

Chapter 3

Anthropology of a Virgin Village Kutch's *Banni* Grasslands: Zararhwadi

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Introduction

The Banni grassland, located in the Bhuj taluka of Kachchh district, Gujarat, covers about 2600 km², making it the most extensive natural tropical grassland in the Indian subcontinent. It includes two ecosystems – wetlands and grasslands – and falls under the *Dichanthium-Cenchrus-Lasiurus* grass cover category (Manjunatha B L, April 2019). The area has 48 hamlets/villages organized into 19 Panchayats. In addition to permanent settlements, the *Maldhari* community sets up temporary settlements based on resource availability, such as water and grazing areas (*Gauchars*), which vary according to the season. Tourism and development of the Kutch-Bhuj region resulted in job creation, infrastructure development, an increase in the standard of living, an increase in resources, an increase in income of local people, and an increase in the need to settle in a geographical location, creating a nascent settlement (Khanna, February 2018). The opportunity for alternative livelihood with induced tourism has changed the patterns of non-stationary inhabitants (*Maldharis*). This results in a virgin settlement in the Banni region, making a community stationery. Infrastructure development, including physical accessibility, utilities like water and energy, local markets, and governance, often precedes the establishment of settlements. This holds for *Zararwadi*, a newly formed settlement inhabited by the *Maldharies* of Kutch, situated near *Hodko* village at the geographic center of the district. The town is characterized by its mud houses, desert landscape, and focus on experiential tourism. Villages such as *Zararwadi* are cataloged alongside *Hodko* as settlements populated by migratory communities (Dixit A., 2010). The settlements have mud houses called *Bhungas*, which are circular or polygon in shape, with thatched roofs, and are recognized for their earthquake resistance and climate adaptability. They also protect against sandstorms and cyclonic winds. As such, houses require regular seasonal maintenance and retrofitting to address wear and tear caused by natural elements and human activities (Priyanka Dey, 2024). The homes are clustered in peculiar patterns governed by socio-cultural reasons, livelihood, terrain, and natural resources.

***Maldharies* – the nomadic community that resides in the *Banni* grassland of Kutch**

For the first-generation residents, the dominant profession is animal husbandry, and the second generation is predominantly engaged in the hospitality industry, which results from the booming tourism industry (Himali Gor, 2024). The Kutch district's semi-arid *Banni* Grassland is renowned for its distinctive grasses and ecology. One of India's most significant grassland ecosystems, the terrain is ideal for grazing animals, which is crucial to the *Maldhari* community's way of life. The *Maldharis* are primarily known as herders. Their lives revolve around their livestock. The livestock provide them with milk, meat, and wool and serve as a source of income through trading animals and animal products. Their pastoral lifestyle has been intertwined with the region's ecological balance for centuries. The community has adapted to the harsh desert climate of Kutch, building their homes from locally available materials such as mud, thatch, and wood. These traditional houses, known as "*Bhungas*," are circular, with a conical roof, designed to withstand strong winds and hot temperatures. *Maldharies* have rich crafts, like weaving and embroidery, that are well known. The *Maldhari* community has been integral to preserving the *Banni* Grassland's delicate

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ecosystem—their livestock's grazing habits help maintain the grasslands' biodiversity. Overgrazing has become a concern in recent years due to population pressures.

Decoding *Bhungas*

The settlement is organized as a cluster, with the houses arranged in three loosely defined strips aligned in an east-west direction as seen in Figure 2. The natural boundary of the trees protects the settlements from desert winds, especially dehydrating hot, dry, and gusty summer winds in peak summer and cold winds in winter. The vegetation is also the source of fuel for locals and fodder for cattle.

The units of *Bhunga*, on the periphery, are arranged so that the entrance faces towards the cluster's centre. The *Bhungas*, in the cluster's centre, are placed facing each other. This formation creates an introverted space within. Also, it encourages more interaction due to a visual connection. It was observed that people of all age groups use this interactive in-between space during different times of the day. An ample gathering space has formed in front of the *mukhiya's* (the town leader's) unit. The openness allows all the village members to gather and address the talk or celebrate festivals, feed the cattle, have children play, etc. The space becomes a community space for many activities. Also, the same space has different activities during varied times of the day and performs in various manners with the play of light and shadow. The settlement of *Zararwadi* shows a unique characteristic where the activity of the day is distributed across the settlement irrespective of the house ownership.

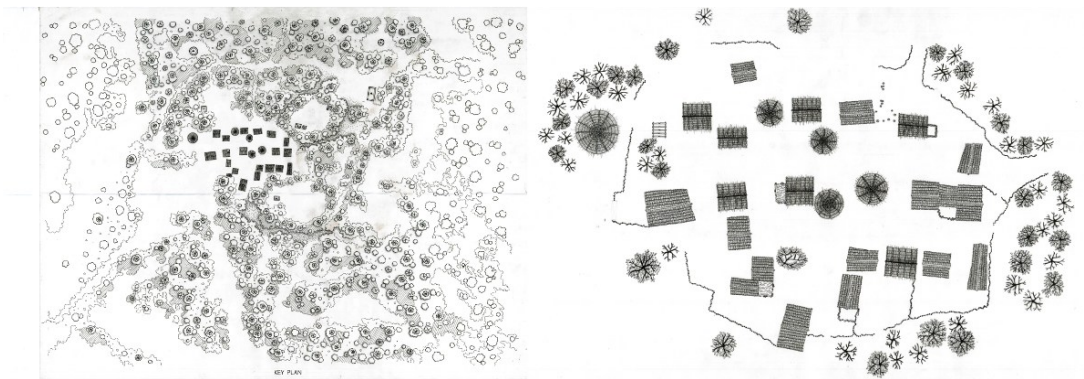


Figure 1. Bird's eye view of *Zararwadi* in *Hodko*, Kutch (Key plan, Floor plan).

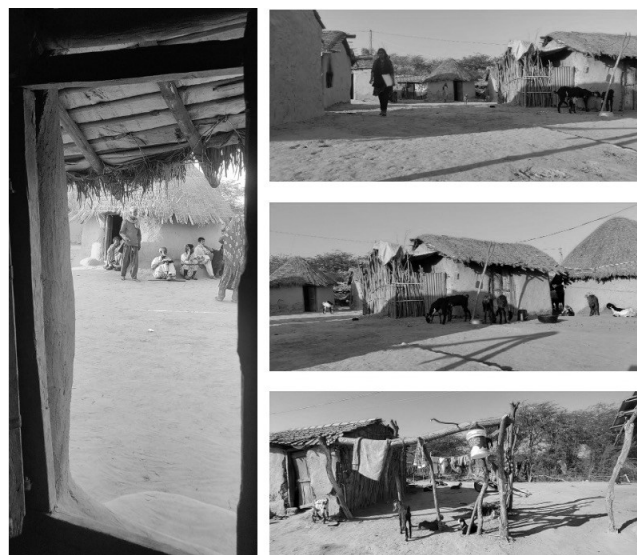
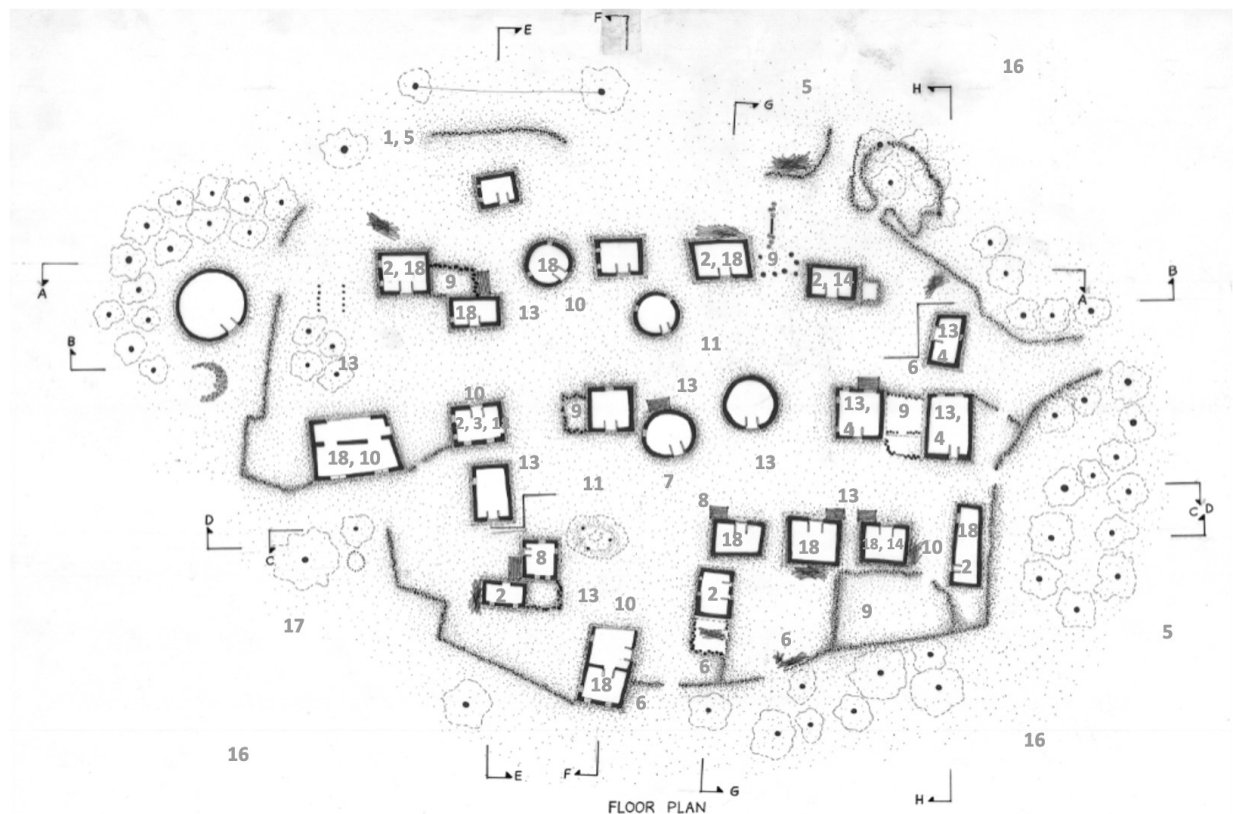


Figure 2. Habitat of *Zararwadi* in *Hodko*, Kutch (photo credits to the Authors).

Since the early twentieth century, traditional buildings have been examined by folklorists and within disciplines like ethnography, cultural geography, and material culture. These fields have approached such architecture as a tangible expression of human culture (Robert Brown, 2012). Cultural customs and communal rituals play a significant role in shaping and transforming these built environments, highlighting the significance of cultural influence in their development (Figure 3 (A)).



No.	Name of the Activity	Group / Individual	Gender (M/F/C)	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	Activity description
1	Bathing	I	M/F/C				*													-
2	Cooking	I/G	F																	-
3	Meals	G	M/F/C																	-
4	Craft activity	G	F					*	*	*	*									Done mainly by females for the running economy (Sewing machine is also used for the same)
5	Fetching water	I	F			*														Young girls from the village usually perform this activity
6	Laundry / washing utensils	I/G	F						*	*										Washing of clothes happen once in two days according to the amount of used clothes
7	Smoking & tobacco	I	M/F					*	*			*	*	*	*					Prefer beedi and tobacco
8	Getting firewood	I	M					*	*											Rs-50/ 40 kg, 2-3 people, also a source of earning(Rs. 250/day)
9	Milking cattle	I	M/F/C			*										*				Mostly by females
10	Evening tea	I/G	M/F/C												*					-
11	Sun bathing	G/I	M/F			*	*													Bath is usually done by females and elderly men
12	Playing	G	C						*	*	*		*	*						With individuals as well as cattle
13	Socializing	G	C/F				*									*				-
14	Nursing children	I	F			*														-
16	Grazing cattle	G	C/M				*	*	*	*	*									The children or males who take the cattle to graze are back before 1 pm (winter time)
17	Praying (azan/namaz)	I/G	M/F/C	*								*								Men usually go to masjid to pray while the ladies sit at homes and pray
18	Sleeping	I	M/F/C															*		-

Figure 3 (A). Activity Map of Zararwadi, Kutch (Above), Table captures the occurrence of activity across the day (yellow, orange, and blue as morning, afternoon and evening hours) (credits to the Authors)

The cultural influence on a building encompasses the full spectrum of human values, livelihoods, and material expressions that shape its design and use. Rather than viewing vernacular architecture—crafted from stone, timber, mud, or tin—as merely functional structures, it is more accurate to see them as reflections of intricate social and cultural dynamics. These buildings embody their inhabitants lived experiences, traditions, and community practices (Robert Brown, 2012).

It is distinctively observed that buildings (Here *Bhungas*) that store valuables, jewellery, clothes, and products, centered on economic activity like handicraft items, are located in the centre of the settlements and the entry doors face inward and also open inward, keeping them safe from anthropogenic factors governed by the eyes in the streets concept (Figure 3(B)). Moreover, these houses are constructed on raised platforms, ensuring safety

from natural events like rain, storms, and cattle roaming in the settlements (Figure 4, Section GG). The families that practice animal husbandry have cattle sheds near the living spaces with shared windows that ensure regulated temperatures in extreme winters (Figures 2 & 5 photographs).

There is a dominant practice of the community kitchen where families collectively own a shared cooking space (Figure 6 photographs) with nearby storage spaces that align with kitchen needs. The inhabitants of *Zararwadi* practice settlement-level Endogamy; hence, the settlement evolves into clusters of houses owned by families (Figure 3 (C)). It was interesting to observe that communal harmony practices include community cooking, a common space for storage (Figure 3 (B)).

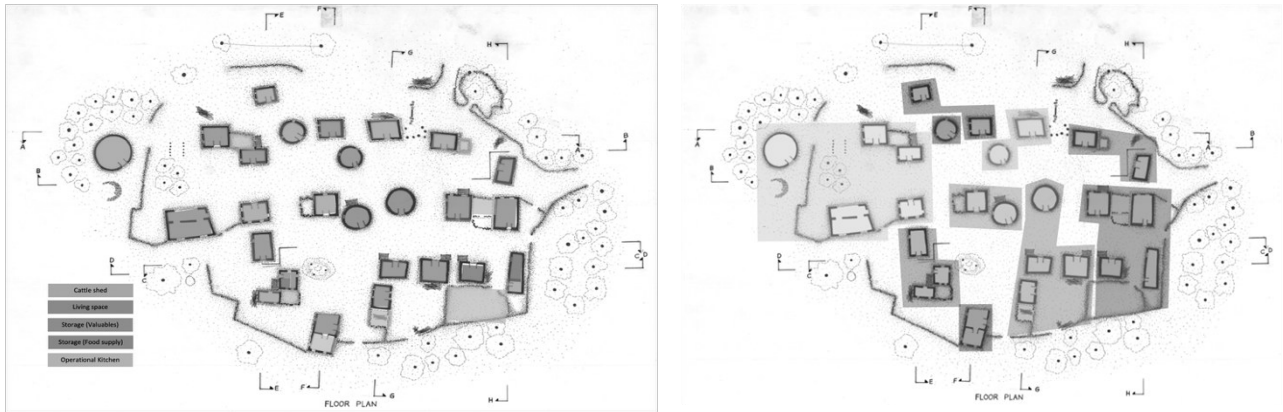


Figure 3 (B). Habitat of *Zararwadi*, Kutch, consolidated plan with function of the place (left) (credits to the Authors)

Figure 3 (C). Family clusters of *Zararwadi* (right) (credits to the Authors)



Figure 4. Plan and Section of *Zararwadi* in *Hodko*, Kutch (created by the Authors)

Built forms are subject to change with ongoing evolution in cultural practices and the socio-economic fabric of the inhabitants. Earth construction, especially vernacular buildings, has the opportunity to respond to people, place, and tectonics to sustain itself; however, it also follows the classic elements of architecture structurally to make it anthropomorphically habitable (Heath, 2019). Typically, *Bhungas* are mud houses constructed with dominant materials like cattle dung, soil, and water as required, with humidity for solidification. As per Figure 5, a typical wall section has a skeleton of locally available wood from babul shrubs that weaves horizontal and vertical sticks in the centre of a thick mud wall. The mud construction is not only cost-effective as the raw material is

abundantly available, but simple assembly processes are used in construction, making the house thermally comfortable indoors.

The walls can be constructed using cob construction, which involves mixing straw and small gravel into sandy soil. The resulting mixture is kneaded by hand, foot, or tools and then formed into lumps. These lumps are stacked vertically, with drying intervals between each layer. Once the vertical walls are formed, they are plastered to complete the construction.

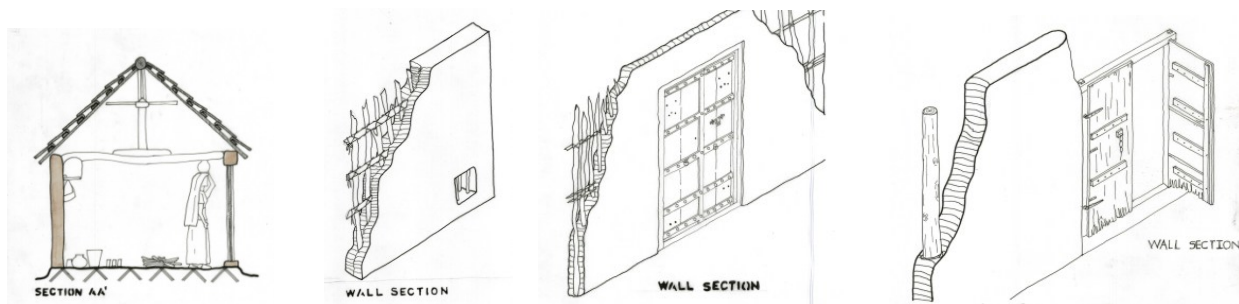


Figure 5. Wall section of houses in Zararwadi in Hodko, Kutch (created by the Author)

The floor of the *Bhunga* is constructed using the same materials as the walls: silt, cattle dung, and water, layered one over the other. This traditional technique is known as *Lippan*, where a fine paste of clay, finer than that used in the walls, is applied. The process involves a semicircular motion of the hands to apply the plaster, which is repeated twice to three times a year, depending on wear and tear. This repeated plaster application helps insulate the house and disinfect the surfaces following the monsoon season. Additionally, the re-plastering process incrementally elevates the structure by a few centimetres with each cycle, protecting from the dusty winds prevalent in the settlement.

The tapered thatched roofs are constructed using straw sourced from local grassland vegetation, while the beams supporting the roof are made from thicker logs of the Babul tree. Depending on the shape of the house, the roofs are typically either circular or rectangular with a tapered top, which may or may not include waterproofing. These roofs serve multiple functions beyond protecting the interior from external climatic conditions. The beams that hold the roof's straw also double as storage elements within the house. Items vulnerable to domesticated cattle or those requiring long-term storage, such as food or milk containers, are hung from the roof beams. This storage is anthropogenically accessible and includes provisions for air-drying food, lights, lanterns, and fans. The outer edge of the roof, where it intersects with the wall, features protruding logs that form a functional overhang, providing additional protection and utility.

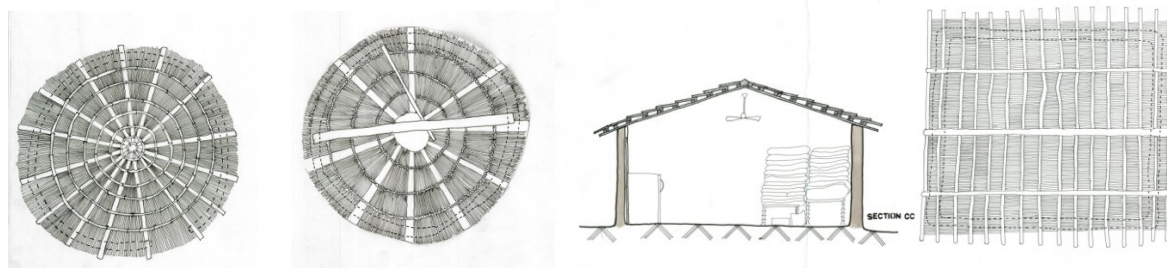


Figure 5. Roof details of houses in Zararwadi in Hodko, Kutch, Round roof (left) and polygon roof (right) (created by the Author)

Use of the Elements Anthropomorphically

Vernacular buildings evolve and have been sustained for generations, designed to meet the needs of growing families and changing needs (Robert Brown, 2012). Conventional buildings are a rich cultural resource with the potential for equivalent complexity, as they express multiple meanings. These buildings have characteristics expressed through form and decoration, as well as enclosed liveable spaces influenced by human rituals and daily life activities (Koebel, 1998). Village pathways and open spaces are paved with mud flooring (*Lippan*), this flattened land also acts as a spillover space for the community and often restricts the dust from rising

with wind, keeping the place habitable. The texture of *Lippan* is similar indoors as well as outdoors, maintaining the feel of the settlement as a home and the individual *Bhungas* as a subset of living spaces within the habitat.

The **entrance** of the *Bhunga* is slightly higher than the ground outside. This threshold serves as a transitional space between the inside and outside, where people can sit and work under natural sunlight. This space becomes essential as the houses cluster together, facing each other. This cluster again creates a sense of enclosure at the macro level in the settlement.

The columns: The two main wooden logs (in rectilinear form) act as the structure's main support and hooks for placing daily items.

The beams use small wooden logs or a large bamboo that acts as beams that hold the roof's straw and double as storage elements within the house. Items vulnerable to domesticated cattle or those requiring long-term storage, such as food or milk containers, are hung from the roof beams, shown in Figure 8. This storage is anthropologically accessible and includes provisions for air-drying food, as well as lighting, lanterns, and fans. The outer edge of the roof, where it intersects with the wall, features protruding logs that form a functional overhang, providing additional protection and utility.

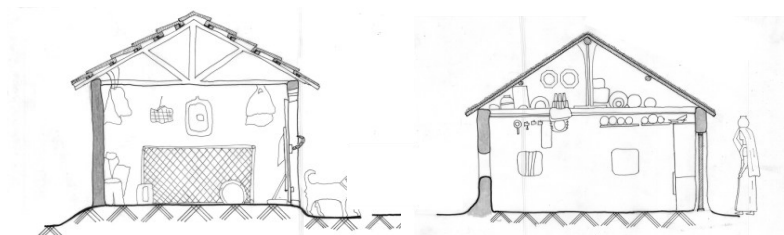


Figure 6. Wall section of houses in Zararwadi in Hodko, Kutch (created by the Author)

The floor: It is a straightforward and convenient way to carve out a floor and create a depression to place wood on fire to prepare their food. Along with a depression, they made a ring on the top to hold the vessels that act as *chula* (a stove made with mud) to make the food. Refer to Fig. 6. Dry wood is available in the region and used as a daily fuel for cooking. The roof tile above the *chula* is removed to allow smoke to escape from the unit. This arrangement acts as a chimney.

Additionally, some units are extended families, and they utilize a shared space for cooking as a communal area. The granary is just next to the cooking space. These units are mostly rectangular, with pitched roofs covered with Mangalore tiles. Additionally, these *bhungas* are located on the outer edge, where one creates a plinth that bulges out from the flat surface of the wall, serving as a sitting platform (*pali*). As these *bhungas* also formed a cluster of built structures, the sitting space serves as an interactive space for the neighbours.

Wash areas and common bathing spaces: Washing and bathing occur in the same space. Additionally, these villages lack plumbing facilities, making water availability a significant issue. Here, the washing space near the cooking area becomes a space for bathing. As the cooking space is only accessible to females, approaching the area becomes an unspoken norm. A bamboo fence surrounds the space and opens from above. Stone bases give a surface to bathe and water to percolate nearby soil. The kitchens, primarily accessed by women, are designed with adjacent spillover areas used for bathing and utensil washing. A simple arrangement — placing a stone slab on the ground and enclosing the area with a dense fence — allows used water to be naturally absorbed back into the ground, reflecting resourcefulness and ecological sensitivity.

Shades for cattle: These spaces are structured along with the structure of their respective units. They are just a skeleton of wood structures, like a primitive hut, partially covered by thatch. They are mainly used to keep cattle safe and bound inside the space. Also, firewood can be stored for domestic purposes. They are taken out to feed in the common area during morning and evening hours. These structures are mainly below or around the trees to utilize their mutual shading. The cattle sheds are lower in height than the surrounding house to protect the cattle from harsh, stormy winds of the desert and to share the thermal comfort of warmth in winter and mutual shading

in the summer months. The sheds are built with wood, allowing for breathability for cattle and easy replacement of material for the future.

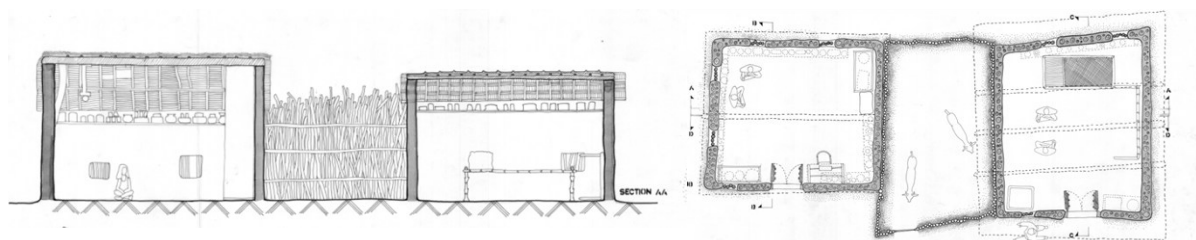


Figure 8. Cattle shade between two houses, Section (left) and Plan (right) (created by the Author)

Discussion and Conclusion

Context always plays a crucial role in shaping people's behaviour and built environments. In the case of *Zararwadi*, the habitat has evolved organically in response to socio-cultural practices. The village developed primarily in response to the availability of natural resources, particularly water and grass. The settlement's location is also relevant and complementary to the livelihood opportunity. The *Maldharies*—pastoral communities of Kutch—traditionally led a semi-nomadic lifestyle. However, with the increasing availability of resources and livelihood opportunities, they have begun settling more permanently as quasi-legal settlements. The settlement's growth is closely linked to the accessibility and consistency of resource availability, sustainability from a livelihood perspective, and access to markets and utilities, such as schools and hospitals. The increase in tourism and the community has also witnessed a rise in livelihood opportunities beyond pastoralism and craftsmanship, which is passed down informally and dominantly practiced by women. However, the cattle are in the epicentre of the daily life of these communities and their livelihood.

The typical situation where '*form follows function*' has been documented, as has the way the houses are constructed, and places are inhabited in these settlements. The elements of building materials offer abundance in terms of availability and thermal comfort. From the formation of clusters to the architectural aspects of the *bhunga*, every level of spatial organization reflects a lifestyle deeply intertwined with a profound cultural understanding. Natural boundaries made of *Prosopis juliflora* (Indian babul) protect the people and their domesticated animals from predators and the stormy winds of the desert. Village clusters have evolved incrementally through the accumulation of knowledge that responds sensitively to climate and socio-cultural needs.

- The orientation of *bhungas* typically faces inward, creating an introverted boundary and promoting community interaction.
- The spatial scale is well understood; the spaces between two or three *bhungas* create usable outdoor areas that foster visual and social connectivity, along with the *eyes on the streets* for young animals, children, and women, keeping safety in the epicenter.
- Clusters are organized so that shared facilities, like a communal storage area for valuables, are centrally located within the village.

Cattle are an integral part of the *Maldharies*; their shelters follow the *bhungas*, allowing residents to care for them closely, especially for young calves, lambs, and kids. Animals are integrated into domestic life, as seen in practical adaptations such as suspending clean utensils and food items on beams to restrict access and raising the entryway to the house, creating a physical barrier for animals to enter. However, there is synergy in the settlement as a shared living space for humans and cattle, with cattle sheds located between or near houses to facilitate thermal comfort exchange. Every structural element is thoughtfully used.

In essence, the settlement patterns and architectural choices of the *Maldhari* community are not just pragmatic responses to environmental and economic factors but are deeply rooted in cultural knowledge and collective memory. The seamless integration of livelihood, ecology, and social practices demonstrates a sustainable and adaptive way of living that prioritizes human and animal well-being. *Zararwadi* is a testament to how traditional wisdom can shape resilient and meaningful habitats when aligned with natural rhythms and communal values. Preserving and learning from such models is crucial, especially as we search for context-sensitive and inclusive approaches to contemporary rural and urban development.

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Conflict of Interests

The author(s) declare(s) no conflict of interest.

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