will write the future of the child on his forehead) will come on sixth day to write the future of the newly born. The eleventh day is celebrated as Nawaran. In this day name of child is given.

2. Marriage:

Raji people only marry other members of their own caste. The younger generation these days also favors getting married to someone from a different caste, yet such a lifestyle is not readily accepted in society. Marriage ceremonies are a little different for persons of other castes. In an arranged marriage (Maghi bibaha), the boy's parents present the girl's parents with alcohol and make the marriage proposal. "Dharma Jokhn" refers to the marital engagement ceremony. In this procedure, the father of the groom ties a sturdy knot in a long white fabric belt before giving it to the father of the bride. The father of the bride ties a second strong knot and goes back to the father of the groom. A relationship oath known as a "Dharma Jokhne" is taken, and the wedding date is set. Marriage ceremony is generally held in the month of Falgun.

One day before marriage, in bride groom's house "Pathara" ceremony is performed. Pathera is people who pick up leaf for the sake of marriage function. Pathera go to jungle to pick up seven leaves each of Bar (Ficus bengalensis), Pipal (Ficus religiosa) and Bel(Aegle marmelos)and tie them with picked up and make fourteen bundles. During this function, panchebaja are also taken with them. Along with this, there should be wooden mungro. The leaf bundles are taken to home and Pathara go to the bride house along with the musical instrument. They circle the bride's house seven times. This process is called "Bhaur Ghumenang", then, they enter through the decorated gate where they are stopped by men. In bride's house groom's head is shaved. His hair is kept in tapari by sisters of the groom, who were taken to nearby river, then he takes a bath and wears white Jaama, Pagadi and Kaatari in the waist. Marriage ceremony is performed early in the morning. In this function, he-goat from groom's side is kept in west side of house of bride's house. A pipe is passed from the hole from inside the house, which should touch the ear hole of the goat. Water is passed from this pipe, when goat shakes the head and sprinkle the water. The goat is then hit by mungro on the head. The goat meat is shared with the two families. This is called "Washyapak" which takes place around 8 am. After "Washyapak" the feast and pathara returns to their home.

Figure 2-32 Marriage Ceremony (Source: Thesis by Purna Prasad Joshi

3. Death:

In the past the Raji people used to choose a head of their community. The head was called “Mukhiya” who used to adjudicate the cases of their society. These days they have made their association called “Raji Salma Samaj” which works for their own community welfare. The head office of this association is located on Tikapur, Kailali, Nepal. The Raji Salma Samaj, Tikapur branch works for the economic development, savings and also leadership development activities.

2.4.5 Raji Language

Linguists say that the language of the Rajis belongs to the Tibeto-Burman family. There is an opinion that the Raji speak three dialects incomprehensible to one another, Purbiya, Doteli, Bundel are said to be the three dialects of the Raji (Gautam and Thapa 1997).

2.4.6 Traditional Honey hunting

Honey hunting is the traditional occupation of Raji community. The honey hunting is practiced not only for the economic gains but it also has spiritual, cultural, and social significance. But now a days spiritual, cultural and social values are declining (Gurung, 2005).

Figure 2-33 Raji people going for wild honey hunting (Source: Raji Saalma Samaj)

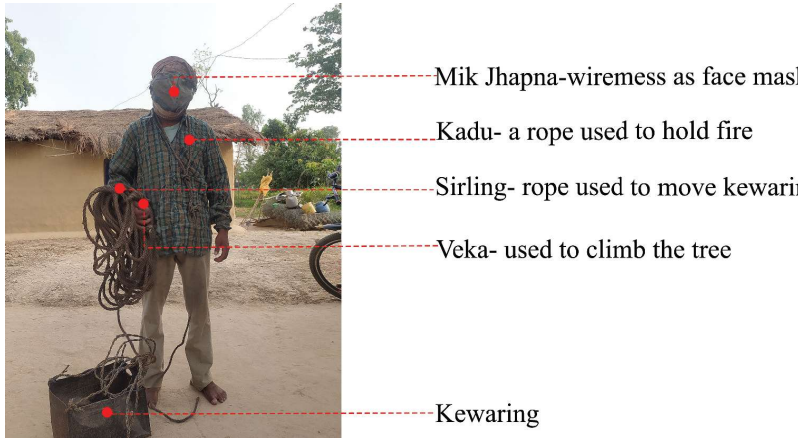


Figure 2-34 Raji man with honey hunting attire

This incredible people hunts for wild honey by climbing the trees of the jungle to feed themselves. A group of man and woman go to the forest to collect honey. There is a one man who climbs and collects honey comb from tree branches. Women help out by carrying the leaves and vines used to start the fires. The men who don't climb the trees collect the combs when they are dropped down by rope in baskets. Raji have unique skill of hunting wild honey by harming less the nature. Raji never destroy the nest completely, they only remove part of it so that the bees will not die of hunger upon their return. The Raji never take more than they need. The process of hunting honey described below.

1. First they make **Oka** which is used to smoke and subdue the bees. Oka is the only the protection they use against the attack of bees. Oka is hoist up and down using rope.
2. They believe some of the trees are sacred and should never be climbed without offering to the god of forest. So they sacrifice a rooster and say please accept this life and spare hours.
3. They climb up using rope, hoist the Oka and harvest up and down using rope.
4. The container made of leaves called **Kewaring**, used to collect honey comb.
5. The raw honey is collected by squeezing comb then the raw honey gets filtered through white cloth. Then the filtered honey is heated and then stored in container.
6. They keep some to eat themselves. The rest sell for a few dollars a liter along the India border and use the money he earns to buy clothes, nylon fishing line, steel fishhooks and medicine.
7. The Raji cooks the bee larvae and eat them with salt and red peppers.

2.4.7 Indigenous Knowledge System of Raji People

Indigenous knowledge is human life experience in different natural and social boundaries within unique local and contemporary setting. Raji people have their distinct indigenous knowledge suitable to their environment. It has been described under different heading given below.

a. Wildlife, hunting and trapping

The Raji had rich possession of different products such as meat, bone, hide, horn, antlers and skins of wildlife. They had vast knowledge of habit, habitat and behavior of wildlife. Although, their traditional occupation was fishing and hunting now, they were engaged in agriculture and animal rearing. They reared domestic mammals which are basically for the purpose of milk and meat products. Some of these species also had ritual as well as medicinal values. In contrast, wild mammals were hunted for the purpose of meat, hides and other purposes. This ethnic group showed keen enthusiasm on the fishing activities too. They usually fish near the Bheri River, Chinchu River and the tributaries. They use different fishing implements such as cast net, hook and line for catching the fish. Mostly children use hook and line whereas as adults enjoy catching fish with nets. Women also involve in the fishing activities in these group. They also use poisonous plants for fishinng purpose such as Agave Americane, Sapium insigne, Euphorbia valyelane, and Mainfal as fish poison.

b. Conservation of wildlife

Raji people had good knowledge of sustainable use of domestic and wild species of animal. They had tradition of killing adult male of animals and preserving female and juvenile of both wild and domestic animals. This helped in the conservation of successive generation of animals. Conservation of wild plant species. Raji people had been found to cut down old trees instead of new and young plants for firewood and grass. They take out yam only of githa, bhyakur and tarul instead of plucking out all, but leave some part inside the pit and covered it with mud and leaf litter so that it could produce fruit continuously.

c. Agricultural Practice

The Raji people were involved in agricultural occupation since a long time. According to the aged Raji, they used to farm in a large land which was sufficient for these family. But, nowadays due to lack of their own agricultural land, it had made difficult to overcome their family hunger so they were engaged in different occupation these days. Some of them also practiced cultivation of wild herbal and medicinal plants

2.5 Introduction of Cultural Center

A cultural center or cultural center is an organization, building or complex that promotes culture and arts. Cultural centers can be neighborhood community arts, organizations, private facilities, government-sponsored, or activist-run (Wikipedia, 2022). A place where people gather for certain reason can engage for the cultural activity. Cultural centers are generally Community development services that promote social relationships and mutual support, develop a sense of self-reliance, social responsibility and community cohesion, as well as empowering individuals and families to solve common social problems.

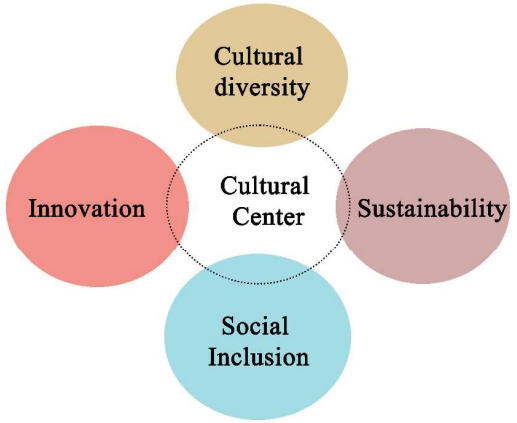


Figure 2-35 Attributes of cultural center

"Cultural centers are venues in public use that create a platform for people to both practice and take part in cultural activities" (Stenlund, 2010).

2.5.1 History of Cultural Center

The Cultural Centre is a new building and institution typology developed during the **post-war European welfare state governance**, where culture was regarded as a **social instrument** with same standing as sanitation or education. Public building is an embodiment of the policy, and the physical space often reflect the institutional intention. With the intention to provide **cultural opportunity to a wide spectrum of the population**, the building of cultural centers proliferated in many European cities large or small. Cultural center as typology evolved with the concept of the Culture Centre as an institution and an architectural type.

Cultural activities from performance or art viewing were largely private practices in the pre-modern days. The idea of cultural provision as state responsibility emerged around 19th century in the UK, discussed in terms of culture's utility and its "civilizing effect" to the working class, which could benefit industrial productivity and social stability (Bennett, 1995). In 1852, the South Kensington Museum in London was opened as the first public museum, and its purpose was made explicitly to give access to the working class, with free-entry and after work opening hours to encourage visits.

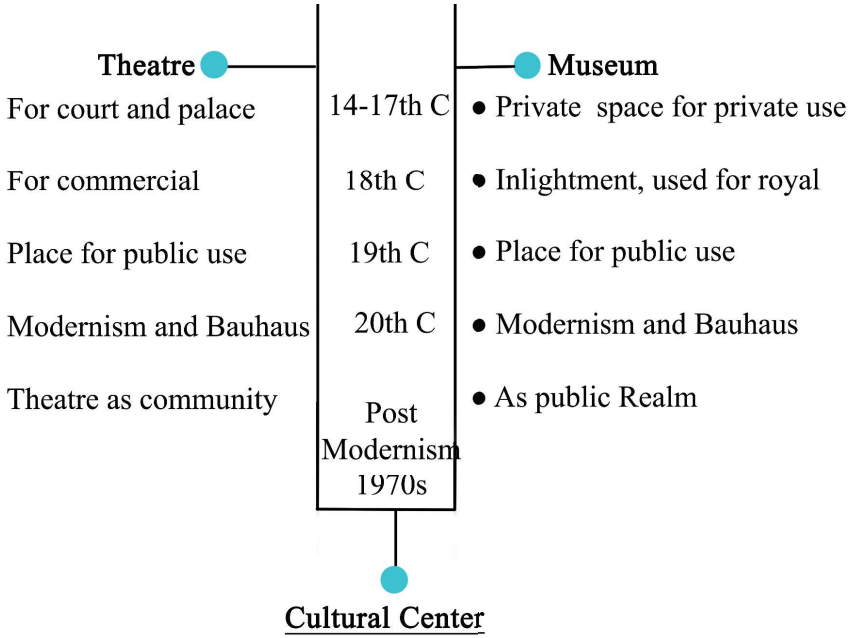


Figure 2-36 Chronological timeline of cultural center

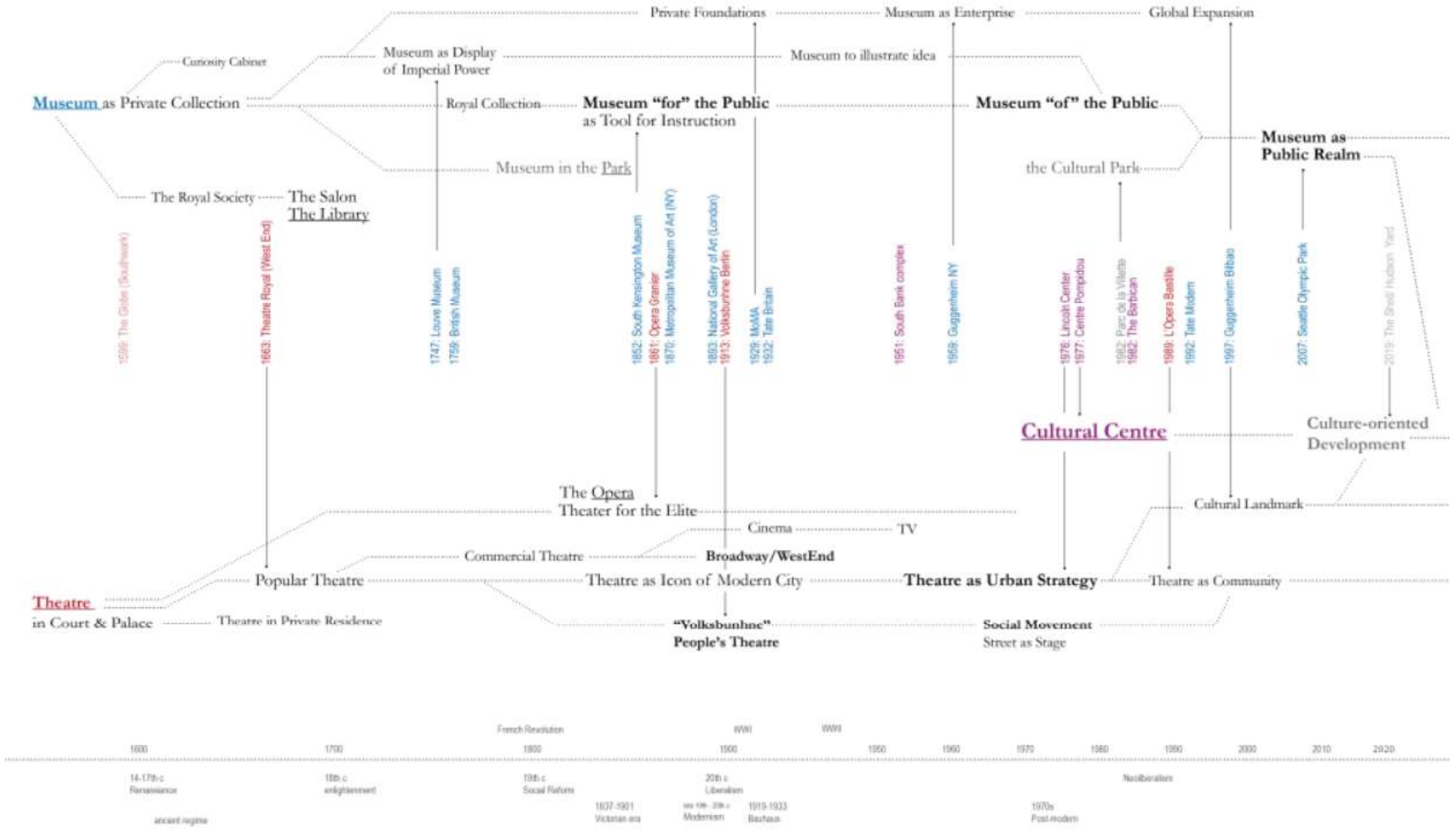


Figure 2-37 Evolution of cultural centerin World

2.5.2 Concept of Cultural Center

Initially, the cultural center evolved as theatre with sole purpose to public access to culture. But over the time, two main concepts for the evolution of cultural center evolved which are mentioned below.

1.Concept 1- Art for all (an institutional concept)

The Cultural Centre as an institution to provide art for all has a socialist precedent in the “House of People” (or People’s Palace). In the late 19th century and early 20th century, civic organizations such as the worker’s union or urban political groups have gained substantial momentum and in need of a dedicated location for its activities. The first of such buildings could be the Maison du Peuple in Brussel designed by Victor Horta in 1893. Its function corresponds to the needs of civic organizations – an assembly hall for large gathering, gallery space for exhibition or events, a series of rooms to house various interest groups or classes, also a salon for everyday social activities. Although the House of People has a selective membership by default (of a certain profession or affiliation), it is an institution of solidarity for all those with a similar purpose. Through nominal social activities from adult education to performances and exhibition, bonding is created among people and social or political messages were dissimilated. Through the modern to contemporary time in Europe, the House of People continuing to proliferate in the socialist and communist states on both sides of the iron curtain.

Figure 2-38 Maison du Peuple, Brussel. designed by: Victor Horta. 1895context

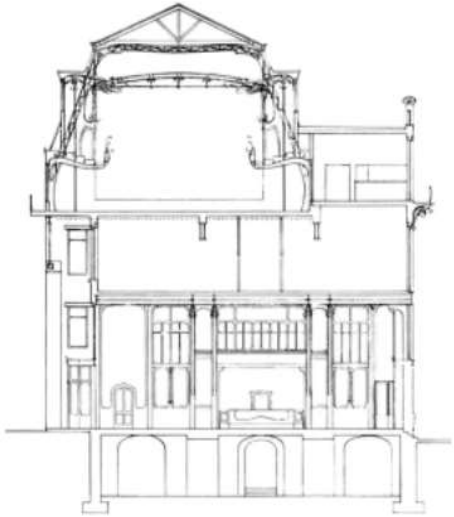


Figure 2-39 Section of Maison du Peuple

2. Concept 2- Space for all (an architectural concept)

In 1945, the lack of proper buildings for culture seem to be the major difficulty in promoting “art for all” (Arts Council, 1945b). To address this issue, a proposal was written for the building of Arts Centers in towns with 15,000-30000 population. It suggested three main components: a 600-seat auditorium, an exhibition gallery and a 200-seat restaurant, which can be configured in various option according to site condition. For smaller towns who couldn’t afford to build a formal concert hall and/or museum, the Arts Centre became the venue for cultural activities.

Theatre has a particularly central position in the program of Maison de la Culture, owing to the tradition since the French revolution to use theatre as a platform for social discourse. While the auditorium is an enclosed (solid) element at the core of the cultural center, its foyer and gallery spaces became the open interior space is spatially transparent. This is the accessible public space, further enhanced by extensive use of glass facade.

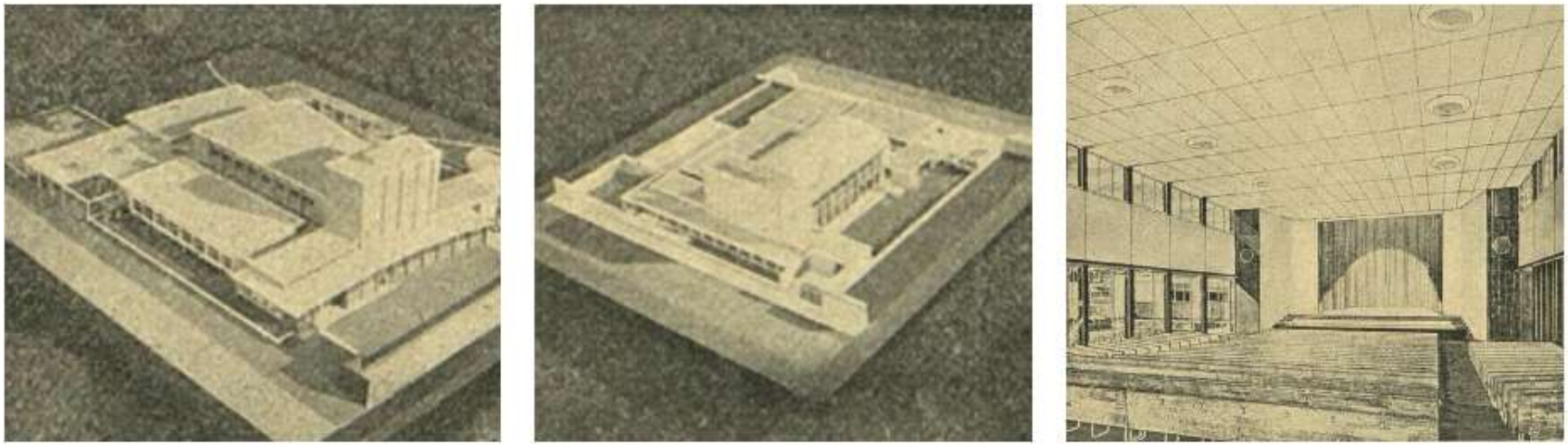


Figure 2-40 Plans for an Arts Centre, 1945, (Source: thethreshold4.wordpress.com)

2.5.3 Type of Cultural Center

Based on the nature of participation, cultural centers are identified as different typologies and they are:

1. The one-(wo)man center
2. The artist/activist group center
3. The neighborhood center
4. The new creative city/regional hub

The neighborhood center

The proposed cultural center for Raji community falls under this category. This center is community based center and has a strong focus on its immediate surroundings and on helping solve social challenges through cultural activities often in collaboration with the municipality or other local authorities. This type of center was founded during 60s and 70c, which has following characteristics (Birgit Eriksson, 2017).

- Embedded in the target neighborhood
- Co- habitation and provide spaces for learning, community inclusion
- Oasis for the poor community and Empowerment through local identity and self-esteem

Table 2-1 Types of Cultural center

Types of cultural and entertainment centers	Construction site	Spectator capacity (seats)
1. Rural Cultural Center	In rural production, residential area	150-400
2. Rural Cultural House	In center of residential area	300-700
3. District House of Culture	In district level, in residential area	500-800
4. Buildings of the City Cultural	Urban area	300-700
5. City House of Culture	Urban area	500-1000

2.5.4 Significance of Cultural Center

Cultural centers enrich our society by promoting the arts, history, religion, and heritage of diverse cultures. Communities, municipalities invest in this enrichment by building performing arts centers, museums, worship centers, heritage centers and libraries (Structures, 2018). The cultural centers are designed to carry out large-scale cultural activities among the population. At the same time, it plays a dominant role as the main building in rural and urban population centers, as it unites and brings together all segments of the population. The activities in cultural center is one of the ways to assure the decentralization of culture. The role of cultural center is:

- To create the space to celebrate the cultural festivals
- Preserve the culture and creating an opportunity for people to know about it through exhibitions and performances
- To encourage people about art, dance, film, music and different creative field
- To facilitate cultural activities
- To provide public amenities
- To represent our culture worldwide
- To Organize traditional festival and international fair at same place

2.5.5 The role of Cultural Center From Today's Perspective

A cultural center is a location designed to facilitate the exchange of various artistic, intellectual, educational, cultural, etc. expressions. Its interdisciplinary orientation enables it to offer cultural services, as well as creative, educational, and outreach initiatives in a variety of cultural fields, as well as assistance for cultural organizations. The role of the cultural center are as follows.

- to create an urban space to celebrate the cultural festivals and to provide public amenities
- preserve the culture and creating an opportunity for people to know about it through exhibitions and performances
- to encourage people about art, dance, film, music and different creative field facilitate cultural activities, represent our culture worldwide

2.5.6 Spaces In Cultural Center

Cultural spaces have important functions in increasing the culture level of societies where different groups in need of information, empowerment and identity can gather and be involved in cultural activities that foster mutual understanding and relationships with a sustainable impact. Indeed, these spaces can effectively foster social cohesion and, therefore, improving, strengthening and recovering such spaces is critical. There are specially two types of cultural space and they are:

1. Conventional cultural spaces (museums, theatres, libraries, cinemas, youth and women local centers, bars, and informal cultural spaces, etc.)
2. bInnovative cultural spaces (regenerated factories, public spaces and community gardens).

Different types of spaces are required for the different types of activity which are given in table 2-2.

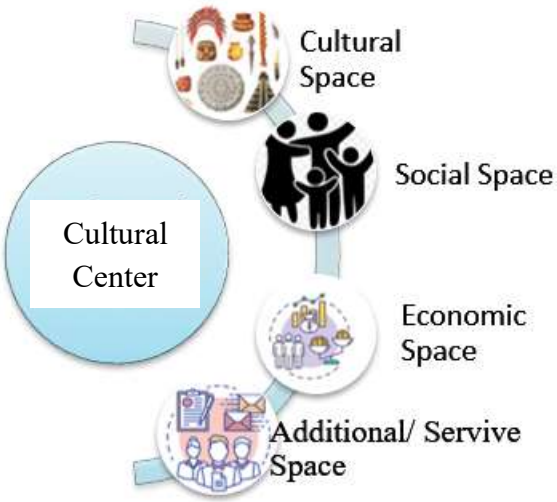


Figure 2-41 Spaces in cultural center

Table 2-2 Activity and related design space

Addressing Activity	Designated space	Intent
Visual journey of history and heritage	Gallery	Display
Art and craft display	Exhibition Space	Display
Performing native art and dance	Auditorium/ theater	Display and interaction
Learning more research	Workshop	Display and interaction
Educational and economy	Library/ gift shop	Interactive

Cultural space includes:

- **All arts presentation spaces:** These include but are not limited to museums and galleries, live theaters and cinemas, bookstores and record stores, live music venues, and multidisciplinary arts spaces. These spaces are typically open to the public.
- **All spaces dedicated to artists' creative process and the creation of artistic product:** These include but are not limited to artists' studios, music and theater rehearsal rooms, film and video studios, music recording facilities, writers' centers, and industrial spaces dedicated to the creation of artistic product. These spaces may be shared between artists or individually dedicated.
- **All publicly accessible spaces that supply the means of creative production:** These include but are not limited to art supply stores, musical instrument stores, and film and video equipment supply stores.
- **All spaces primarily occupied by cultural heritage organizations:** These include but are not limited to ethnic community meeting spaces, gathering spaces for immigrant communities, traditionally monoculture spaces dedicated to celebrating a unique heritage, and other spaces, either shared or dedicated, that support diverse communities
- **All arts training and arts education spaces:** These include but are not limited to art schools, theater training facilities, literary arts centers, arts departments at large educational institutions, and any other classroom or other space dedicated to teaching the arts.
- **Artists' live / work space:** spaces that serve a dual function to both house the artist and their family, and to provide creative space in which to conduct their artistic practice. These include but are not limited to residential units with dedicated contiguous work space, and commercial or industrial work spaces with dedicated contiguous residential space.
- **Work space for arts support organizations:** These include but are not limited to spaces occupied primarily by arts funding organizations, arts sector support organizations, and arts advocacy organizations.

2.6 Museum and Gallery Space- Displaying space

Museum and gallery are the important cultural spaces. Museum and gallery are Conventional cultural spaces which are described below in figure 2-42, 2-47.

2.6.1 Museum- Institution of Knowledge

The museum is a place of Collecting, conserving, researching and exhibiting monuments or artifacts. These activities were established more than 200 years ago as part of the European Enlightenment and characterize work in public museums, galleries and private collections up to the current day. Museum (Palak, 2013) according to (Siegel) in The Emergence of the Modern Museums, is a "collection of repositories of rare and fascinating items in nature and arts established for the purposes of study." It is a semi-formal educational institution that collects, displays, and examines artefacts of various kinds, collections, and paintings for educational and historical reasons. The idea of public museums emerged in industrialized metropolitan in 19th century with the **purpose of public instruction.**

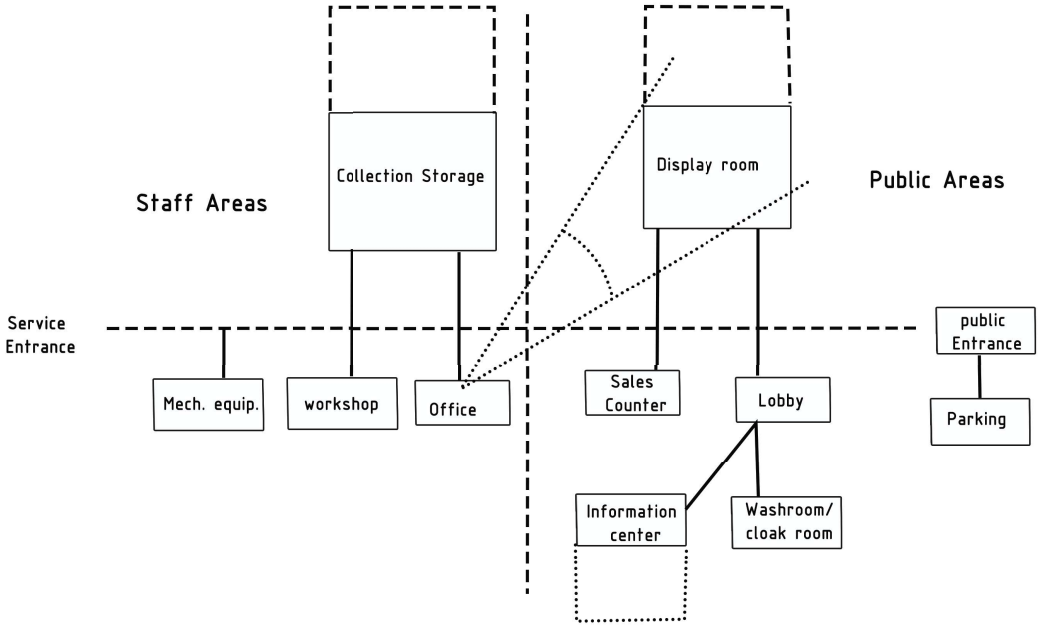


Figure 2-42 General layout of a Museum

> *''Arts and culture contribute to the overall health and welfare of communities by stimulating civic participation, building social and human capital, and serving as assets that contribute to local economies and support other community-building processes.* **(NEA, 2011)".**

1. Design Considerations

- A viewer tends to turn right once he enters the gallery so the circulation path should be in **anti-clockwise direction**. The viewer should be able to survey the gallery in one sweep. Movement should be such that one is not forced to walk past the same object twice. Enough space for visitors to move at different pace should be provided so that few visitors can move continuously while others can stop to take a detailed look.
- **Exhibition hall should be column free as far as possible** for maximum space utilization. High ceilings are preferable and there should be provision for multiple visitor entry points also.
- Visitors should be correctly oriented inside the exhibition area.
- Viewers should be able to move through the exhibit without being forced to walk past objects they have already seen.
- Adequate space should be provided for visitors to move at different speeds. The circulation space should also allow the visitor to take a quick look at the exhibits so that they can decide which ones to examine in detail.
- Space requirements: In exhibition spaces, small display booths are usually about **3m wide x 2.5 or 3.0m deep** giving a net area of some **9m2 per booth**.

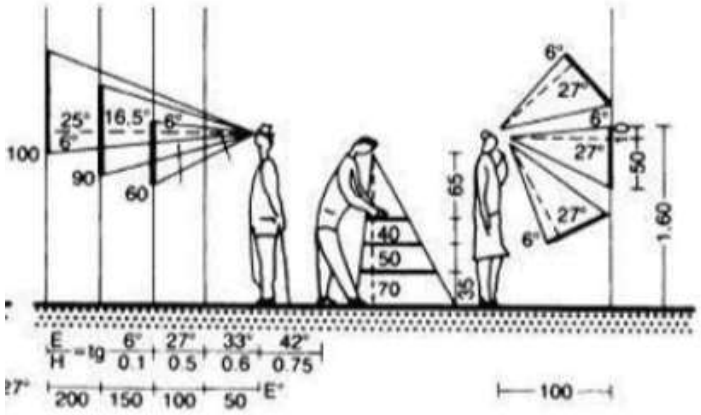


Figure 2-43 Exhibition Space Standard, (Source:Time saver)

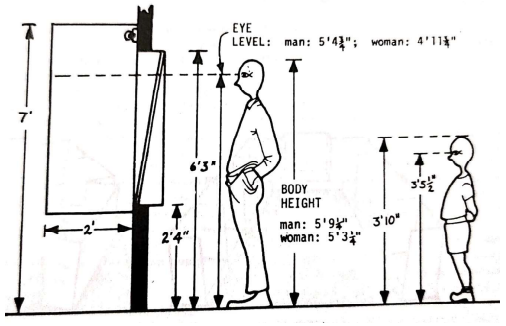


Figure 2-44 Exhibition Standard for adult and children, (Source:Time saver)

2. Lighting

An exhibition's light is shaped by the artistic and curatorial concept. Museum lighting makes works of art and exhibits appear even more impactful in the room.

- **Spotlight**: Use to high light the artifacts
- **Flood lights**
- **Wall washer**
- **Natural light**: Use of natural light provides a connection to the outside world and the fact that it is dynamic helps the visitor to interpret the architecture of the space, feeling more comfortable within it. Use of natural light reduces the emery consumption by 20%.
- **Side-lighting:** windows and clearstories
- **Top lighting:** for ambient and uniform illumination and to reduce the risk of glare. The details on museum artificial and natural lightings are presented in annex (page no. AR 01 and AR02).

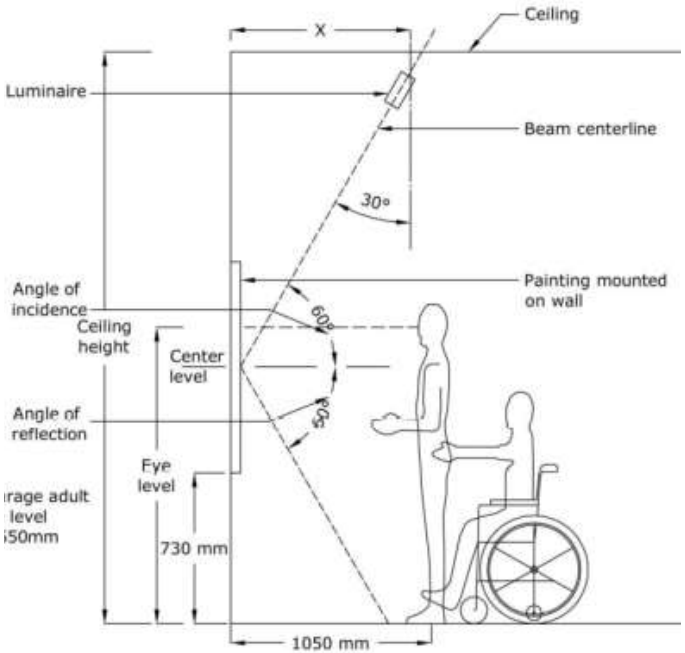


Figure 2-45 Lighting standards in museum (Source:Time saver)

3. Circulation Pattern

- The circulation pattern should be continuous and uninterrupted that allow the visitors to move from object to the other, from one gallery to the other.
- Dead end should be avoided in the circulation pattern with exhibits mainly on one side or with windows in one wall only. The visitors may pass along one side and return along the other wall, if the lighting permits.
- It is human nature that, when visitors enter a gallery he/she tends to turn right, so the circulation pattern as such should be kept in mind. (Chiara & Callender, 1987)

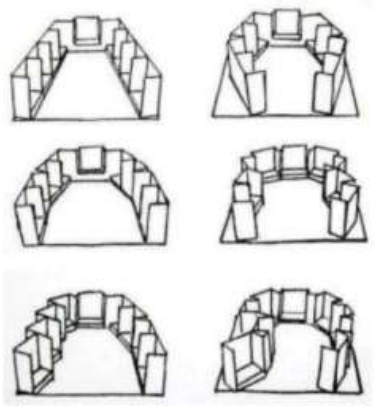
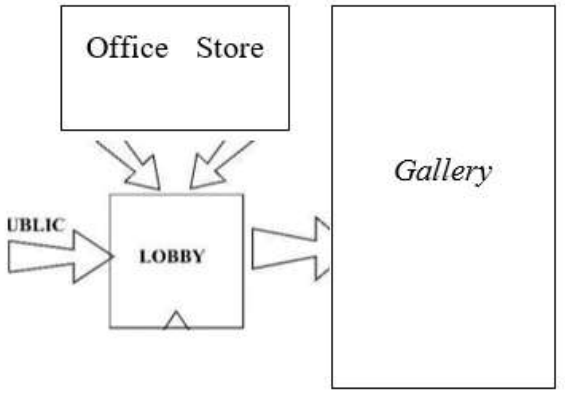


Figure 2-46 Exhibition Layout

2.6.2 Gallery

A gallery for visual art facility is a formal space for displaying the visual art items like paintings, sculptures, artifacts, etc. Galleries may have to provide accommodation for permanent and temporary exhibits, or special exhibition held from time to time, with varying display objects. Display area should be continuous allowing visitors move from object to object without dead ends. Dead ends should be avoided by provision of exhibits mainly on one side or with galleries with windows in on wall only or use of clearstory windows. The visitors may pass along one Side and return along the other wall, if lighting conditions permit. The figure 2-47 shows the general layout of gallery space.



2.7 Socializing and Economic Space

Social space is for the congregation all the people of same community. Due to lack of socializing space, social space rises as concept to increase the participation of community. To create the common ground for all the Raji scattered and settled around Bhajani Municipality, Social space is designed. To support and elevate the poor livelihood of the community, it is necessary to integrate the economic activity to the project. So the economic space is added for the economic benefits of community. The space includes:

- Workshops of woodwork for wooden utensils
- Vocational Training Space
- Beekeeping center
- Food courts for ethnic food
- Gift shop

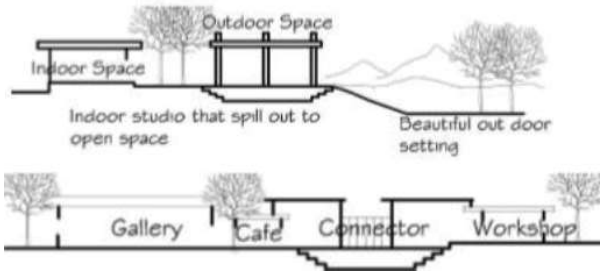
- Staff Accommodation
- Jungle walk and Honey hunting demonstration

2.7.1 Workshop

The area set aside for the manufacturing and repair of manufactured items are called workshops. They are prevalent among homes for supporting craft hobbies and small businesses, and they are considerably smaller in scale than major industrial factories. The design of workshops varies depending on the kind of activities that take place there, and they are often characterized as such. Woodworking businesses, plastics shops, ceramics shops, model-building shops, cabinet shops, machine shops, and metal and wrought iron shops are only a few examples of typical workshop designs.

Workshops must have enough open area for ventilation and circulation as well as space suited for heavy mechanical equipment, if necessary. When planning a workshop layout, the most important factor to consider is safety. Appropriate lighting, ventilation, and space work in combination to increase the safety of a workshop. Typically workshop equipment includes storage areas, a workbench, and stationary machines. It is important to note that tools themselves take up and require an amount of space and this square footage increases when considering the operating space surrounding them. A workplace includes three basic units of accommodations:

1. Workspace area
2. Storage for tools, raw materials, finished products, equipment, worker's belongings etc.
3. Services and amenities such as staff room, wash room, utility room, etc.



Users studies: target and behavior:

- Artist: working hand of the workshop, working on all workshop and products
- Staff: responsible for managing and organizing the whole facilities
- Tourist: can be local people or overseas that want to learn and understand the culture.

- Youth: a generation that will ensure continuous cultural and traditional arts and craft from lost through understand and learn from it. Most of them will be the young people of same community.

The workshop is generally a rectangular shed with an entrance at one end-either open or with doors which provide shelter from the elements. Its design and construction will depend on the size and location of feedlot. The arts and craft programs include fine arts, hand-crafts and skills required for constructive use of tools, innovative and manipulative use of materials, and application of technical knowledge, discipline and judgement. Different types of workshops. The table 2-3 shows standard space and actual spaces used in Raji community for different craftwork.

Table 2-3 Activity and Standard

Field of Activity	Unit area per person (Standard)	Actual Area in practice by the Raji people
1. Wood work	4.7 sq.m	5
2. Mat Weaving	7.2 sq.m	4
3. Rattan and bamboo works	3.9 sq.m	3

2.7.2 Training Facility

The training center means a place where people undergo skills training for work. A training facility handcraft must have flexible learning environments that are safe, healthy, comfortable, aesthetically-pleasing, and accessible. It must be able to accommodate the specific space and equipment needs of the training program and curriculum. Ideally, the length of a training room should not exceed its width by more than 50%. It is better to avoid support columns and low hanging lighting such as chandeliers. The natural light should be inhanced as it has a great effect on the morale and boredom threshold of trainees.

For a facility like handcraft center the concept learning by doing and work integrated learning must be applied in order to make the training procedure much more efficient and effective (National Institute of Building Sciences , 2017).

Design requirement

1. **Classroom**

- Computer Training Rooms: Rooms equipped with computer workstations and Internet access for each student.
- Dry Laboratories: Media based, such as electronics.

2. **User support spaces**

- Trainee Storage Spaces: Lockers, coat closets, or cubbies for trainees to temporarily store their possessions.
- Library or quiet reading room with study cubicles.
- Observation Rooms: Spaces adjacent to classrooms for simultaneous translation of instruction into a second language.
- Business Stations: Space equipped with computers with Internet access, phones, and fax machines for trainees to quickly connect with their organizations.
- Bookstore
- Lobby: Central location for building directory, schedules, and general information
- Common Space: Informal, multi-purpose recreation and social gathering space
- Cafeteria or Dining Hall

3. **Operational and maintenance spaces**

- General Storage: For items such as stationery, equipment, and instructional materials.
- Food Preparation Area or Kitchen
- Computer/Information Technology (IT) Closets. See WBDG Automated Data Processing: PC System for related information.
- Maintenance Closets

2.7.3 Library

It offers a collection of information sources and related resources that are made available to a certain community for use as a resource or for borrowing. It might be a real structure or room, a virtual location, or both that offers physical or digital access to content. Books, journals, newspapers, manuscripts, videos, maps, prints, documents, microform, CDs, cassettes, videotapes, DVDs, Blu-ray Discs, e-books, audiobooks, databases, and other forms can all be found in a library's collection. Libraries can have a few book shelves or a few million books. Light from windows should be blocked off on book shelves. Ideally, workspaces should be in well-lit places. Library acts as a resource center for information and ideas serving as a tool to assist learning, teaching and research and offers hospitality to students, faculty members and visiting students. Standard planning for the library is shown in figure 2-48 and standard required for the planning of library are mentioned below.

- Standard workplace: 0.35-0.55 sq. m
- Book issue and return: 5 sq. m/person
- Information desk: 19-20 sq. m/person
- Storage in 1000 volume stacks: 20-30 vol. /meter
- Access per person: 4 sq. m
- Circulation route: 1.2 m
- Spaces between shelves: 1.3-2.3 m

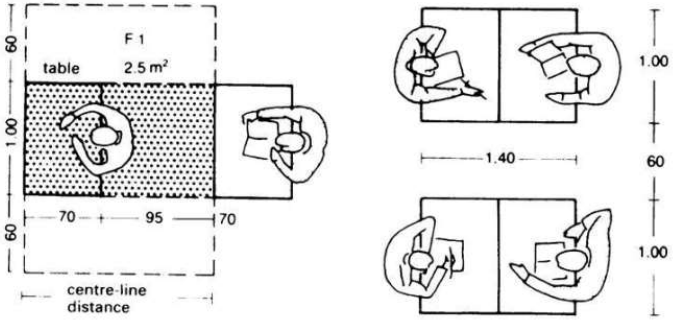


Figure 2-48 Planning for the library

Shelf Storage

- Area required for a simple reading/working is 2.5m² and that for a PC or individual work
- The circulation routes should be >1.2m.
- Wide, & clear spaces between shelves shown in figure 2-49.
- Least 1.3-1.4m wide (or in accordance with local regulations). The rest of the standards for the administration are shown in annex (Page no. AR-03).

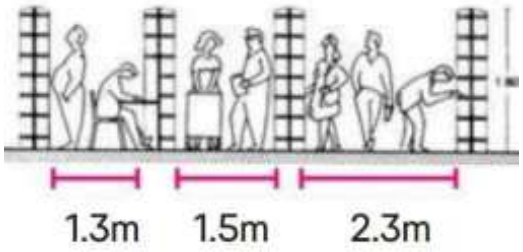


Figure 2-49 Spaces between shelves

2.7 Administration

- **Reception area:** Reception or information area should be located at the main entrance so that information to the visitors can be easily given. Area per person is 2 sq.m.
- **Waiting area:** it can be accommodated within the reception or can be separated. The area per person is 0.5 sq.m.
- **Office area:** 18- 30m2 depending on the functions of use. Office accommodation should be planned to be as flexible as possible. A single-person office should accommodate a workstation with VDU and keyboard, seating for up to three other people, and storage for books and files. The smallest individual office is usually about 12m² net, but cells for short-term work may be half that. Beyond this, the size of offices varies dramatically.
- **Floor height:** 2.5-3m
- **Circulation:** 15%
- **Avg. workstation floor:** 12-15 sq. m
- **Min. room size:** 8-10 sq. m workstation layouts

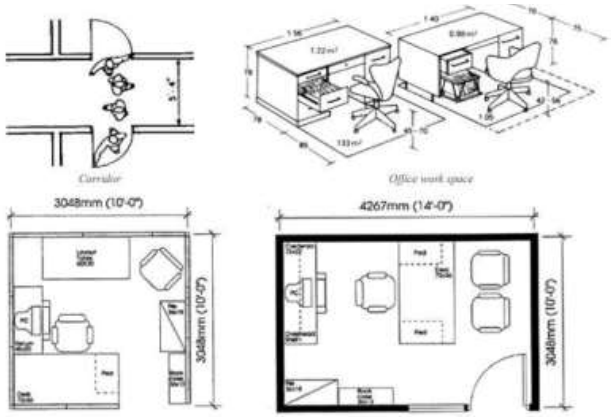


Figure 2-50 Standard planning for staff cubicles

The rest of the standards for the administration are shown in annex (Page no. AR-03).

2.8 Cafeteria Design

Rest and refreshment is requirement and necessity of people visiting the cultural center. A good restaurant with adequate seating facility and good service attracts visitors. Surrounding of restaurant also plays important role in well-functioning of restaurant. The plannig standard for the cafeteria are given below.

- Min. table size: 40 x 60

- Floor height: 2.5-3 m
- Window area: 1/10 of floor
- Min. walkways: 1.1 m
- Min. width of service aisle: 0.9-1.35 m
- Waiter station: I per 20-30 seats
- Dining area per seat 1.5-2.2 m2
- Kitchen area per seat: 0.4- 0.6 m2 Net Kitchen area: 15-25% Ratio of service area to total area:.

Design Considerations

In primary space planning, the rule of Thumb‖ for determining the area requirements of a restaurant are given below.

- **Dining Room:** 60% of total area
- **Kitchen, cooking, storage, preparation, etc.:** 40% total area
- **Service aisles:** 0.9-1.35m wide if used both by trolleys and guests
- Structural columns in a dining room are best located at the middle of a group of tables or at the corner of the table.
- The ceiling height of the dining area should relate to the floor area

Table 2-4 Ceiling standard for the cafeteria

Area of dining	Ceiling height
≤50m2	2.5m
>50m2	2.75 m
≥100m2	3m

2.9 Toilet

Separate facilities should be provided for man and women. They should be separated from the food areas by a hallway or double entrance. Supply one wash bowl for every 8 to 10 workers, one toilet for every 1 -15 women, one toilet for every 1-25 men, and one urinal for every 7-20 men. Toilet compartment measure approximately 3’ x 4’6” to 5’.

2.10 Parking

The type, size and shape of a turning and parking place in a road depends on the road use in that particular area and the size of the vehicles. Separation of moving and stationary traffic is necessary due to the growth of the transportation.

Space requirements

- 90° parking = approx. 20 m2
- 45° /60 °park1ng = approx. 23m2
- 45° /60° oblique spaces, easy entry/exit to parking
- 45° /60° oblique spaces, easy entry/exit to parking Space, for one-way traffic

Table 2-5 Standards of Parking

Types of vehicles	Length (m)	Width (m)	Height(m)	Turning circle radius (m)
Motor cycle	2.20	0.70	1.00	1.00
Car (standard)	4.70	1.75	1.50	5.00
Bus (standard)	11.40	2.50	3.30	6.50

2.11 Beekeeping: For Sustainable Livelihood

Beekeeping has been in practice from an ancient time in Nepal. It is one of the potential sectors to generate the employment and increase the income for the people in the Raji community. Beekeeping is landless and marginalized based farming provides the economic, nutritional, and ecological benefits. Beekeeping in the Nepal carried the tremendous potentiality due to the distribution of high diversified bee flora and suitable climatic condition for honeybee diversity. Beekeeping has been considered as a high value income-generating agriculture activity in Agricultural perspective plan (APP), and it has also been mentioned in the tenth plan.

The farmers in Nepal kept the bees to meet the demand of honey in the **local, national, and international markets and also for the pollination in some crops** like Oilseed crops, Buckwheat, and fruit crops to increase the yield. The bee species plays crucial role in the conservation of biodiversity by pollinating wild flowers in the entire region, and the species for **ecotourism development and income generation in the poor, rural, and landless people in Nepal**. In the context of Raji community, Honey hunting is the one of traditional occupation of the community. They usually harvest wild honey wearing their own traditional customs for the honey hunting (Kedar Devkota, 2019).

The addition of this facility signifies an important initiative that promotes a form of economic growth that maintains and honors Raji's beekeeping and wild honey hunting history in harmony with wildlife. The vision is that the facility of project will bring a sense of dignity to the enterprise - a place where modern equipment and techniques blend with traditional methods. An increase in beekeeping education programs offers local farmers and tribal groups the knowledge and skills to become more independent and self-reliant, providing an opportunity to improve their quality of life. The facility would be beneficial to encourage local learning, conservation and eco-tourism. The facility includes the different spaces like:

- Spaces for Education: Gallery Spac, production and packaging area, live demonstration area of hunting and extracting the honey
- Honey Harvesting: Apiary and Honey hives

Benefits of beekeeping: Beekeeping has both direct and indirect benefits.

- Ecological benefit, and health benefit
- Economic and cultural benefit

2.11.1 History of Beekeeping In Nepal

Beekeeping is a cultural heritage in Nepalese community, practiced from an ancient time as honey hunting has been dated back to thousands of years. It is reported that little honeybee (Apis florea), rock bee (Apis dorsata), Asian bee (Apis cerana), and largest honeybee (Apis laboriosa) were native honeybees found in Nepal. The exotic honeybee, European bee (Apis mellifera) was introduced in Nepal in 1994. Although, the scientific beekeeping in Nepal was initiated in 1989 with the introduction of moveable comb hive of native bee Apis cerena, however, commercialization of modern beekeeping geared up with the introduction of high yielding exotic honeybee Apis mellifera (Kedar Devkota, 2019). In 1980, Beekeeping Development Section (BDS) was formed for the development and extension of the apiculture under Nepal Agricultural Research Council (NARC).

2.11.2 Market scenario of Honey

Bee keeping has become increasingly popular in recent decade. Many stores and supermarkets now have large section devoted to honey and its related products. In scenario of beekeeping industry, in Nepal, the honeybee industry includes 5700 registered beekeepers operating 55,000 hives. A hive is home to 25,000–70,000 bees, depending on the species. The number of beehives, including those from non-commercial keepers was 280,000 in the 2017/2018 fiscal year, twice as many as 10 years ago, 2009; those hives produced 5500 tons of honey, more than six times the yield from 10 years ago.

In recent years, the consumption of honey in Nepal has increased, particularly in the major cities and urban areas. The honey production depends on the availability of floral resources but it is presumed that approximately 1000–1500 metric tons per annum would be produced. However, around 50% of the honey is sold out in the national and international market, whereas the rest are consumed at village or district level. The total annual domestic demand for honey is estimated to be about 300–350 tons. It is estimated that if honey consumption increased by 100 g per capita, then total demand for honey in the domestic market would be about 2800 tons per year.

The Nepalese honey market was extended to the India, UAE, Japan, South Korea, Thailand, USA, and Bangladesh. The imported honey is processed and provided to the other parts of the world. According to, industrialized countries such as China and Argentina produce the honey at low unit cost, and export to the world market. However, Nepali beekeepers are unlikely to produce honey at prices that can compete with these major producing countries even though they are of varied resources.

2.11.3 Harvesting and Extraction Technique

Harvesting techniques of honey varies with the type of bee hives. In modern bee hives it includes several steps such as colony management, shaking or brushing the bees, moving the bee colony and extraction process. In extraction process, frame containing at least 2/3rd of ripe honey is selected. The process of honey extraction from jungle or apiary used in Raji community heating and storage, they lack the packaging process.

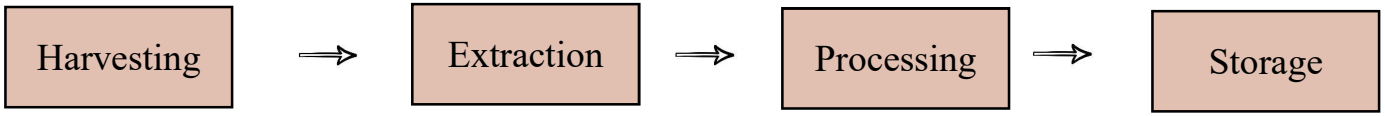


Figure 2-51 Process of harvesting and extraction

Harvesting techniques of honey varies with the type of bee hives. In modern bee hives it includes several steps such as colony management, shaking or brushing the bees, moving the bee colony and extraction process. In extraction process, frame containing at least 2/3rd of ripe honey is selected. The process of honey extraction from jungle or apiary used in Raji community heating and storage, they lack the packaging process.

Processing

Processing of honey means indirect heating of honey. During this process batch pasteurization, maintained at 63oC for 5-6 minutes is generally followed. Then the processed honey is kept in cylindrical container for straining/purification process. These will sediment mineral and metallic particles while other foreign materials, wax particles, insect pieces, debris float to the surface. The area required is 10m2 per hive.

Storage

Honey is considered as a stable product, in the sense that it is not spoiled by the bacteria and fungi normally responsible for food spoilage. Fermentation remains the major threat to unprocessed honey, whether it is crystallized or liquid. Therefore, storage conditions have to prevent fermentation through either low temperature storage or by preventing further adsorption of moisture. The heated honey is stored in the Mud pots. They generally require 3m2 per hive extraction.

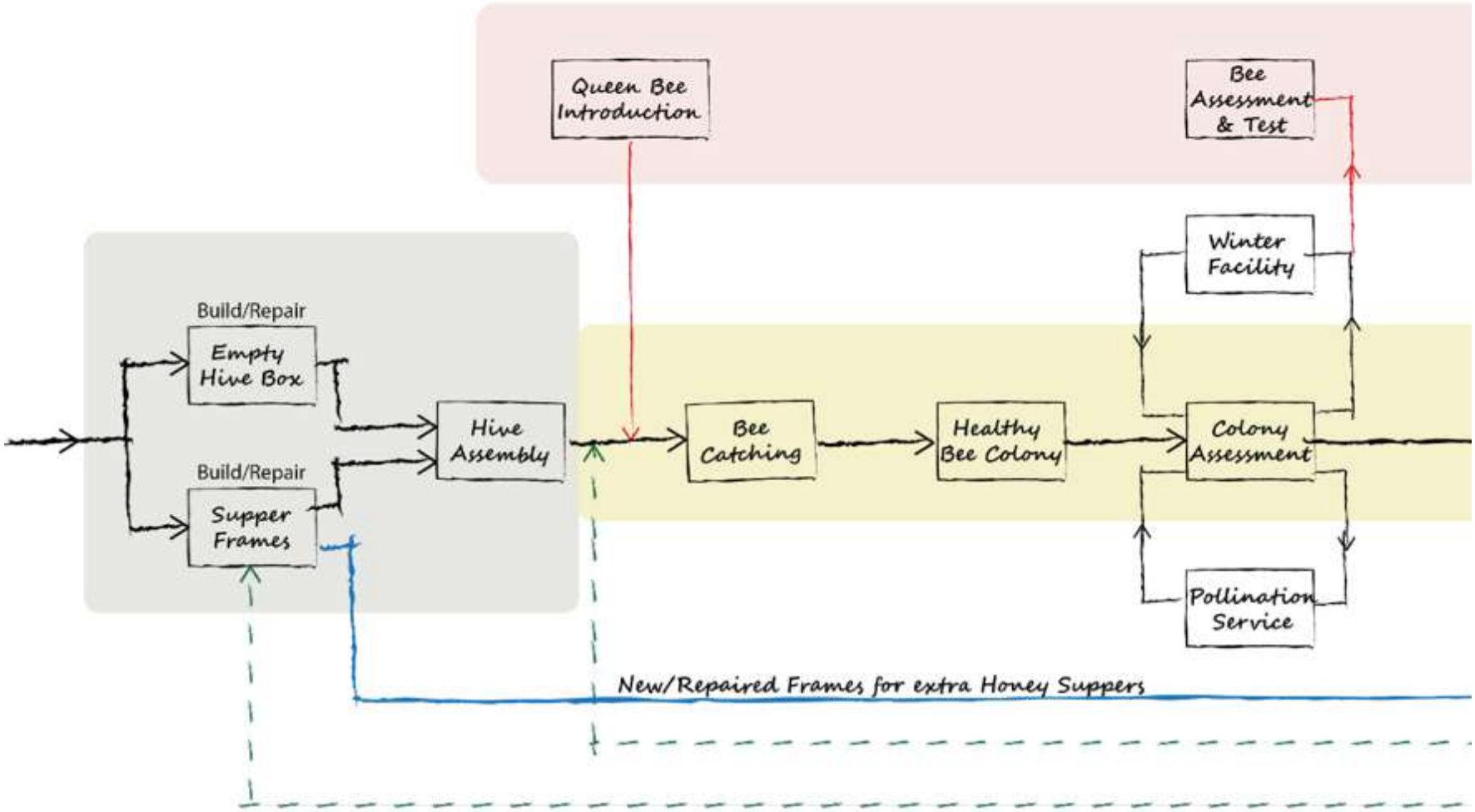


Figure 2-52 Bee keeping flow chart

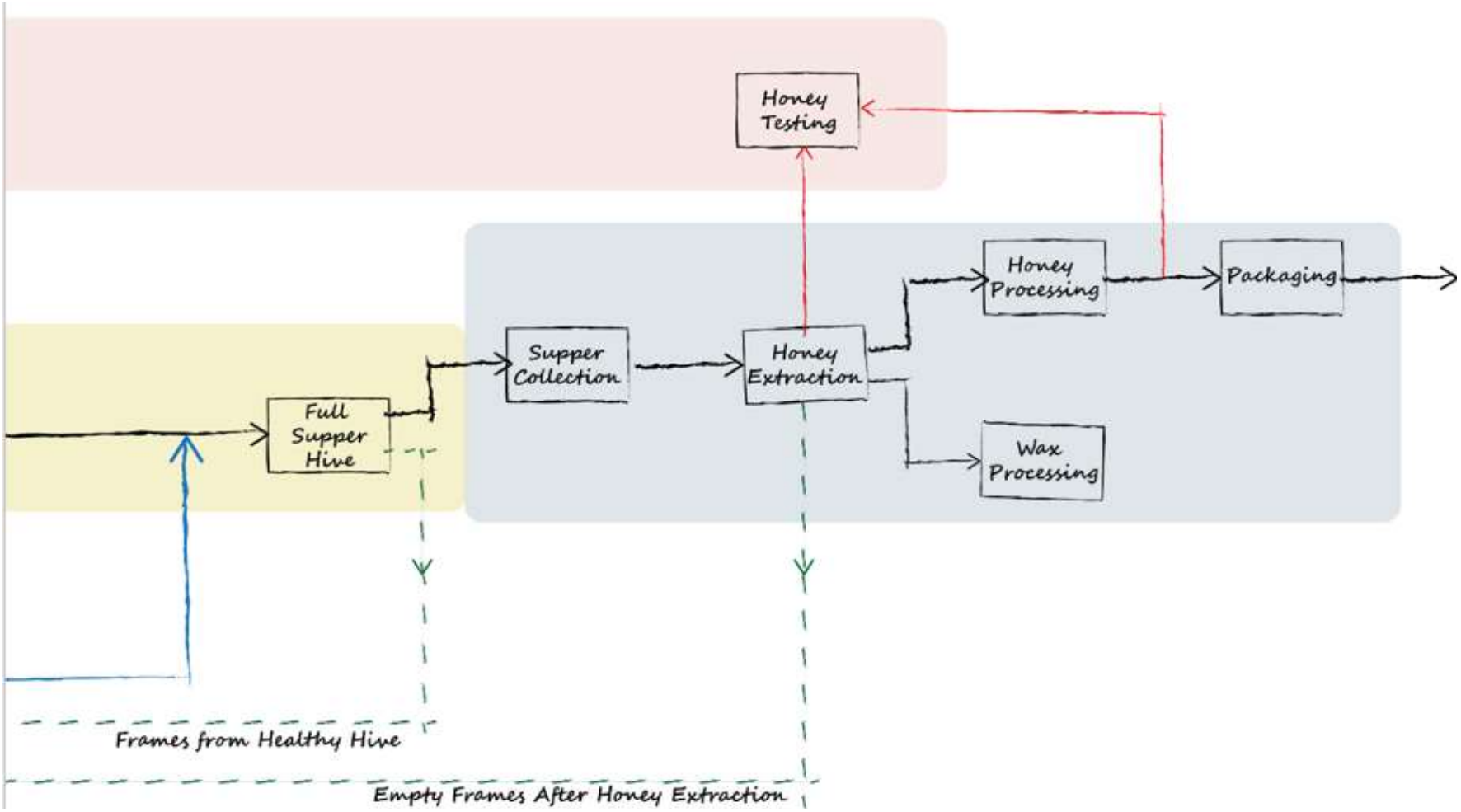


Figure 2-53 Bee keeping flow chart

2.12 Nature of Apiary

An apiary, also known as the bee yard, is the place where beehives are placed. The main idea of an apiary is to create a space, preferably in a natural environment in which the beehives will be placed in order to maximize forage area for the bees. There are generally two types of apiary.

2.12.1 Remote Apiary

The Apiary is best located near farms where the bees will perform pollination activities and collect nectars and pollen for the hive.

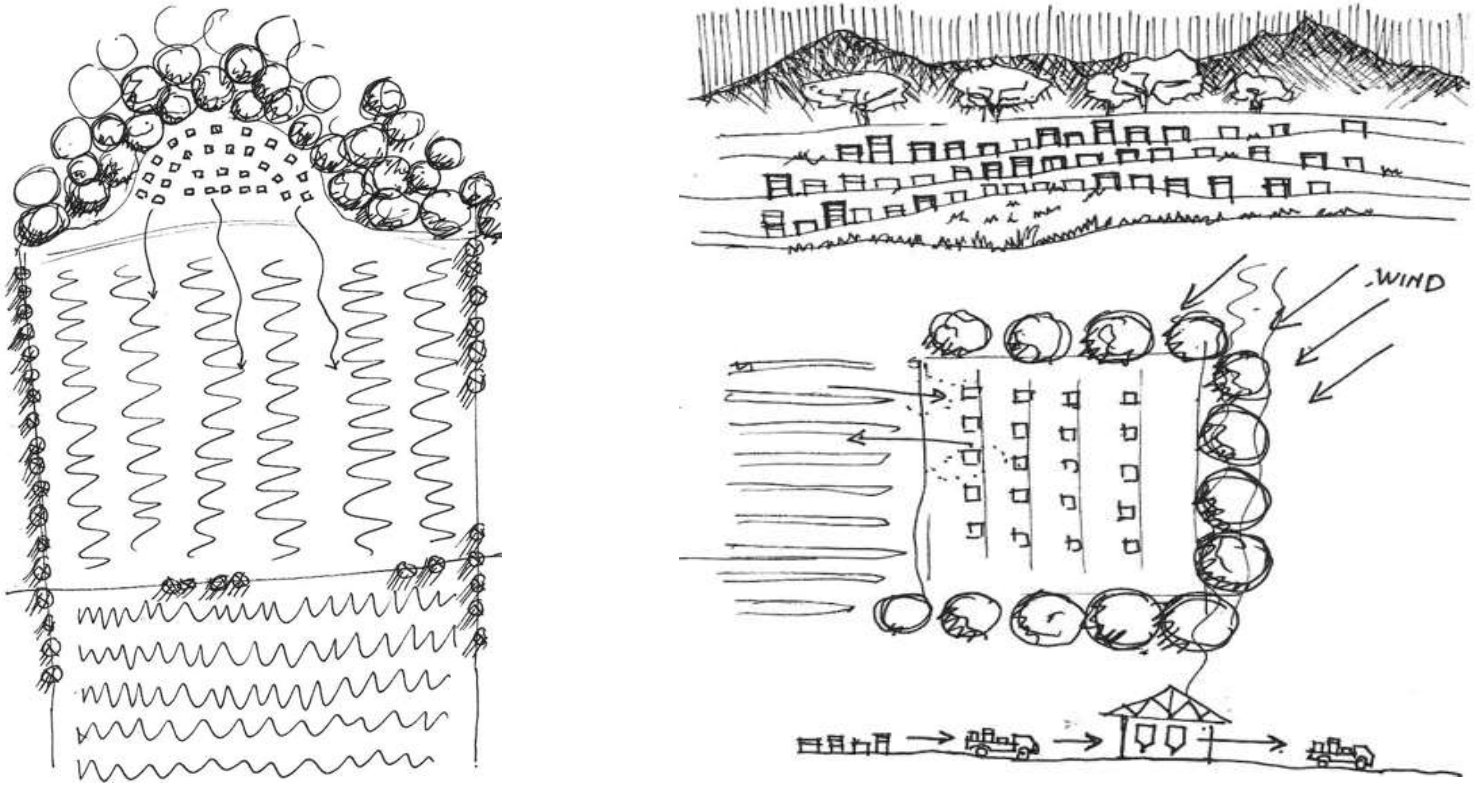


Figure 2-54 Remote Apiary Sketch

2.12.2 Integrated Apiary

In a larger context, the Apiary is located in farmlands on the outskirt of cities to allow easy connection for finished honey delivery and also the intake of raw material to maintain the Apiary. This strategic location also reduces the transportation time and distance of relocating beehives for pollination services (Hive and Honey Apiary, 2017).

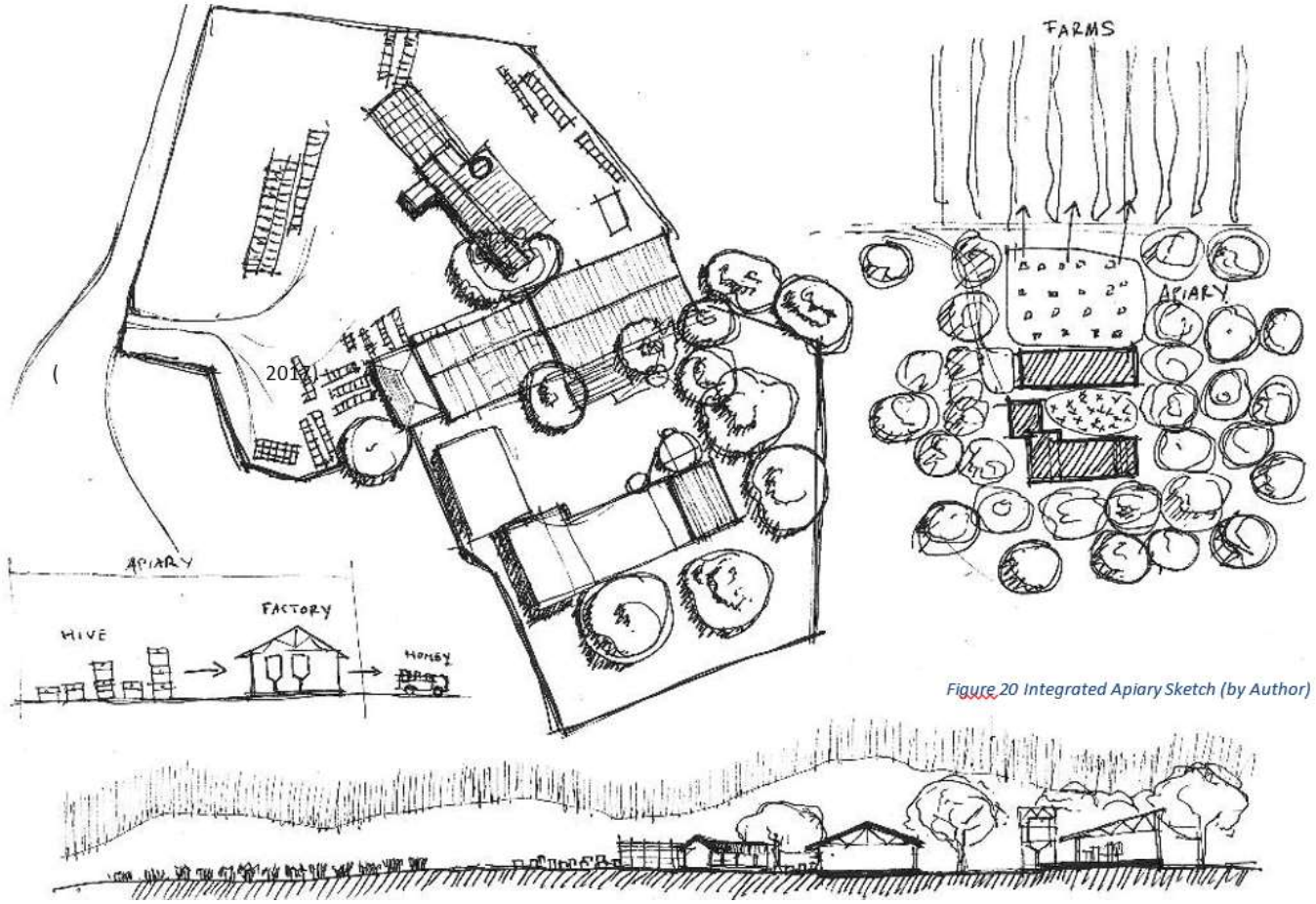


Figure 20 Integrated Apiary Sketch (by Author)

Figure 2-55 Integrated apiary

2.12.3 Apiary Setting

In a larger context, the Apiary is located in farmlands on the outskirt of cities to allow easy connection for finished honey delivery and also the intake of raw material to maintain the Apiary. This strategic location also reduces the transportation time and distance of relocating beehives for pollination services (Hive and Honey Apiary, 2017).

1. Knowledge of bee plants

- Plants selected should be producing high quality honey.
- Among the best beekeeping vegetation areas are forest woodlands, grasslands with dense covers of flowering herbs/shrubs and thickets. Agricultural crops yielding nectar in abundance can be good beekeeping sites e.g. sunflowers, coffee, sisal estates legumes, bananas etc

2. Source of water

- Bees require water for various uses in the hive, cooling, feeding larvae and own use.
- The Apiary can be close to the source of water.
- If there is no permanent source, water can be supplied in containers with floating sticks for bees to step on to avoid drowning.

3. Human conflicts

- Apiary location should be away from public places, away from cultivated fields where large numbers of people work every day.
- Schools, highways and estates should be avoided so that bees do not become a nuisance to people
- The recommended distance from these utilities is more than 300 meters.

4. Fence/ Hedge

- Trees and bushes should surround the apiary.
- This makes bees fly high when leaving and returning to the apiary, thus reducing the risk of becoming a nuisance to the nearby firm’s

activities.

- The area should be fenced to exclude livestock and other animals that might disturb the bees.

5. Shelter

- Colonies should be sheltered from the scourging sun, frost, wind and floods.
- Wind causes the drifting of bees and poor communication. Artificial or natural shade is necessary.

6. Accessibility

- Area must be accessible for ease in management of the apiary and transportation of honey

7. Pests

- An apiary should be free from areas with frequent attacks by pests (honey badger, ants and man).

8. Fire hazard

- Avoid locations with frequent bush fires, alternatively cut the grass short in the apiary to minimize fire hazard or hang hives on trees.

9. Distance between Apiaries

- This depends on the acreage of floral sources and the number of colonies within the area.
- Apiaries should be at least 2-3km apart.
- It is recommended that each apiary should not hold `more than 50 colonies.

10. Carrying Capacity

- In one acre of good forest woodland an average of 50 hives can be comfortably established without any problem.

2.12.4 Beehieves

A beehive is any container naturally formed or man-made which allows honey bees to nest in. Natural hives will be chosen for its strategic location and man-made hive will be nested for its practicality. There are various kinds of natural habitations:

1. Natural Bee Hives

Honey bees live in large colonies to protect their offspring which require a protected hive. Thus they commonly build the hives in hollow tree or tree cavities which have openings towards the south. Bee hives can also be found in abandoned animal ground tunnels as it offers protection against light and predators. These hives are mostly constructed by bumblebees. In Asia, beekeepers construct aerial or open-air hives by looking for potential natural nests such as exposed tree limbs and cracks on cliff faces (Whitmer, 2017).

2. Man Made Bee hives

These are made from whatever materials are available locally: typically hollowed-out logs, bark formed into a cylinder, clay pots, woven grass, or cane. They are used to encourage bees to nest in a site that is accessible by the beekeeper. The idea is to encourage the bees to build their nest in such a way that it is easy for the beekeeper to manage and collect honey and other bee products without destroying the broods or the nests (Wyatt, 2015)

Figure 2-56 Types of Man made hieves

2.13 Climate Responsive Design

The fact is that building account 39% of the C02 emission per year, more than either the transportation (33%), of the industrial fields (29%). The building contribute half of the energy used (Kaur, 2016).

Climate-responsive buildings are a form of energy-efficient architecture. They work with the natural elements, reducing electricity-related emissions. Heating, cooling, and lighting are the main targets in climate-responsive structural designs. Climate-responsive buildings minimize their reliance on fossil fuel energy sources, decreasing atmospheric emissions (Carbon emissions). They work with the elements, reducing excess waste and improving sustainability levels (Newton, 2021). The core philosophy of climate responsive design is to harmonies the building form and fabric with the site and climate thereby reducing ecological impacts and achieving energy efficiency whilst providing,

- Human health and comfort
- Creating opportunities for social interaction
- A productive learning environment

In simple words, climate responsive design is not only more sustainable from an environmental perspective, but it also increases occupants comfort and workplace satisfaction. Considering climate sensitivity in building design leads to a sustainable design which in turn leads to,

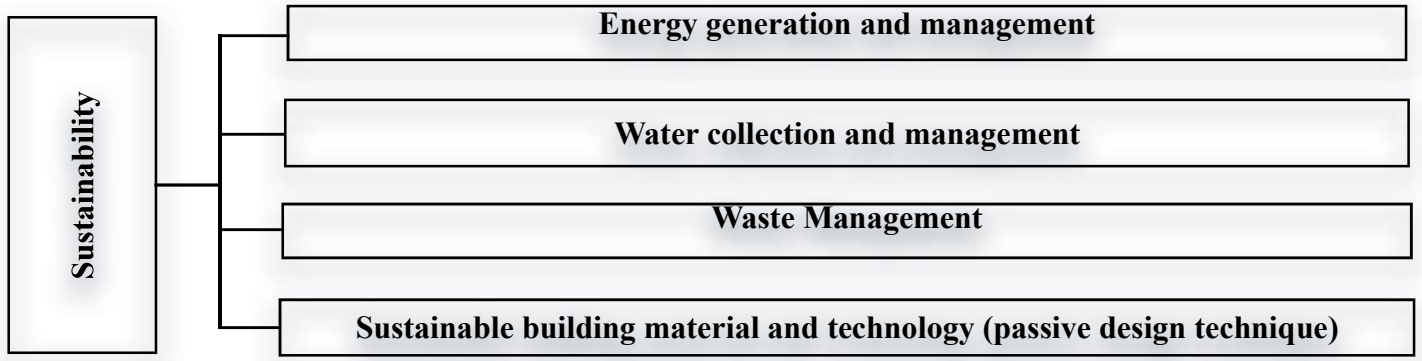


Chart 2-1 Sustainable approaches of climatic responsive design

The climate responsive design is the sustainable approach that,

- Use 29 % less energy
- Have 13% lower maintenance cost
- Have 27% higher occupant satisfaction
- Have 33% of less greenhouse gas emissions

2.13.1 Climate Responsive Strategies For Hot and Humid Climate

Climate-responsive architecture functions in lockstep with the local climate(temperature, historical weather patterns, etc.), the direction of the sun (sun path and solar position), site-specific environmental conditions (such as wind, rainfall, humidity), seasonality and also taking into account the natural shade provided by the surrounding area and topography to design pleasant buildings which ensure physiological comfort of users, energy-efficient buildings with reduced reliance on artificial energy. The vernacular architecture has been always a climate responsive design. The building construction, site context and the local materiality are the attributes of climate responsive design. To achieve the climate responsive design in passive way, following techniques can be used.

1) Site planning

- Basic principal is that orient the building to minimize the solar gain, reduce the density and minimize the building massing to increase airflow through the site

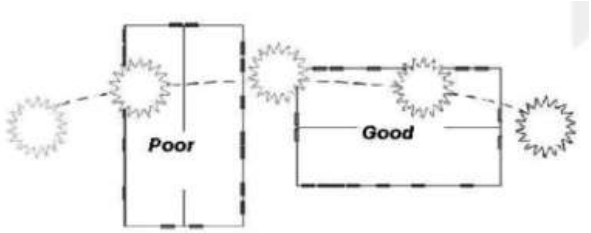


Figure 2-57 Site orientation for the good response to climate (Source: Clark, 2020)

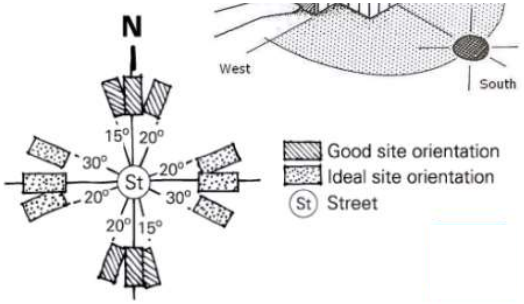


Figure 2-58 Best orientation for the site (Source: Clark, 2020)

2) Design for natural ventilation

- Relatively high wind speed is needed to achieve cross ventilation with rate of 1m/s to achieve indoor comfort
- Maximize the summer wind and control the winter wind
- A building can be cooled by designing for stack ventilation to draw cooler air from low building openings to protect from warm air rises while carrying heat away through openings at the top of the space. The rate at which the air moves is function of the vertical distance between the inlets and outlets, their size, and the temperature difference over the room height.
- Cross-ventilation helps in improving the thermal comfort of a house by maintaining the minimum air quality, reducing heat and other pollutants, and allowing natural airflow. The size and placement of doors and windows have to be given importance when designing a building. They should be incorporated right from the first stage of design. The sizes of the openings can be larger, and closer to the floor for maximum comfort. They should be placed along the wind direction to make sure air moves in and out of the house freely.

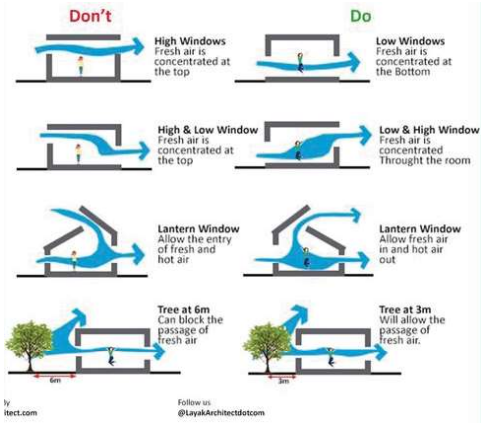


Figure 2-59 Types of good cross ventilation (Source: Pinterest.com)

3) Building envelop

- Locally available material such as mud, thatch, wood, bamboo, etc. for the building material.
- Light colored/ textured material
- Thick porous roofing materials absorb moisture at night and release it during daytimecooling the roof

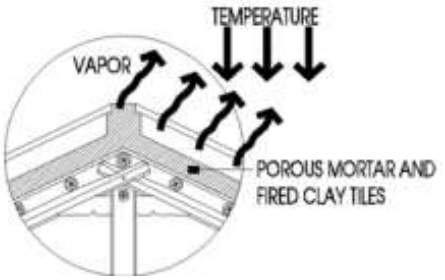


Figure 2-60 Material idea for the roof (Source: Clark, 2020)

4) Solar control

- Use of shading device and large roof projection.
- The building should be placed considering the cardinal directions. The goal is to maximize the amount of sun that heats space in the winter as well as decreasing the amount of sun in the summer to reduce the less reliance on mechanical energy for cooling and heating (Rethinking the future, 2020).

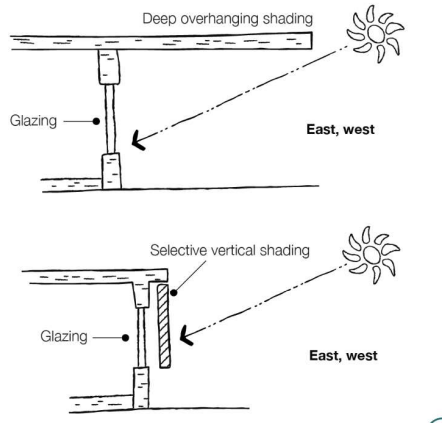


Figure 2-61 Projection to control east and west sun (Source: Clark, 2020)

5) Vegetation and waterbody

- Shaded areas using plants
- Control of west sun using native plants
- Water body and green landscape affect the psychology for cooling effect (Clark, 2020).

6. Building Element

- **Wall:** wall of mud with thickness more than 1 feet acts as the heat insulator, plaster in light tone to reduce heat gain
- **Pitch roof:** used to buffer the heat intering the building.
- **Window:** with projection, window is used to facilitate natural ventilation
- **Wide door:** to enable heated air go outside
- **Ceiling henit:** more that 9 feet ceiling to enable good ventilation

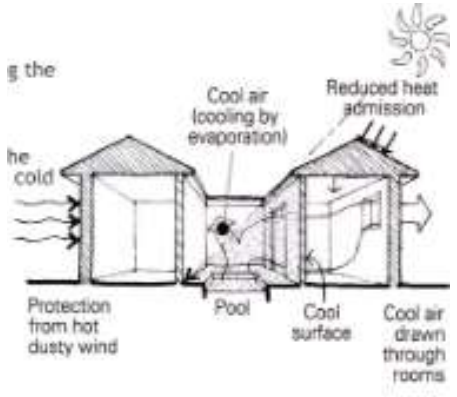


Figure 2-61 Component to be consider for the climatic design (Source: Clark, 2020)

2.14 Flood Resilient Design-Mitigation Strategies of Flooding Disasters

Flood resilient design is the design strategy to reduce or mitigate the impact of flooding water entering the building so that no permanent damage caused, structural integrity is maintained. The general design consideration for the flood resilient design are given below.

- Elevated floor must be above the **BFE level** (categorized by the flood prone zone)
- Buildings must be properly anchored to resist, Coastal flotation, collapse, and lateral movement.
- Basement are not permitted
- Walls of enclosed areas below elevated homes must have **flood openings** that allow food waters to automatically equalize during an event.
- Enclosed areas below elevated buildings are permitted to be used only **for parking, building access, and storage.**
- **Utilities**, including electrical, heating, ventilation, plumbing, air-conditioning equipment (including ductwork) must be elevated above the BFE, or specifically designed to prevent water from entering or accumulating within the components during flooding.
- **Flood damage-resistant construction materials** must be used below the BFE (FEMA, 2013).

2.14.1 Mitigation Measures: Flooding Proofing

Flood proofing is the process of making a building resistant to flood damage, either by taking the building out of contact with floodwaters or by making the building resistant to any potential damage resulting from contact with floodwaters. There are two types of flood proofing.

a. Active flood proofing: Active flood proofing, sometimes known as contingent (partial) or emergency (temporary) flood proofing, requires human intervention to implement actions that will protect a building and its contents from flooding. Successful use of this technique requires ample warning time to mobilize people and equipment and flood proofing materials.

b. Passive flood proofing: Passive flood proofing, sometimes referred to as permanent flood proofing, requires no human intervention—the building (and/or its immediate surroundings) is designed and constructed to be flood proof without human intervention.

1. Dry passive flood proofing:

Waterproof sealants and coatings on walls and floors permanently installed automatic flood shields and doors Installation of backflow prevention valves and sump pumps.

2. Wet passive flood proofing:

Use of flood-resistant materials below DFE Installation of flood vents to permit automatic equalization of water level Elevation of vulnerable equipment above Design Flood Elevation.

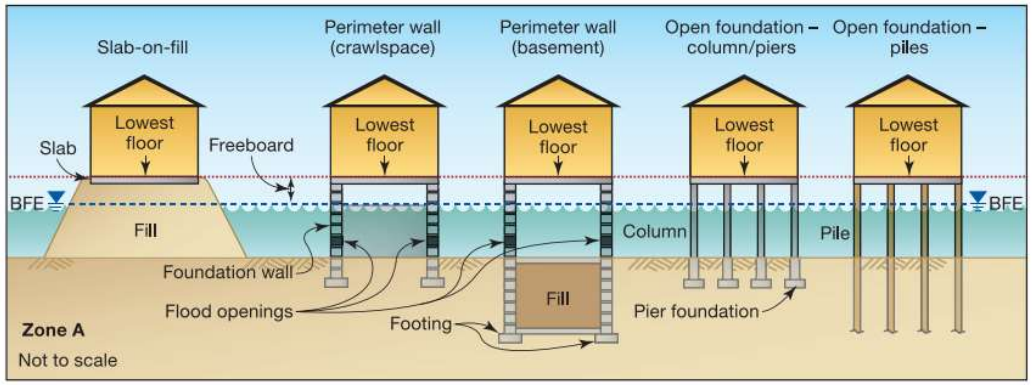


Figure 2-62 types of wet passive flood proofing above BFE (Source:FEMA)

2.14.2 Mitigation Measures: Elevate

Elevation involves raising a building to reduce its risk of flooding while keeping the building at or near its existing location. For buildings located in a Coastal High Hazard Zone, the lowest floor of a structure or lowest horizontal structural member must be raised to the design flood elevation (DFE). Where possible, provide greater risk reduction by raising the building more than required to reach the DFE. Like relocation, elevation is easiest with smaller or lighter buildings; larger buildings generally are more difficult to raise. Buildings that cannot be relocated may be candidates for elevation in following ways (FEMA, 2022).

- Open foundation- Pier/ column
- Open Foundation-Piles
- Open Foundation- Micropile/ columns

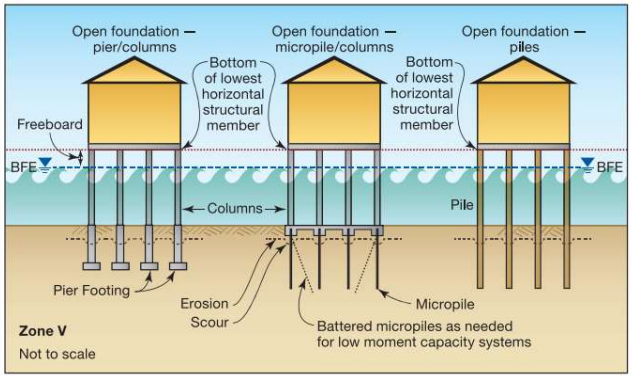


Figure 2-63 elevated foundation types above BFE (Source:FEMA)

Open Foundation-Post /Column

- Elevation on posts or columns is frequently used when flood conditions involve moderate depths and velocities. Made of wood, steel, or precast reinforced concrete, posts are generally square-shaped to permit easy attachment to the house structure. However, round posts may also be used. Set in pre-dug holes, posts are usually anchored or embedded in concrete pads to handle substantial loading requirements. Concrete, earth, gravel, or crushed stone is usually backfilled into the hole and around the base of the post.
- Post are small size column
- While piers are designed to act as individual support units, posts normally must be braced. There are a variety of bracing techniques such as wood knee and cross bracing, steel rods, and guy wires. Cost, local flood conditions, loads, the availability of building materials, and local construction practices frequently influence which technique is used. Figure 1-4 shows an example of a post and column foundation.

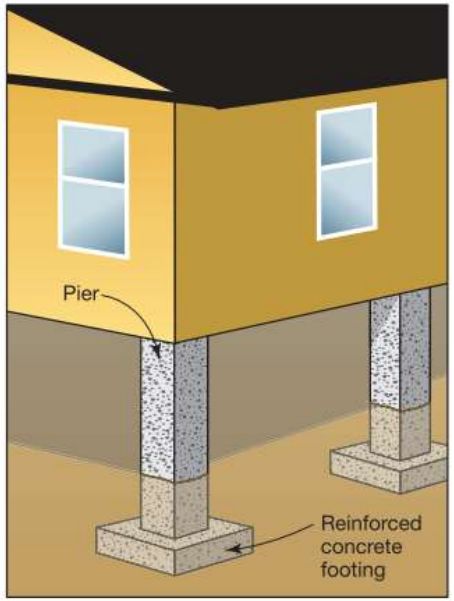


Figure 2-64 Foundation on pier(Source:FEMA)

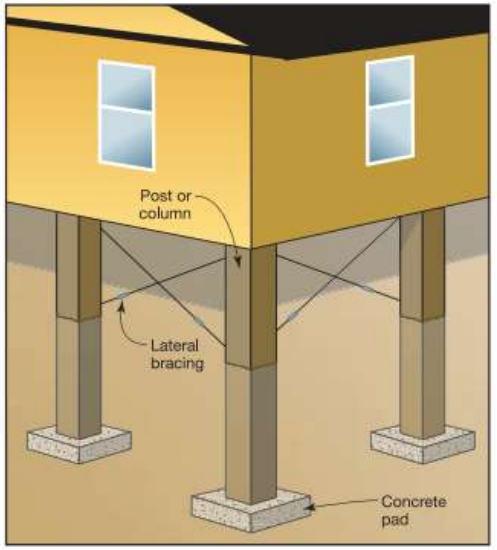


Figure 2-65 Foundation of Post/Column (Source:FEMA)

2.14.3 Mitigation Measures: Landscaping

Landscaping has the great impact on mitigating flood risk. Some of the strategies for the landscape are given below.

1. **Create a swale**: landscape feature and can be used to redirect flood water away from a dwelling. Planted swales are relatively inexpensive and can be aesthetically pleasing.
2. **Create a rain garden system**: rain gardens collect water and are vegetated with water plants and help slow, filter and collect flood wate
3. **Increase garden absorption area with deep friable topsoil/mulch**
4. **Replace solid fences and screening with permeable fencing components**
5. **Increase permeable surface areas:** Some options include: gravel, decomposed granite, permeable pavers, permeable concrete. It is recommended to reduce the width of large paved areas.
6. **Anchor external structures, such as rainwater tanks and sheds:** Floods have the ability to uplift structures such as rain water tanks and sweep them downstream toward other properties potentially causing serious damage. Fixing them onto concrete slabs keeps them in place during heavy floods

Figure 2-66 Swale design (Source:FEMA)

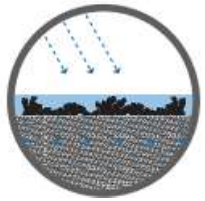


Figure 2-67 Rain garden (Source:FEMA)

Figure 2-68 Vegetation for flooding proof design(Source:FEMA)

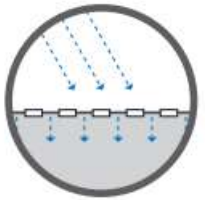


Figure 2-69 Permeable pavement (Source:FEMA)

2.14.4 Flood Resisting Materials

1. **Flooring Materials:**

- Concrete, concrete tile, and pre-cast concrete Latex or bituminous, ceramic, clay, terrazzo, vinyl, and rubber sheets and tiles
- Pressure-treated (PT) or decay resistant lumber
- PT wood and cold-formed steel

2. **Wall and Ceiling Materials**

- Brick, metal, concrete, concrete block, porcelain, slate, glass block, stone, and ceramic and clay tile
- Cement board, cold-formed steel, and reinforced concrete
- Polyester epoxy paint
- Decay resistant lumber
- Marine grade plywood
- Foam and closed-cell insulation
- Decay resistant wood like Black Locust (Robinia pseudoacacia), Teak (Tectona grandis), Ipe (Tabebuia spp), California Redwood, (Sequoia sempervirens), Western Redcedar (Thuja plicata), Loblolly Pine (Pinus taeda) , European Larch (Larix decidua), Bald Cypress (Taxodium distichum).

3. **Other**

- Hollow metal doors, cabinets, and foam or closed-cell insulation

2.15 Open Air Theatre

As the architecture of Raji people is extrovert in nature, they also perform the cultural program in open place rather than inside any structure. During the festival time, they gather and celebrate their culture in the places like Aagan of chief of the community, or in open ground. So, the OAT and gathering ground are very important to design to facilitate Raji people socializing, gathering, and celebration of their culture. The open air theatre is the performing and seating space designed open to air. An open-air theatre has no roof overhead, although it may have an enclosing barrier all around. The general design specification for OAT design are given below.

- The site should be away from industrial of community noise
- Wind direction should not be from the noisy area and the direction of the prevailing winds must be **from the stage towards the audience**
- The area of the theatre excluding the stage may be calculated at the rate of **0.8 to 1sqm per person**, including gangways.
- Stage is raised at **75cm** above the ground floor level
- Lower seat rise 30cm and tread 100cm
- Higher seat rise of 45cm
- Slope of the seating should not be less than **12 degrees**, for better audibility and visibility.
- Noise level should **not exceed 40 decibel**
- Angle of view =>20 degrees
- Circular shape if more preferable as it helps for the sound reflection
- Materials should be properly selected, keeping in mind their absorption and diffusion properties (YOEZER, 2023).

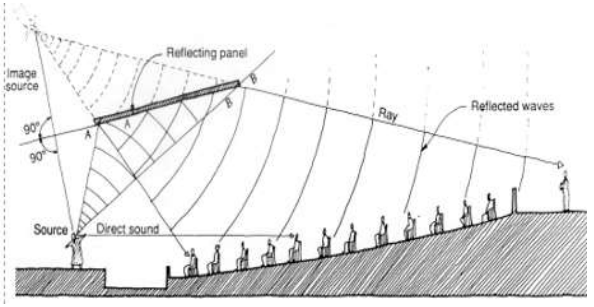


Figure 2-70 OAT Component (Source: YOEZER, 2023)

Table 2-6 Material prefered for the OAT

Component	Material
Seating area	hard stone
Proscenium	Porous stone
Colonnade	Porous stone
Performing Stage	Wood/ Polystyrene

2.15 Inferences drawn from the literature

Table 2-7 Inference drawn from the literature review

S.N.	INFERENCES DRAWN	REMARKS
1.	History of Raji Community	Way of living of Raji, traditional culture, festival and architecture
2.	Natural, rural site context	Site selection criteria, Proximity of community
3.	Climate Responsive design	Passive design technique, orientation, material,
4.	Space and Requirements	Space required per person, technicality
5.	Flexible Space	Multidisciplinary Spaces for different timeline, temporary space, future expansion space

3 CASE STUDY

3.1 Case Study Framework

Table 3-1 Case Study Framewok

S.N	Criteria	Level of Analysis	Technique	Case Studies
1	Relevant to target Group			
2	Activities and Functionalism			
3	Relevant site climatic design			
4				
5				
6				

3.2 National Case Study

3.2.1 Case 1: Tharu Cultural Museum and Research Center

Project Brief

- Location: Sauraha, Chitwan
- Design phase: Completed
- Project Year: 2005
- Total Site area: 32392. 822sq.ft
- Target people: Tharu Community and Tourist

Study Criteria

- Design for Indigenous people
- Good example for community hub for local context

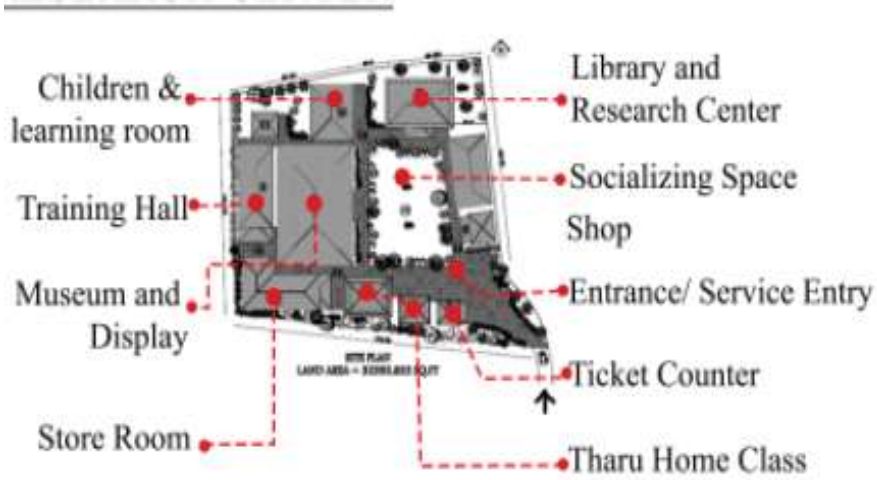


Figure 3-1 Proposed Master plan of Tharu cultural museum and research center

About The Project

It is situated in the heart of the Tharu community in Bachhauli village, Sauraha, Chitwan. It is a self-funded community-based museum. In the very beginning, it was funded by collecting funds from the local people and the museum's visitors. However now "the museum's funds come from its cultural shows, souvenir and handicraft shop, food festival, and museum fees" (Mahato & Mahato, 2010, 121).

In addition to that the "funds are collected from the performance of cultural dances, particularly the Tharu stick dance, which is very popular in Nepal" (Mahato & Mahato, 2010, 123). The land, where the museum situated, is still on the lease with a little amount of money to pay back. The buildings were not only made with the community's support in labors and available materials in the village, but also using the Tharu traditional archeological designs.

Area studied

1. Architectural Expressions

- Tharu architectural expression have been attempted to express using modern material. East oriented and is said to be good orientation in Tharu style.
- Double stepped roof to take natural light through ribbon window.
- Mud color in cement plaster along with horizontal stripes on the wall to give the look like traditional Tharu house.
- Hand paintings on wall.
- Timber decorative doors.

Figure 3-2 Front elevation of Museum

2. Distribution of Activities:

A. Main Building: Museum

The museum itself houses medium and small-sized collections. Single-story museum building exhibits Tharu heritage, cultural artefacts, crafts, artworks, daily used materials in the past and present including historical archives, photographs etc. The primary purpose of the museum was spreading knowledge and awareness about the Tharu culture, traditions, heritage and the Tharu indigeneity as well as educating Tharu and the other neighboring national minorities and indigenous groups.

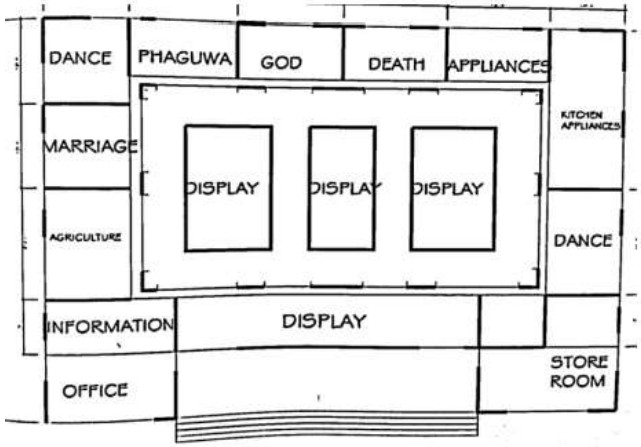


Figure 3-3 Plan of museum

a. Museum wall painting:

The Museums wall paintings demonstrating the general life style, and the birth, wedding and death ceremonies of the indigenous Tharu of Chitwan. The Paintings are historically and archeologically very significant. The paintings not only tell the life cycle, life style of indigenous Tharu people but also how the life of Tharu people has changed over time.

b. Tharu Sculpture

The Museum endeavors to demonstrate Tharu Culture via several sculptures. The museum has three sculptures at the center space:

- Tharu woman in traditional dress,
- A woman with grinding toll,
- A man in a traditional dress.

c. Traditional cookware:

- The Museum endeavors to demonstrate Tharu traditional cookware that were used for daily cooking.

d. Lighting

- Natural lighting through ribbon windows but not proper and effective.
- Uncontrolled light system.
- No provision of proper artificial light for displays.
- Sufficient natural light in circulation areas.

e. Display Techniques:

Figure 3-4 Statue of Tharu man at center of museum

Figure 3-5 Household equipement in display

Figure 3-6 Natural light penetration from roof

- Exhibits are separated by movable panel.
- Unique wooden cart is exhibited at the center.
- The exhibits displayed in the tool are painted in the wall to show how Tharu people use it.

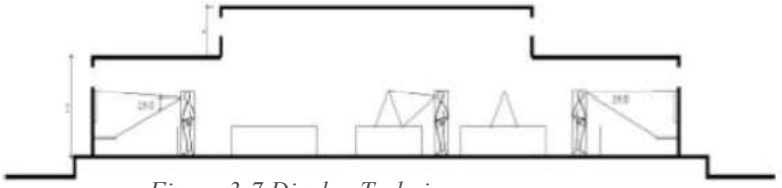


Figure 3-7 Display Technique

B. Library

- Library building two story building on the east side of the center which accommodates the Computer classes for the Tharu girls, research and library section.

Figure 3-8 Library plan and section

C. Training hall:

D. Meeting room:

E. Souvenir shop:

F. Store Block

3. Analysis:

- No service areas, cafeterias and insufficient office spaces
- Not based on theme or sequential arrangement
- Improper lighting arrangement
- Congested Space in Museum
- Improper provision for the road and access.

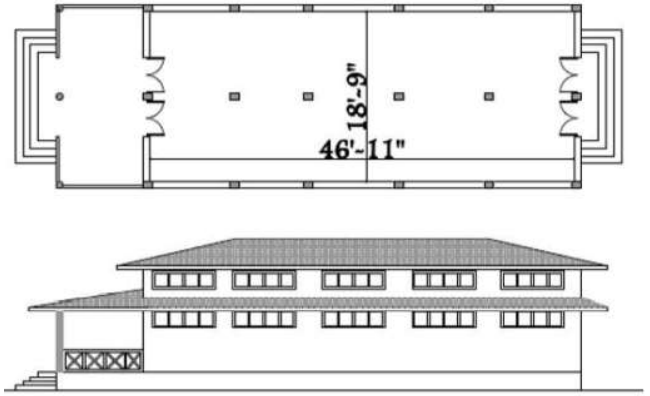


Figure 3-9 Plan and elevation of training hall

3.2.2 Case 2: Nepal Traditional Handicraft Training Center

Project Brief

- Location: Pulchowk, Lalitpur
- Year established: 2006 A.D.
- Run by: Artist Prachanda Shakya
- Class hours: 7a.m.-10a.m. and 5p.m.- 8 p.m.

Figure 3-10 NTHTC building

Study Criteria

- Local context
- Traditional technique for the Wooden handcraft

About The Project

Nepal traditional handicraft training center is one of the very few places where traditional handicraft is taught. Main mission of this institution is to preserve, protect and contribute toward Nepalese traditional arts and crafts by training future generations in both traditional and creative way and prepare them to compete in the global marketplace. This institution provides two yearlong training courses for both beginner and professional artisans. The courses available in this center includes paubha, repousse, carving, sculpture, digital graphics, traditional art theories and so on. This institution has two theory classes each for beginner and advanced course with the capacity of 30 and 15 students. This center also has library, practical rooms for sculpture, repousse and paubha, gallery, administration and computer room.

Space allocations

The planning of this building is in a single row planning on the plot of area about 9 Anna where 40-45. Ground floor dedicated for administration, library and pantry. 1st floor has advanced theory class, computer class and repousse studio. 2nd floor has basic theory

classes and management room. Third and the topmost floor has Paubha painting studio which is furthest other facilities with a terrace. The mezzanine sculpture studio and gallery is built on a contouring part of the site.

Figure 3-11 Gallery space

Figure 3-12 Theory class

Table 3-1 Case Study Framewok

S.N.	FUNCTIONS	NOS.	CAPACITY	AREA (SQ.FT.)
1	Administration	1	6	215
2	Library	1	-	700
3	Pantry	1	5	100
4	Basic theory class	1	30-40	540
5	Advanced theory class	1	15-20	270
6	Computer class	1	10	160
7	Repousse/ carving studio	1	6-8	175
8	Paubha studio	1	10	175
9	Sculpture	1	-	540
10	Gallery	1	3	450
11	Management	1	-	175
12	Outdoor space	1		2000
13	W/ C	3		350

3.2.3 Inferences Drawn From National Case Study

Table 3-2 Inferences drawn from national case studies

S.N.	Tharu Cultural Museum and Research Center	Nepal Traditional Handicraft Training Center
1	Community Participation Space	Education and Training
2	Exhibition Idea	Space and functional requirement
3	Space for community empowerment	Architectural identity
4	Flexible space	
5	Use of local material and vernacular construction techniques	

3.3 Regional Case Studies

3.3.1 National Craft Center, Delhi

Project Brief

- Location: Delhi
- Design phase: Completed
- Architect: Charles Correa
- Total Site area: 6800 sqm.
- Date of completion: 1990
- Climate: Hot dry climate
- Form and Scale: Masculine form and Human scale

Figure 3-13 National Craft Center

Study Criteria

- Use of Spaces for local tradition, and craftsmanship
- Relevant site context

About The Project

The Crafts Museum displays various objects from different parts of India. Showcase India's rich tradition of handicrafts. Perfect example to show case the local and national identity of crafts, that has been elaborated through architecture spaces, materials and other elements.

Planning

- Museum divided mainly into three sections: **display gallery, village complex and crafts demonstration area.**
- Museum organized around a central pathway going from village to temple to a palace, which creates a **metaphor for the Indian street.**
- Planning is done through the composition of open spaces and clusters of blocks. Open spaces provided are of different scales and of different function and characters. Galleries, store, administrative areas and library situated around a series of open to sky courts and along the pedestrian spine.
- Planned a grid iron pattern which allows free and spontaneous movement throughout the space revealing one space after another and allows free movement of the visitors through the museum without restricting the view every exhibit and village complex (Mathias, 2019).

Design concept:

Design inspired from the great Buddhist and Hindu temples of the past such as those in Bali (Besaki), Java (Borobudur) and southern India (Srirangam) which are structured around an open to sky ceremonial path. Use of stepping down of platforms and the actual use of steps to define both functions and edges of spaces echo the old bathing ghats of Varanasi and the Sarkej in Ahmadabad (Architecture Studies, 2020).

Architectural analysis

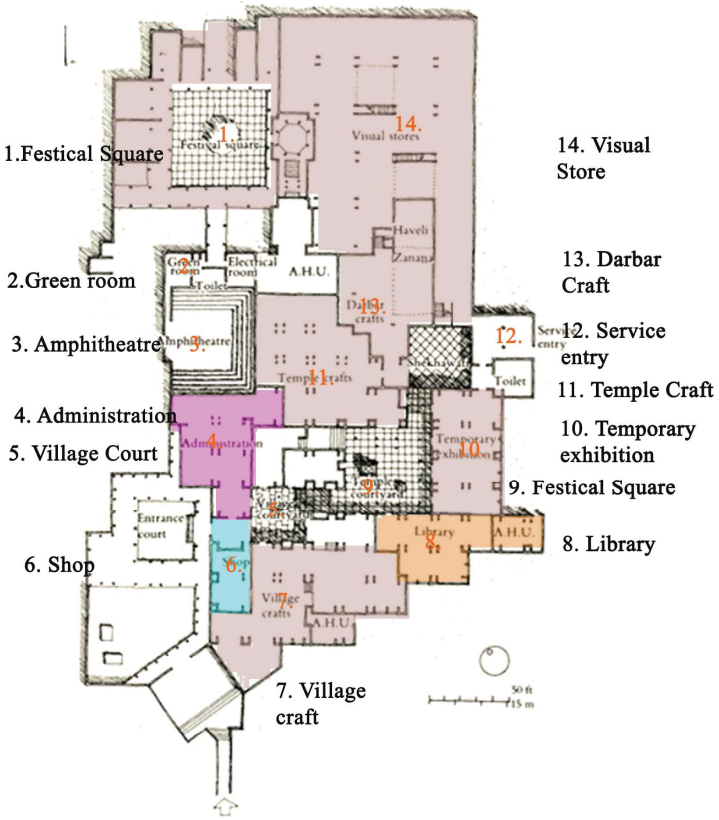


Figure 3-14 Ground Floor Plan (Source: architecture-casestudies.wordpress.com)

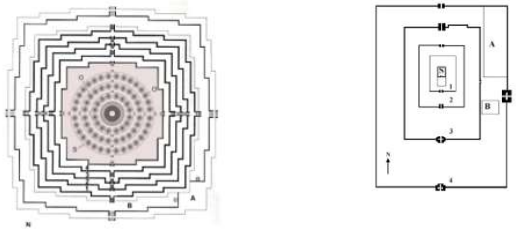


Figure 3-15 Borobudur and Srirangam for te planning concept (Source: architecturecasestudies.wordpress.com)

A. Planning

The architect used local tradition and craftsmanship in the architecture just as in the craft displayed. Materials like mud, timber, terracotta, brick, earth color are used in the museum. This adds a valuable and unique traditional character to the museum. However, the openness and spacious planning of the museum adds modernity to it. So a **unique co-existence of modern and traditional characters** can be seen in this crafts museum.

B. Hierarchy and Balance

Use of hierarchy of different major to minor spaces through scale and geometry and balance by amphitheater can be seen in overall plan.

C. Circulation

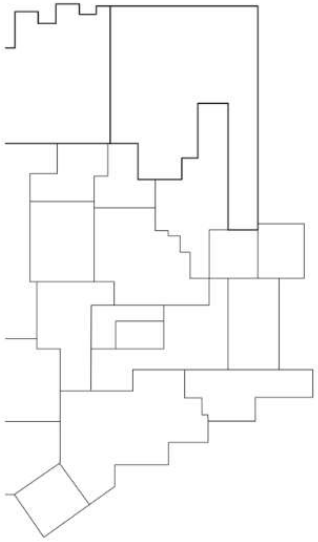


Figure 3-16 Hierarchy of spaces

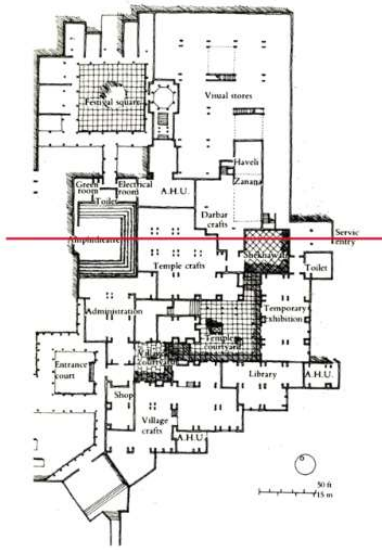


Figure 3-17 Balance of spaces

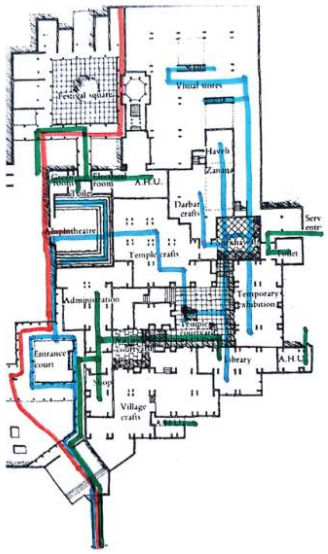


Figure 3-18 Circulation in GF

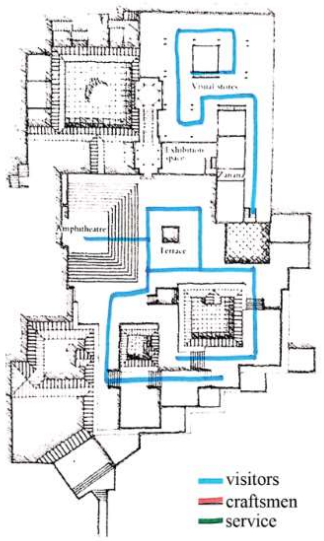


Figure 3-19 Circulation in FF

The walk through the museum leads one through a series of open, semi-open and closed spaces. The whole museum is divided into small galleries which reduces the problem of circulations.

D. Lighting

The main source of lighting natural light is direct ligth from the courtyard which disperses towards the sides creating natural environment.

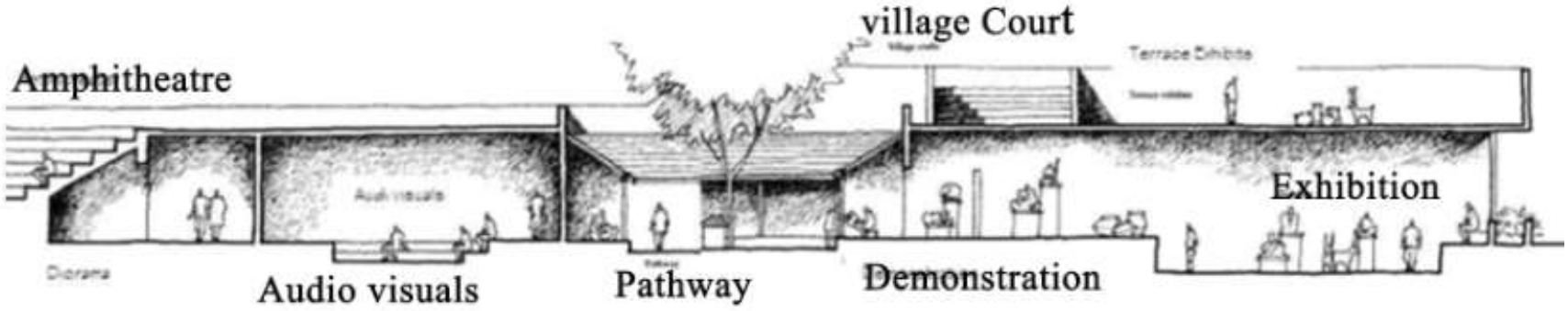


Figure 3-20 section showing different levels of spaces, (Source: Source: architecturecasestudies.wordpress.com)

Table 3-3 Construction details

S.N.	Description	Analysis
1	Structure	Load bearing
2	Material	Exposed concrete, stone
3	Roof	Clay tile
4	Height of the wall	3m
5	Wall thickness	300mm
6	Flooring	Stone
7	No. of storey	1

3.3.2 Shilpgram: Craft Museum, Udaipur

Project Brief

- Location: Udaipur, India
- Total Site area: 70 Acres
- Accessibility: 3km west of Udaipur
- Target people: Local people, and tourist

Figure 3-21 Shilpgram Craft Museum, (Monomousumi.com)

Study Criteria

- Ethnographic museum
- Context of Rural Arts and Crafts of tribal group

About The Project

Shilpgram meaning a "Craftsmen's Village" is a living ethnographic museum depicting the enormous diversities in craft, art & culture of folk and tribal people of the west zone. Around 16.1500 hectors land is used to setup this complex. The village is an effort to **present and preserve the tribal culture** from four western states of India. The main objective of **converting a whole village into a museum is to promote the lifestyle and culture flourished in western India and to endure the living of ethnic minorities** but also to keep them alive and prosperous for the next-gen to know their works (Monomousumi, 2020). Shilpgram **motive and increase the awareness of rural life** of different folk tribes and their culture so that they can understand and feel proud of it and try to preserve and maintain the heritage (Khan, 2020). The rural art and craft complex, Shilpgram, also provides an opportunity to rural and urban artist to come together and interact through the process of camps and workshops.

Planning

There are 26 huts and 5 museums representing architecture, traditional arts and culture depicting the enormous diversity and aesthetic sense of the state of Rajasthan, Gujarat, Maharashtra and Goa which comprise the Western Zone of India. There are so many workshops for music, theatre and art to show and display their craft, heritage and their culture. Shilpgram are divided into different parts which are following.

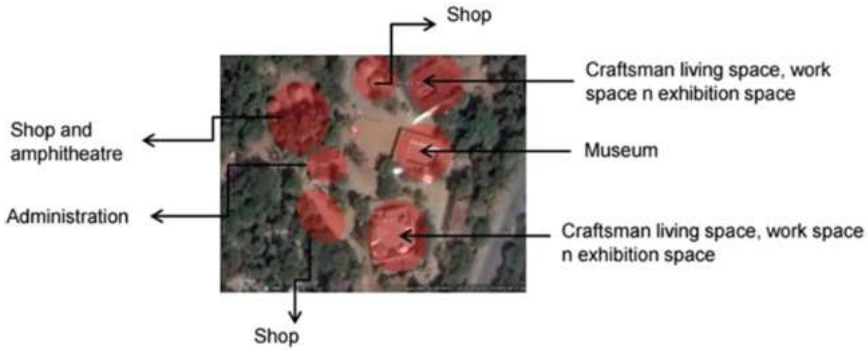


Figure 3-22 Different amenities Shilpgram Handcraft museum, (Source: Google.com)

A. Museum

- The Chaupal Museum: wide range of collection, essential everyday items such as tools, kitchen utensils and an assortment of other kitchenware represent the prosaic side of tribal life, whilst various musical instruments, decorative articles, wooden toys and ornaments give one an idea of the things a typical tribal household would be likely to use in the course of leisure, celebration or worship.
- Kothi Museum: the containers commonly used to store food grains in the rural areas. They may be made of mud, dung, bamboo, grass or whatever other local materials are available and suitable.
- The Tribal Museum: occupies a small, circular building. There, one can see a sample of the general items that would be used by an average Rajasthani tribal family; from clothing to tools and even weapons.
- The Gol Museum: The exhibits include ladies' traditional costumes, wooden boxes, utensils and decorations, masks,

Figure 3-23 Chapel (Source: Google.com)

Figure 3-24 Kothi (Source: Google.com)

weapons and musical instruments.

B. Dance Theatre Area

- Amphitheatre for the Folk Dance

C. Mela Ground

- Every year in the month of December 10 days Shilpgram festival celebrated.

D. Residence for Craftsmen

- Accommodating seven huts of Rajasthan, twelve of Gujarat, seven of Maharashtra and five from Goa and depicting their cultural activity and living styles. These huts have been made by the workers themselves with their rural architectural style using the vernacular materials from native place.

E. Guest Rooms:

F. Sculpture Park:

G. Stalls

H. Services:

- WATER SUPPLY – 2 bore wells (50ft deep) are there on the site.
- ELECTRICITY – solar panels are provided and rest is taken from the government.
- SANITATION – 60 bathrooms and 60 toilets are provided.

3.3.3 Inferences Drawn From Regional Level Case Studies

Table 3-4 Inferences drawn from regional level case studies

S.N.	National Craft Center, Delhi	Shilpgram Arts and Craft Museum
1	Clubbing of open space and activities	Use of temporary and permanent stalls as per the demand throughout the year, at the time of the festival the temporary stalls are also used for display.
2	Allowing free movement of visitors from museum to view every exhibits	Self-sustenance of the center and target group
3	Permanent and temporary exhibition	Accommodation of craftsman
4	Architecture as craft	
5	Local values, tradition and craftsmanship in architecture	
6	Planning and spatial relations	

3.4 International Case Studies

3.4.1 Case 5: Jean-Marie Tjibaou Cultural Center

Project Brief

- Location: New Caledonia, Nouméa
- Architect: Renzo Piano
- Design Stage: Completed
- Project date: 1991-1998
- Total Site area: 8,188 sq.m.
- Target people: Local people of Kanak
- Country: New Caledonia

Study Criteria

- Climatic design
- Relevant target Group

Figure 3-25 Jean-Marie Tjibaou Cultural center, (Source: Archdaily, 2020)

About The Project

This building was designed in a way to present and promote Kanak culture, the traditions from Kanak culture, languages, craftsmanship, and the arts. The cultural center is dedicated to Kanak culture as symbol of peace after the independent politician Jean Marie Tjibaou assassinated in 1989. The complex is composed of 10 circular pavilions, of three different sizes. Pavilion with varying height from 20-28m, with an area ranging from 55 to 140 sqm. 10 pavilion are connected by a sort of “backbone’’, covered with passageway 250m long giving

access to the complex. The pavilions are divided into three main villas.

1. Villa 1: entrance, museum, café, entrance porch, exhibition, theatre, hall, shop
2. Villa 2: library, exhibition room, maintenance room, lecture hall, media center
3. villa 3: conference room, media room, class room, administration

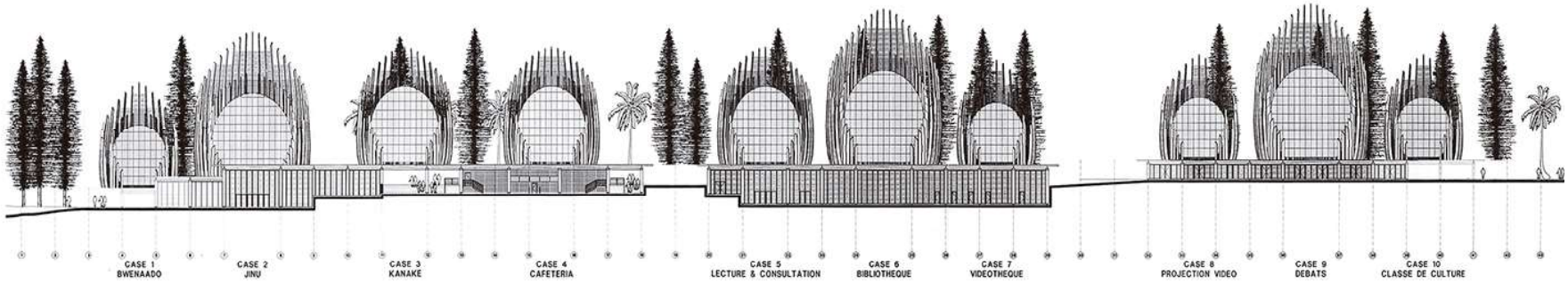


Figure 3-25 Site section showing pavilion of Jean-Marie Tjibaou Cultural center, (Source: Archdaily, 2020)

Design Concept

Design and planning took the inspiration from traditional architectural elements from the Kanak people`s culture and also their deep ties with nature and enhancing it to fit the current modern era. (Thandapani, 2017).

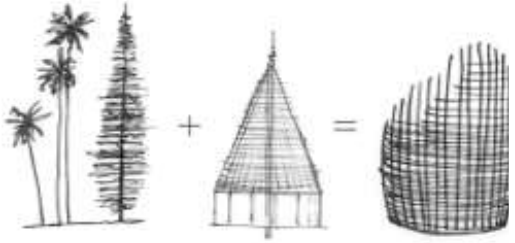


Figure 3-26 Concept of design (Source: behance.net)

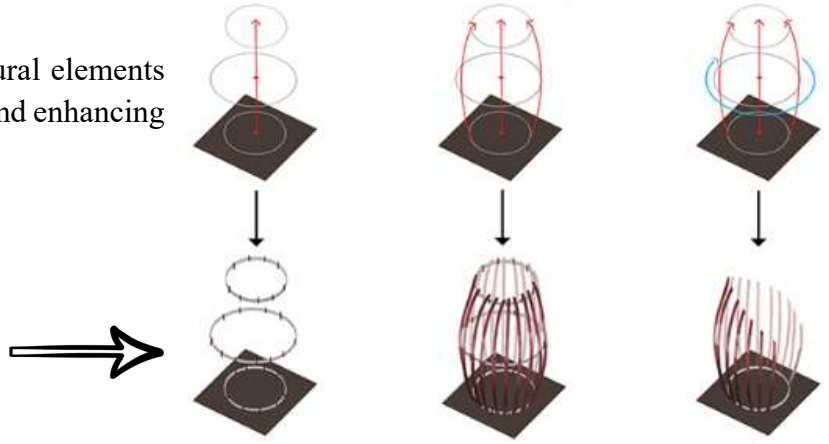


Figure 3-27 Form and massing (Source: behance.net)

Site process

Three main site challenge was taken into account and they are sun path, prevailing wind, and noise.

Figure 3-28 Site process (Source: behance.net)

Design Response and Sustainability

1. Façade made of louvre is used to minimize the impact of the strong wind.
2. The façade also manages the amount of air flor and provides natural ventilation.
3. The building roof use aluminum screen to reflect the solar radiation, this could assist to reduce the heat gain of the building.

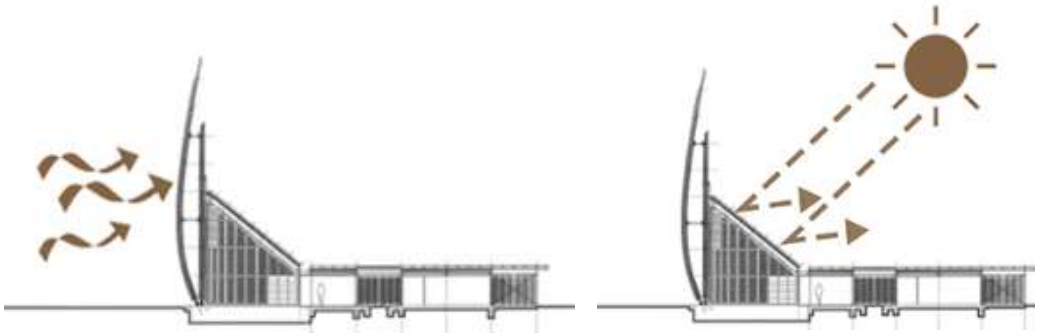


Figure 3-29 Site responsive design (Source: behance.net)

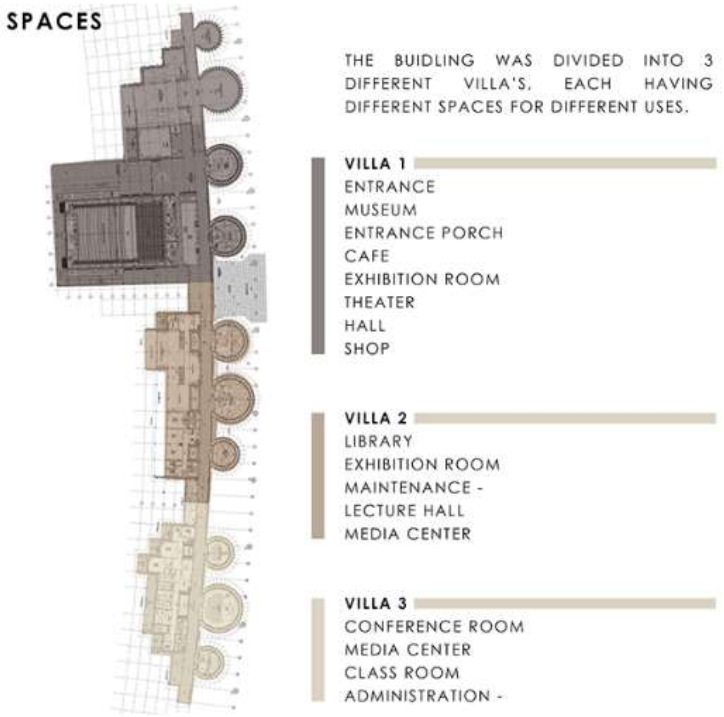


Figure 3-30 Programs (Source: behance.net)

3.4.2 Sodhiou Cultural Center, Africa

Project Brief

- Location: Sedhiou, Senegal
- Site context: Rural area
- Design phase: Conceptual
- Total Site area: 950 m²
- Target people: Target people: Local people of Sodhiou, and tourist

Figure 3-31 Sodhiou Cultural Center, Africa, (source: Behance.net, 2018)

Study Criteria

- Functionalism and spatial responses
- Climate responsive design and sustainability.
- Indigenous cultural space relevant to Bhuruwa like rural area

About The Project

The idea of the design is to create a contemporary iconic architectural structure that is taking into consideration Sodhiou's vernacular architecture spirit, preserving, and reformulating their local architectural language by giving it contemporary expressions to create an environment that's suit local community needs and aspirations through dissolving the gap between their legacy and modernity. The building is constructed upon the local community's narratives acting like a Griot transferring Sedhiou's local cultures, pass them on, and preserve them. Consisting of four circular zones. The outdoor spaces between the huts create communal areas to separate the huts from the busy streetscape and also as a place for social interactions functions as an open community center for gathering local community under connected thatched roof mesh designed to be an iconic structure that is respecting Sedhiou's skyline harmony, and its contemporary curves and lines shine under the west African sun (Behance, 2018).

Concept and ideations

Design concept based on the idea of interweaving vernacular architecture, urban context, and nature. The building creates a new environment that first the local community aspiration and suit their needs through dissolving the gap between their legacy and modernity.

Figure 3-32 form development of Sodhiou cultural center, (Source: Behance.net)

Materiality

The materiality of the building fusion of vernacular and contemporary material. The building uses locally available material like thatch for roof dome and mesh, bamboo for ribs of dome and mesh, plastered compressed earth blocks.

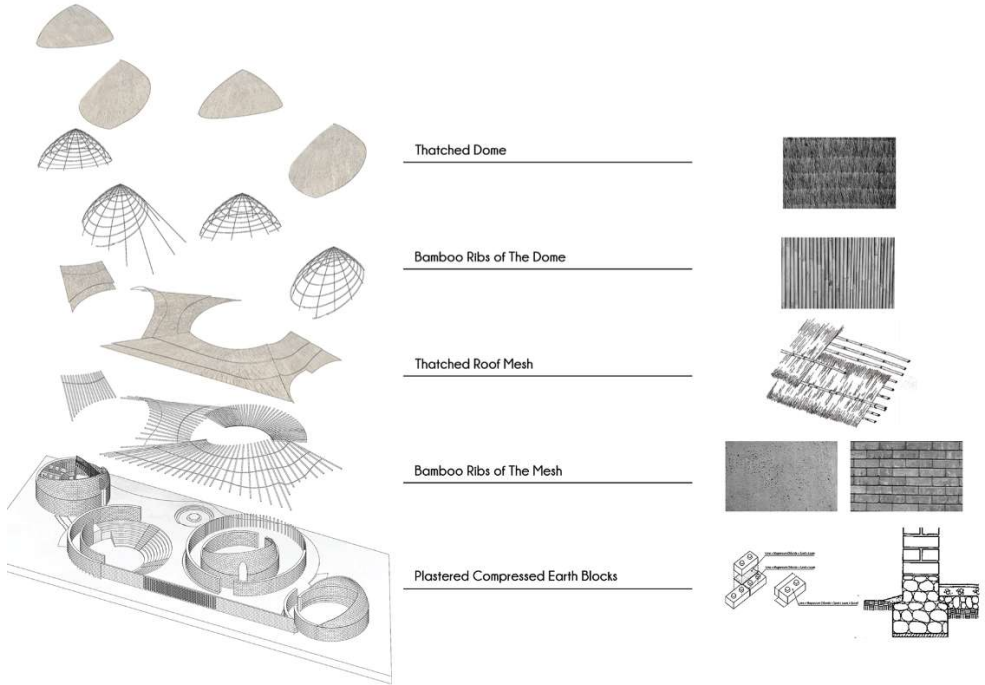


Figure 3-33 Materiality of building, (Behance. net)

Community engagement

1. Educational space: helps the community to initiate a new agricultural practice by using the circular structure of the walls.

2. Exhibition: Space is built timeless to make the local community pass their narratives and culture on the walls and give the next generations the same opportunity.

3. Performance Open Theater: The center of the building gives the local community new opportunity to discover their heritage through contemporary through the open theatre.

4. Office and Restroom: The building provides a combined cell with two consists of offices and restrooms.

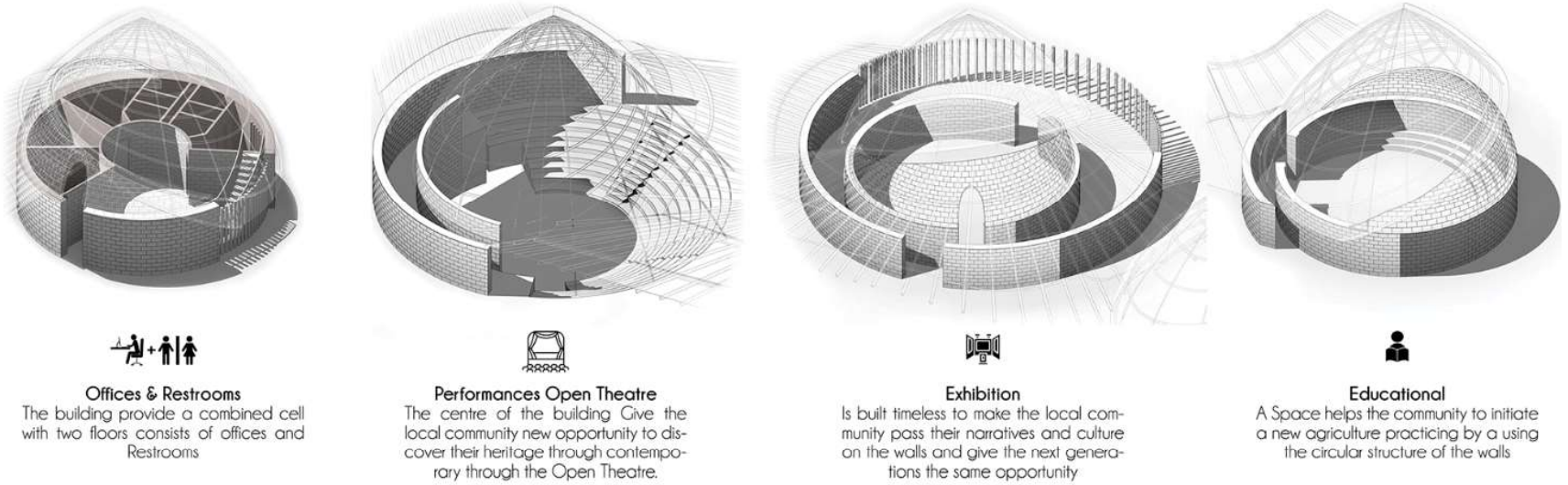


Figure 3-34 Component of the design (Behance. net)

Sustainability:

- Use of natural ventilation-stack ventilation, Cavity wall, Water collection and water table recharge

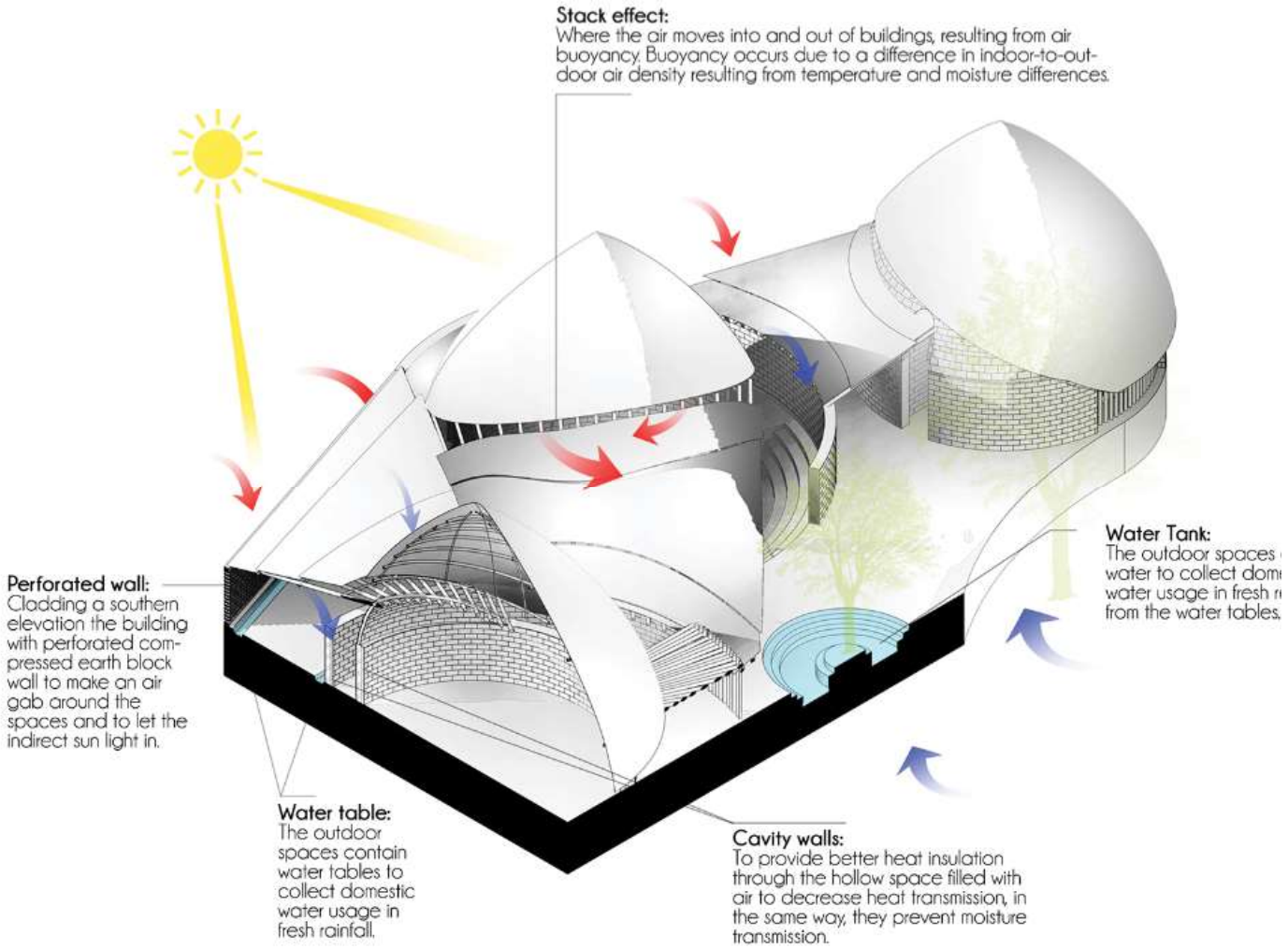


Figure 3-35 Sustainability Technique used, (Behance. net)

3.4.3 Sodhiou Cultural Center, Africa

Project Brief

- Location: Grano de Oro, Costa Rica
- Material: Wood
- Project Year: 2014
- Architects: Entre Nos Atelier

Figure 3-36 Käpäcläjui Indigenous Training Center, (Source: Archdaily, 2014)

Study Criteria

- Design of training center for indigenous

About The Project

- Rural integration, In harmony environment.
- Administration, multi-purpose hall, library, computer lab, classroom, kitchen and dining in first floor
- Mezzanine floor as Temporary shelter
- Comfortable, permeable space, ventilated, in direct contact with the environment and incorporating green areas and gardens
- Co-create design philosophy
- Accessibility (Archdaily, 2014).

Inclusive design: project development and community participation

The two wooden pavilions, rising two floors and connected by a footbridge, provide the local population with all the facilities necessary for a training center of today to function, including a computer room, a library, multipurpose rooms, a kitchen, and administrative offices. In the first pavilion, an attic overlooking the work spaces can be used as accommodations if needed (Arquitectura Viva, 2022).

The Hostel project consists of 470 m2 distributed within a ‘large linear layout’ along its longitudinal axis. It comprises on the first level administrative areas (offices), multipurpose rooms, dining, kitchen, restrooms, computer room, library and warehouses. In the double height of the front part it incorporates a ‘mezzanine’ as an area that provides temporary shelter.

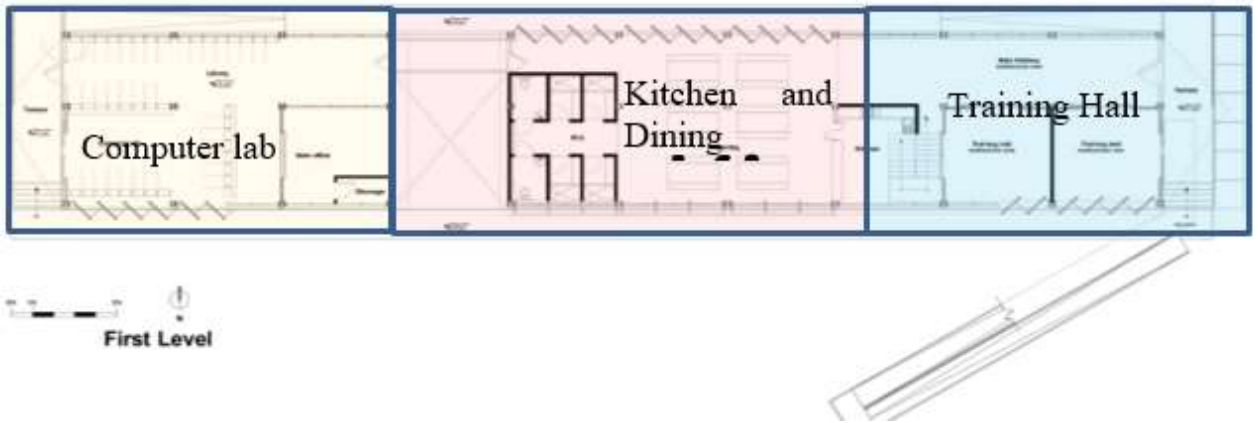


Figure 3-37 Ground floor plan, (Source: Archdaily, 2014)

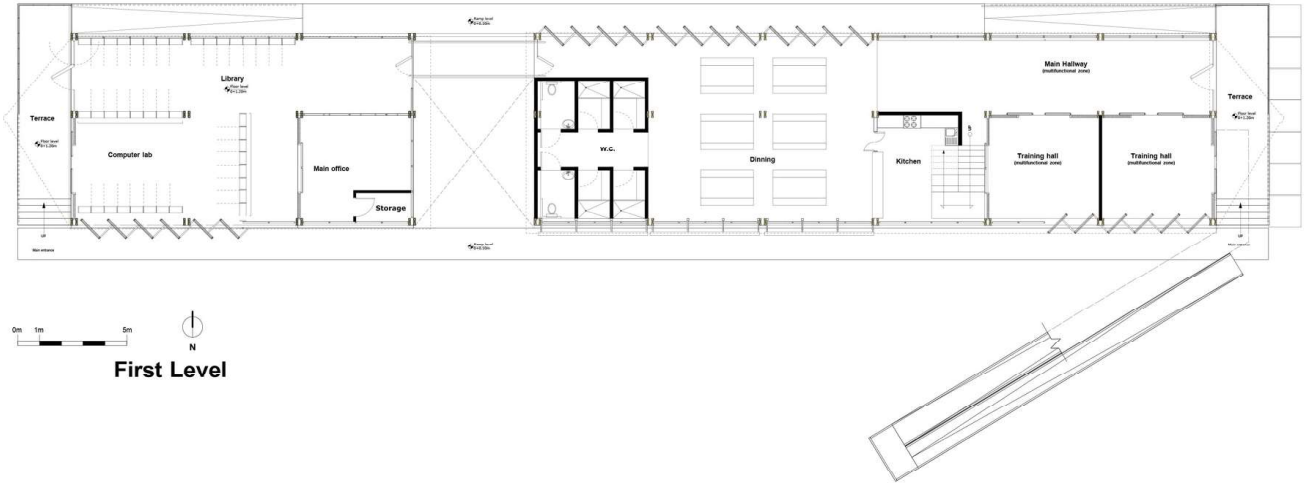


Figure 3-38 Second floor plan, (Source: Archdaily, 2014)

3.4.4 Inferences Drawn From International Case Studies

Table 3-5 Inferences drawn from International level case studies

S.N.	Jean-Marie Tjibaou Cultural Center	Sodhiou Cultural Center, Africa	Indigenous Training Center Käpäcläjui
1	Passive design technique	Community engagement	Concept of Co-design
2	Ideas about the spaces and spatial flow	Spatial arrangement	Spatial arrangement and accessibility
3	Exhibition of the Traditional culture	Local contextual design	
4		Sustainability	

4 SITE CONTEXT AND ANALYSIS

Site refers to the location where a structure is or will be built. Each building's architecture must take into account the site's unique features in order for the design to succeed. Because of this, proper site selection and site analysis are necessary before planning and building on any site. Understanding the purpose of the project, site selection is done. As the main objective of the project is to provide the cultural platform, and increase the community engagement, the site is purposed within the community. The site is located in Bhuruwa, Kailali. Many surrounding like Bhajani, Laalbojhi were analyzed for the project. But, out of all those, Bhuruwa came out to be more appropriate for the project. The other important site analysis in the rural context were carried out which are given below.

4.1 Site Selection Criteria

- The proposed site location is Bhuruwa, within the Bhajani Municipality. The site is vacant land and the most suited for the Cultural center as the largest Population of Raji people are living in Bhuruwa. The focused points for proposing particularly this site are:
- Site is within the Raji Community, in close proximity to Raji People living in Laalbojhi and Bhajani Municipality.
- The site is Most suited in context Raji community, presence of natural forest, agricultural land and the surrounding river depicts the best location for the Raji people.
- Site has the future potential as the Hulaki Sadak passes by the site and connects two big cities, Nepalgunj and Dhangadhi. Also the site is in close proximity from the India border. This will help in flourishing the Raji people`s daily Economic Activity.

4.2 Site Information

The site chosen for this project is located in Bhajani, ward no-7. The surrounding area is the Raji community, agricultural fielsd, and lush jungle. The site lies in a rural area.

- **Location:** Bhuruwa, Kailali
- **Site Area:** 35 Ropani
- **Proximity:** within the community
- **Accessibility:** Easily accessible from Bhajani and Dhangadhi, Public stop in Laalbhojhi
- **Road:** Hulaki road on south, secondary road on east side.
- **Site Context:** surrounded by forest on West, Agricultural Land on south and East, Kandra river on East and Mohana River on South.
- **Latitude:** 28.4793
- **Longitude:** 80.9568
- **Building Bye-Laws**

1. Setback: 3m from road
2. Ground coverage: 35%
3. Floor area ratio: 2.5 max.

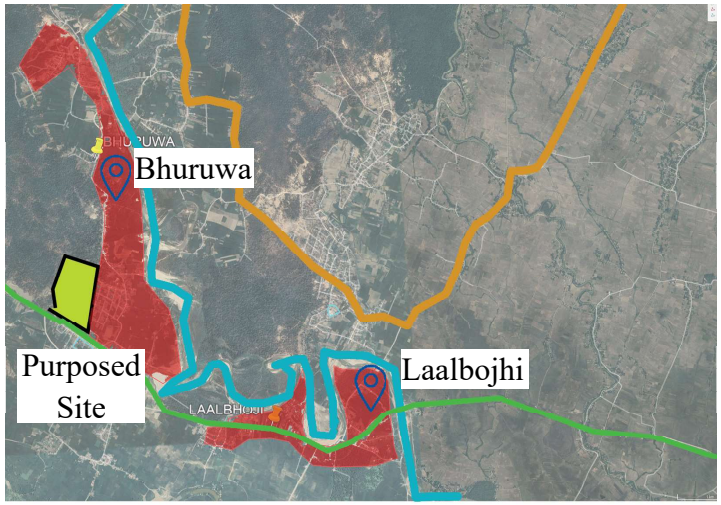


Figure 4-1 Site location map, (Source: Google map)

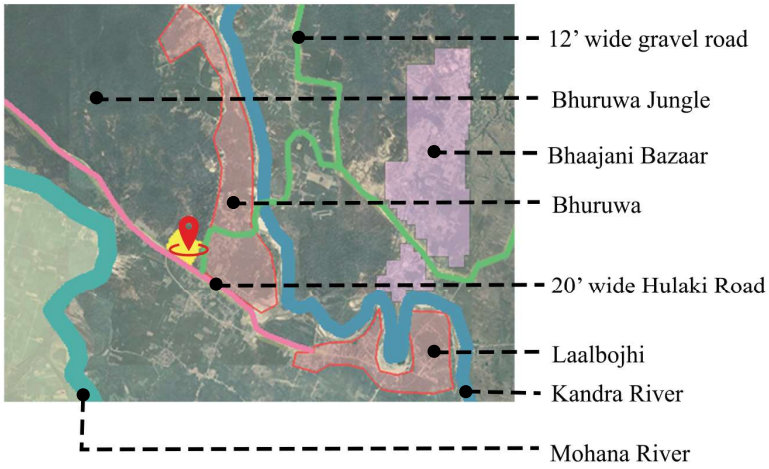


Figure 4-2 Site surrounding, (Source: Google map)

4.3 SWOT Analysis

Strength

- Close proximity
- Maximum participation
- Future potential of site
- Scenic view of lush jungle and river

Weakness

- Climate of Locality
- Far away from urban area

Opportunity

- Close proximity
- Maximum participation
- Future potential of site
- Scenic view of lush jungle and river
- Close to Hulaki Sadak

Threat

- Flooding from the Kandra river
- No utilities for construction

4.4 Site Climatic Analysis

In Bhuruwa, the climate is warm and temperate. June is the warmest month with an average highest temperature of 30.2`C (86.4`F). In January, the average lowest temperature is 14.1`C (57.3`F). It is the lowest average temperature of the whole year. The driest month is November. There is 3mm/0.1 inch of precipitation in November. Most precipitation falls in July with an average of 449mm/17.7 inch (en.Climatic Data, 2022). The month of highest relative humidity is August (87.13 %). The month with the lowest relative humidity is April (40.20 %). The summer wind is from the S-W and winter wind is from the N-E.

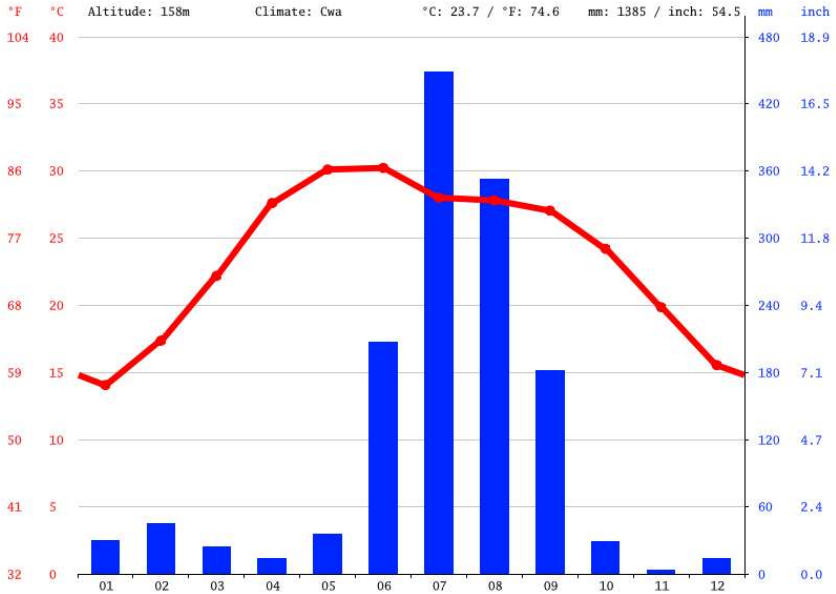


Chart 4-1 Annual Temperature (Source: climate-data.org)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	14.1 °C (57.3) °F	17.4 °C (63.3) °F	22.2 °C (72) °F	27.6 °C (81.7) °F	30.1 °C (86.2) °F	30.2 °C (86.4) °F	28 °C (82.4) °F	27.8 °C (82.1) °F	27.1 °C (80.7) °F	24.2 °C (75.6) °F	19.9 °C (67.8) °F	15.6 °C (60) °F
Min. Temperature °C (°F)	8 °C (46.4) °F	10.5 °C (50.9) °F	13.9 °C (57) °F	18.6 °C (65.5) °F	22.7 °C (72.9) °F	25.4 °C (77.7) °F	25.6 °C (78.1) °F	25.4 °C (77.7) °F	23.9 °C (75) °F	18.6 °C (65.5) °F	13.5 °C (56.3) °F	9.5 °C (49) °F
Max. Temperature °C (°F)	20.3 °C (68.5) °F	24.1 °C (75.3) °F	29.9 °C (85.9) °F	35.8 °C (96.4) °F	36.8 °C (98.2) °F	35 °C (94.9) °F	31.1 °C (88) °F	31 °C (87.8) °F	30.8 °C (87.4) °F	29.8 °C (85.6) °F	26.3 °C (79.3) °F	21.9 °C (71.4) °F
Precipitation / Rainfall mm (in)	30 (1)	45 (1)	24 (0)	14 (0)	35 (1)	207 (8)	449 (17)	353 (13)	182 (7)	29 (1)	3 (0)	14 (0)
Humidity(%)	78%	70%	55%	40%	49%	65%	87%	87%	85%	75%	71%	76%
Rainy days (d)	2	3	2	2	5	11	20	19	13	2	0	1
avg. Sun hours (hours)	7.2	9.1	10.6	11.5	11.7	11.0	9.2	9.0	9.1	9.6	9.0	7.7

Chart 4-2 Average Weather, (Source: climate-data.

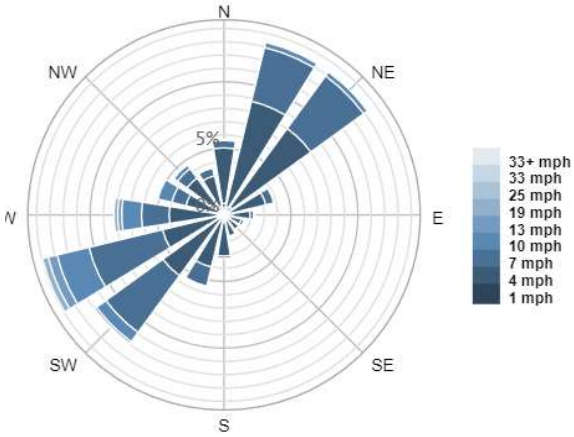


Chart 4-3 Wind rose, (Source: climate-data.org)

4.5 Site Topograpgy

The site chosen has almost flat terrain with gentle slope towards north to south direction. The average elevation difference in the site is about 3m according to Google Earth.

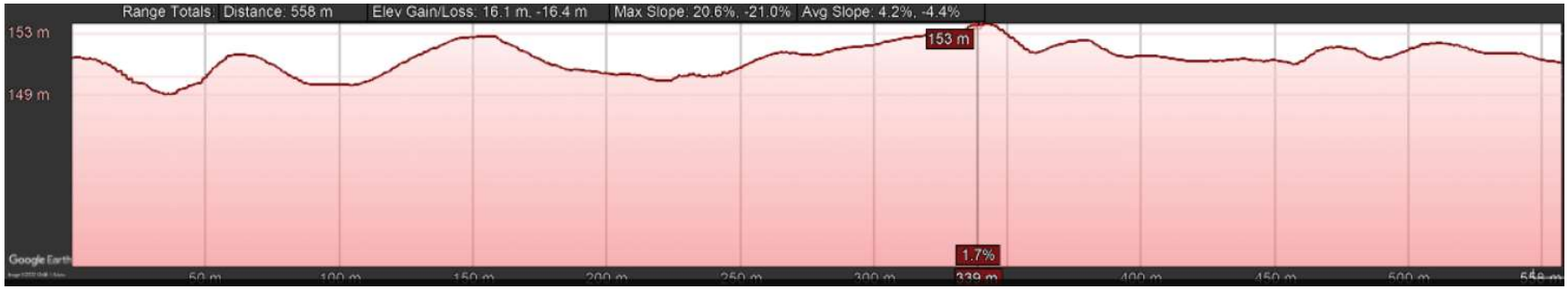


Figure 4-3 Site Longitudinal section, (Source: Google map)

4.5 Site Contextual Study

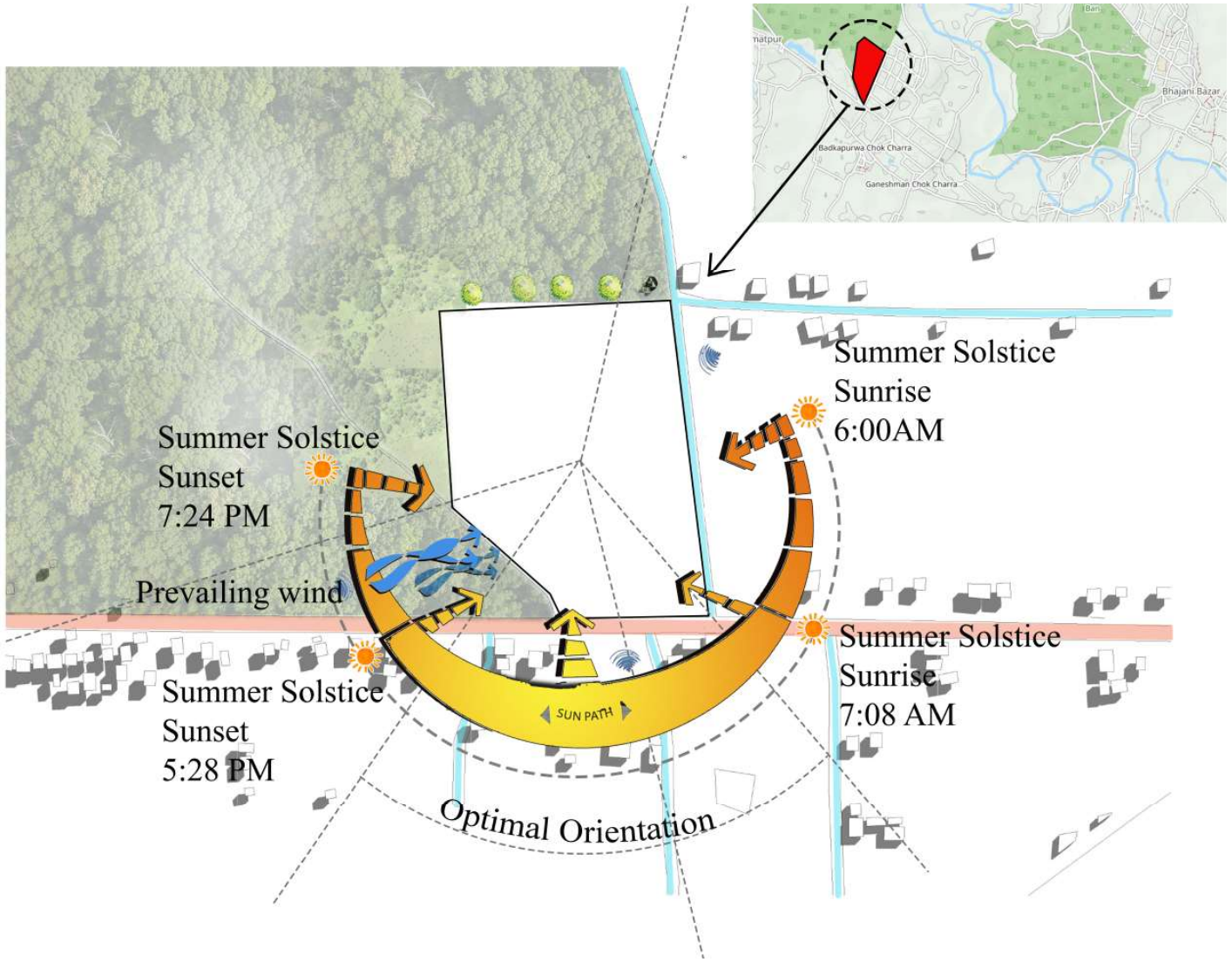


Figure 4-4 Site analysis, (Source: Google map)

4.5.1 Inferences Drawn From International Case Studies

1. **Natural surrounding and views**

Site has the natural landscape and views which is most suited for the Raji Cultural center. There are following natural surrounding located around the proposed site.

- Bhuruwa jungle in north and west direction and Bhajani Community forest in east direction
- Agricultural land in east and south direction
- Kandra river flowing from North to south

2. Road and accessibility

The site is easy accessible from Laalbojhi, Bhajani. The site is accessible by following road pattern.

- Hulaki Road: 20’ wide, connects Dhangadhi, Nepalgunj
- Secondary Road: 12’ wid and Internal road: 10’ wide connecting the

3. Site Infrastructure

within the periphery of 5km dia. Circle, there are physical infrastructures like:

- Bhuruwa Primary School up to 5 class.
- Public water supply
- Bhuruwa community market, Laalbojhi Bus park, Laalbojhi Hospital.

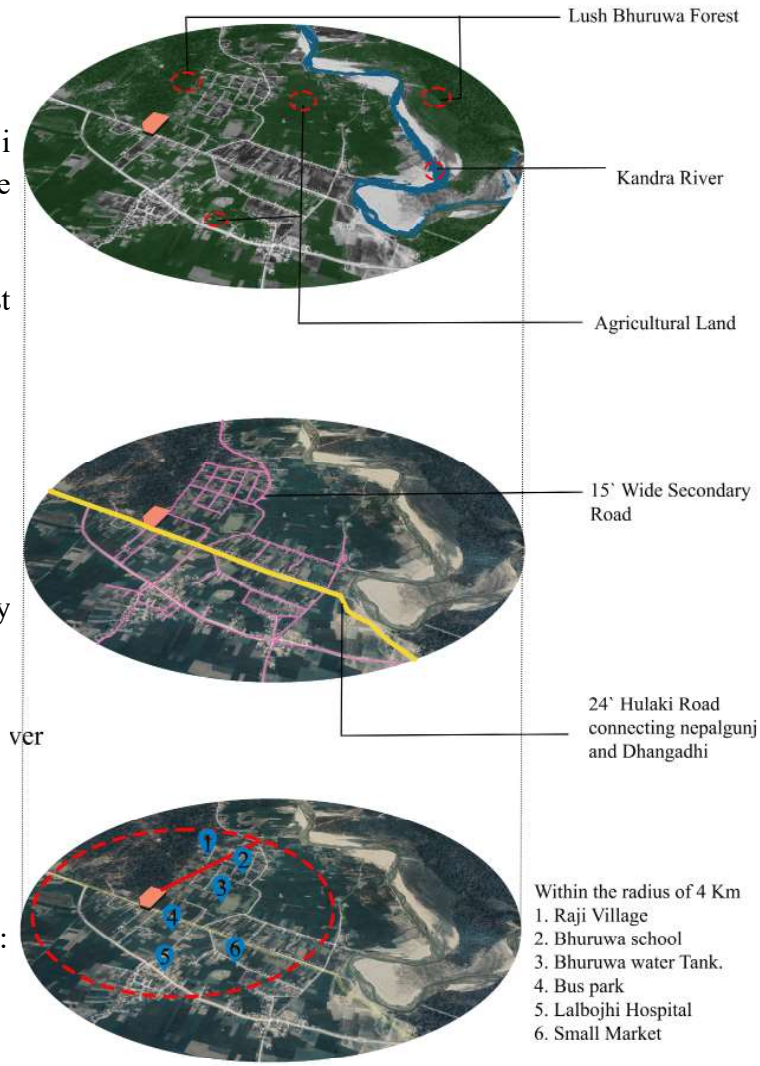


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Figure 4-5 Site overlay, (Source: Google Earth, software: Photoshop 2022)

4. Sun path and wind analysis

- Summer Solstice (21 Jun): sun rise 6:00 AM, sun set 7:15 Am
- Winter Solstice (21 December): sun rise 6:30 Am and sun set 5:30PM
- Prevailing summer wind from west

5. Proximity

- The proposed site is in close proximity to the target community. Within the diameter 2km, the target Raji community i.e. Bhuruwa and Laalbojhi.

6. Site issues

- The major issue of the proposed site is the flooding in the nearest area from the Kandra river during Monsoon season in the interval of 6-8 years. Another problem can be the noise from traffic, surrounding residential area.

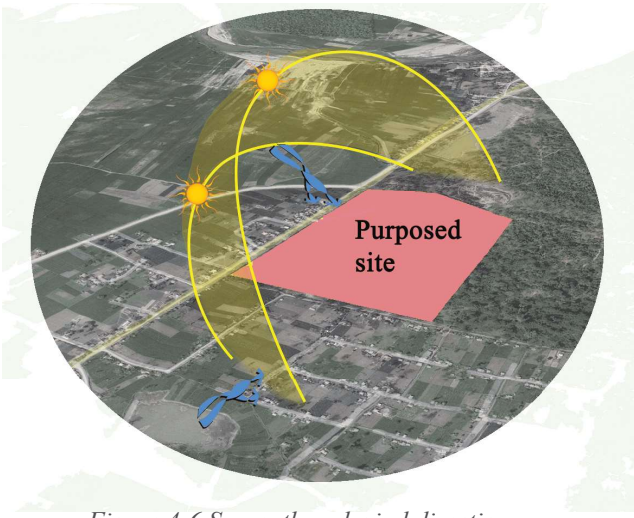


Figure 4-6 Sun path and wind direction, (Source: Google Earth, software: Photoshop

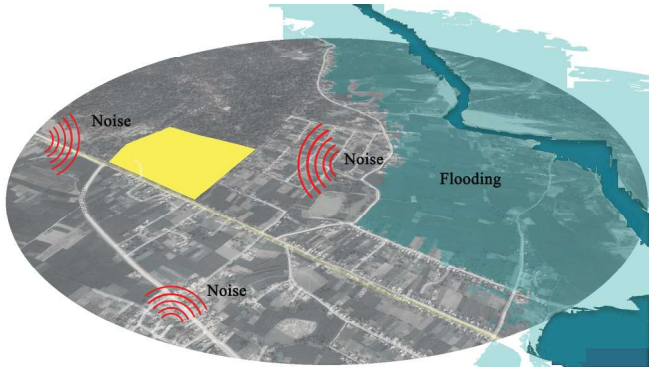


Figure 4-7 Site issue, (Source: Google Earth, software: Photoshop 2022)

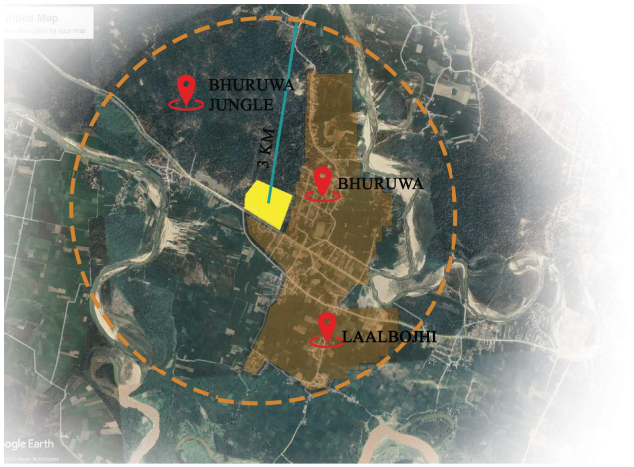


Figure 4-8 Site proximity, (Source: Google Earth, software: Photoshop 2022)

5 PROGRAM

The capacity of the Raji cultural center is 500-1000. The maximum capacity of community people is 500-800. While the visitor's capacity is 200. The Raji cultural center accommodate the major facility to the Raji community of Bhuruwa. The center accommodates museum, gallery, workshop, honey hunting and apiary, artist accommodation is, training and community gathering space, celebrating area (OAT and open ground), learning and educational space for the community children, woman, and old age people. Some spaces like cafeteria, children play and recreational area, exhibition area are dedicated to visitors, researcher, and students. The user group for the Raji cultural center are given below.

5.1 Tentative program

From the literature review, case study and analysis of the context, the tentative program are given in table 5-1 below.

Table 5-1 Tentative Program

S.N.	TENTATIVE PROGRAM	REMARKS
1	Past Time Zone	Museum, Ethnic Food and Restaurant, Temporary and Permanent Exhibition area, Wild Honey hunting and Demonstration Space, Fishpond and Boating
2	Present Time Zone	Way of life of Raji Villagers-Artist accommodation
3	Future Time Zone	Training and Workshop, Skill development, Knowledge Transfer to new generation, Shops Sustainable economy future
4	Transitional space	Admin, Outdoor open Space, Central OAT, landscape

5.2 Need Identification

Raji Children-50 capacity

Raji Young people-500 capacity

Elderly- 51 capacity

Office worker- 20-25 capacity

Employees- 100 capacity

Figure 5-9 User count

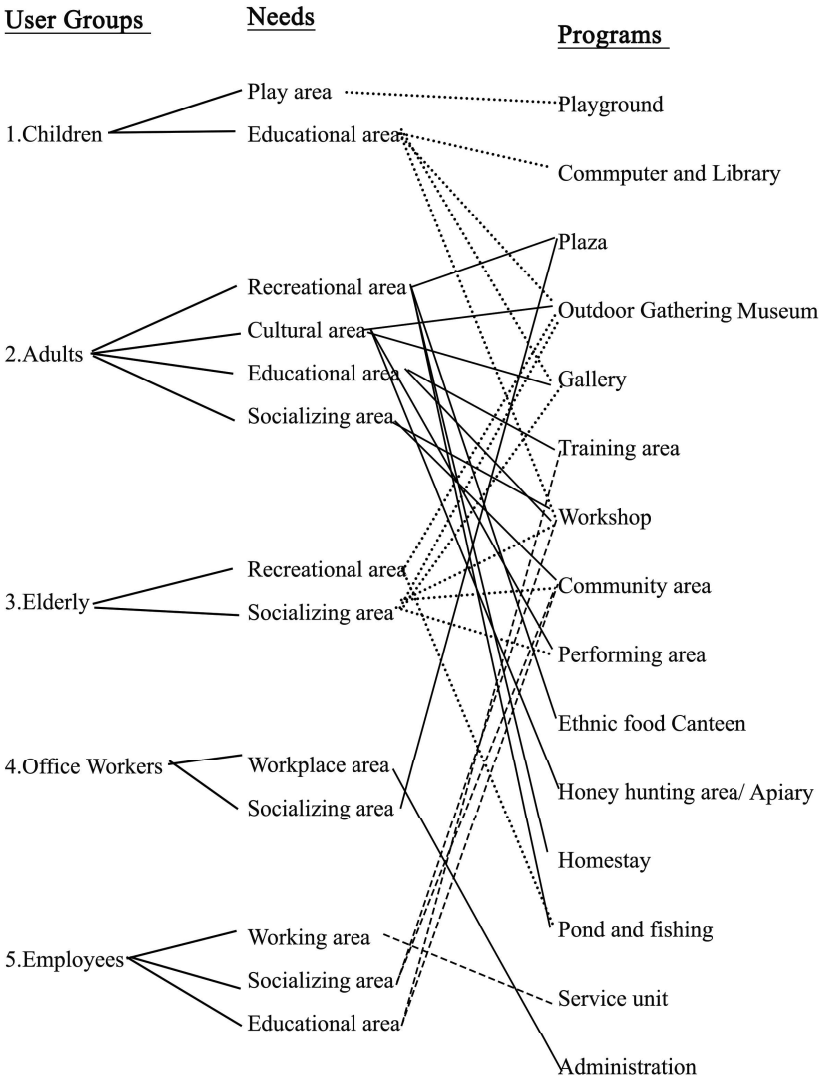


Figure 5-10 Need identification of different user groups

5.3 Detailed Program Formulation

5.3.1 Administration

Table 5-2 Detailed program for administration

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
1.	**Foyer/ Reception**	1.2		1	70	Variable
2	**Executive room**	12	1	1	12	Standard
3	**General manager**	12	1	1	12	Standard
4	**Director office**	15	1	1	15	Standard
5	**Raji Salma Samaj office**	15	1	1	15	Standard
6	**Staff room**	6	1	5	30	Standard
7	**Conference room**	2.5	1-10	1	35	variable
8	**Pantry and store**	--		1	17	variable
9	**Restroom**	--		1W/C- female, 2 W/C,2 urinal-male	15	1 w/c for 1-25 male, 1 urinal for 1-20 male 1w/c for 1-15 female (NBC 208, 2003)
	Total area				**206**	

5.3.2 Cultural Space

Table 5-3 Detailed program for cultural space

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
10	**Reception and ticket counter**	1.2	20	1	70	Variable
11	**Gallery: Transitional Space**	3	50	1	150	Standard
12	**Museum**			1		
	Permanent exhibition	4	1-50	1	340	Variable
	Temporary exhibition	1	6	6	36	Standard
	Store	20	--	1	20	Standard
13	**Toilet**	2.5	1-10	4 W/C- female, 3 W/C,3 urinal- male	50	1 w/c for 1-25 male, 1 urinal for 1-20 male 1w/c for 1-15 female (NBC 208, 2003)
14	**Honey Hunting and demonstration gallery**					variable
	Small honey hunting demonstration space	3	20	1	70	Variable
	Changing room	2	2	2	8	Standard
	Equipement and bee hunting costum room	--	--	1	6	Variable
15	**Honey processing area**					

	Uncapping, filtration extraction Room	5 sq.m for 1 hive	5 hives	1	25	Variable
	Heating and packaging room	6 sq.m for 1 hive	5 hives	1	25	Variable
	Honey retail shop	2	20	1	40	Standard
	Apiary maintenance area	10	--	1	25	Variable
	Waste	--	--	1	10	Variable
	TOTAL				**1000**	

5.3.3 Learning and Skill Development Space

Table 5-4 Detailed program for learning and skill development space

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
16	**Skill development and Economic activities Space-for Raji Man**					
A.	**Woodwork craft**			1		
	Machin+polishing	3	10	1	30	Standard
	Store (raw material)	--	--	1	30	Variable
	Carving+assembling	20	6	1	150	Standard
	Store(finished product)	--	--	1	30	Variable

B.	**Bamboo craft workshop**			1		
	Store (raw material)	--	--	1	20	variable
	Basket making space	2	5	1	60	Variable
	Store (finished product)	--	--	1	30	Variable
17	**Skill development and Economic activities Space- for Raji female, Children**					
A.	**Hey mat workshop**			1		
	Store (raw material)	--	--	1	20	Variable
	Mat making space	3	5	1	100	Variable
	Store (finished product)	--	--	1	30	Variable
B.	**Tailoring area and vocational training**	3	9-10	1	60	Variable
C.	**Informal education space for woman**	1	30	1	60	Variable
D.	**Library**	2.3	20	1	64	Variable
E.	**Computer classroom**	1	20	1	64	Variable
18	**Ethnic food and Cafeteria**	1.1	50	1	150	Variable
19	**Community training space**	--	100	1	130	Variable
	TOTAL				**1028**	

5.3.4 Artist and Community Socializing Space

Table 5-5 Detailed program for artist and community socializing space

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
20	**Accommodation Area (Homestay)**					
A.	**Admins house**	--	4+2 tourist	1	150	
B.	Honey hunters house	--	4	2	100	Variable
C.	Fisherman's house	--	4	1	100	Variable
D.	Cultivating farmers house	--	4+2 tourist	1	100	Variable
E.	Artist house	--	4	1	100	
21	**Cultural celebration space, Community gathering space**	1	500 community people	1	1100	OPEN SPACE Standard
22	**Open Air Theatre**					
A.	Seating	0.5 to 1	300	1	150	Standard
B.	Stage	1/3rd of seating	--	--	50	
	TOTAL				**550**	

5.3.5 Exterior Space

Table 5-6 Detailed program for exterior spaces

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
23	**Loading/ unloading, service area**	--	--	--	80	
26	**Utility and service**					
A.	Two wheeler parking	3	--	30	90	Standard
B.	Four wheeler parking	12.5	--	20	250	Standard
C.	School Bus	48	--	2	96	Standard
D.	Bicycle	2	--	20	40	Standard
	TOTAL				**556**	

5.3.6 Public Opne Space

Table 5-7 Open Space

S.N	PROGRAM	STANDARD SQ.M	NO. OF PEOPLE	NO. OF UNITS	PROPOSED AREA (SQ.M)	REMARKS
274	**Pond and recreational space**	--	--	1	2050	
25	**Children play area**	3.5	--	1	429	
26	**Apiary and cultivation**	--	--	1	2531	
27	**OAT and gathering space**	--	--	1	1500	
28	**Drying area**	--	--	1	561	
30	Public plaza	--	--	-	855	
	TOTAL				**7926**	

5.3.7 Total Area Calculation

Table 5-8 Footprint calculation

S.N	DESCRIPTION	NO. OF USER	AREA	CIRCULATION 30 %	FOOTPRINT AREA
1	Administration	20	206	61.8	267.8
2	Cultural Space	240	1100	330	1430
3	Learning and Skill Development Space	150	1028	308.4	1336.4
4	Artist and Community Socializing Space	630	660	198	858
	Total built up area	**3892.2**			
	Ground coverage	21.856% (Site area is 17, 805. 5sq.m)			

Chart 5-1 Area analysis chart

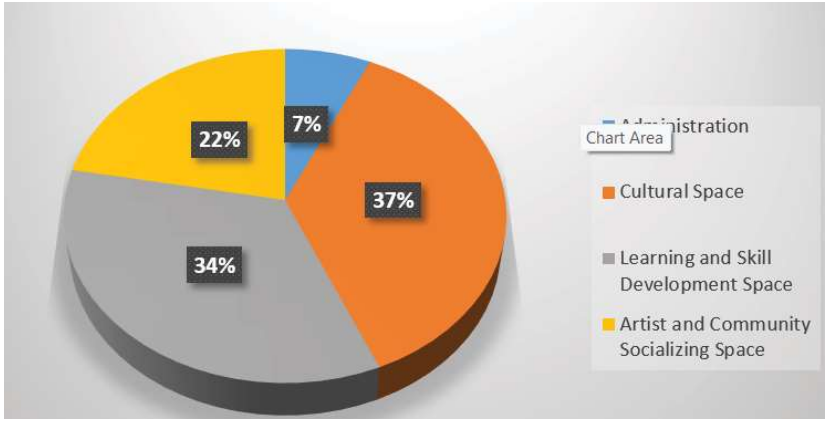
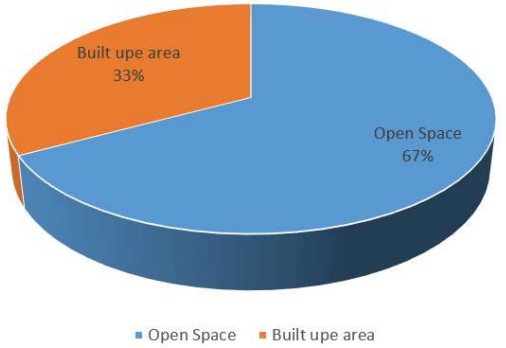


Chart 5-2 Built and unbuilt ratio



6 CONCEPT AND DESIGN DEVELOPMENT

6.1 Concept

Concept Statement "सुङ्थाउ, *The Three Branch"*

The main objective of the project is to provide the community and cultural space for Raji where the Raji people can come together, work together for the preservation, promotion of lost culture, and socio-economic sustainability. The major target group is Raji people. The project also includes the other community people, visitor, students, researcher, etc. So the concept is based on the idea of layering the various approaches for the Raji people and visitors. The concept of the design is **"**सुङ्थाउ**"**, which is Raji word means the three branches. This symbolize the three aspect considered i.e. concept of **Nature, Culture, Community for the Raji** and **Past, present, future time zone for visitors.**

6.1.1 Concept 1: For The Raji Community

Community, culture of Raji community and the nature are mutually inseparable. Without the nature, the Raji community and culture cannot be exist. So the ideation came out to be the common ground for the nature, Raji culture and community. The idea is to create the space of **co-existence** of three aspects **"Nature, Culture, and Community."**

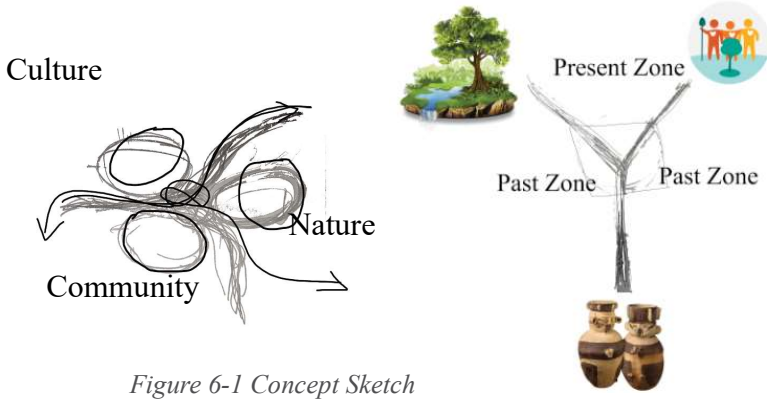


Figure 6-1 Concept Sketch

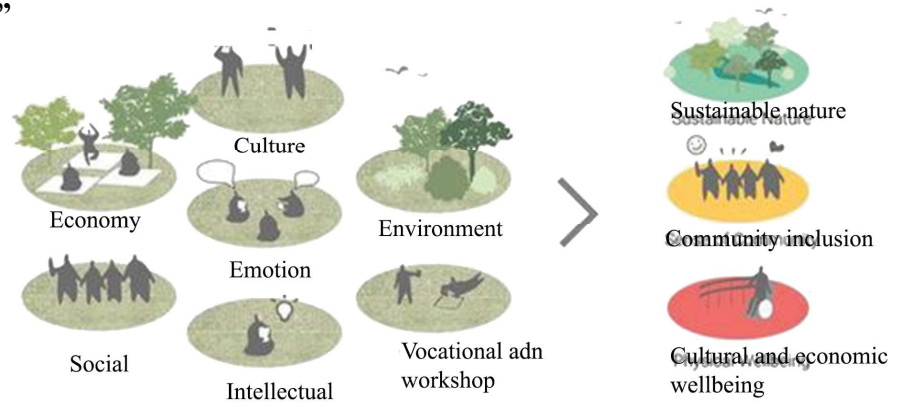


Figure 6-2 Seven dimension of Community inclusion design

6.1.2 Concept 2: For The Visitors

The idea arises to make the unique experiencing journey for visitors. The concept is **"experiencing through the journey."** To make the unique experience, water body and open space are designed as **elements of surprise**. The planning is inspired from the journey of Raji community from scheduled, nomadic tribe to present day permanently settled Raji community. The planning is done by arranging the spaces in three-time zone i.e. past, present, and future time zone. The past time zone shows the culture, history of tribal people, present time zone shows the way of living of Raji or tribal life, and the future time zone shows the approaches for future sustainability in terms of economy, education, and future architecture for the Raji people. The movement of visitors starts from past zone, follows the present time zone, and ends with future time zone making the journey unique and memorable.

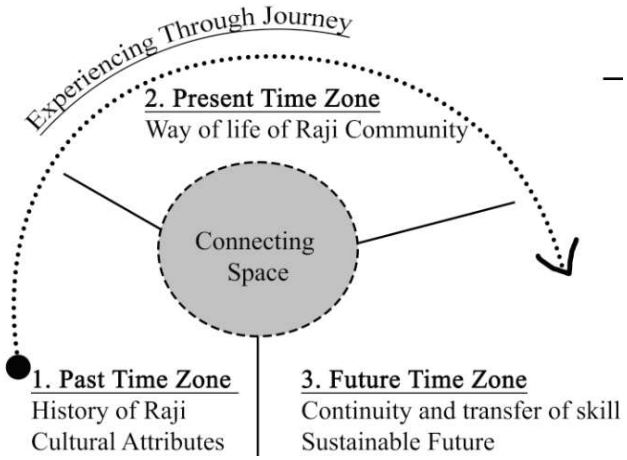


Figure 6-3 Concept for the visitors

6.2 Design Approach

Besides of design concept, there are other governing design approaches integrated to make the project more toward the climate and local contextual design. To make the design more sustainable in future, problem solving of the present site issues, and environmental friendly, the following approaches are incorporated in planning.

6.2.1 Approach 1: Climatic responsive design

Climatic responsive design concerns the aspects that affects less the environment or reduce the carbon emission and dependency in the fuel energy. Following strategies are used to achieve the climatic responsive design.

- **Energy efficient technique:** biogas and use of compost fertilizer
- **Water efficient technique:** rain water harvest and collection, grey water recycling,

- **Local available material:** thatch for the roof, mud flooring and wall, CSEB block for the wall, timber for the structure.
- **Passive cooling and ventilating technique:** to maximize the passive cooling and natural ventilation, the orientation of the typologies are either along the summer wind direction or perpendicular to the summer wind direction.

6.2.2 Approach 2: Flood resilient design

Though the is located far from the Kandra river where the possibility of flooding is less. But the possibility of flooding in near future cannot be ignore. So the plinth level of all typologies are raised above the BFE (base flood elevation) where if the flooding occurs, the water surface level will not cross the BFE. It is recommended in flooding resilience design guideline; the elevated height should be BFE of flood zone+1feet. As the BFE of site is 4 feet, the total elevated height is 5 feet (1.5 m).

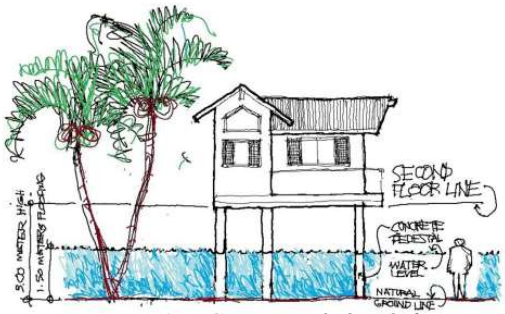


Figure 6-4 Conceptual sketch for flood resilient design

6.2.3 Approach 3: Ecotone As Transitional Space

The concept for the landscape design is based on the idea of "Ecotone". The ecotone is a region of transition between two biological communities. So, the concept is the inspiration for the landscape design to separate the Pond and land area, to show the transition. 'Transition' is based on the idea of ecotone connecting surrounding landscape and water body.

Figure 6-5 Layers of ecotone

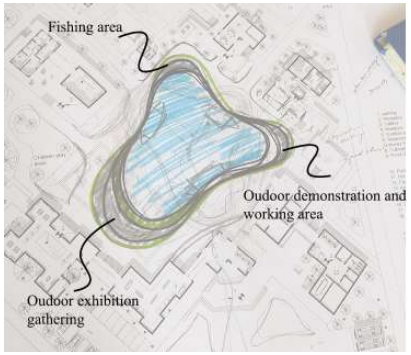


Figure 6-6 Conceptual idea and sketch

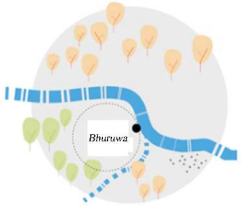
6.2.4 Approach: Designing With Community

During the site visit, interview was taken with some of the community representative person, children, and elderly people regarding the project. They responded as:

How can we reflect your identity into design

"I am Raji, and the forest is my house."

Local material

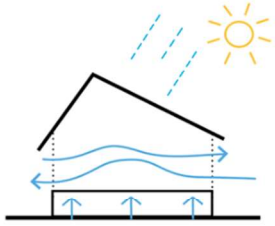


The materials came from surrounding

How can we design safe place?

"It could be as our houses: they always have raised floor to protect us from flooding, attack of animals."

A Safe Place

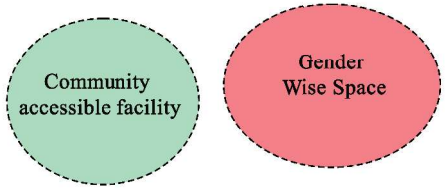


As Raji house

What kind of space do you want?

"I dream about the a place , where community can come together, learn new skills, and , celebrate the culture."

Community Inclusion

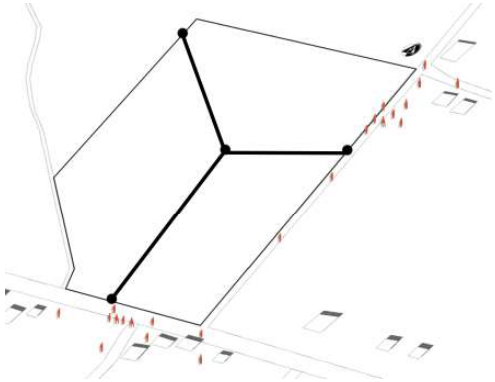


Connecting surrounding

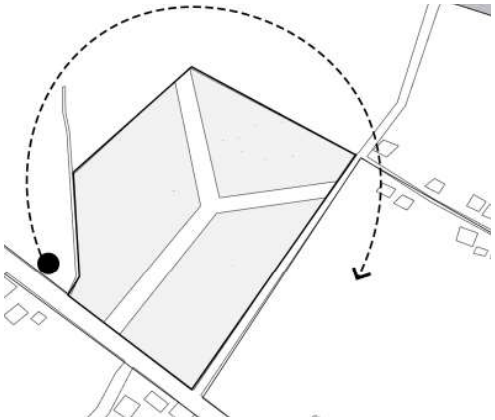
Figure 6-7 Concept of design with community

6.3 Form Development

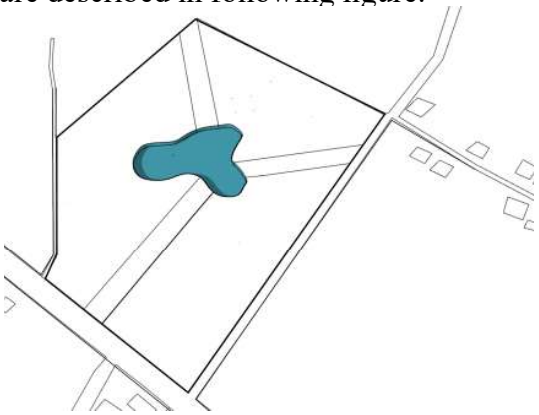
Passing through the design process, the form is the result of many iterations and phases which are described in following figure.



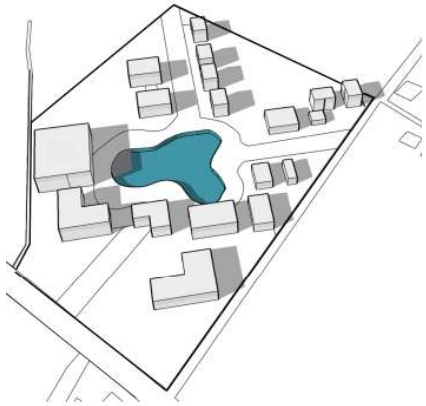
1. Forging Visual Axes: Visual connections using axis from three sides.



2. Dividing into 3 Parts: Three parts as Past, Present, and Future zone after offsetting the visual line.

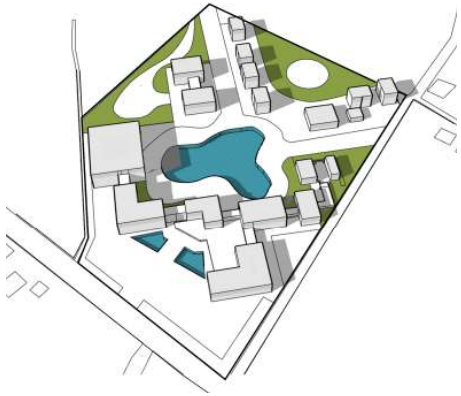


3. Integration of Nature: Pond at the center to break the symmetry, to symbolize the nature and Raji settlement.



4. Program placement: Generic rectangular block placed in their respective zone accommodating total programs.

5. Creating Open Space: Outdoor Cultural and socializing space introduced as Raji architecture is extrovert.



6.Connections-Scattered typologies connected, also inside connection to nature

6.3.1 Final Form

Figure 6-8 3D view

6.4 Conceptual Zoning and Hierarchy of Space

The zoning is done so as to establish the spatial relation among the different programs. The zoning is done as per the concept of sequential arrangement of spaces as per the time area.

1. **Past time zone program**

- Spaces: Museum, Gallery, Honey hunting and demonstration
- Transition space: Reception area and apiary area

2. **Present time zone program**

- Spaces: Accommodation for the admin, Honey hunter, farmer, and artist, community gathering and celebrating open area
- Transitional space: Ethnic food cafeteria

3. **Future time zone program**

- Spaces: Workshop and demonstration area, Shop, Woman and children area, Multi-purpose community area
- Transitional space: Reception

4. **Central connecting**

- Pond for recreation and fishing

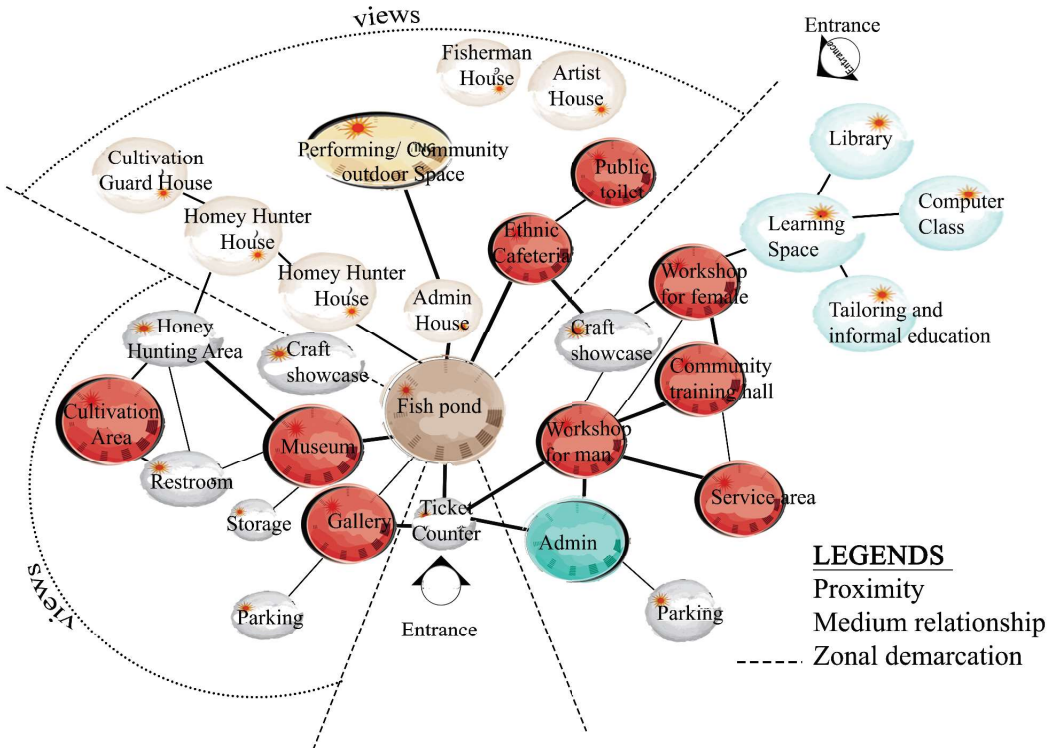


Figure 6-9 Conceptual zoning

6.5 Site Plan

Figure 6-10 Site plan

6.6 Master Plan

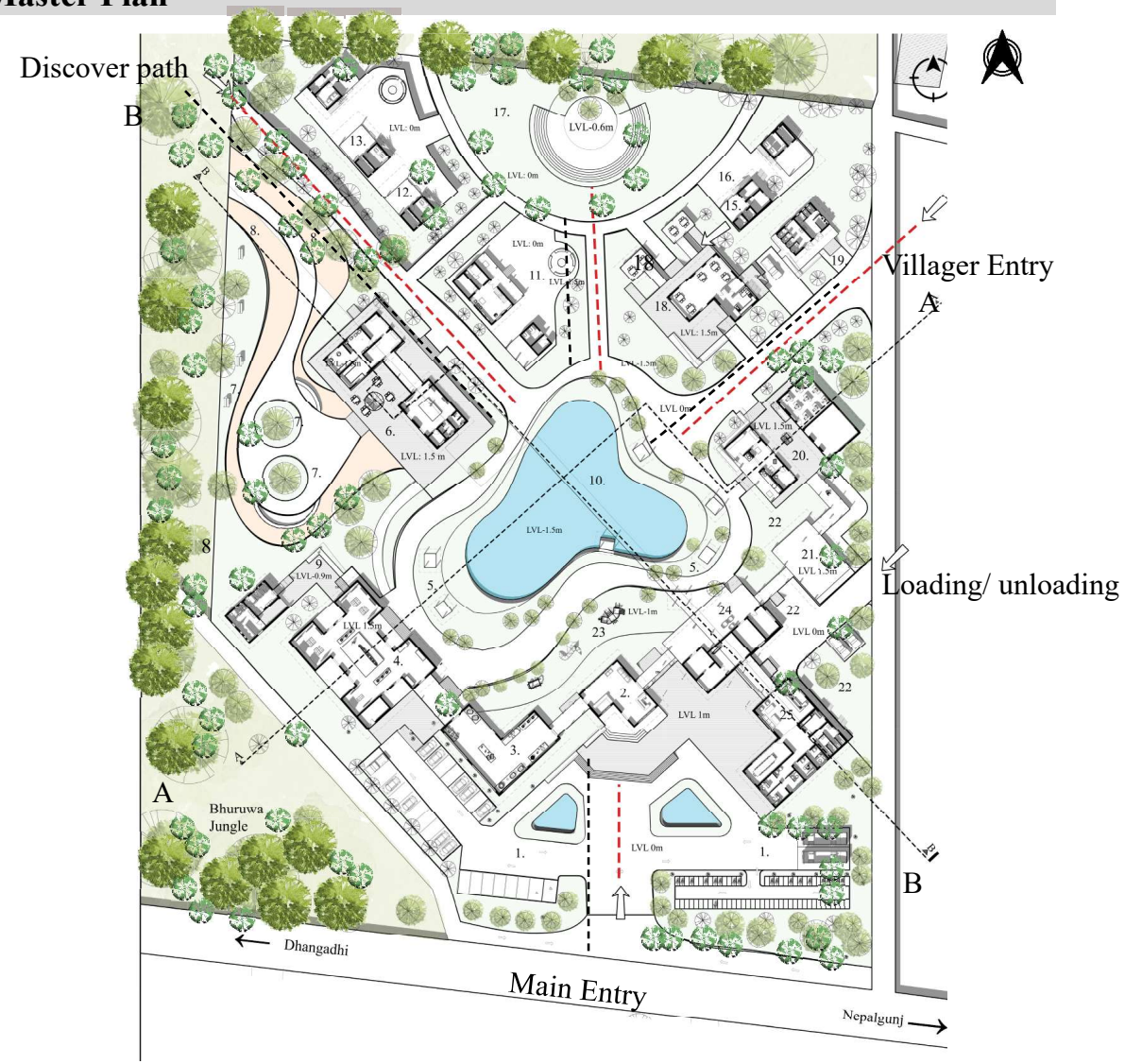


Figure 6-11 Master plan

Legend

PAST TIME ZONE

1. Parking A
2. Reception
3. Gallery Space and exhibition area
4. Museum
5. Outdoor Socializing space
6. Honey hunting and demonstration
7. Outdoor Demonstration area
8. Cultivation and Apiary area
9. Restroom
10. Pond and recreational area

PRESENT TIME ZONE

11. Admin house
12. Honey Hunter house
13. Fisherman House
14. Farmer House
15. Changing Accommodation-
16. Artist house
17. Performing and open cultural celebration area
18. Ethnic food cafeteria
19. Community toilet and bio gas

FUTURE TIME ZONE

20. Woman workshop, tailoring and informal education area
21. Community gathering area
22. Raw material drying area
23. Children play area
24. Outdoor demonstration area
25. Workshop for man
26. Administration

6.7 Site Section

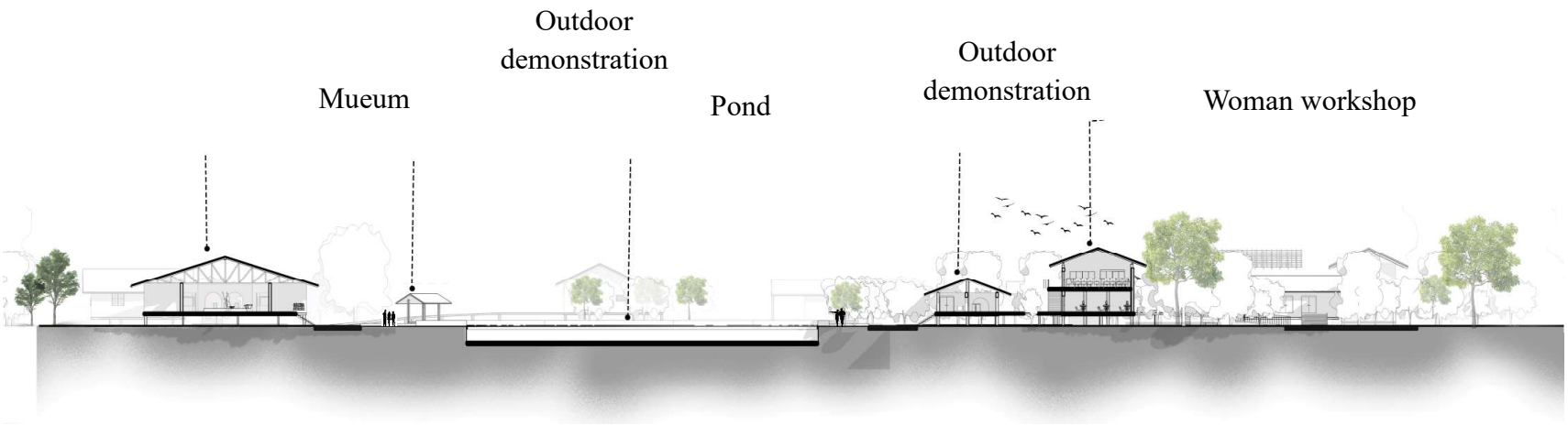


Figure 6-13 Site section through A-A

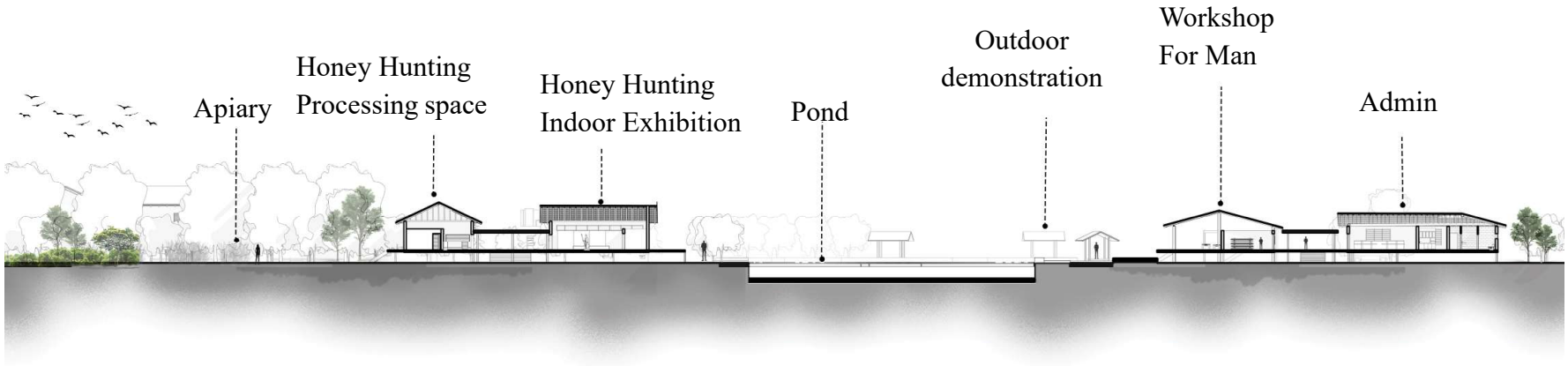


Figure 6-14 Section through B-B

6.8 Circulation

Taking the inference from the international case study, the circulation of visitors, staffs, and service should be different. So, the circulations for visitors, staff, community people, and service are defferent. The circulation for the visitors is deliberately design as in close loop. The circulations for the different groups are shown in figure 6-12.

Legends

- Visitors Circulation
- Staff Circulation
- Community Circulation

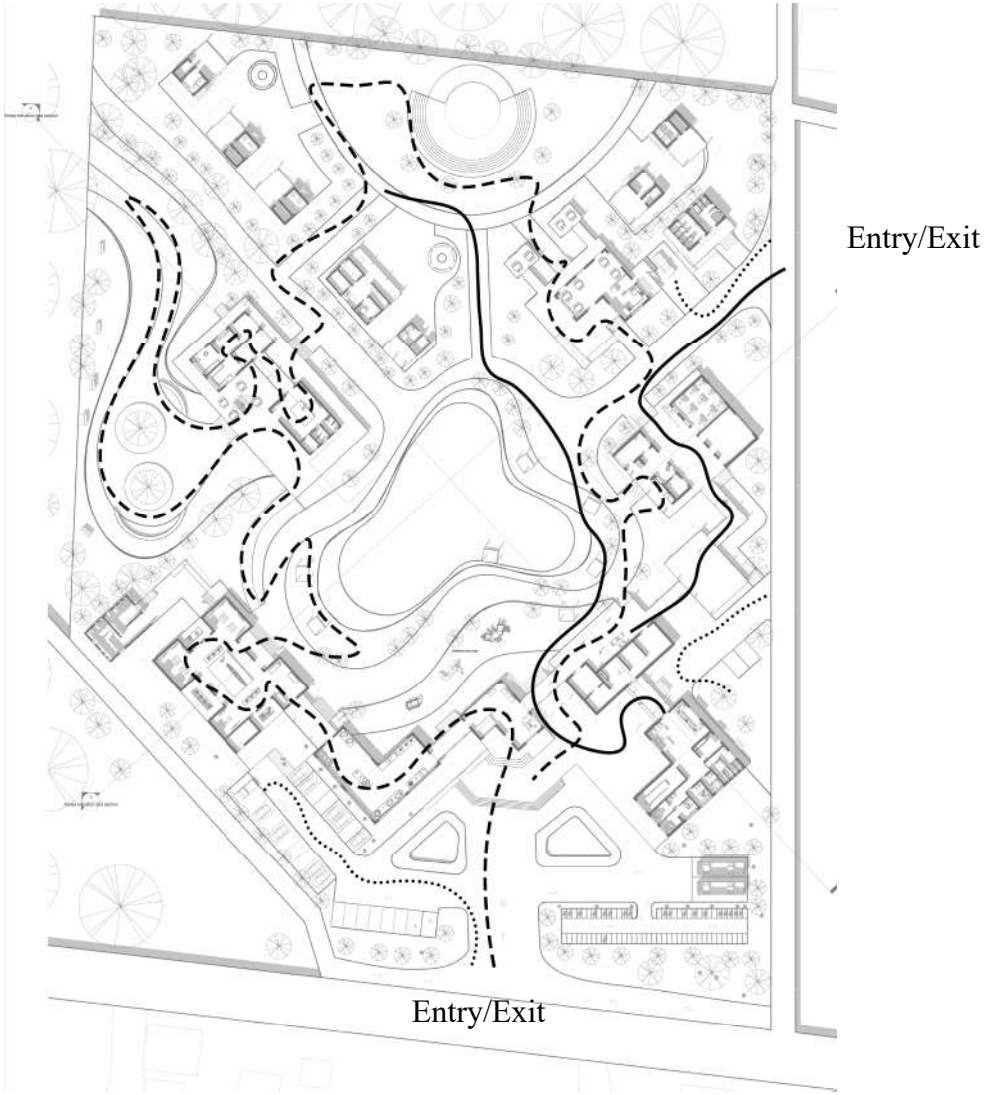


Figure 6-12 Circulation

6.9 Indivisual Spaces

The different Spaces as the community inclusive spaces, cultural spaces, artistist accommodation, recreational spaces are briefly presented below with respective drwaing and visualization.

6.9.1 Cultural and Economic Spaces

The cultural spaces are dedicated to the conservation, preservation, and promotion of the Raji culture which are on verge of extinction. The economic spaces are added to get the reveneu and uplift the livelihood of Raji people. The related designed spaces are presented below.

A. Museum and Gallery

Museum and gallery space is the cultural space which is designed for the exhibition and promotion of Raji culture. The gallery space is to exhibit the art and crafts from workshop for the sell. While museum is designed to exhibit permanently the cultural heritage of Raji community. The museum accommodates the four section for the history, traditional occupation, dress and ornaments. The central part is allocated to showcase the Raji man and woman statue, Traditional boat. See Page no. AR05 of Annex for more drawings of Past Time Zone.

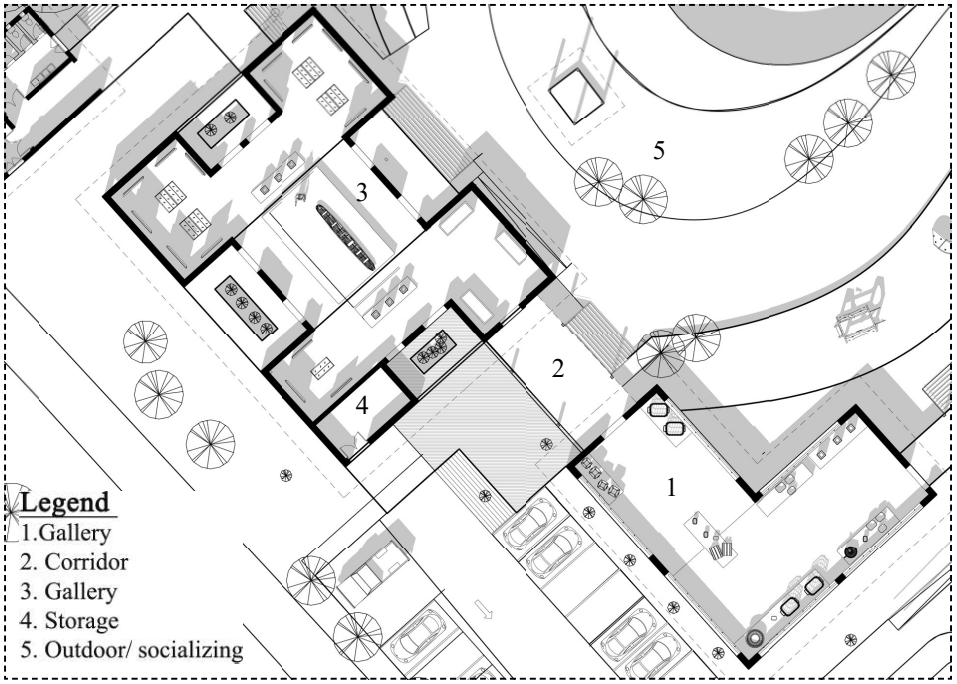


Figure 6-15 Blow up plan of Museum and gallery

B. Honey hunting and Apiary

Raji have their own traditional technique for the wild honey hunting. Therefore, the honey hunting and demonstration space accommodated the honey hunting technique, dress, equipment exhibiting area, and honey processing, storage area. Visitors can experience the whole traditional process of extracting, processing, and storage of honey. And also they can test the first hand honey while observing the honey hunting demonstration. This will facilitate the Raji hunter to practice and preserve their traditional occupation. See Page no. AR06 of Annex for more drawings of Present Time Zone.

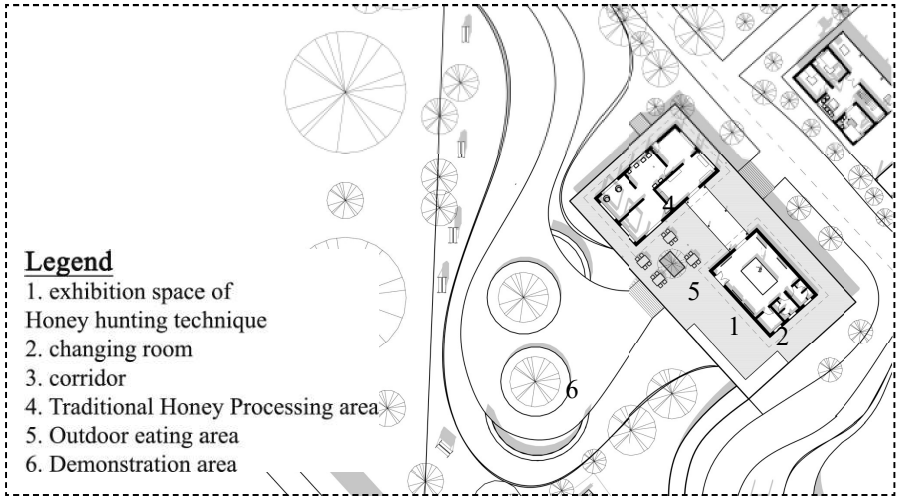


Figure 6-16 Blow up plan of honey hunting and demonstration area

C. Ethnic Food Cafeteria

The cafeteria is the transitional space between the present and future time zone spaces. View toward lush jungle and pond area is enhanced for the cafeteria design. One can test the ethnic food or Raji giving unique experience while the cafeteria helps Raji people for economy and cultural aspects. The capacity of the cafeteria, 30-40. Visitors can explore the ethnic food of Raji, Geetha, Vyakur, Tarul, Fish, Kankuwi, and other food.

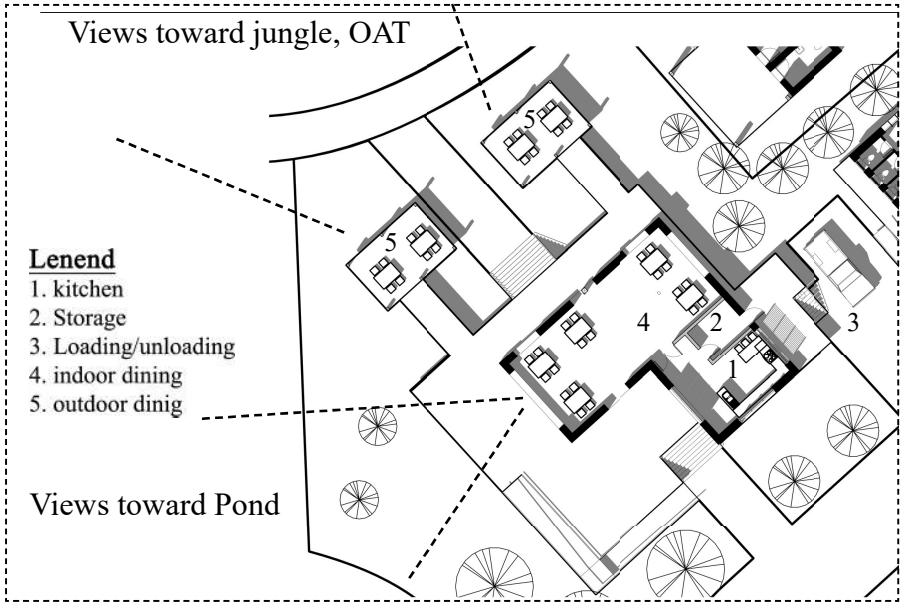


Figure 6-17 Blow up plan of ethnic cafeteria

6.9.2 Community Targeted Space and Economic Spaces

Inclusion of the Raji community is one of my design concept. With the aim of giving opportunistic platform of practising, learning, educating, and cultural celebration and socializing spaces area dedicated to the Raji community people. The Spaces are given below.

A. Woman and Children Spaces

As the literacy of Raji woman is only 45%, the space for the Raji woman is much need for to make Raji woman economically independent .The spaces are dedicated to Raji woman and children of Bhuruwa. The facilities provided are the hey mat workshop, gift shop, tailoring space (Silai bunai), informal and training are (Praud Sikshya, training) for the Raji woman and library, computer classroom, and for the children. See Page no. AR07 of Annex for more drawings of Future Time Zone.

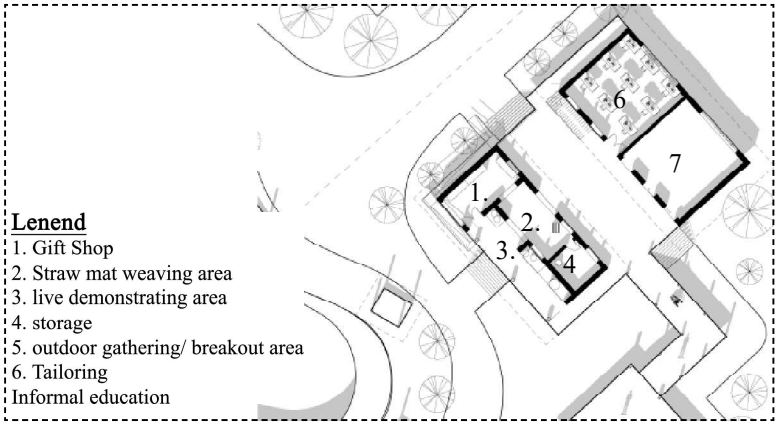


Figure 6-18 Blow up plan of woman and children

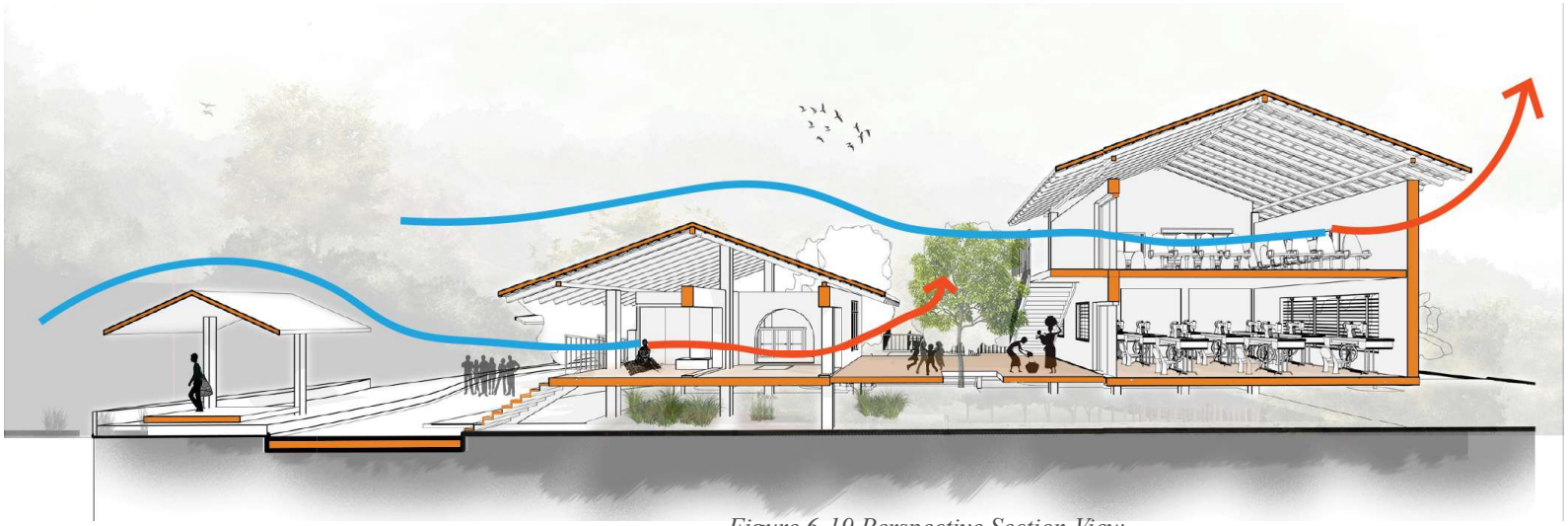


Figure 6-19 Perspective Section View

B. Workshop For The Raji Men

Workshop area is provided for both Raji artist living within the cultural center and men from the Raji community. Working and live demonstration area is provided. Visitors can directly explore the arts and craft made by Raji man.

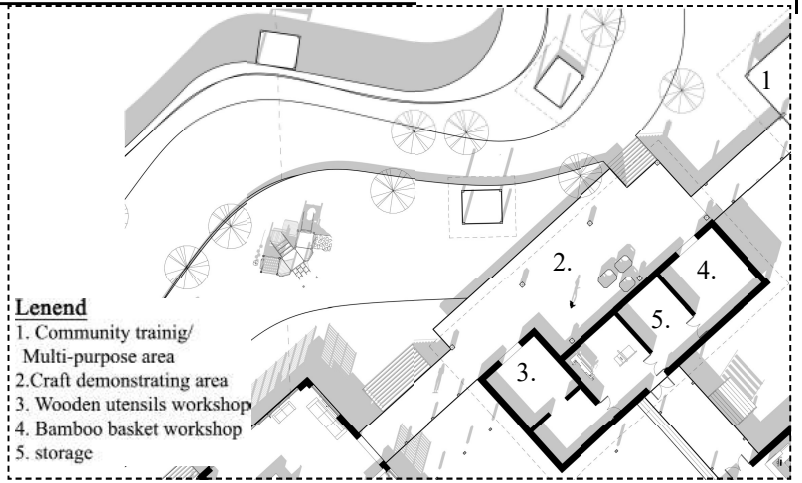


Figure 6-20 Blow up plan of workshop for man

Figure 6-21 Pond and Outdoor demonstration area

Figure 6-22 Children's Play Area

C. Community Gathering, Trainig Hall

This is the multi-purpose hall designed for the Raji people. Community training space is connecting separated workshop and training area for Raji man and Woman. This space is designed for the 50 people at a time.

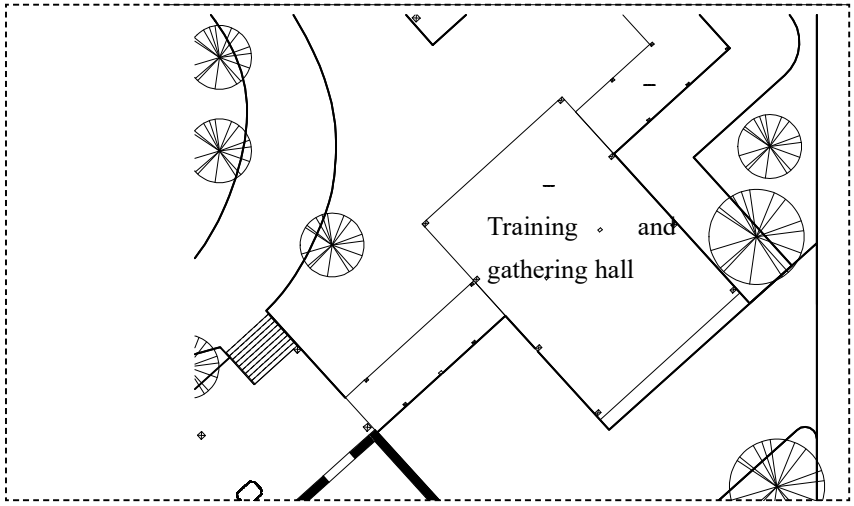


Figure 6-23 Blow up plan of workshop for man

B. Community Accessible Toilet

The public toilet which is accessible by both visitors and community people passing by the center. The floor is elevated to 1.5m from the ground level. The toilet also facilitate for the differently abled people. Sustainabl idea of generating gas from the toilet and organic waste from the cafe is also used. For this, space for the bio gas plant is provided near this toilet. The gas generated can be used in cafe and fertilizer produced can be used in apiary, landscape. See Page no. AR07 of Annex for more drawings of Future Time Zone.

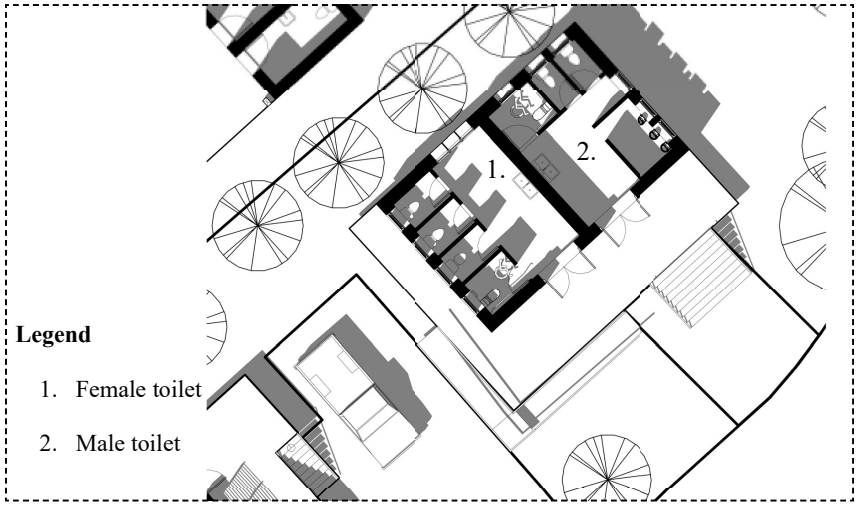


Figure 6-24 Blow up plan of public toilet

6.9.3 Pond-The connecting, Cultural, and Recreational Space

The conceptual planning is done in such a way that to show the Raji village. So the central pond is designed and the rest of program are placed around the pond. The pond symbolizes the integral part of Raji community. Besides of this, the pond helps for the;

- Ecological benefits
- Economic and cultural benefit (fishing)
- Recreational benefit
- Flooding water sponging area
- Controls mosquito (80%)
- Ground water recharge (Community benefit)

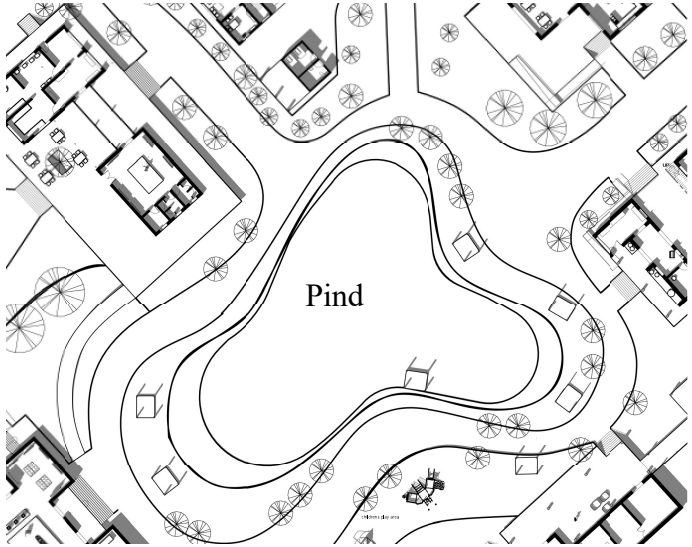


Figure 6-25 Blow up plan of Pond

6.9.4 Artist Accommodation and Tourist Homestay

6 housing units are provided to accommodate the artist and staff of the cultural center. Each house accommodates 4 family member. Tourist homestay facility are available only in honey hunter man house, fisherman house, and admin house.

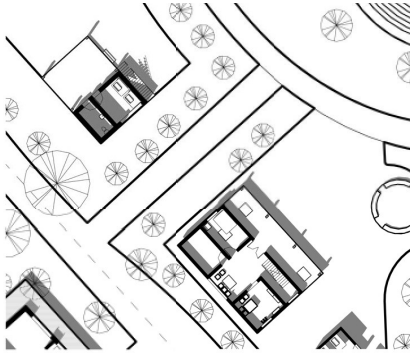


Figure 6-26 Blow up plan of accommodation units

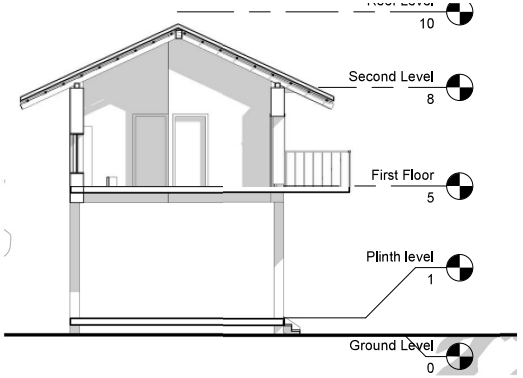


Figure 6-27 Blow up plan of accommodation section

6.10 Construction Technology

Since the floor is elevated 1.5m from the ground (accommodation units only 0.5m as BFE level is 0.5m), the floor is supported by the wooden post of dimension 140mmx190mm which is locally available material. The frame structure of timber is used for the construction of typologies. The roof is constructed using thatch roof of thickness 100mm, which came from the community forest **'Bhuruwa'.** The roof is supported on the wooden rafter and batten support. The illustrative drawing and views are shown below figure. To increase the maintenance period, polythin sheet of size 10mm is used which will protect seepage of rain water(NBC 204, 2015). The further details on construction are presented in annex page no. AR13.

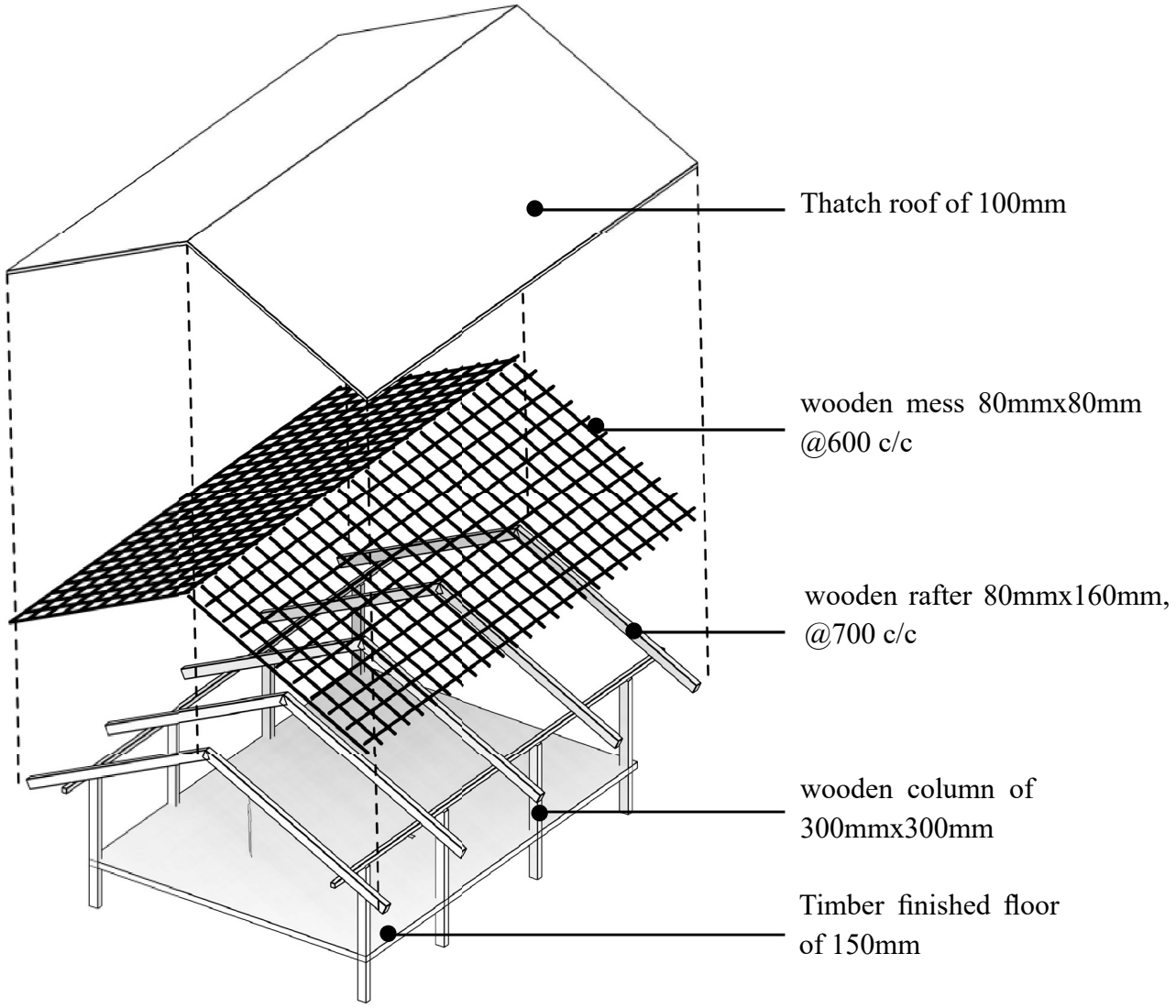


Figure 6-28 Exonometric diagram of comminity hall

6.11 Physical Model Phtographs

The physicap Model was made in the scale of 1: 200. Following photographs show the elevations from four side of the model.

Figure 6-29 East Elevation (Elevation from A)

Figure 6-30 North Elevation (Elevation from B)

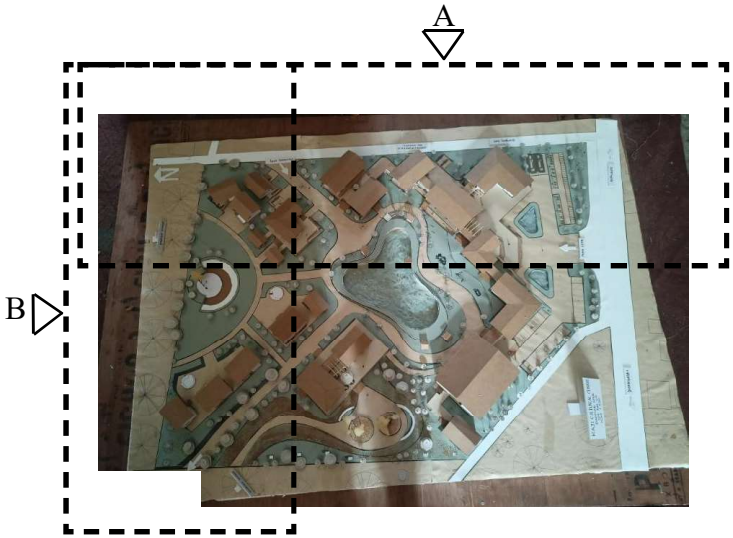


Figure 6-31 Key plan

Figure 6-33 South Elevation (Elevation from C)

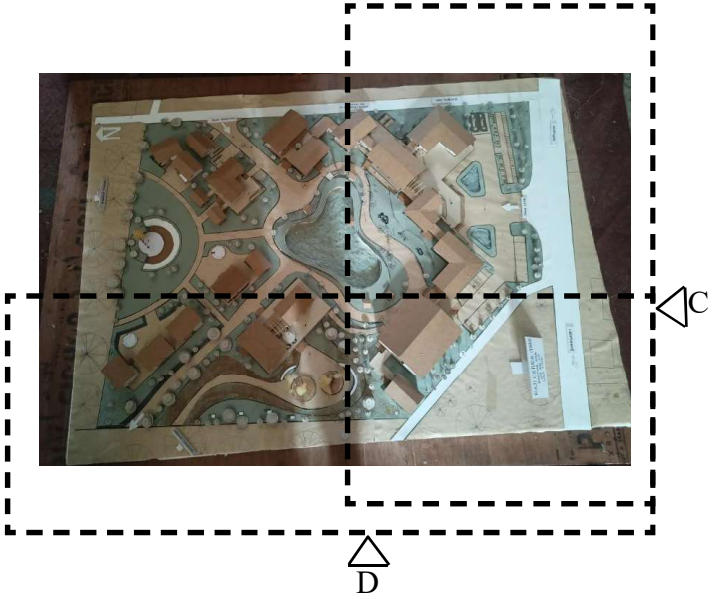


Figure 6-32 Key plan

Figure 6-34 West Elevation (Elevation from D)

7 SERVICES AND UTILITY

The Building services and utility is one of the important portion of the design, it comprises the services that are used in day to day life as well as the services used for the emergency purpose. The service used in the design are given below.

7.1 Water Supply

The sources of water for site are municipal water line and boring. Total volume of water required is stored from source in raw water tank. Water obtained through boring is aerate before sending to the raw water tank. The water to be used in the building is then pumped to treatment plant and then into the treated water tank. Water from treated water tank is pumped to an overhead water tank. The water required for firefighting is pumped directly into firefighting water store tank from raw water tank.

Table 7-1 Water Demand Calculation

S.N	Building Typology	Min. Requirement (Lpcd)	No. of People	Total Demand
1	Administration	45	20	900
	Workshop	15	150	2250
2	Trainign hall	45	100	4500
3	Museum	15	50	750
4	Gallery	15	50	750
5	Honey hunting	15	50	750
6	Artist accommodation	100	30	3000
7	Cafeteria	50	40	1000
8	Recreation/ gathering space	600	45	27000
	Total	**30,150**		
9	**Size of Storage tank**	**8m x4m x4m,** 0.5 m above the ground level (NBC 208)		

Total water demand=30.15 cu.m/day + 6.03 cu.m (20% of 30150 for fire fighting)

Size of the underground tank=36.18x3=108.54 cu.m

height of the tank=3.5m

Area of the tank=volum/height=108.54/3.4=31.01 sq.m

= 8mx4m

Adding 0.5m over boad + 1m above the ground to protect from flood,

Underground storage tank= 8mx4mx4m

7.2 Sanitation

Since the building blocks are scattered and located in different levels, septic tanks are provided in three different locations.The septic tank and soak pit should be water tight as the site can be flooded.

1. Past time zone typologies catered by 1st septic tank-placed in past time zone
2. Present time zone, 6 staff accommodation units and toilet catered by the 2nd septic tank -placed in present time zone
3. Admin is catered by 3rd tank-placed in future time zone

Calculation

- Quantity of waste water = 75-80% of water consumed= 0.8 x **30,150** = 24120 liters/day
- No of septic tank= 3
- Quantity of waste water in each septic tank = 24120 /3 = 8040 l/day
- Now,
- Detention period = 3days
- Total quantity of waste water in 3 days = 3x8040=24120 liters = 24.120 cu. m
- Volume of sludge = 125 x 0.03 x3 = 11.25 = 37.75 (for 3 years)
- Required size of each septic tank = 24.120 +37.75 = 61.87 cu.m.
- Let height of the septic tank be 2 meters
- Area of each septic tank = 61.87/2 = 30.935 sq.m.
- Tentative size of each septic tank is 6m x 5m x 2m.

7.2.1 Storm water drainage

The site is a flat with the slight level difference of 3m from north to south, rain water is easily drained off to the lower level as gravity flo In order to avoid washing away of soil, along with the storm water and corrosion of pavements, drains are provided around the building and along the sides of roadways and pathways. Use of the permeable paving is also done which reduces 70 to 80 % water runoff. Also, the OAT surface and pond are used sponge are which will facilitate ground water table recharge.

7.3 Grey Water Recycling

The grey water from the toilet and the waste water household is recycled using treatment plant so that thetreated water can be reused for the landscape irrigation, Toilet flush and can be store for the dry season. This technique will contribute the whole center in achieving the water sustainability. The process of recycling is illustrated in the following figure 6-35.

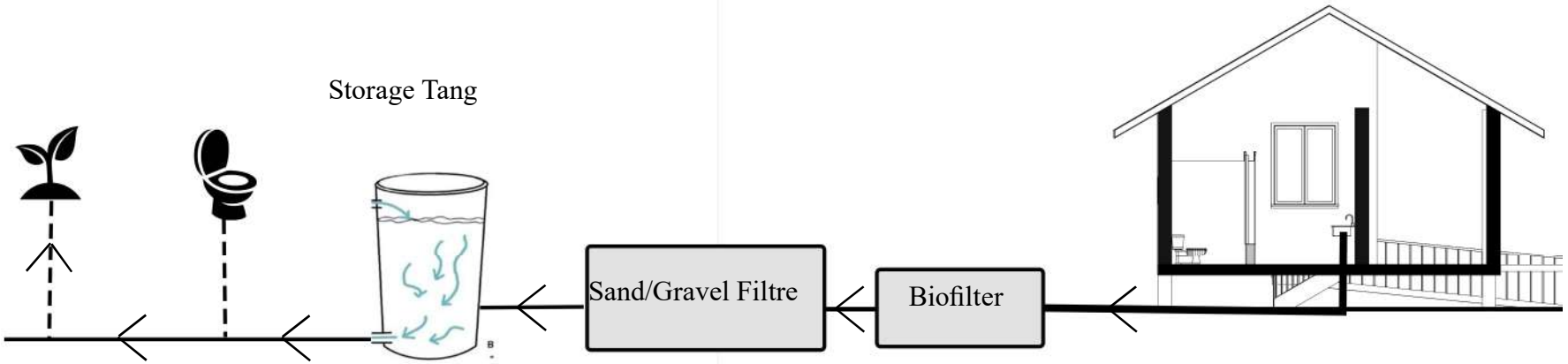


Figure 6-35 Grey water recycle process

7.4 Biogas Generation

The future time zone focuses on the future sustainability of the community and the center. For the center itself, the main aim is to provid the facilities for the future sustainability.One of the main future sustainability approach of the center is the enery efficiency. For this, the biogas generation from the organic waste coming from household of artist accommodation and human excreta. The energy generated can be use in cafeteria and the fertilizer cab be use in the landscape and apiary area. The energy generation process is illustrated in the figure 6-36. This will help to make the center energy independant. The calculations for the biogas generation are:

1 kg of cow dung produce 40litre of Gas
Cow dung per day-10 kg
Total cow dung-40 kg per day
Total gas produce-40x40=1600 liters
Gas holder size=(1x1.7x1)m3
Digestion plant=(2x1x2)m3
Storage Tank=(1.5x2x1)m3

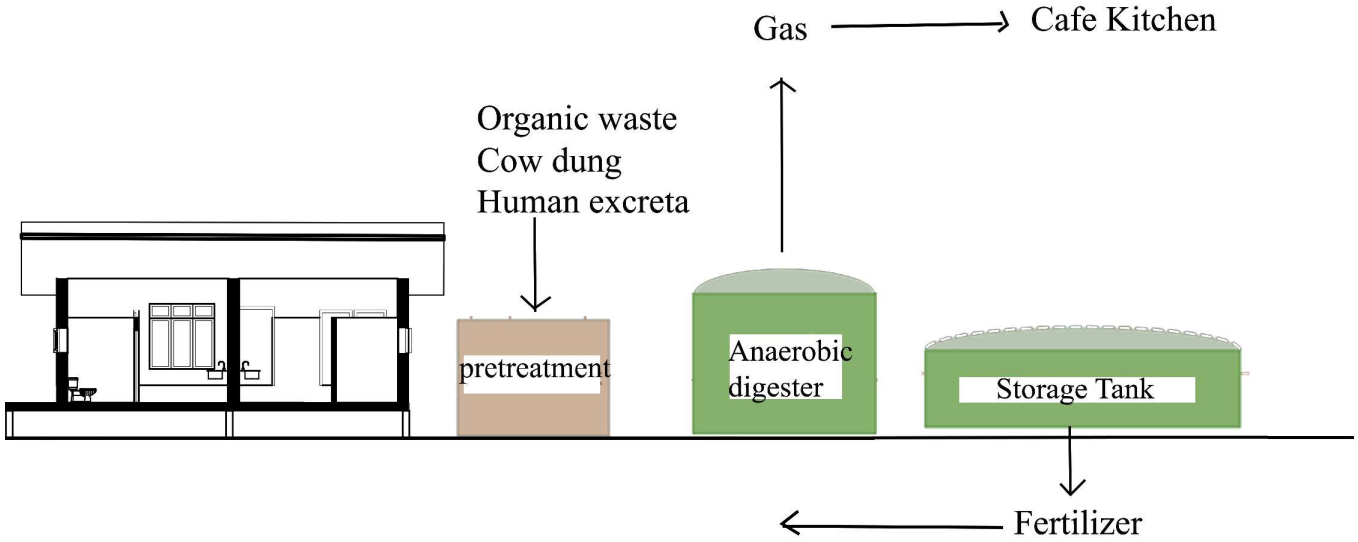


Figure 6-36 Bio-Gas Generation Process

8 CONCLUSION

Culture, closely related to the identity of any Raji ethnic group, is slowly taking the path of extinction due to rapid globalization, and the changing needs of people. The facilities like cultural center that fulfills the need of promoting and preserving the culture while “staying true to its roots” have been a growing necessity for keeping the valuable culture, skills and the identity intact.

The Cultural Center is envisioned to provide a complete experience of the art and craft, craft making, indigenous surviving skills and knowledge and its entire culture, deviating from the traditional way of preservation and some addition of economic activities. The facility provides social grounds to the target community people, students and visitors while maintaining the authenticity of the culture. The design of these centers shall perhaps be made universal, functional and economically sustainable without compromising on the aesthetics of the center.

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10 ANNEX