HISTORICAL ANALYSIS OF THE INDIGENOUS SALT SPRINGS AND SALT PRODUCTION IN NAGALAND

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
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By

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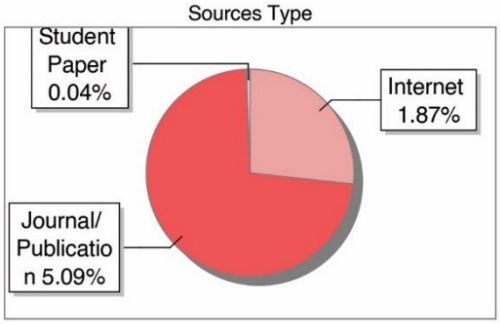

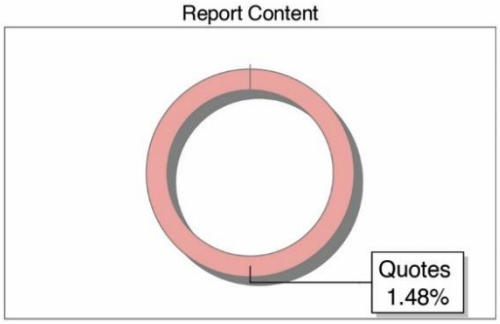

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Tenosenuo Angami

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1.1. Salt: A General Introduction

The use of salt as a condiment is a universal practice. Its significance extends far beyond culinary application. Salt is one of the oldest raw materials known to man and has been used since the earliest times for both subsistence and symbolic functions (Good, 1972). It is the most widely accepted and universally used of all condiments, and in no part of the world is salt unknown or unused (Manley, 1884, p. 6).

Etymologically, the term salt originally denoted the residue left by the evaporation of seawater (Aggarwal, 1937, p. 4). In mineralogical terms, salt is commonly known as halite or rock salt, a crystalline substance composed primarily of sodium chloride (Bai, 2015, p. 1). Chemically, sodium chloride (NaCl), also known as common salt, is the simplest type of chemical salt and is highly soluble in water. While pure sodium chloride is not deliquescent, it absorbs moisture due to the presence of magnesium chloride (Aggarwal, 1937, p. 4). Salt consists of approximately 40% sodium and 60% chloride, and both play essential roles in the biological system; sodium facilitates the absorption of glucose and certain amino acids in the small intestine, regulates nerve function and aids in water balance. Chloride is an essential nutrient and, together with sodium, helps to maintain extracellular fluid volume and balance (Bryd-Bredbenner *et al.*, 2009, p. 499-506).

Geologically, salt is also called an "evaporite", a term that covers a large variety of minerals that may be called "salts" in a general sense (Harding, 2013, p. 21). Salt's natural formation is tied to processes of chemical weathering and dissolution. When rocks are weathered, soluble salts are carried into natural waters such as lakes and seas (Westphal *et al.,* 2012, p. 323). Liquid inclusion in halite usually entraps brine from which the salt crystallises. Cavities containing such liquid may be only partially filled and show a movable bubble (Ramdell, 1960, p. 14). Salt exploitation dates back beyond recorded history, and groundwater brines provided some of the earliest sources, due to their salt content (Landes, 1960, p. 32). Table salt is not the only salt; other sources of salt exist, even though they may differ in purity and quality (Matsheshe, 1998, p. 75). Ethnological evidence suggests that people don't necessarily look for sodium chloride,

but a “generic salt”, the composition of which can be different in terms of its origin (Gouletquer and Weller, 2015, p. 14).

The origin and composition of salt were subjects of tradition and poetic speculation among ancient civilisations. Classical thinkers sought to explain the nature of salt. Hippocrates, for instance, explains that the sun’s heat draws away the fine particles of water, leaving the heavy salt behind. Similarly, Pythagoras articulated that salt was born from the sun and the ocean, and the same belief is shared by Pliny (Calvert, 1915, p. 6). Such accounts reflect early attempts to explain natural phenomena and highlight the symbolic as well as material significance attached to salt.

Salt has been a fundamental dietary necessity throughout history. Its physiological significance can be understood by its role in human physiology and nutrition. People have valued salt because it fulfills these physiological needs (Williams, 1024, p. 12; Lovejoy, 1986, p.1). It is a much sought-after item, and its dietary use is closely linked to the transition of men from nomadic to agricultural and a sedentary society (Kaufmann, 1960, p. 3). Yet, despite its necessity, salt was not easily accessible. While some regions possessed natural deposits or coastal brine sources, others faced considerable challenges in procurement. Salt, unlike other foodstuffs, cannot simply be “harvested”, and in many areas its extraction or production necessitates specialised techniques. The difficulty in procuring and its vital role in the human diet made salt procurement, production, exchange, and trade a major activities of early settled communities, and later in the development of urban society (Buccelati, 1990). The varied methods of salt extraction, from boiling to mining rock salt, date back to prehistoric times, reflecting both technological ingenuity and the social importance of this mineral (Gilmore, 1955).

Some of the earliest evidence of salt production sites in Europe is from the Neolithic site (Harding, 2013, p. 87). Many scholars argue that the origin of salt-making is directly linked to the dietary changes associated with the Neolithic transition, as diets dependent on cereals are low in sodium and need to be supplemented by salt (Andrews, 1980, p. 37).

Human beings require a minimum intake of salt to retain water balance (Bloch, 1963). As Eubanks (2016, p. 13), citing Beauchamp (1993), observes, salt constitutes a physiological necessity, and the human body frequently develops a craving for salty

foods. Since salt is continually lost through processes such as sweating and urination, and if not replaced, depending on the level of deprivation, it can lead to health complications, including headaches, dizziness, nausea, and in severe cases, even death (Dharker, 2005, pp. 119-120). Records further suggest that salt deprivation was once used as a method of torture, causing victims to languish in acute physical pain; a condition described as salt hunger (Trumbull, 1899, p. 42).

Despite its vital role in human nutrition and physiology, there remains no consensus regarding the amount of salt required in the diet, and consumption varies considerably across regions and populations. These variations are influenced by climate, dietary composition and occupational habits. For example, communities whose diet rely heavily on meat and sea-based food often require minimal salt; those who are dependent on plant-based diets naturally have low sodium content and must supplement their intake with mineral salt. This need is particularly evident among agrarian societies that subsist on cereals and vegetables (Andrews, 1980, p. 35).

The importance of salt has shown how salt scarcity can threaten the life of a community or disrupt the affairs of nations. In particular, fluctuations in its supply and demand can create havoc, and competition over access to salt has, at times, resulted in conflict and warfare (Andrews, 1980, p. 36). A striking example is Mahatma Gandhi's famous Dandi March of 1930, which protested the British colonial administration's imposition of increased salt taxes in India, thereby highlighting salt as both an essential commodity and a powerful symbol of resistance (Rose, 1952).

Salt occurs naturally as rock salt or in dissolved form as brine. Regions rich in saline deposits often become distinctive ecological zones, attracting large numbers of animals and diverse species of birds, which are drawn by the saline-rich atmosphere (Boddy, 1881, p. 57). The identification of such saline springs and deposits by humans was frequently through close observation of nature. In particular, people noted that wild animals frequented such sites to lick salt; thereby drawing human attention to the presence of salt springs (Saile, 2012). These natural deposits, referred to as salt licks, are marshy swamps where saline springs emerge. Wild animals, guided by instinctive needs, were known to travel long distances to reach these "salt licks", whether in the form of brine pools and rock salt (Manley, 1884, p. 7; Rose, 1952). Such sites not only satisfied

the mineral requirements of wildlife but also provided opportunities for human hunters, as the gathering of a large number of animals around salt sources made them a prime hunting ground (Eubanks and Brown, 2015). Accounts further illustrate how indigenous groups, such as the Aboriginal peoples of North America, located such salt sources by following the trails of wild animals. One of the ways through which humans searched for salt was by following the trails of animals, which eventually led to salt lakes, brine springs or other saline deposits (Thakur, 2017, p. 179). The deep connection between animal behaviour and human subsistence is evident in the way hunters across various cultures exploited salt licks as natural lures, setting traps to hunt game (Harding, 2013, p. 16). Salt licks thus represent a culturally significant landscape for human survival with natural patterns of salt-seeking behaviour.

The earliest human encounters with salt likely occurred in the form of natural incrustations or efflorescence found around salt springs or at sites frequented by wild animals seeking salt (Kaufmann, 1960, p. 5). Such sites played a crucial role in attracting both animals and humans. It is believed that the availability of this mineral salt enabled early civilisation to thrive and flourish. Archaeological and historical evidence suggests that some of the earliest human settlements were established near salty springs, often discovered by hunting tribes who traced animal movements to these natural sources of salt (Bloch, 1963).

The beginning of the Christian era saw salt as a dietary necessity for large-scale trade. Vast salt networks had developed across Europe, the Near East, Egypt, China and Middle America, serving not only as economic lifelines but also as catalysts for political power and cultural exchange. These salt networks played a crucial role in shaping the economic foundations of some of the world's earliest and most civilisations (Andrews, 1980, p. 37).

Despite its importance, the supply of salt was historically limited by the levels of technology (Adshead, 1992, p. 23). Different regions, therefore, devised diverse methods to overcome these constraints with varying degrees of technological sophistication. In China, for instance, salt production reached remarkable levels and was produced in large quantities by drilling wells to obtain brine, which was then evaporated. As early as 500 AD, they had an advanced production and yielded salt in large quantities by this method.

This technique represented a significant technological achievement and placed China as a leader in salt production for centuries; a technique that was discovered in Europe only in the eighteenth century and thereafter made salt a common commodity (Rudolph, 1952; Lovejoy, 1986, p. 2).

Historically, control over salt resources and their distribution played a primary role in shaping the economic, social and political structures of societies (Good, 1972). The necessity of salt for human survival elevated it from a mere dietary requirement to a strategic commodity, and many of the earliest long-distance trade networks were believed to have developed around salt, forming what historians describe as some of the world's first commercial routes (Andrews, 1980, p. 37). Salt has indeed been described as the world's first article of commerce and played a foundational role in the development of market exchange. Harris (1960, p. 627) observed that some of the world's oldest trade routes were established primarily for the purpose of transporting salt. Besides commerce, the salt trade also functioned as one of the great sources of communication between people. The regular supply of salt required an extensive and long-lasting communication network; therefore, salt-producing regions became highly valued and often protected (Brown, 1980, p. 5; Saile, 2012, p. 231).

Salt has a variety of uses compared to any other mineral substance. Its earliest and most fundamental use of salt was as a food and food supplement, and probably the second use was as a preservative for salting fish and later on meat (Kaufmann, 1960, p. 662). Over time, it came to be used in other fields such as the industrial and agricultural sectors, for curative purposes and even transportation, expanding its value beyond domestic consumption. Its indispensability made it a reliable basis of public revenue. Numerous States and empires throughout history levied duties and monopolies on salt, recognising its financial potential. The taxation on salt, as Aggarwal (1937, p. 7) notes, provided profitable revenue that contributed to the maintenance of state institutions and power.

Salt occurs in diverse forms and quantities across different geographical regions. It may be found dissolved in the water of seas, in springs, deposited underground in mines, spread across swamps or appearing as efflorescence on open plains in many parts of the world (Boddy, 1881, p. 32; Aggarwal, 1937, p. 8). Historically, salt was procured

from various sources, including rock salt deposits, brine springs and seawater. In regions where salt resources were abundant, communities developed specialised techniques for extraction and processing, while those lacking direct access depended on exchange and long-distance trade to secure this essential commodity (Yankowski, 2007, p. 24). Today, a substantial proportion of the world's salt supply is obtained from the underground beds of nearly pure salt formed millions of years ago by the ancient seas and are now buried under thick layers of earth and rock. Other sources where salt is found are the waters of salt lakes, the oceans, and natural salt springs, which are created through subterranean streams flowing through these rich salt beds (Rose, 1952).

Salt deposits found and exploited today are largely the product of tectonic activity, which has shaped their formation and distribution (Harding, 2013, p. 22). Tectonic processes are responsible for the evolution of ocean basins, mountains and plateaus, and thus generate structural features such as folds, faults, joints and thrusts (Moiya, 2019, p. 52). Historical accounts also attest to the influence of seismic activity on salt resources. Hodson (1908, p. 35) noted in his work 'The Meitheis' that the earthquake of January 1869 led to a dramatic increase in the saltwater levels in the Ningail salt well (p. 35).

Globally, salt resources occur in diverse forms and settings. They may be extracted from land deposits or seawater. Some exist as huge mountains with dark cavernous interiors, and some lie in deep mines, hundreds of feet beneath the earth's surface. However, not all deposits are equally accessible, as many are located in remote or challenging places that render them uneconomical to exploit (Boddy, 1881, p. 32; Harris, 1960, p. 628). Despite the widespread availability of salt resources across various regions, scholars emphasised its geographically circumscribed nature. Access to salt has been uneven, shaping patterns and interaction in significant ways (Eubanks, 2016, p. 16).

The salinity of the brine sources varies; however, even brine of relatively weak concentration can yield salt through evaporation. Although salt could be produced continuously throughout the year, historical practices displayed a seasonal work, with production taking place mainly during the dry season when evaporation is more efficient (Williams, 2014, p. 38). Multhaf, as cited in Brown (1980, pp. 60-61), emphasised that, in Europe, salt production was traditionally referred to as 'harvesting' as it was closely

tied to seasonal occupation scheduling being adjusted to agricultural activities. The salinity of brine also fluctuates even on a single day due to factors such as rainfall and the sun's heat, thereby influencing both the timing and the efficiency of salt extraction (Harding, 2013, p. 24).

The origin of artificial evaporation techniques for salt extraction and the earliest method might have been dropping brine onto burning wood coals or heated stones, after which the crystallised salt efflorescence could be scraped and collected. This primitive technique, documented in Europe, represents the earliest technological interventions in salt production. In contrast, the Chinese developed a more advanced technique of brine processing at a comparatively early date. Historical records attribute the Chinese preparation of superior salt before the reign of Emperor Yu (2205 to 2197 BC). Additionally, the first definite recorded solar evaporation method for salt production is traced to Italy, leading to technological pathways in the history of salt production (Kaufmann, 1960, pp. 5 & 8).

1.2. Significance of Salt in History

Salt has held its honoured place in human civilisation since antiquity, with references dating back to the papyrus leaf literature (Calvert, 1915, p. 1). In early societies, it was not only a rare and costly commodity, but was also regarded as a great delicacy and a highly valued article of trade. Besides its culinary uses, salt was also significant as a chemical agent, applied in manufacturing processes, and a valuable article both from a scientific and commercial point of view (Boddy, 1881, p. 25). As an indispensable commodity, salt has played an important role in human history, whether in social and religious, economic, military, political and even as a medicine and curative agent.

i) Social and religious significance: In the social and symbolic life of communities, salt functioned more than as sustenance. In Medieval European society, a salt receptacle on the dining table symbolised social hierarchy. Members of the household, honoured guests, and the master of the house sat "above the salt", while servants of the house and people of lower status sat "below the salt" (Casal, 1958). Such practice shows how salt was embedded in rituals of status and

authority. The cultural importance of salt across civilisations is also evident in language. Numerous expressions on salt emerged to reflect its value, such as "to pay a salt price", meaning costly or dear; "worth one's salt" or worthy of one's hire; denoting someone deserving of their wages, "above or below the salt", indicating social rank (Kaufmann, 1960, p. 2). Sources further revealed the sacred and divine that was ascribed to salt. Homer referred to it as "divine", while Plato considered it a substance dear to the "gods" (Orr, 1934). Salt's purifying and protective qualities are also found in religious practices. In Japan, custom prescribed the use of salt or a salt-water bath for the mother after childbirth as a means of purification for the body (Casal, 1958).

ii) Economy and Commerce: Salt emerged as one of the most precious and sought-after commodities following the agricultural revolution (Eubanks, 2016, p. 1). Its economic and commercial significance is reflected in the early development of transportation and communication. The first roads constructed for commercial purposes were primarily to transport salt. In Italy, the oldest known road, the *Via Salaria,* or salt road, was used mainly to transport salt from coastal areas to the interior, passing through Rome. Similarly, Herodotus mentions the caravan routes that linked the salt oases with the Libyan Desert, demonstrating the centrality of salt in ancient trade networks (Orr, 1934). The physiological necessity of salt and its relatively limited distribution rendered it an ideal medium of exchange (Brown, 1980, p. 5). As a substance in constant demand that can be stored safely for a long time, it was used as primitive currency by pre-modern societies worldwide and as a means of paying salaries. The Roman army received part of its wages in the form of "salt money", from which the modern term "salary" is derived, indicating that money was given to buy salt (Galili & Arenson, n.d.; Rose, 1952). To ensure uniformity, salt was moulded into cakes of regular size, thereby facilitating its role as a unit of currency (Brown, 1980, 67). Marco Polo recorded that under the reign of Kublai Khan, salt cakes were used as "small money", a practice also evident in Abyssinia, Africa and in Tibet (Orr, 1934; Casal, 1958). The indispensable nature of salt made it a promising source of public revenue and imposed some form of tax on it by every civilised nation

(Calvert, 1915, p. 14). Because the sources of production were localised and easily controlled, governments across Europe and elsewhere often targeted the salt tax for production and monopolisation. In France, the salt tax, known as '*gabelle'*, became one of the most unpopular fiscal policies of the monarchy. The monopoly of salt distribution, granted to a privileged few, led to widespread scarcity and discontent, contributing to the outbreak of the French Revolution (Westphal *et al.,* 2012, p. 320). In colonial India, salt as a source of revenue attracted the attention of the Company in Bengal. In 1780, Warren Hastings, the Governor-General of Bengal, established a monopoly on salt production under a complex system of revenue in Bengal, Bihar and Orissa. This exploitative system prompted Gandhi to resist British Colonial rule by his Dandi March in 1930, a symbolic act of defiance against the colonial salt laws (Dane, 1924). In Northeast India, the Ahom kingdom similarly derived a large amount of revenue from the salt of the hills, and officials were entrusted with the duty of tax collection from the salt wells in the hills as well as the *haats* (markets) in the border (Barpujari, 2003, p. 138). Salt, in a historical context, functioned not only as a dietary necessity but also as a key commodity of economic exchange and state revenue.

iii) Political and Military: Salt has played an important role in the political/military history. Numerous conflicts have been caused as a result of competition for control over salt (Calvert, 1915, p. 15). In China, salt was regarded for centuries as an important source of state revenue, with tax revenues from its production and distribution to build armies and defensive structures, including the Great Wall, to keep nomadic invaders at bay (Kurlansky, 2003, pp. 29-31). During the American War of Independence, British General Lord Howe was quite jubilant when he succeeded in capturing George Washington's salt supply (Westphal *et al.,* 2012, p. 320). Similarly, Napoleon financed his Italian campaign through money raised by a special salt tax. The Venetians forced their neighbouring state to abandon salt production, took it into their own hands and founded an empire built on their monopoly of salt manufacture (Calvert, 1915, p. 15). Salt was equally contested beyond Europe. Wars were waged for the possession of salt springs and salt deposits (Gilmore, 1955). The Moroccan invasion of the Songhai Empire in 1590

was driven by the desire to control the lucrative Sahara salt trade. In China, the centuries following the collapse of the Han dynasty witnessed prolonged conflicts among rival kingdoms over access to salt resources, lasting nearly 400 years. Even in modern times, salt remained a strategic resource; the Japanese invasion of Manchuria during the Second World War was partly motivated by the region's need for salt (Andrews, 1980, p. 38-39). Salt was thus a strategic commodity that had influenced the course of political authority, military campaigns and imperial expansion.

iv) Medicinal/Curative: In the olden days, salt was not only valued as a dietary necessity but also used for medical purposes. Evidence suggests that salt held an important place as a health remedy across different cultures (Lovejoy, 1986, p. 1; Saile, 2015, p. 200). The earliest known treatise on pharmacology, the Peng-Tzao-Kan-Mu of the Chinese, dating back to 2700 B.C., records its medicinal significance (Baas-Becking, 1931). The therapeutic application of salt has been widely documented in both traditional and early modern medicine. Owing to its antibacterial and preservative properties, salt was frequently used in wound treatment and infection control. It was also administered for a variety of ailments, including intermittent fever, dysentery, typhoid, inflammation of the eyes, poisoning, for the expulsion of worms, and to control hemoptysis and post-partum haemorrhage. In certain contexts, salt was also regarded as a treatment for haemorrhage and traumatic shock, underlining its perceived medicinal efficacy in critical care (Orr, 1934; Harding, 2013, p. 13). Historical record further illustrates the consequences of salt scarcity in medical contexts. During Napoleon's retreat from Moscow in 1812, thousands of his troops reportedly succumbed to wounds that failed to heal due to the absence of adequate salt supplies (Westphal *et. al.* 2012, p. 320). Such examples highlight the important role of salt not only as a dietary component but also as a curative agent in both preventative and therapeutic medicine. Over time, its clinical applications have continued to be recognised as integral to the treatment and management of various human illnesses.

1.3 Salt Scenario in India

India is one of the leading producers of salt in the world, with the majority of its production derived from the solar evaporation of seawater and natural brines (Nagvenkar, 1999, p. 28). References to salt appear as early as the Vedic period, where it was described as the "sacrificial essence" in sacred texts. According to the Brahmanic tradition, the earth and the sky were once united, and when they separated, they said to each other;

> "Let there be a common sacrificial essence for us, what sacrificial essence there was belonging to yonder sky, that is bestowed on this earth, that became the salt (in the earth); and what sacrificial essence there was belonging to this earth, that is bestowed on yonder sky, that became the black spots on the moon. When he (man) throws salt let him think to be that (the black in the moon); it is on the sacrificial essence of the sky and the earth that he sets up his fire" (Calvert, 1915, p. 5).

Salt is intimately connected with India's freedom struggle. For over two millennia, the production of salt in India remained under the monopoly of successive rulers (Aggarwal, 1937, p. 525). Prior to the British occupation of India, salt was widely manufactured in various parts of the country, particularly in coastline regions, saline marshes, lakes, brine springs and rocky deposits (Aggarwal, 1937, p. 24). The process of producing salt through the evaporation of seawater was known to the Indians since the Vedic age. Historical evidence also records that salt extraction from Sambhar Lake, in present-day Rajasthan, began as early as the 6th Century C.E. (Nagvenkar, 1999, pp. 23-28). Pliny, the Roman natural historian, noted that rulers in northwestern India derived more revenue from salt mines than from gold and pearls (Adshead, 1992, p. 285). Similarly, the Rann of Kutch became a prominent centre of salt production by the twelfth century, while coastal regions in Bengal, Bombay and Madras supported flourishing cottage industries around salt manufacture (Aggarwal, 1937, p. 2; Adshead, 1992, p. 285).

Salt production was also widespread in Eastern India. Along the coasts of Bengal, Bihar and Orissa, locally produced salt supplied large populations (Dane, 1924; Manna, 2023). In Bengal, two distinct types of salt were produced: *panga* salt, obtained by boiling brine from saline earth in Orissa, and *karkatch* salt, manufactured through solar evaporation. These industries were regulated through licensing fees on production and duties on transport. In North-east India, salt was manufactured from brine wells and in 1809, the springs of Borhat and Sadiya reportedly yielded as much as 1,00,000 maunds (1 maund is equivalent to 37.32 Kilograms) (Aggarwal, 1937, p. 25-26).

The granting of the *Diwani* or tax of Bengal, Bihar and Orissa to the British East India Company, by the Mughals, in 1765, included salt (Adshead, 1992, p. 286). Governor-General Clive established a monopoly, granting private companies owned by senior servants exclusive rights over salt production while declaring all other manufacture illegal (Moxham, 2001). By 1772, Warren Hastings, then Governor-General of Bengal, brought the salt monopoly under the direct control of the Company's Government, turning it into a major source of revenue (Serajuddin, 1978). It created complicated rivalries between the company's servants and a competing group of Indian merchants. Before 1877, the British had no uniform system of salt administration in India. Tax was levied at various rates in the three Presidencies of Bengal, Bombay and Madras and, therefore, it led to internal customs barriers. In the Bengal Presidency, which included Bihar, Orissa and Assam, officials imposed direct customs and excise duties, making salt expensive (Adshead, 1992, pp. 285-292). The burden of salt taxation proved especially devastating during famines between 1765 and 1879, when salt remained heavily taxed with no relief. It is argued that the number of people who have died might be from a lack of salt, as salt is essential for hydration and survival in India's hot, humid climate (Moxham, 2001). Although salt taxation was not new to India, the British East India Company, for the first time, imposed a tax that was much higher than the actual value of salt, converting it from an ordinary article into a scarce and often unaffordable condiment. The Company established strict monopolies and made salt production a punishable offence. It restricted the movements of salt between regions. Consequently, traditional salt production declined, with Bengal ceasing production in 1862 and Orissa

shortly thereafter (Sanghi, 2023; Kothiyal and Taylor, 2023). An artificial scarcity was thus soon created, and for most of the period between 1870 and 1930, India was forced to import salt, mainly from Britain (Taylor, 2023, p. 794).

It was in this context that salt became a powerful symbol of resistance during India's struggle for independence. Mahatma Gandhi selected 'Salt' for his campaign of the Civil Disobedience movement and made the salt tax a focal point of his campaign for *swaraj* (self-rule), viewing it as a "crying symbol" of India's subjugation (Aggarwal, 1937, p. 525). On March 12, 1930, Gandhi launched the Salt March to Dandi, a protest that marked a decisive moment in the Civil Disobedience Movement. By the 1930s, the salt industry was increasingly controlled by independent licence holders, although the monopoly and salt tax formally remained (Taylor, 2023, pp. 799-802). Following independence in 1947, India rapidly achieved self-sufficiency in salt production. Within six years, the domestic production could meet the country's demand. Today, salt is produced in as many as 10,107 salt works, most of which are small-scale operations. The country's largest producer is Tata Salt, whose facility at Mithapur in Gujarat remains the main salt industry (Dharker, 2005, pp. 125-126). The history of salt in India thus spans religious, cultural, economic and political spheres.

1.4. Salt and its role in the Naga Hills and Neighbouring Areas

Salt, once a rare commodity, was produced by the Nagas from their salt springs. Early colonial officers and writers documented the Naga expertise in extracting salt from brine. M'Cosh (1837) in his "Topography of Assam", described how salt was prepared during the dry season from brine wells in the Naga Hills. The process involved filling the joints of large bamboos with brine, which were then suspended in an earthen trough over fire for evaporation (p. 61). Similarly, Robinson (1841), in his 'A Descriptive Account of Assam', documented that salt was the only mineral with which the Nagas were familiar and utilised, with brine springs in the low ranges of the Naga Hills yielding a significant quantity of salt. He further emphasised that locally manufactured salt was more highly prized than salt imported from Bengal (pp. 33-34, 391). Butler (1847), as cited in Elwin's "The Nagas in the 19th century" (1969), reported that salt wells in various parts of Naga territory were worked extensively by different tribes, producing immense quantities of

salt, which were either sold or bartered with the Assamese people in exchange for rice (p. 586).

The Konyaks, whose land was near the three successive capitals of the Ahom kingdom (Charaideo, Charagua and Garhgoan), and the Noctes of the lower area traditionally exploited salt mines. The Ahoms claimed control over Naga salt after establishing their capital at Garghaon in 1253, which led to several conflicts regarding salt collection from salt licks located in Naga territory. The salt mines remained under the indirect control of the Ahoms, and the salt produced in the hills continued to be shared between the Ahom Kingdom and the Naga villages until at least 1819 (Bouchery, 2007, pp. 117-118).

Salt deposits are found throughout the Himalayan Mountain belt. In Northeast India, significant salt-producing areas are located in the eastern part of the Naga-Patkai Mountain, specifically in Longding, Tirap and Changlang in Arunachal Pradesh, as well as Mon in Nagaland and in some localities along the south Bank of the Brahmaputra (Saikia, 2019). The economic and political significance of salt also shaped British relations with the Eastern Nagas. In his study, Barpujari (1982) argues that the East India Company's involvement in the region was partly motivated by the desire to control salt wells. Owens (1844), pp. 44-46) in his "Notes on Naga Tribes", referred to the work of Mr. C.R. Strong, the Sub-Assistant Commissioner of then Assam, who listed as many as eighty-five (85) salt wells in the areas of Namsang, Bordwar and Pani Dwar (pp. 44-46). Mackenzie (1884) also observed that the Nagas residing near Jeypore (Sibsagar), Namsang, Pani Dwar, and Bordwar subsisted chiefly by manufacturing salt, which they sold to the people of the plain area (p. 92).

Northeast India contains a mine of economically valuable mineral resources located in hilly regions and distributed across a wide area. Geological deposits in the region include coal, petroleum, iron, lime, salt, gold and silver in varying quantities (Choudhury, 1966, p. 46). The Assamese population was unable to efficiently work the brine springs in Sadiya and Barhat due to political instability and unsettled conditions, and, therefore, salt was scarce in the region (Bhuyan, 1949, p. 53). There is no evidence of large-scale salt production in Assam during the pre-colonial and colonial periods. Instead, an alkaline preparation known as *"khar"* derived from the ashes of plantain trees

and certain aquatic plants was used as a substitute for salt (Basu, 1960, p. 179; Devi, 1968, p. 22). Consumption of '*khar'* has been linked to health issues such as soft muscle on the neck, headache, hyponatremia and diarrhoea (Wary, 2019). Although Assam is geographically close to the sea, salt extraction by boiling seawater was not feasible due to inaccessible routes. Consequently, salt became a luxury commodity in Assam, affordable only to the wealthy who purchased local salt produced from the Naga Hills (Sharma, 2011, p. 54; Wary, 2019).

The Naga Hills have numerous salt springs and wells. To ensure a consistent salt supply and regulate trade, the former rulers of Assam took deliberate measures to maintain cordial relations not only between the Nagas and the plain people but also among the various Naga tribes, recognising the strategic importance of salt resources (Goswami, 1984, p. 93). The Ahom rulers in particular viewed the eastern Nagas areas as critical from both a political and economic viewpoint. Salt produced by the Nagas was brought to the *haat* (weekly market) in the plains and exchanged for articles which they needed (Barpujari, 2003, p. 6). These trading centres along the border became not only centres for economic exchanges but also socio-cultural contact, bringing together diverse Naga tribes as well as the plain communities. The use of Assamese language, which they learnt, served as the lingua franca, removing linguistic barriers and enabling inter-tribal communication (Barpujari, 1982).

Robinson (1841) also documented that Naga villages located in the upper course of the Dhansiri River, where brine springs were abundant, manufactured salt and traded it with the neighbouring hill tribes (p. 403). Hutton (1921), in his monograph *"The Angami Nagas",* suggested that Viswema and other villages with brine wells must have produced salt before the pacification of the Angami hills (p. 70). Salt was also obtained from the Zeliang Naga, Sangtam and Tangkhul areas, as well as from Jalukie, Peletkie and Mbaupungwa in Zeliangrong areas (Bareh, 1970, pp. 113-114). Mills (1937) emphasised that salt was a necessity of life that few Naga villages could produce. He pointed out that salt was produced in places like Akhegwo, Yisi, Yisisu and other neighbouring Sangtam villages (pp. 72-73). Furthermore, salt manufactured by the Zeliang, Konyak and Sangtam groups was also traded across villages; the Zeliang exchanged salt with the Angami, the Konyak to the plains, while Sangtam salt was traded with the Sema,

Yimchunger, and Eastern Rengma and eventually reached the Eastern Angami (West, 1992, p. 172).

At present, the traditional practice of evaporating brine continues among certain Naga communities, particularly among the Zeliang group in Peletkie Village under Peren district, and among the Pochury group in Hutsü and Matikhrü villages under Meluri district. This enduring practice illustrates the cultural and historical continuity of salt production in the Naga Hills.

1.5. Salt Sources and Methods of Recovery

The various occurrences of salt had been classified by Landes (1960, pp. 28, 29), who identified two broad categories: (i) Salt in solution and (ii) Salt in dry deposits. Salt in solution occurs in ocean water, lake water and groundwater, while dry deposits consist of playa salts, bedded salts and flowage salts. It has been widely held that ocean water became mineralised during geologic periods through the leaching of continental rocks, wherein sodium chloride and other ions were transported into the seas by rivers.

Kaufmann (1960, pp. 4, 5) emphasised that salt is derived from various sources and diverse means. These sources include:

1. Brines: derived from oceans, salt lakes, and natural brines.
2. Rock salt deposits accessed through artificial well brines, mines and quarries.
3. Chemical reactions yielding co-product and by-product salt.
4. Salt-containing substances such as shrubs, plants and grasses.
5. Salt-impregnated substances, including peat and mud.

The recovery of salt from these sources has relied on a wide range of techniques. These methods include;

a. Solar evaporation of brines from various sources.
b. Quarrying of solid salt.
c. Mining of solid salt.
d. Burning of plants containing salt, using the ashes as such.

e. Evaporation of brine on burning wood.

f. Evaporation of brine in vessels.

g. Leaching of salt-impregnated peat or peat ashes and mud followed by evaporation of brine.

h. Sublimation of sea-water ice or sodium chloride dihydrate in cold climate

i. Recovery of co-product or by-product salt from chemical reactions.

As Williams (2014) observes, because salt is necessary for survival, cultures worldwide developed diverse and innovative techniques to exploit salt deposits (p. 22). One of the most common methods, both historically and ethnographically, was the boiling method. In the ancient world, the majority of salt was produced by the evaporation of seawater, a process extensively documented across civilisations (Nagvenkar, 1999, p. 23; McKillop and Sabloff, 2005). Experiments have demonstrated that the best salt is produced by gentle heating, maintaining fire at the right temperature, rather than by rapid boiling. The boiling method requires frequent topping with hot brine to replace the water as it evaporates. This traditional process of preparing salt by heating brine persisted till the early nineteenth century. In 1823, William Furnical of Liverpool introduced the use of steam heat for evaporation, a technological innovation that improved efficiency in salt production (Schrimppf, 2015, p 35; Aggarwal, 1937, p. 2).

1.6. Conceptual Framework:

The thesis draws upon the works of Anthony Harding (2013), *Salt in Prehistoric Europe* and Eduardo Williams (2014), *The Salt of the Earth: Ethnoarchaeology of Salt Production in Michoacán, Western Mexico*.

Anthony Harding's research examines prehistoric salt-work in Europe. In Europe, salt studies had gained interest due to the remarkable discoveries of salt works in several parts of the country, and salt is seen as an important commodity in ancient economies. Salt is difficult to study archaeologically due to its high solubility; thus, it is studied through the production sites in mines, springs, or streams where it was once extracted,

along with the equipment used for the purpose. Harding incorporates ethnographic data from other parts of the world where information is available to supplement the European record. His analysis elucidates the economic significance of salt and the operational process involved in it.

Eduardo Williams's work explores the salt production of Michoacán in Western Mexico, a pre-Hispanic Mesoamerican culture. Salt is not usually preserved in archaeological records, unlike other strategic resources that were produced; therefore, ethnographic and ethno-historical information helped to postulate the existence of several kinds of material evidence that serve as markers of salt production at specific sites. William's work shed light on understanding the technological processes and the material culture associated with salt-making by focusing on the artefacts and techniques used by the salt makers. He further explores issues of productivity, labour inputs, energy use and the transformation of raw materials into finished products, thereby providing a comprehensive picture of the role of salt in pre-Hispanic economic and social systems.

The present research work focuses on the community that continues the tradition of salt production, as well as those that discontinued the practice, to analyse the factors contributing to the abandonment of salt-making.

Ethnographic fieldwork was conducted in the study areas, with particular attention given to observing salt-making activities at all salt-producing sites.

An ethno-history approach was also adopted, whereby historical records, artefacts and cultural narratives related to salt were examined.

The Nagas lacked written sources till the arrival of the British and American missionaries in the Naga Hills. Deficiency of written records requires taking recourse to oral sources. The elders of the community were interviewed to seek information on the village and their experiences with salt cooking during their time. The present salt makers from the three study areas were interviewed.

The study documents the various techniques adopted by salt-producing communities, the discovery of their brine sources, the materials employed during the early days of the salt-cooking process and its changes over time. In addition to the above, it also considers how salt played its role in the religious, social, political, and economic aspects.

1.7. Study Area

The study focuses on areas that are still engaged in the salt manufacturing process. At present, salt-cooking is practised in the two districts of Nagaland, namely, Peren and Meluri. The sites visited for fieldwork are Peletkie in Peren District, and Hutsu and Matikhru of Meluri District, which still have salt cooking traditions. Besides the above, fieldwork was conducted in Sanphure under Kiphire District, as the village also had an active salt-cooking tradition till 1979. Mon District, which processed salt before the availability of market salt in the plain areas and Viswema village under Kohima District, which possesses salt springs, were visited to obtain information on how they utilised their brine before salt became available in their area.

1.8. Review of Literature

Salt work research done in other parts of the world was reviewed to gain a better understanding of the skills and methods applied in the salt manufacturing process:

Hooley & Terit (1972), in documenting *"Preparation of Salt among the Baung, New Guinea"*, describe the salt preparation process in New Guinea utilising their local resources. Salt is obtained from the ashes by burning certain plants and grasses. They lamented that local salt preparation knowledge is endangered, as it is now only the elders who show interest in salt production, and the tradition is at risk of being a lost art in a generation or two.

Good (1972) stressed that although salt held the preeminent position in world trade for many centuries, the ordinary activities associated with its procurement and exchange often seem secondary in importance when compared with its widespread use as a standard of valuation, its influence on migration and settlement patterns, its role in shaping political and military relations, and its rich symbolic significance in his work *"Salt, Trade and Disease: Aspects of Development in Africa's Northern Great Lakes Region"*.

Chiang (1976), in *"The Production of Salt in China, 1644-1911",* outlines that the salt works of China began in the summer months, and for many centuries, the practice was to boil seawater. However, later on, the solar evaporation method was adopted as fuel became scarce. He also illustrates that the amount of salt production corresponds to the population in the different regions of China.

Ian W. Brown (1980), in his monograph *"Salt and the Eastern North American Indian: An Archaeological Study"*, confirmed an observation that the technology and material equipment associated with salt production around the world in pre-industrial times is often similar from continent to continent due to the basic exigencies of the task.

In his study on salt production and trade in Central Sudan, Paul E. Lovejoy (1986) in *"Salt of the Desert Sun: A History of Salt Production and Trade in Central Sudan"* examines the interaction between ecology, technology and social structure as a means of analysing the organisation of the salt industry. The technology employed in the Sudan salt industry was relatively simple, but the salt workers could manipulate the natural conditions of their environment to a significant degree. Salt production depended on the labour of artisans, peasants, slaves and women and was a dry-season activity. Access to the salines varied between the salt locations but ultimately depended upon political factors. By the last decades of the nineteenth century, European imports penetrated further into the interior, reaching central Sudan in appreciable quantities that gradually undermined local salt production.

Works produced on the Nagas in the nineteenth century by Colonial Officers such as M'Cosh (1837), Robinson (1841), Hutton (1921), and Mills (1937) have briefly mentioned the knowledge the Nagas possessed of salt processing from brine wells.

Mention of salt springs and local salt production among the Nagas is found in the following:

Shimray (1985), in his book *"Origin and Culture of Nagas"*, writes about how salt built relations with the neighbouring tribes. The Ahoms, an immediate neighbour, needed this item from the Nagas as it was not sufficiently available in the plains until the British brought it.

Goswami (1999) has also mentioned that the salt springs, which were worked to a considerable extent by the Nagas, held promises of great value and economic potential

for the Europeans in her work *"Assam in the Nineteenth Century: Industrialisation and Colonial Penetration."*

Nshoga (2009), in his work *"Traditional Naga Village System and its Transformation"*, points out that salt production forms an important part of the village economy.

Except for these few works, most publications on salt find their place as a trade item, wherefore the Nagas took down their agricultural produce to the nearby plain areas in exchange for salt. Market salt might have reached the plains when they started their trade with the people of the plain area.

Very sketchy and fragmentary works are thus found in the published works on the salt production process in Nagaland. Moreover, some pertinent questions, such as the role salt played in the articulation of economic, social and political life and whether the control of salt sources had any strategic importance, are not available at all. No extensive documentation on salt production has been carried out.

1.9. Statement of the Problem

Where there is land, water, and a tolerable climate, man has found it possible to produce food, shelter, clothing and fuel for oneself. In numerous such areas, however, salt could not be produced. Salt could be accessed in areas adjacent to the sea, and likewise, in a few inland areas where there were salt deposits, saline springs or streams. Salt occurs naturally throughout the world in a variety of locations. The methods used to adapt to various natural resources depend onseveral factors, the most important being the location, the type of source, and the traditional knowledge of the community. Salt, far more frequently than any other material good, is the item which people have insisted on having and, if not available within, have had to secure outside their locality.

Published historical and ethnographic works have little written documentation on the Naga salt production. Information on the skills and methods applied in the salt manufacturing process, the important role of salt among the salt producers, and whether control over the salt sources had any strategic importance is somewhat lacking.

Although salt has played a crucial role throughout time, little is known about this resource's historical, social, technological or economic significance. Salt work in the production site is rarely documented. Salt still remains an important commodity; however, it is now purchased commercially rather than traditionally made. Moreover, the last few years have seen large coastal salt producers utilising modern solar evaporation techniques, gradually overtaking the salt markets and edging out smaller competitors employing traditional salt-working methods. Traditional salt industries, which have existed for centuries, are rapidly disappearing; therefore, it is crucial to document traditional salt production practices before they disappear completely.

1.10. Objectives

This study is an attempt to explore salt production sites and to understand the manufacturing process. The main objectives are

- To understand the relationship of mankind with its natural resources and environment
- To document the method and technologies of traditional salt production
- To identify the continuity and changes in salt production
- To understand how it operates and what role it plays in the salt production community
- To evaluate the historical and contemporary importance of salt production sites and trade

1.11. Hypothesis

- Salt has been a valuable commodity, and the availability of salt resources has determined the people’s choice of settlement
- Salt supplies have played roles in building relations and in making peace treaties
- There has been a close relationship between potters and saltmakers.

1.12. Significance of the Study

• As most of the knowledge that is indigenously built is uncodified, tacit and transmitted orally, the significance itself lies in its compilation

• The study aims to fill gaps in our knowledge about indigenous methods of salt production

• The study seeks to fill a void in the knowledge of locally important salt production sites

• Provide information on the economic and social situation at the salt production site

1.13. Methodology

The study adopts an exploratory method. The study areas were surveyed, and pictures were taken. An ethnographic observation was carried out in all the study areas (Peletkie, Hutsu, and Matikhru) by accessing their salt huts, focusing on the manufacturing processes, the labour input and the outcome of the product.

Furthermore, elders of the village in all the study areas who were involved in salt cooking were interviewed. Those who had performed rituals and were witnesses to them were also interviewed. Data were collected through qualitative methods, which included observation and unstructured interviews with open-ended questions, aimed to elicit views and opinions from participants.

Along with the salt-producing villages, sites where salt production had been practised in the past but abandoned were visited to gain further insight into the salt production process.

For the collection of secondary sources, various libraries were consulted. Books, documents, reports, dissertations, research journals, published and unpublished documents, newspapers, articles, magazines and other printed materials form part of the secondary sources. Besides the above-mentioned sources, personal collection on salt work and documentation on the production site were also consulted for the study.

1.14. Chapterization

The study is organised into five chapters.

Chapter 1: Introduction

The first chapter introduces the study by conceptualising the central theme. It defines the role and economic significance of salt, outlines various extraction methods and sources, and establishes the primary focus guiding subsequent chapters. Additionally, this chapter details the research problem, objectives, significance and the research design and methodology employed in the study.

Chapter 2: Profile of Salt Springs in Nagaland

Chapter Two presents a profile of the State and provides background information on the sites containing brine sources selected for study.

Chapter 3: Traditional Mode of Salt Production

Chapter three contains data collected from study areas, detailing the methods, technologies and skills utilised. It further examines the evolution of operational modes and technologies over time.

Chapter 4: Role and Impact of Salt Production Site

Chapter four elucidates the role and impact of the salt production site in the past and its significance in the present time.

Chapter 5: Discussion and Conclusion

The fifth chapter summarises insights and knowledge gained, by coming to the study's central findings.

Chapter II: Profile of Salt Springs in Nagaland

2.1. Nagaland

Nagaland, the 16th State of the Indian Union, emerged from the Naga Hills district of Assam and NEFA (North East Frontier Agency) province and was formally inaugurated on 1st December 1963 (Fig. 1). The State comprises 17 Administrative Districts, with Meluri as the youngest district. Nagaland State lies between 25°6' and 27°4' North Latitude and between 93°2' and 95°15' East Longitude. It covers a geographical area of 16,579 sq. km with remarkable topographical variation and shares an international boundary with Myanmar to the east. It is bounded by Myanmar and Arunachal in the East, Assam in the west, Arunachal Pradesh and part of Assam in the north and Manipur in the south (Basic Facts of Nagaland, 2022).

Fig. 1: Map of Nagaland

The topography of the state is mountainous, with altitude varying between 194 metres and 3048 metres above sea level. Many villages are situated at 1000 to 2000 metres, reflecting a predominantly highland settlement pattern (Statistical Handbook of Nagaland, 2011). The physical environment of a region, including land, forests, rivers and other biotic communities, is important as it serves as the habitat of man's domain. The physical boundary of Nagaland is delineated by two tectonically formed and massive mountain ranges, namely, the Barail and Patkai (Nienu, 2015, pp. 1-2). The Patkai range is the highest mountain range in Nagaland, with Mt. Saramati at a height of 3480 metres. It takes a north-south course separating Nagaland from Myanmar. The Barail Range is another important mountain range in the State. It enters the State from North Cachar, and after passing through the Kohima area, runs towards Wokha. Japvo, with a height of 3,014 and located a few kilometres south of Kohima, is the highest peak of the Barail Range. The Barail Range is connected with the Patkai Range through small ranges (Ao, 1987, p. 48). (Fig. 2) The report on the Assam census (1901) mentions that 'the Naga Hills extend geographically eastwards to the Patkoi' (Allen, 1902, p. 3). The entire Naga country is covered with hills, and the mountainous range inhabited by the various Naga tribes was referred to as the "Naga Hills" and "Patkoi Hills" during the colonial period (Barpujari, 2003, p. 1; Neinu, 2015, p. 3).

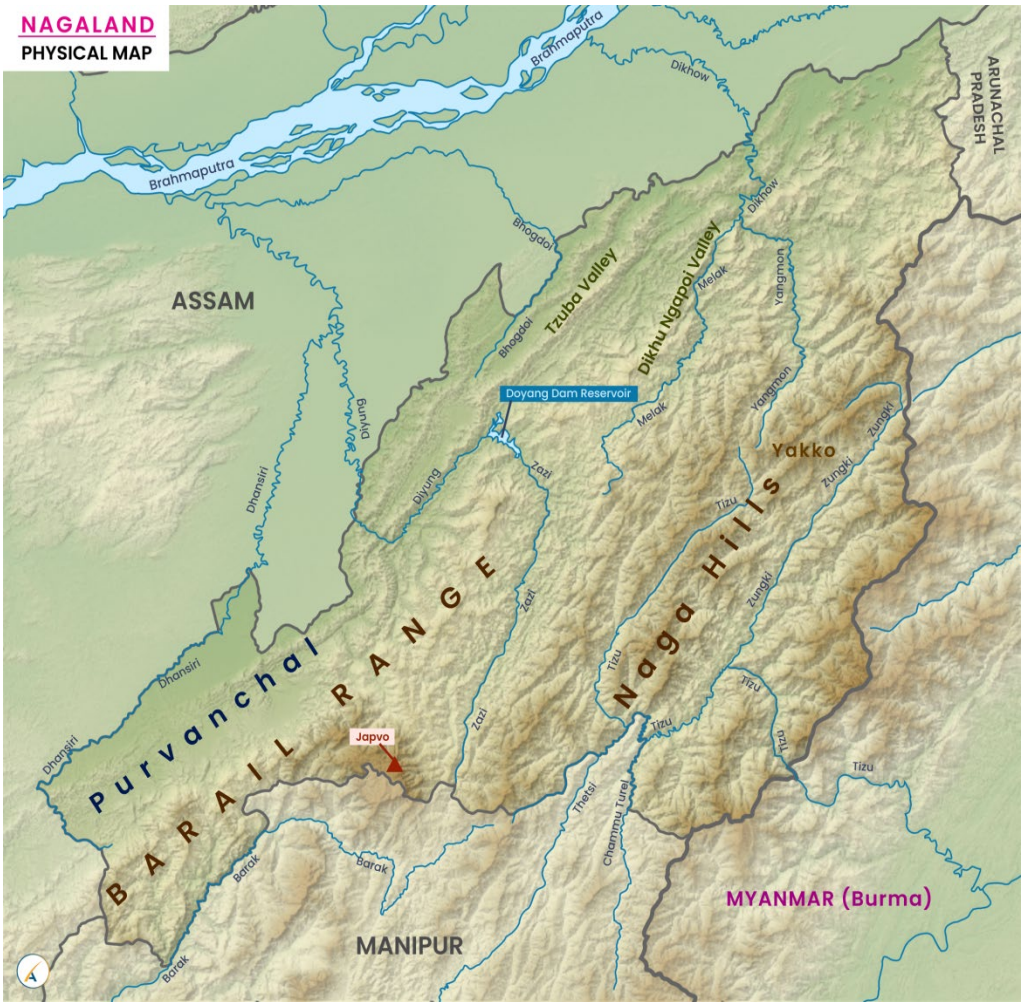

Fig. 2: Physical Map of Nagaland Showing Naga Hills and Barail Range

Source: https://lotusarise.com/maps/states/nagaland/nagaland-physical-map/

2.1.1. Physical Features of Nagaland

2.1.1.1 River: Nagaland has a number of seasonal and perennial rivers and rivulets. The major rivers of the State are: Doyang, Dikhu, Dhansiri, Tizu, Tsurang, Nanung, Disai, Tsumok, Menung, Dzulu, Langlong, Zungki, Likimro, Lanye, Dzuza, Milak and Manglu. The Rivers Dhansiri, Doyang and Dikhu flow westward into the Brahmaputra. The Tizu River flows eastward and joins the Chindwin River in Myanmar (Sebu, 2013, p. 45). The State does not have big rivers suitable for navigation. The Doyang River, which drains

into the Brahmaputra in Assam, is navigable for a few kilometres within the State (Brief Industrial Profile of Nagaland State, 2015).

2.1.1.2. Agro-Climatic Zones: Nagaland State falls under the Mid-Tropical Hill zone category of Agro-Climatic Zonal Classification, with further sub-classification into three distinct geographical regions: i) High hill areas with lateritic soils and non-laterised red soils. ii) Lower Hill ranges of brown forest soils and podzolic soils, and iii) Foothill/valleys with recent alluvium, old alluvium and mountain soils (Brief Industrial Profile of Nagaland State, 2015).

2.1.1.3. Soils of Nagaland: The soils of Nagaland are derived mainly from the tertiary rocks belonging to the Barail and Disang series and are generally acidic, rich in organic carbon but poor in phosphate and potash content (Ao, 1987, p. 60). The Barail consists of alternating layers of sandstones and shales with Carboniferous intrusions or even coal seams. The underlying Disang series represents unfossiliferous shales, slates and pyrites (Brief Industrial Profile of Nagaland State, 2015).

2.1.1.4. Forest: Nagaland State has a variety of forest types due to its unique geographical location and wide range of physiographic terrain. The State lies in the tropical belt and has mountainous topography. It is covered with evergreen vegetation. Some species of bamboo (*D. Gigantium*) are so big that several strong men are required to lift even one piece. The Alder (*Alnus Nepalensis*) of Nagaland and some *Cedrellas* are fast-growing trees and outgrow even the fastest-growing Eucalyptus (Sebu, 2013, p. 51). Forests in Nagaland fall under three types: i) Tropical Wet Evergreen Forest, ii) Tropical Semi Evergreen Forest and iii) Sub-tropical Pine Forests. Tropical Wet Evergreen forest has valuable evergreen timber species in the top canopy with bamboo growing abundantly (Brief Industrial Profile of Nagaland, 2015).

2.1.1.5. Geology & Geomorphology of Nagaland: Nagaland is in the northern extension of the Arakan Yoma mountain ranges, formed by earth movements during the Cretaceous and Tertiary periods. The Naga Hills form the northern part of the north-south mountain

chain called the Indo-Myanmar Range. To the north, they connect to the eastern Himalayas. The Indo-Myanmar Range is bordered on the west by the Shillong-Mikir Precambrian massifs and the Assam shelf. In the Naga Hills, a special rock belt called the Ophiolite belt, about 200km long and wider in northern Nagaland, is closely associated with sedimentary and metamorphic rocks, which give clues regarding their tectonic settings (Acharyya *et al.,* 1990).

The geology of Nagaland is composite in structure and forms an integral part of the Indo-China landform complex. The Geological Survey of India (GSI, 2011) identified four geotectonic domains in the Naga Hills. These are: a) the Assam shelf, b) the Schupppen Belt, (c) the Inner Palaeogene Fold Belt, comprising a thick folded sequence of Disang and Barail rocks and d) the Ophiolitic Complex occurring further east, close to the Indo-Myanmar border, associated with Late Mesozoic-Tertiary sediments (Nienu, 2015, p. 4).

a) The Assam shelf comprises a relatively thin sequence of sediments of the Barail group, Surma group and Tipam group resting uncomformably on a pre-Tertiary granitic basement exposed mainly in the Dhansiri valley.
b) The Schuppen belt comprises a composite of six tectonic blocks formed by several thrust slices occurring along the Naga-Patkai hill ranges of Nagaland. The belt comprises the Barail group, Surma group, Tipam group, Namsang formation and Dihing formation.
c) The Inner Palaeogene Fold Belt is composed of folded and thrust post-Upper Cretaceous sequence commencing from the Disang group onwards to the Surma group of sedimentary rocks, over which recent and Pleistocene sediments have been deposited.
d) The Ophiolite belt has a tectonic contact with the Inner Palaeogene fold belt in the west and the Saramati formation in the east of the pre-Mesozoic age, as the oldest formation in the belt. Nimi formation overlies the Saramati Formation, which is succeeded by the Ophiolite Suite, followed by the Salumi Formation. The Phokpur Formation is the youngest group of rocks in the belt (Geology and Mineral Resources of Manipur, Mizoram, Nagaland and Tripura, 2011).

The general rock sequence of Nagaland can be tentatively grouped into:

1. The Nimi Formation of the Palaeozoic Age
2. The Ophiolite Complex of Upper Cretaceous.
3. The Disang Group of Lower and Middle Eocene Age
4. The Barail Group of Eocene and Oligocene Age
5. The Surma Group- Miocene
6. The Tipam Group- -do-
7. The Namsang Beds of Mio-Pliocene Age
8. The Dihing Group of Pliocene-Pleistocene Age.

The 'Nimi Formation', which covers the eastern fringe of Nagaland, extends from Mollen in the south to Saramati Peak in the north for about 30 km in length. The Ophiolite Complex, also situated in the eastern part of Nagaland, is tectonically sandwiched between the 'Nimi Formation' on the eastern side and the 'Disang Formation' on the western side. The Disang sediments occupy a vast country of intermediate hill ranges and exhibit occurrences of limestone, brine springs, slates, black shales and pyrites (Ao, 1987, pp. 42-45).

2.2. People: The Nagas, an Indo-Mongoloid people, inhabit the north-eastern region of India and are divided into more than a dozen major tribes, each characterised by distinct languages and dialects. The Naga tribes, occupying the hills, have diverse physical and cultural attributes. Each tribe has its own legends giving indications of the course from which migration took place. These sources essentially indicate that legends and traditions described the area as having been settled by successive waves of migrants from various directions. The origin stories have a mythological aspect and reference migration aspects, describing in detail the actual movements of people in the Naga Hills (Alemchiba, 1970, pp. 1, 5 & 19; Jacobs, 1990, p. 13).

At the time of their first contact with British colonial administrators and the American Baptist Missionaries, Naga society was pre-literate and lacked documented records of its culture and history. Even in the later period, systematic historical records are largely absent, with only occasional references available (Alemchiba, 1970, p. 29; Aier, 2018, p. 6). The term "Naga" was not widely used until the 1950s, referring to the various tribes in the present State of Nagaland, as well as the Nocte, Wancho, and Tangsa

tribes of the North East Frontier Agency and the congeners in Manipur and the Somra tract of Burma. The name 'Naga' was given by the neighbouring plain communities, and not by the people themselves. Despite differences in dialect and tribal divisions, these groups share distinguishing features and some common ties that unite them as one people (Alemchiba, 1970, pp. 21, 24; Jacobs, 1990, p. 20).

2.2.1. Society: The Naga society is structured and defined by kinship based on ancestral social institutions centred on the nuclear family. It is made of group ties. The individual and the household, though autonomous, are integrated into society by being members of larger units in lineages, clans, age groups, morungs and tribes. The social system is organised within the confines of patrilineal clans, and individuals trace themselves back through the male line to a common ancestor. That is why, even though women are valuable when viewed from an economic standpoint, preferences are given to the father's side because of patrilineal heritage (Nienu, 2015, p. 103).

Amongst the Nagas, the Aos in particular, the organisation of the *ariju* (bachelor's dormitory) served as the most effective social structure, whereas the *thinuo/khel* (clan) structure played crucial roles for most other tribes. Clans in the Naga society claim to have counterparts in villages outside their own community "tribe". Clans do have common ancestors, which allows quite distant clans to claim a special affinity. Within the village, the clan functions as a unit of collective responsibility. Landed properties are invariably individually owned, and other communal lands and forests are shared as clan or village properties (Nienu, 2015, pp. 103-111; Jacobs, 1990, pp. 53-56).

2.2.2. Economy: Agriculture has served as, and remains, the primary occupation for the population. The Nagas practice two agricultural methods, both suited to the region's hilly terrain. *Jhoom*, or shifting cultivation, is the most common practice, with rice as the main crop. Terraced wet-rice cultivation (*panikhets*), the second kind of agriculture, involves cutting terraces into slopes and managing water supply through an organised system of canals and pipes (Jacobs, 2012, p. 33).

Besides agriculture, people engage in weaving, metal works and other handicrafts and artisanal work during the off-season to meet their daily requirements, but not much

for commercial purposes. Nowadays, the Nagas also take up floriculture, sericulture, bee-keeping, handloom and handicrafts, plantations, cottage and small-scale industries, adopting modern technologies for their livelihood. The state of Nagaland is endowed with vast natural resources in minerals such as oil, limestone, marble. etc., forest resources of different wood species, flora and fauna, as well as bamboo varieties and immense water resources for hydropower generation (Brief Industrial Profile of Nagaland State, 2015).

2.2.3. Polity: In the pre-colonial period, Naga tribes occupied their own specified territory. Each tribe is grouped into a number of villages, but is not governed by any centralised system of political or military power. Each village occupied a well-marked area and existed as an independent entity (Venuh, 2005, p. 15; Nienu, 2015, p. 111). Naga communities are organised strongly around the principle of the village as a unit. The types of village government included theocratic set-ups (Konyaks), autocratic chieftainships (Semas), and democracies ranging from the well-organised system of the Aos to the purest form of democracy. Some form of nominal chieftainships existed among the Changs, Sangtams and other tribes, but they were not as powerful as those of the Konyaks or the Semas. The Konyak and Sema chiefdoms maintained suzerainty over a sizeable group of villages that depended on them for their survival in a military sense.

2.2.4. Religion: Traditionally, the Nagas were animists. They believed in the existence of spiritual beings inhabiting the natural world. Ritual beliefs and practices form an important part of their activity and offer the possibility of understanding the world and of changing it (Jacobs, 1990, p. 83). The Naga animistic world is a dynamic, operative system of interrelated components governed by omnipresent spirits, both benevolent and malevolent. The spirits are everywhere in their habitation, granaries, fields, forests and in numerous natural forces, objects and phenomena. They believed the universe was inhabited by hosts of spirits, ghosts and strange creatures who affected human fate, and these belief systems fostered a cohesive society (Neinu, 2015, p. 138).

The opening of missionary activities among the Nagas began with an American, Edward Winter Clark and his wife Mary in Mokokchung district. In 1876, Clark settled in

Molungkimong (Deka Haimong) to execute the mission work among the Ao Nagas. Acting on Clark's initiatives, the American overseas deputed Rev. C.D. King to work with the Angamis. Soon, missionary works started in other parts of the District, like Wokha and Zunheboto. Those Naga converted and educated by the American missionaries took the newfound faith to the neighbouring tribes and villages. In due course, the major section of the Naga society embraced the new faith and many of its old ritualistic practices were abandoned. The conversion of the Nagas to Christianity brought about changes. Christianity had weakened their taboos and belief systems (Smith, 2009, p. 190; Zetsuvi, 2014, p. 101).

2.2.5. Technology: Naga technology relies on simple materials and tools (Jacobs, 1990, p 43). The challenging and dense forests of their habitat require ingenuity and technological skill for adaptation. Traditional Naga technology remains largely unchanged, reflecting a legacy of technical knowledge transmitted down through generations. These skills are integral to their culture and are taught and learned within the community. Indigenous knowledge is closely linked to their belief systems and is continually reinforced and transmitted. Natural resources mostly constituted a major part of their technological input (Neinu, 2015, pp. 275, 276).

Common household technologies include basketry, carving, spinning, and weaving. Specialised crafts such as pottery, metalwork and ceremonial wood-carving are practised by skilled individuals. While most production serves household needs, some artisans create goods for the wider community and surrounding villages (Jacobs, 1990, p. 43).

2.3. Brine/Salt Spring

Brine water is characterised by a concentration of dissolved salt. Mineral springs are defined by the presence of dissolved minerals, which gives a distinct taste compared to normal fresh water (ENVIS Publication, 2017, pp. 2 & 4). Springs are locations where water emerges from the ground and either flows or accumulates in pools that are

continuously replenished from subsurface sources. Mineral springs specifically yield water containing unusually high concentrations of mineral matter or distinctive and noticeable mineral matter.

Groundwater acquires soluble substances from the rocks it passes through. Many mineral springs produce water of a type common to their local geological regions. If the water has or is supposed to have therapeutic value, "mineral springs" are often called medicinal. Mineral springs are classed based on the chemical composition of their water. Common classifications include saline springs, which contain a significant amount of common salt, and oil springs, which contain petroleum suspended as droplets in the water (Bryan, 1919, pp. 525-526).

Brine springs are subterranean streams of water impregnated with salt from percolating through saliferous strata (Aggarwal, 1937, p. 8). Where domed rock formations approach the earth's surface, rainwater percolating down to them may rise in the form of brine springs (Harding, 2013, p. 22). These brine springs rise through strata of sandstone and red marl, which contain large beds of rock salt. The origin of the brine, therefore, may be derived in this and many other instances from beds of fossil salt (Lyell, 1835, p. 327). Salt obtained from brine springs contains the same constituents as that from the sea, though in their course upwards they collect on their way soluble salts and therefore the water goes through certain modifications (Boddy, 1881, p. 48). By far the greatest part of the world's salt is in solution in the ocean. It is widely held that the oceans were originally freshwater bodies, and this water became mineralised in geologic time by leaching of the continental rocks and the transport of the sodium, chloride and other ions in solution to the sea by rivers (Landes, 1960, pp. 28-29).

Landes (1960), in his work "The Geology of Salt Deposits" (1960) states that;

"Groundwaters vary in degree of salinity from almost pure water to saturated solutions. The groundwater lying close beneath the water table is rarely strongly mineralised, but those within the permeable sedimentary formations are strongly mineralised. In some areas, these brines reach the surface as salt springs, as a result of an intersection of the artesian reservoir by a fissure, but in most cases, the brine is obtained by sinking wells

into the reservoir rocks. Such wells may flow naturally, or they may be pumped. Sedimentary rocks contain the most abundant groundwater supplies because of their greater percentage of porous and permeable zones. Groundwater can be classified in terms of its relative age compared with the enclosing rock. It was either deposited at the same time as the associated sediment or moved after the surrounding rock had been formed. If it was deposited along with the associated sediment, it is known as connate water. Chemically, the connate waters are the same as the water in the medium in which deposition took place. Most sedimentary rocks are deposited beneath the sea, and such connate water is "fossil sea water". However, sediments are also laid down in freshwater lakes and streams, and some may have been deposited on the floors of interior salt lakes. The younger water is usually meteoric (rain) water. Meteoric water is fresh initially, but in the course of its travels through soil and rock, it may pick up a considerable volume of soluble matter. The chemical composition of groundwater is therefore dependent upon the history of the water. If it is connate, it is due to the composition of the water in which the sediment was deposited. If it is younger water, its composition varies with the environments encountered, but if it is mixed with water, the quality depends upon both sets of factors and the degree of mixing" (Landes, 1960, pp. 32-34).

Groundwater is regarded as saline when highly mineralised (Luirei *et al.*, 2023). The Indo-Myanmar Range, whose origin is ascribed to the under-thrusting Indian plate, saline springs are reported from the Inner Fold Belt of Nagaland State and the Ophiolite complex of northern Manipur. The inner Fold Belt occupies the central part of the Naga Hills and extends up to the Pangsu Pass in Arunachal Pradesh, and the Ophiolite Belt of the Naga Hills extends along the eastern margin of Nagaland State for nearly 200 km, bordering Myanmar. The saline springs of Nagaland are from the Disang (Upper Cretaceous Eocene) and Barail (Oligocene) groups of rocks (Sebu, 2013, p. 26; Luirei *et al.,* 2023, p. 9). The geological structure of southern, central and northern Nagaland is essentially the same. According to the Geological Survey of India, Southern Nagaland is governed by the Disang and Barail series of rocks. The Disangs conforming to the oldest rocks are dominant towards the east between Japfu and Saramati at an altitude of 3,000 feet to 4,000 feet, but the Barail series is abundant towards the west (Bareh, 1970, p. 7). A study done by Luirei et al., through stable isotopes of hydrogen and oxygen in the

Indo-Myanmar range in Nagaland and parts of Manipur that host several saline and hyper alkaline springs, suggests that the origin of spring waters is from two sources, meteoric and metamorphic, and the possibility of seawater origin is ruled out (Luirei *et al.,* 2023, p. 13).

2.4. Brine Resources and Utilisation among the Nagas:

Brine and saline water found in different parts of Nagaland, served as a source of salt when salt was scarce in the region. Some groups, like the Angami, used the brine directly without processing it. The Konyaks, Changs, Khiamnungans, Zeliang, Pochury and the Sangtam tribe of Kiphire manufactured salt from their brine water. When market salt arrived in the plains of Assam and was brought up to the Naga Hills, the Konyaks, Changs, and Khiamnungans tribes abandoned their traditional salt cooking practices. The Sangtam tribe of Kiphire processed salt until 1979. The tradition of salt cooking is still practised in the Peren and Meluri Districts inhabited by the Zeliang and Pochury tribes, respectively.

2.4.1. Kohima: Kohima, the capital of the State of Nagaland, is situated between 25^{O}40'N to 25.67°N latitude and 94^{O}.120E to 94°07' E longitude. Kohima district lies in the southern part of Nagaland, covering an area of 3114 sq. km. It is the oldest district in Nagaland. According to available records, Kohima was chosen as the British Headquarters, because, besides being climatically favourable, "it is especially well-placed for political control, commanding as it does the Naga trade route. Kohima initially included the districts of Kohima, Phek, Meluri, Dimapur, Peren and Tseminyu (Sebu, 2013, pp. 14, 15).

Kohima is a hilly district, sharing its borders with Assam State and Dimapur District in the West, Phek District in the East, Manipur State and Peren District in the South, and Wokha District in the North. As one of the oldest districts in the state, Kohima is the first seat of modern administration, serving as the Headquarters of Naga Hills

District (then under Assam) with the appointment of G.H. Damant as Political Officer in 1879. When Nagaland became a full-fledged state on 1st December, 1963, Kohima was christened as the capital of the state. The name Kohima is so called because the Britishers could not pronounce its original name "*Kewhira*", which is the name of the village where Kohima town is located. Kohima village, also called 'Bara Bosti', is the second largest village in Asia (Brief Industrial Profile of Kohima District, 2015). It has an average elevation of 1261 metres (4137 feet). Kohima town is located on the top of a high ridge, and the town serpentines all along the top of the surrounding mountain ranges, as is typical of most Naga settlements. As per the 2011 census, Kohima has 2,67,988 population (Basic Facts of Nagaland, 2022).

a) The Angamis: The Angamis are one of the Naga tribes, and the principal inhabitants of Kohima district (Thakro, 2002, p. 29). The Angami tribe is made up of different groups. Hutton (1921) identifies four distinct groups as follows: a) the Viswema, b) Kohima, c) Khonoma and d) Chakhroma group of villages (p. 15). The Angamis lack a written record of migration to their present settlement, thus it is constructed based on their oral sources. An Angami legend goes that a person named Koza came from the East, and after reaching Mekhroma (Makhel) in Manipur, he rested there for some time. Legends further say that from Makhel, the Angamis migrated into Khezhakenoma and settled there. Khezhakeno is a village in the Chakhesang area in Phek adjacent to the Manipur border (Zetsuvi, 2014, pp. 12-13).

b) Economy: The traditional economy of the Angami Nagas is characterised by subsistence agriculture, with rice as the staple crop and settled terrace cultivation as the predominant agricultural practice. Shifting cultivation plays only a minor role (Christina, 2019, p. 25). In addition to rice, other cereals such as maize, millets, jowar, etc., and pulses like arhar, mong, peas, lentils etc., are widely cultivated. Seasonal vegetables and fruits supplement the local diet, while oilseeds, including soya bean, groundnut, mustard, along with commercial crops like sugar, cotton, jute, potato, tea, etc., form an integral

part of the diversified agrarian economy (Ground Water Information Booklet, Kohima District, 2013).

c) Salt Springs: The monograph of Hutton (1921) mentioned "Salt must have been made by Viswema and other villages possessing brine wells before the pacification of the Angami hills" (p. 70). In the Angami villages on the Southern sides, besides Viswema, salt springs are also found in and around the nearby villages of Jakhama, Kidima, Khuzama, Khonoma and Jotsoma (ENVIS Special Publication, 2017).

Salt springs located in the southern and western Angami areas have been utilised for culinary purposes up to the present day. Viswema village contains several varieties of brine, including a type called *zana*, which has a relatively low salt content, but helps green vegetables retain their colour and become tender when boiled. Oral accounts indicate that women from the village fetched brine water early in the morning during the winter months for cooking. Before the late twentieth century, collecting salt water was a widespread practice among the women of the village. Brine water remains a highly valued and sought-after resource. Vegetables boiled in brine water are noted for retaining their colour and developing a distinct flavoursome taste. Brine is also used in preparing a popular porridge dish with green leafy vegetables. The Northern Angami areas, which lack such springs, travelled to obtain brine water with permission, as it is believed to possess curative properties for goitre. The sale or trade of brine water from the Viswema area is prohibited. The community refrains from producing salt from brine water for commercial use as they believe it would cause the source dry out and relocate. A dried brine source in the village is believed to have moved/married off to a nearby Western Angami village. Consequently, brine water is not used for commercial trading purposes (Damo, personal communication). During periods of salt scarcity, villagers procured a salt known as "*Thomezo Tsa*", which translates to "cow's urine smell" from the neighbouring Mao tribe. The salt had a smell of cow urine, but a sweet aftertaste (Yotoho, personal communication). According to village elders, the brine content in the well remains constant and does not overflow. The brine source, *Krachu Zaba* of

Viswema Village, contains two salt wells in close proximity. The springs have a common source, and a large stream flows nearby (Plate No. 1). Thus, in the absence of and scarcity of market salt in the region, brine water functioned as an indispensable culinary and medicinal resource, enhancing its enduring cultural and economic significance within the community.

Plate No. 1. (a) and (b) Salt Well *Krachu Zaba* at Viswema

2.4.2. Mon District: Mon district is the northernmost district of Nagaland and is the home of the Konyak Nagas. Mon town is the District Headquarter. The district is situated between 26°43’ N to 26°717’ N latitude and 95°02’ to 95°033’ E longitude. It was a part of the North East Frontier Agency till 1957 and later joined the Naga Hills. It is bounded on the north by the Sibsagar district of Assam, on the south by Tuensang district of Nagaland and Myanmar, on the east by Myanmar, on the west by Longleng and Mokokchung districts of Nagaland and on the northeast by Tirap district of Arunachal Pradesh. The total geographical area of the district is 1786 sq.km. The altitude of Mon district headquarters is 897.64 meters above sea level (Ground Water Information Booklet, 2013).

Even at the beginning of the 19th Century, a vast tract of land lying between the administered areas of Assam and Myanmar (Burma) was not brought under the Civil Administration by the British. By the year 1914, the Foreign and Political Department of the Government of India, by a Notification, extended the Assam Frontier Tract Regulation of 1880 to the Hills, which were either inhabited or frequented by Abors, Mishmis, Singphos, Nagas, Khamptis, Bhutias, Akas and Daflas. It is by this extension of the aforesaid Regulation that the Government of India brought the area under some administration in 1914, and the area was named the North East Frontier Tract. Hence, the present Mon district was also brought under the same Notification, but practically, there was no Civil Administration till 1948. In 1951, the plains portion of the Balipara Frontier Tract, the Tirap Frontier Tract, the Abor Hills District and the Mishmi Hills were transferred to the administrative jurisdiction of the Government of Assam. Thereafter, the remaining areas of the said North East Frontier, together with the Naga Tribal Area of Tuensang, including the present Mon (District), were renamed as the North East Frontier Agency. The Mon Sub-division under the Tuensang Frontier Division was created. The district was carved out of the Tuensang district (Nagaland) on 21st December 1973. The district was enlarged in 1991 by transferring some villages from the Tuensang district and creating some new administrative circle headquarters at Tobu (headed by the Additional Deputy Commissioner), Mopong and Muknyakshu (headed by the Extra Assistant Commissioner each) (Brief Industrial profile of Mon District, 2015). Mon District has a population of 2,50,260 as per the 2011 census (Basic facts of Nagaland, 2022).

a) **The Konyaks:** The Konyaks are the predominant inhabitants of Mon, the northernmost district of Nagaland. The Konyaks, apart from Nagaland, are also found in the districts of Tirap, Longding and Changlang of Arunachal Pradesh; Sibsagar district of Assam and in Myanmar. The Konyaks in Arunachal Pradesh are known as "Wancho Konyaks". Ethnically, culturally and linguistically, the Noctes of the same neighbouring state of Arunachal Pradesh are closely related to the Konyaks (Konyak, 2019).

b) Economy: Agriculture forms the main backbone of Mon's economy, with 90 per cent of the population engaged in farming. The dominant agricultural system is shifting cultivation, commonly called '*jhum cultivation*'. Rice is the staple crop, followed by

maize, yams, pulses, varieties of vegetables and other crops. In 2001, the total area under jhum cultivation was more than 75 thousand hectares in Mon district. In the foothill areas of Mon district, wet rice cultivation is practised. In recent years, cultivation of horticultural (vegetables, fruits and flowers) and cash crops has gained ground. The recent trend in the District is tea cultivation by the local people.

Mon district is well endowed with fertile land and favourable climatic conditions suitable for crop and livestock production (District Human Development Report, 2009 and Brief Profile of Mon District, 2015).

c) Salt Springs: A distinctive aspect of the Konyaks of Mon district was their indigenous salt-making tradition in the earlier days. Salt springs are found in various places of Mon District, and oral accounts affirmed that the Konyaks manufactured salt, locally called *"hum"*, from their salt springs *"humti"*. Jacobs (1990) notes that 'the Konyak village Wakching, functioned as a local centre for iron tools producing *daos* and chisels for at least twelve villages and in return received salt from those Konyak villages with their brine wells, such as Mon. Their wells were ingeniously constructed by sinking a hollow tree stump below the water table to collect the salty water, which was then boiled in earthenware pots to yield salt (pp. 39, 40). Similarly, Mills (1926) recorded that the Ao Nagas of Mokokchung valued Konyak local salt for its medicinal properties and procured it through trade in a roundabout route in the plains (p. 103).

The Konyak local traditions emphasised the centrality of salt production in community life. Villages such as Leangha, Mon and Hongphoi drew brine water from a site known as Humponlong, where salt well was located. The Hongphoi villagers transported brine water home for both domestic use and for evaporation into salt cake. Winter was considered the most favourable season for processing salt cakes. Village elders reported that during the winter months, they camped near the salt well to process salt cakes. The salt they produced was taken to places that had demand (Ganjun, Hongphoi, personal communication).

Elders from Leangha village narrated that they continued to produce salt by evaporating brine even after market salt became available in Naginimora, because of the challenges associated with travel and transport. The journey to Naginimora took

approximately three days, and transporting salt loads from the town was physically demanding. Among Mon villagers, the Chief- or *'Angh'* periodically assigns individuals to prepare salt for his household and for the community (Ngamwang, personal communication). Over time, however, they gradually abandoned their indigenous salt-making practice as market salt became more easily accessible and affordable.

Lonching in Upper Mon has a perennial salt spring that flows alongside the State highway (Plate No. 2). The villagers of Longching did not manufacture salt, but instead used the brine water directly for cooking purposes and as medicinal remedies. Oral accounts testify that the brine was commonly used for the treatment of minor ailments such as chronic coughs and also for headaches, where brine water is boiled and drunk as a relief tonic. Neighbouring Konyak villages also frequented Longching village to draw their brine, particularly as a treatment for goitre *"Antuhpu"* which was a widespread health concern at that time (Mrs. Chingang, personal communication). This suggests that salt resources in Mon were not only valued for dietary purposes but also integrated into indigenous systems of health practices and healing, highlighting its multi-functional role of salt in the socio-cultural life of the Nagas.

Plate No. 2. Salt Well of Longching Village, Mon District

Although salt production in the Mon region had long been sustained through local resource use, the period following the First World War marked a decisive turning point. With the gradual improvement of transport and trade networks linking the hills to the plains, commercially manufactured salt began to reach Naginimora, a key trading centre along the Assam border. The availability of cheaper market salt, particularly from the plains of Assam, undermined the economic sustainability of locally produced salt, which was comparatively less saltier than market salt. Elders recalled that the salt produced locally from their villages was not as salty as the salt that came from the plain area. The local salt produced in Mon district of Nagaland was inferior to that produced in the area near Jaipur (Joypore) and Borhat in Assam (Chingang, 2008, p. 106).

As trade intensified, the demand for indigenous salt steadily diminished, leading households to abandon production in favour of market alternatives. Consequently, what had once been an essential subsistence and exchange activity in Mon gradually waned, surviving only in memory as an element of cultural tradition.

2.4.3. Tuensang: Tuensang district lies on the eastern fringe of the state, with the international border running on the eastern side of the district. Tuensang is one of the original three districts, along with Mokokchung and Kohima, when Nagaland state was created. The headquarters of the district is Tuensang town, which lies at an altitude of 1575 metres above sea level (Ghosh, 1981, p. 9).

Over the decades, the district has gradually diminished in size with the carving out of Mon, Longleng and Kiphire districts. Tuensang district is bounded by Mon and Longleng districts in the north and northeast respectively, Mokokchung lies in the north-west, Zunheboto district in the south-west and Kiphire District in the south. The international boundary with Myanmar is located on the eastern side. The district of Tuensang encompasses an area of 1,728 square kilometers. Tuensang is situated between latitudes 25°06’ to 27°04’ North and longitude 93°20’ to 95°15’ East, with an altitude ranging from 800 to 3500m above the main sea level. One hundred and four (104) villages fall within the boundaries of the district of Tuensang. The district has rich natural resources (Brief Industrial Profile of Tuensang District, 2015). The District is inhabited by the tribes of Chang, Sangtam, Yimchunger, Phom, Khiamniungan and part of Sumis.

The district, as per the 2011 census, has 1,96,596 population (Basic Facts of Nagaland, 2022).

Tuensang district has evergreen sub-tropical and temperate coniferous forests, which support a variety of flora and fauna. The forest in the lower range of the Tamlu-Namsang area and other parts of the district are classified as "Tropical Wet Evergreen Forests" mixed with "Tropical Semi-Evergreen Forests". Forests above 1000 metres of altitude are categorised as "Montane Sub-Tropical Forests". These are further divided into "Sub-Tropical Broad Leaved Hill Forests" and "Sub-Tropical Pine Forests". Broad Leaved Hill Forests are found in Longkhim, Tuensang and Noklak areas. Sub-Tropical Pine Forests are found in Shamator, Kiphire and Pungro areas. Important trees found in the district are Bonsum, Bogipoma, Khasi Pine, Oaks, Amari, Gamari, Hollock, Nahor, Uriam, Alder, Kachnar, Sasi, etc. Several natural occurrences have been located in the district, such as Asbestos, Coal, Limestone, Marble, Magnesite, Chromite, Pyrite, and Oil. Oil seepage has been found near Namsang-Chingchang village of Tuensang–Mon border area (Ground Water Information Booklet, Tuensang District, 2013).

a) The Changs: The Changs are the major tribes inhabiting the Tuensang district. The district headquarter is situated in the Chang area, and Tuensang village is a Chang village. According to the Chang traditional story, they emerged from the earth in a place known as *Changsang Mongko* /*Changsang Mongdi*, which is situated between Tuensang and Hakchang villages, northeast of Tuensang town. Since they came from a place called *Changsang Mongko/Mongdi*, they came to be known as Chang in short (Ghosh, 1981, p. 24; Aier, 2018, p. 30).

b) Economy: The people of Tuensang District are mostly agriculturists. Jhum or shifting cultivation is extensively practiced, while terrace cultivation is practised in a limited way because the landform is not suitable for terrace cultivation. Rice, millet, maize, taro, pumpkin, beans, squash, mustard leaf, potato, brinjal, cabbage, chilli, garlic, ginger, sesame, cauliflower, radish, leaf-cabbage, french beans, soya beans, water gourd and other varieties of gourds, sorgum, etc., are produced. Among the fruits mentioned may be made of banana, guava, orange, lemon, pear, plum, papaya, peach, pineapple, which are found in abundance (Ground Water Information Booklet, Tuensang District, 2013).

c) Salt Springs: The Chang tribe manufactured salt from springs located on the eastern slopes of Mt. Changsang. Locally, this salt was referred to as *"chem"* and was a vital resource in their subsistence economy (Billorey, 1980; Imchen, 1987, p. 101). Oral traditions associate the tribe's identity with its place of origin, *Changsang Mongko/Mongdi,* from which the ethnonym "Chang" is derived (Ghosh, 1981, p. 24; Aier, 2018, p. 30). Billorey (1980) also noted that the First World War (1914-18) marked a turning point, with men from the Chang community travelling to the plains of Assam as wage labourers on various construction sites. The workers were paid in silver coins, which were used to buy salt. The salt brought from the plains of Assam was not only used for consumption but also as a medium of exchange, with neighbouring tribes such as the Khiamniungans, Yimkhiung and Sangtam exchanging for their *daos* and shawls. Market salt, repackaged into smaller units, was sold to neighbouring tribes at a higher price, thereby integrating the community into the larger networks of trade. The Changs tribes gave up their salt cooking tradition after the availability of market salt brought from Assam by their local traders.

The Chang community, like the Konyak, was also marked by a decisive era following the First World War (1914-1918). With access to currency, they began purchasing cheaper market salt instead of producing it locally. This shift gradually rendered indigenous salt production economically unviable, leading to the abandonment of the traditional salt-cooking practice.

2.4.4. Noklak: Noklak District is located in the easternmost part of the State, bordering Myanmar, and is 316 kilometres from the State Capital, Kohima. Noklak became a civil administration of Tuensang district in 1954. The district was carved out from its parent District Tuensang on 21st December 2017 and is known as "The Frontier District". The District covers a geographical area of approximately 1152 sq Km and is situated at an altitude of 1524 meters above sea level. It enjoys a sub-tropical climate and hilly region with broad-leaved forests. The District shares boundary with Tuensang in the West, Kiphire District in the South, and Mon District in the North, whereas the whole eastern boundary of the district stretches nearly 92 km from the Boundary pillar numbers ranging

from BP 139 to BP 146 form the Indo-Myanmar Border that stretches through forest and hills. There are 44 habitations, including Noklak Town and 3 other Administrative Hqs.

Noklak District is inhabited by the Khiamniungan and the Yimchunger tribe. The Khiamniungan tribe constitutes the majority of the population in the District, with the Yimchunger tribe inhabiting the Thonoknyu Sub- Division adjoining the Noklak District. The population of the District as per the census 2011 stands at 55,434 (noklak.nic.in).

a) The Khiamnungans: The Khiamniungans trace their migration from the Chindwin to their present homeland, motivated by the search for salt, a resource integral to sustenance (Sardeshpande, 1987, p. 11). The community's oral tradition traces its origin to a spring water source. In their local dialect, "*Khiam*" means water and "*Ngan*" means source. The British called them Eastern Changs, while the Chang, who neighbour them, called them "*Kalyo Kengyu*", a reference to their slate-roofed houses. *Kalyo Kengyu* means slate-roofed houses or snow-clad mountain. By the 1950s, however, the Khiamniungan rejected their tribal name of *Kalyo Kengyu* given by the Changs and the British, and asserted themselves as Khiamnungan (Sardeshpande, 1987, pp. 4-16).

b) Economy: The district inhabited by the tribe is predominantly rural, with agriculture as the mainstay of livelihood. According to the 2011 Census, 80.8% of workers in the district are engaged in agriculture as their primary occupation. Subsistence-based traditional agriculture practices, inadequate infrastructure and poor market access have constrained the district's capacity to capitalise on its favourable agro-climatic conditions. Despite these challenges, there has been a gradual transition towards commercial cultivation of products such as cardamom, long beans, and horticulture products. The district has the distinction of practising traditional organic cultivation (noklak.nic.in).

c) Salt Springs: The Khiamniungan community's close connection with salt is reflected in their traditional use of salt springs. According to Sardeshpande (1987), villages such as Pang, Wui and Chokla produced salt by boiling brine in earthen pots until the 1940s. Salt, locally called *"chem"* by the Khiamniungan, was not merely a dietary necessity but was valued as it is believed to have medicinal properties, a quality thought to be lacking in

market salt. While traders from the community frequently travelled to Mariani and Amguri in the Assam plains to procure salt, many households continued to use local salt for their perceived health benefits. Even after market salt was brought to their area, some obtained their salt from salt springs near Pang, and some went to salt springs in Burma. The decline of local salt production resulted from factors such as the drying up of the Pang spring and landslides that buried others. As market salt became more accessible, and though expensive, the tradition of local salt production ended, and the villagers no longer felt the need to reopen their salt springs (pp. 11 and 57).

For the Khiamniungan community, the salt production continued even after the First World War and came to an end in the decade following the 1940s, when the combined effects of environmental changes, such as the drying up and burial of salt springs, and the growing availability of market salt from the plains made the traditional practice unsustainable. From this period onward, locally produced salt ceased to be a regular feature of household consumption, marking the close of an important feature of the community's indigenous salt-making tradition.

2.5. Salt Producing Districts: Currently, salt is produced in the two districts, Peren and Meluri (then under Phek). The Sanphure people under Kiphire District also cooked salt, but abandoned the tradition in 1979 (Fig. 3).

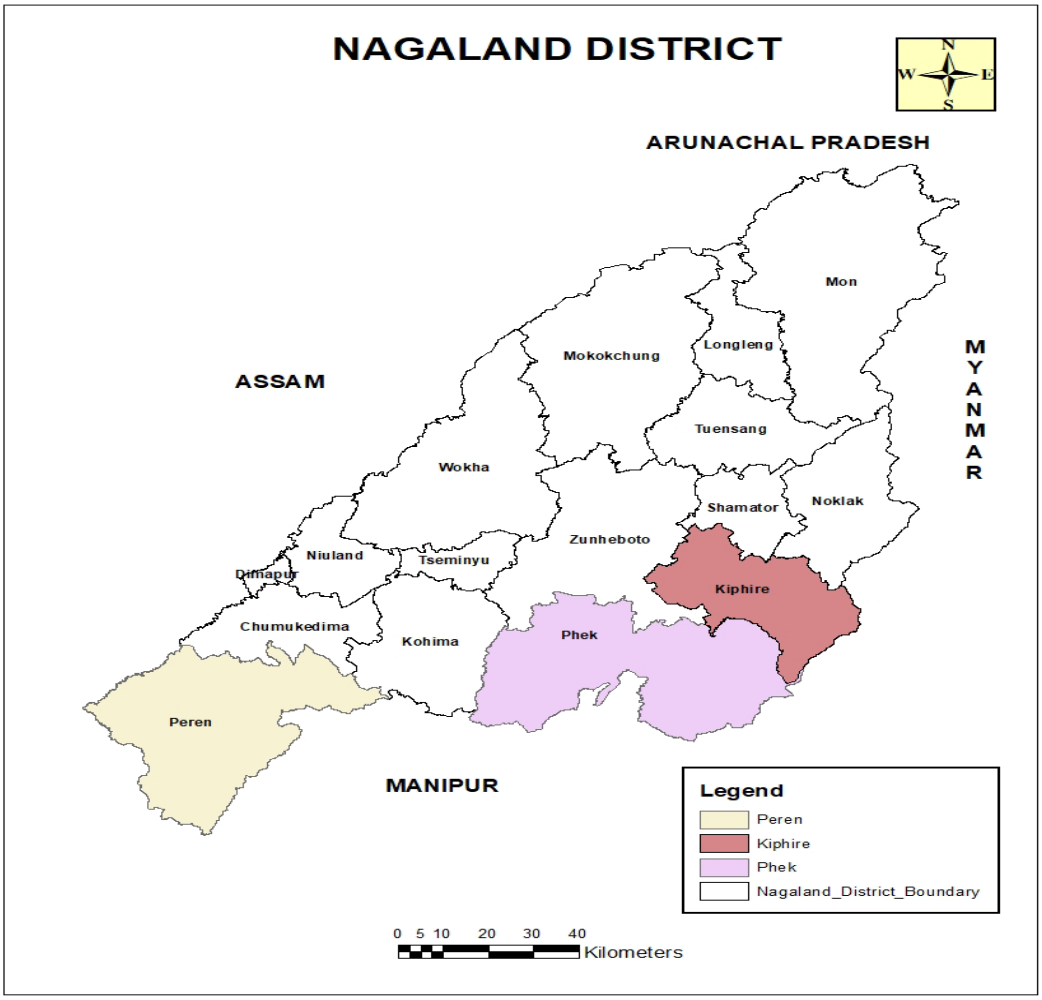

Fig. 3: Map of Nagaland showing Salt Producing Districts.

Source: NGIS & RSC

2.5.1. Peren: Peren District covers an area of 3,114 sq. km. Peren sub-division was upgraded to the status of a district on 24th January 2004. The district is situated between 25°12'N to 25°42'N latitude and 93°19'E to 93°56'E longitude and covers a total geographical area of 1714 km with an altitude of 1445.36 msl (Sebu, 2013, p. 22). Peren

District is bounded by two States and two Districts. On the east and South, it shares Nagaland's Interstate boundary with Manipur; and on the West it shares Nagaland's Interstate boundary with Assam; and on the North and Northeast it is bounded by two districts of Nagaland- Kohima and Dimapur, respectively (Brief Industrial Profile of Peren District, 2015). The District is inhabited by the Zeliangs and Kuki tribes. Legend affirms that their forefathers once lived in Makhel and Kezhakenoma. While migrating westward, they sojourned in some places till they settled down in Nkuilongdi. A mass exodus took place in Nkuilongdi due to certain factors. From the household of Namgang, two brothers called Ndang and Gongdui migrated towards the west and founded Peren village. The word Peren means existence through self-struggle or effort. It was derived from the word *'tsuren'*, which means rocky place or rocky range, named after the geographical feature of the place. The Britishers named the village Beremah, and Peren came to be documented as Beremah (Ndang, 2014, p. 4). There are 105 villages under the District (Brief Industrial Profile of Peren District, n.d.) with a population of 95,219 as per the census of 2011 (Basic Facts of Nagaland, 2022).

Peren District is 139 kilometres away from the State Capital Kohima, and 84 kilometres from Dimapur (Basic facts of Nagaland, 2022). The District is a strip of mountainous territory having fertile foothill valley plains on the north west and north east. It occupies the elongated south-western end of Nagaland and is located at an altitude of 1,445 above mean sea level (PLP, Peren, 2022-23). Peren Town is the Headquarter of the District (District Census Handbook, Peren, 2011). It has two statutory towns, namely, Peren and Jalukie (District Irrigation Plan, Peren 2016). Zeliangrong, which is a combined name of the three cognate groups, the Ze, Liang and Rong, occupy a compact territory along the Barail Mountain and its southern ranges, which extends from Nagaland to Manipur and from Manipur to Meghalaya in the east-west direction in the Northeastern part of India (Venuh, 2014, p. 779).

a) Zeliangs: The Zeliangrong habitat, covering nearly twelve thousand square kilometers, is situated over the Northern, Western, and Southern branches of the Barail range. The steep mountains, deep gorges and river valleys made the region physically isolated from the outside world. Many rivers and streams pass through the country and provide sustenance and other means of livelihood to the people. The Dhansiri, known as

'Temaki' in Zeme, rises from the South-Westerly direction of the Barail, flows westwardly and takes a northwardly course, then it bends eastwardly past the Rangapahar, Dimapur and flows into the Brahmaputra. The Diphu, locally known as the 'Duidiki' source, lies near the Poana Peak, flowing northwardly till it leaves the hills, and near the point of diverting the plains, it flows into the Dhansiri. River Tasangki, West of Peren, flows southwards into the Barak (Mbeiki). Other rivers are Tuilang, Duknaki, Manglu, Langlong, Tahaki, Disagfojan and Teipuiki. The Zeliangrong hills are a segment of the Southern branch of the Eastern Himalayas. Their geological structure belongs to the Disang and Barail series of rocks. The Zeliangrong areas have large tracts of forests. It is one of the richest forest areas in India. The forest consists of a tropical evergreen mixed forest in North Cachar Hills and the plain areas of Southern Nagaland. Tropical moist evergreen forests are found between Cachar and the Japvo peak of Nagaland. Tree species are *Nageshwar* (Ironwood), *Agar, Champa, Tal, Ushoi, Jarul and Uningthou*. Fauna consists of Elephant, wild buffalo, mithun (half domesticated), tiger, leopard, Hill black bear, Indian black bear, badger, wild boar, sambar deer, barking deer, gooral, civet cat, tiger cat, common wild cal, pangolin, porcupine, hoolock, langur, otter, and different species of squirrel and several birds including migrating birds (Kamei, 2004, p. 2).

Captain R.B. Pemberton was the first British officer to encounter the Zeliangrong people during the First Anglo-Burmese War (1826). The Zemes, Liangmais and Rongmeis live in the Peren sub-division and in Dimapur and Kohima. The Zemes and Liangmais are recognised Zeliangs, and the Zemes are the majority in the community. The villages of Peren, Papolongmei and Puilwa were great historical villages and known for their fight against the Kacharis, Angamis, Manipur and the British. According to oral traditions, the Zemes traced their descendants from Namgong, the eldest son of Nguiba, chief of Makuilongdi. Nguiba's eldest son, Namgong, after failing to succeed his father, left his homeland and went out to establish a new village, named Hereira, which is regarded as the first village. From Hereira, Namgong went to Nroikike and then to Nui (present Yangkhullen). The name Zeme is derived from their settlement at the hill range *"Zena"* or *"Nzie"*. Further, the Zemes moved northward to the Barak river and into the present country. It has been speculated that the Zemes came to the Barail for brine. They established the village of Papolongmai, also known as Puilwa (Kamei, 2004, pp. 2-36).

The Zeliangrong areas, particularly Peren district, are endowed with brine springs, enabling local salt production. Salt was traditionally manufactured by boiling brine water in iron cauldrons or *chungas* (bamboo vessels), with lids tightly compressed until crystallised salt was formed, as described by Bareh (1970, pp. 113-114). This practice was particularly significant in villages such as Jalukie, Peletkie and Mbaupungwa. Allen (1905) noted that salt in Lakema was produced by evaporation and sold for eight (8) annas per seer (approximately .933 grams) (p. 51). While Peletkie is the original name, outsiders called it Lakema, a term adopted and recorded by Colonial officials. Peletkie village continues the salt cooking tradition to this day.

b) Economy: Agriculture serves as the primary occupation of economic activity. The practice of *Jhum* cultivation is still prevalent along with terraced cultivation in some of the hilly tracts. Nearly three-fourths of the population engages in agriculture. Rice is the dominant food grown here. The district is described as the "rice bowl of Nagaland" (District Census Handbook, Peren, 2011, p. 11).

Other allied activities constitute an important means of livelihood for the vast majority of people residing in rural areas. Agriculture is mainly rainfed. Rice is the major food crop of the district and occupies 50% of the gross cultivated area. Other major crops grown in the district are maize, soybean, chilli, pineapple, banana and vegetables. Peren District also has a unique land holding pattern in that almost 90% of the area is privately owned. There is no landless among the inhabitants of the District, as each possesses land, either his own or inherited from his family, clan or village. The farmers in the North, Northeast and West foothills and valleys depend on the river water source for paddy fields (Brief Industrial Profile of Peren District, 2015).

c) Salt Springs: Peletkie village in Peren District has two salt springs situated close by within a distance of 1 kilometre. The first one that the community worked in the olden days is the male pond (*pepei*), which has been abandoned for many years. The lower spring, presently worked by the salt workers, is the female pond (*pepui*). It has a depth of six (6) feet. Processing salt is easier and of better quality in the lower springs, according to the village elders. The salt spring is perennial and discharges the same quantity

throughout the year. The salt wells in the village are community-owned, and every member has free access to it.

Colonial writers recognised brine as an important economic resource for the Peletkie community, and that salt produced at Lakema (Peletkie) was manufactured through evaporation, indicating its established market value and regional circulation. The brine spring of Peletkie at present sustained both subsistence and trade. Peletkie village continues the tradition of salt cooking to this day, though with some changes in production techniques, reaffirming the enduring cultural and economic significance of its brine springs.

2.5.2. Meluri: Meluri, the youngest district of Nagaland, carved out of Phek District, became the 17th District of Nagaland on 30th October 2024. It is inhabited mainly by the Pochury Naga tribe. The district is 166 kilometres from the State capital Kohima and 240 kilometers from Dimapur. Meluri is derived from two words: "*Muluo*", meaning 'abundance' or 'plentiful', 'bountiful' and "*Ri*", meaning 'people'. So "*Muluori*" means land of abundance or plentiful (Chukapa, 2021, p. 22). The topography is rugged and hilly, with altitudes between 2000 ft and 8000 feet above sea level. The main basin River Tizu initially flows west to northeast and diverts its course south to meet River Chindwin (Riepetho, 1993, p. 10).

A series of mountains running parallel south to north, which shows the appearance of irregular serrated ridges and, in some places, rises to conical peaks, flat cliffs and precipitous rock cliffs. These mountains are intersected by many deep drainage lines and form innumerable small valleys. Numerous drainages run south to north, north to south, and west to east according to the area. The main basin of the district is the River Tizu. It originates from the southern part of the zone and flows north. After going northward, it turns east and then southeast to join the River Chindwin in Myanmar. Tizu is fed by Zungki from the North and Chaklalu from the east (Yaden, 1995, p. 58). River Tizu flows through the district, touching at least 12 villages in the region before draining into River Chindwin in Myanmar. The main tributaries are Jiji, Araju, Zungki, Luyaukdi and Yowzudi, which are fed by numerous springs (Riepetho, 1993, pp. 12-19).

The influence of physiography on the people of this region has led to differences in agricultural practice, social life and settlement patterns. There are five mountain ranges, namely, Ngazipfu, Kamalay, Muluori, Zhupuhu and Apoksah, running parallel to each other where most of the settlements are situated (Riepetho, 1993, pp. 63-64). The Pochuries consist of diverse linguistic and ethnic varieties which vary from village to village (Riepetho, 1993, p. 6). The Pochury Naga came into contact with the Europeans first in 1874 when a British survey party under Dr. Brown extensively toured the area but had to return because of a lack of interpreters as it had to be interpreted in several stages from Akhwego dialect to Meluri to Angami to Assamese and finally to English and vice versa (Elwin, 1969, p. 364, Chukapa, 2021, p. 109). The real exploration of Meluri began only in 1902 when an outpost was established to protect against the Kuki ravages. In 1911, Meluri became a base of operations against Chingmei village on the border, which conducted several raids on this side of the frontier. In 1923, the villages of Karami (Laruri), Yisi, Purr, and Lophuri, as well as Primi and Meluri, were brought under the district, through a gradual process by Hutton, Deputy Commissioner of the Naga Hills (1917-35) and the house tax was assessed at Rs 2/- at par with other districts (Prakash, n.d., pp. 1916-1917).

Meluri is a mineral-rich district. According to the Geological Survey of Nagaland, the area has rich deposits of limestone, crystalline limestone, decorative and dimensional stones, coal, iron, chromium, nickel, copper, marble, talc, chromites, magnesite, asbestos, cobalt, and molybdenum (Brief Industrial Profile of Phek District, 2015).

a) The Pochuries: The Pochury tribe constitutes one of the smallest indigenous groups inhabiting the highland region of the State. The community is composed of eight distinct immigrant groups. Besides the immigrant groups, there were two villages known as *Khury* and *Kuchu* and one immigrant group known as *Sapo*. Considering this, the name "Pochury" was formed by taking *"Po"* from *Sapo, "Chu"* from *Kuchu* and *"Ry"* from *Khury*. The Pochury tribe speaks eight distinct dialects (Riepetho, 1993, pp. 40, 43). Some of the important household industries practised by the Pochury people are salt production, pottery, cane crafts and weaving.

b) Economy: Agriculture forms the backbone of Pochury livelihood and is primarily subsistence in nature, which includes jhum and terrace farming. Wet-paddy cultivation is available but limited to river valleys. The main crops are rice, millet, maize and yams. The river flowing from west to south-east with wide valleys has fertile soil. The soil is composed of high clay with silt content, which promotes agriculture (Riepetho, 1993, pp. 7-19).

Forest plays an important role in the economy of this region (Riepetho, 1993, p. 38). Most of the Pochury area is covered by evergreen vegetation (Chukapa, 2021, p. 13). Sub-tropical pine forests are found in this area. There are some pure patches of Khasi pine (Pinus Kesiya) with local oaks on the lower slopes. Some other species found in the zones are Amri, Gamari, Hollock, Nahor, Uriam, Alder, Walnuts, Wild apple and wild jack fruit. Plantain leaves grow wild in this area (Yaden, 1995, p. 61; Chukapa, 2021, p. 13).

Different types of birds and animals are found due to the thick, vast forested area and suitable climatic conditions. Barking deer, stag, bear, wild mithun, boar, sow, tiger, porcupine, wild cat, civet, otter, flying fox and different kinds of squirrels are found in the area (Chukapa, 2021, p. 14). Pottery is practised in Sutsu and Laruri, and cane crafts by Reguri. Rearing mithun is common and is practised by Hutsii, Phonkhuri, Phor and Zhipu villages. They supply this animal to other neighbouring villages. Matikhru, Lephory, Reguri and Kangjang rears buffalo and use them to help plough their wet-paddy fields. Trading is very common in this region, particularly with villages situated on the Myanmar border. The trade is carried on in salt, cloths and other light commodities to Myanmar and commodities like medicine and electronic goods are brought from Myanmar (Riepetho, 1993, pp. 22-23).

c) Salt Springs: Several brine springs are found in the Meluri district at Akhegho, Yisi, Phor, Molen and Wazeho (Bareh, 1970, p. 8). The etymology of certain village names reflects their association with brine sources; for instance, *Sutsu*, a Pochury village, literally means “Brine of cattle” (Venuh, 2014, p. 367) and indicates how deeply embedded salt springs are in the cultural landscape of the Pochury community. For the Pochury, brine springs were not merely natural resources but vital economic and social

assets. They provided an essential dietary supplement and functioned as important centres of exchange, where salt was bartered with neighbouring communities for different products. Control and access to these springs often shaped patterns of settlement, mobility and inter-village relations. The tradition of salt cooking continues in villages such as Hutsű and Matikhrű, where brine is still evaporated using traditional techniques. Although market salt is readily available, locally produced salt remains valued for its perceived medicinal qualities. The continuation of this practice reflects not only economic resilience but also a conscious preservation of indigenous knowledge and identity among the Pochury community.

2.5.3. Kiphire: Kiphire sub-division was upgraded to the status of district headquarter from Tuensang in 2004. It is situated between 25°35'N to 26°1'N latitude and 94°34'E to 95°2' E longitude, covering a total area of 1093 km with an altitude of 896.42 msl. Kiphire is bounded by Tuensang District in the north, Myanmar in the east, Phek District in the south and Zunheboto in the west (Sebu, 2013, p. 22). Kiphire District, which was a part of Tuensang district for many years, remains untouched by British colonial administration even after its subjugation in the 1920s. Although it was included in the category of Naga tribal areas under Assam and placed under political control, in practice, there was neither political control nor administration until the transfer of power in 1947. With the expansion of civil administrative outposts, a survey for establishing administrative headquarters was conducted in 1951, and an administrative headquarters was established at Kiphire on June 16, 1952. According to the 2011 census, the district population is 74,004 (Basic facts of Nagaland, 2022).

The predominant tribes of the district are Eastern Sangtam, Yimchungru and Sumi. Kiphire is 254 kilometres from the State Capital Kohima, and 328 km from Dimapur. The town is situated between two lofty mountains, Saramati and Jingkhu, at an elevation of 894.42 metres above sea level (Brief Industrial Profile of Kiphire, 2015).

The district falls under the eastern Himalayan agro-climatic zone with a sub-alpine to sub-tropical climate. The landform of Kiphire is hilly and mountainous, and almost 90% of the population lives in hilly rural areas. The farmers in the district mostly practised shifting forms of cultivation, and therefore, the socio-economic conditions are

related to jhumming. As the general landform is hilly and mountainous, farmers practised wet-terraced rice cultivation in certain pockets and valleys near rivers and streams. Though jhumming is largely practised, wet rice cultivation in the terraced fields is becoming popular in the district. Most of the water sources are seasonal, but there are other perennial sources in the district. The main crops of the district are paddy, maize, millet, and barley and a local bean called kholar is found in plenty (Brief Industrial Profile of Kiphire, 2015). The Zungki River forms an important drainage system of the Kiphire district and surrounds the district. The river receives almost all drainage from Kiphire. Zungki River, which is the biggest tributary of Tizu, starts from the northeastern part of Changdong forest in the south of Teku in the southward direction towards Noklak, Shamator and finally joins Tizu below Kiphire. The district is endowed with rich flora and fauna. Sub-tropical pine forests are found in Kiphire. Some pure patches of Khasi pine (Pinus kesiya) with local oaks, and the most common trees are Amari, Gamari, Hollock, Nahor, Uriam, Alder and Kachnar. Varieties of bamboo are found in this area. Magnolia and Juglans are also found. The district is rich in its variety of fauna, including tiger, panther, jungle cat, barking deer, sambar, wild boar, porcupine, partridge, pheasant, mithun and buffalo. Among these, the mithun holds a special place in terms of its cultural and economic significance and is regarded as the most prestigious of domestic animals (Ghosh, 1981, p. 10; Misra, 2009, pp. 77-78).

Kiphire is recognised as a mineral-rich district, and the minerals found are limestones, magnetite, granite, sandstones, green spillite, boulders, silty sand, and sheared serpentinite (District Industrial Potential Survey Report, 2021-22). The cultural and historical importance of natural salt sources in the region is reflected in local toponymy. Ngoromi, a village in Kiphire, derived its name from an appellation meaning "where salt is found", emphasising the community's long-standing association with and reliance on salt resources (Thomas from Ngoromi Village, personal communication)

a) Sangtam (Kiphire): The Sangtam Nagas are found in the two districts of Tuensang and Kiphire. They consist of four linguistic groups, namely, Phiru, Alisopur, Phelungre and Sanphur, each distinct in itself. The group that settled in the northern region came to be known as Phiru, while those who settled in the eastern region were referred to as

Kijinglangru Phiru. Oral tradition preserved in Sangtam villages of Kiphire, particularly those originating from Samphur/Sanphur, relates that their ancestors emerged from underground. According to this tradition, the first inhabitants of Samphur emerged from a site known as *Boksate*, located in a low-lying area beneath the present village of Samphur. The site is named *Boksate* due to its seasonal water source (Aier, 2018, p. 31). The meaning of the word Sangtam remains uncertain. However, the most widely accepted explanation suggests that it is derived from the word *'Sangtang'*, which, in the Samphur language, means 'reserved forest' (Venuh, 2014, pp. 549, 550).

b) Economy: Agriculture is the main occupation of the people of the district. The main crops of the district are paddy, maize, millet and barley. Cash crops like potatoes, soybeans and different kinds of local beans are also grown. A local bean called *Kholar* is very popular in the district and is found in plenty. Fruits like apples, oranges, mangos, guavas and bananas are also grown. As per the joint survey conducted by the State Department of Geology and Mining and the Geological Survey of India, huge deposits of mineral resources are available in this district. High-quality limestone deposits of nickel, cobalt, chromites and magnetite are found in this district. Apart from this, natural sources of brine are also found. Varieties of rocks are found in the Saramati belt (Brief Industrial Profile of Kiphire District, 2015).

c) Salt Springs: Numerous brine sources are found in the Sanphure region, particularly along the banks of the river '*tsulote'* (literally translated "salt river"). For the community of Sanphure, brine was more than a natural resource; it formed the foundation of their subsistence economy, social life and cultural identity. Extracted from the salt wells and boiled to produce salt, the brine provided an essential dietary mineral in a region distant from trade routes. In earlier times, when access to the market was limited, locally produced salt contributed to overall health and nutrition.

Brine also held economic value. The salt manufactured from these wells was exchanged with neighbouring villages for different products and other necessities. Thus, brine functioned as a medium of local trade and contributed to the village's self-reliance. Beyond its economic role, brine possessed cultural significance. The process of collecting

brine and boiling it into salt was a communal activity that fostered cooperation among households and transmitted indigenous knowledge across generations. The river's very name symbolises how deeply salt was interwoven with the landscape and identity of the people.

A devastating flood in 1979 submerged many of the salt wells and halted salt production, thereby, disturbing a system of knowledge, exchange and cultural continuity. The community was unable to resume the activity, as reopening the submerged salt wells requires substantial labour, time and financial resources, an undertaking beyond the means of the local community. Consequently, a once thriving indigenous salt-making practice, which had not only sustained local needs but also held cultural and economic significance, declined. The wells were subsequently restored, and the traditional practice of salt production was revived in 2017. The revival of the wells and the restoration of salt production, therefore, represented more than the return to economic activity; it marked the reassertion of heritage, resilience and community identity rooted in the enduring importance of brine.

Chapter III: Traditional Mode of Salt Production

The production of any commodity, including salt, is rooted in technology (Adshead, 1992, p. 3). Any material in its raw form is of little use unless it is transformed in some manner. In the case of salt, this transformation occurs through processes of extraction and grinding, or evaporation (Harding, 2013, p. 119). The earliest salt-producing areas were likely located near salt springs or in regions with rocks containing high salt content (Harding, 2013, p. 87). As all cultures depended on salt for survival, various techniques were developed to exploit salt deposits. People in different areas produced salt in ways that were specific to their local environmental conditions. In regions where sunlight was insufficient for effective evaporation, the boiling of brine over fire was necessary (Williams, 2014, p. 22; Harding, 2013, p. 89). While solar evaporation of salt required little specialised knowledge and does not depend on complex technology or fuel resources, boiling brine demanded specialised knowledge of boiling operations, specific processing technology, and considerable expenses on fuel (Parsons 2001).

The process of salt production in the Naga Hills originally involved drawing brine into the hollow joints of large bamboo stems, which were then suspended over an earthen trough and heated to facilitate evaporation and crystallisation, as recorded by various colonial observers (M'Cosh, 1837, p. 61). The three villages of Peletkie, Hustü and Matikhrü, under study, have practised salt-making through fire evaporation in earlier days, and the tradition continues upto the present. In earlier periods, the entire operation relied exclusively on locally available materials; brine was collected using bamboo containers and gourds and boiled in earthen pots. During the inter-war years, however, the gradual expansion of markets in the plains and the improvement of trade networks introduced market goods into these villages. Iron cauldrons and aluminium vessels increasingly replaced earthenware and bamboo implements, as they proved more durable and efficient. This shift reflects not merely a technological change but also the growing integration of these communities into wider commercial trade networks, reshaping aspects of indigenous salt production while allowing the practice itself to endure. The progression from bamboo to earthenware and eventually to metal implements thus

illustrates a layered technological transition shaped by environmental adaptation as well as expanding market integration.

Although salt production in Sanphure ceased in 1979, its demonstration in April 2018 at the request of the present researcher, undertaken by village youth in strict adherence to ancestral techniques, constitutes a significant act of cultural revival that illustrates the durability of collective memory and affirms salt-making as an embedded indigenous knowledge system within the region's socio-economic structure.

3.1. Peletkie Village

Peletkie is a Zeliang-inhabited village, located approximately five (5) kilometres from its headquarter, Peren (Fig. 4). Originally known as "*Lekie*", which translates mean "fountain land", it is one among the oldest Zeliang villages within Peren District (Peletkie Students' Union Golden Jubilee Souvenir, 2018). The village is situated between 93°75'91" E longitude and 25°56'47" N latitude, at an altitude of 1445 metres above sea level.

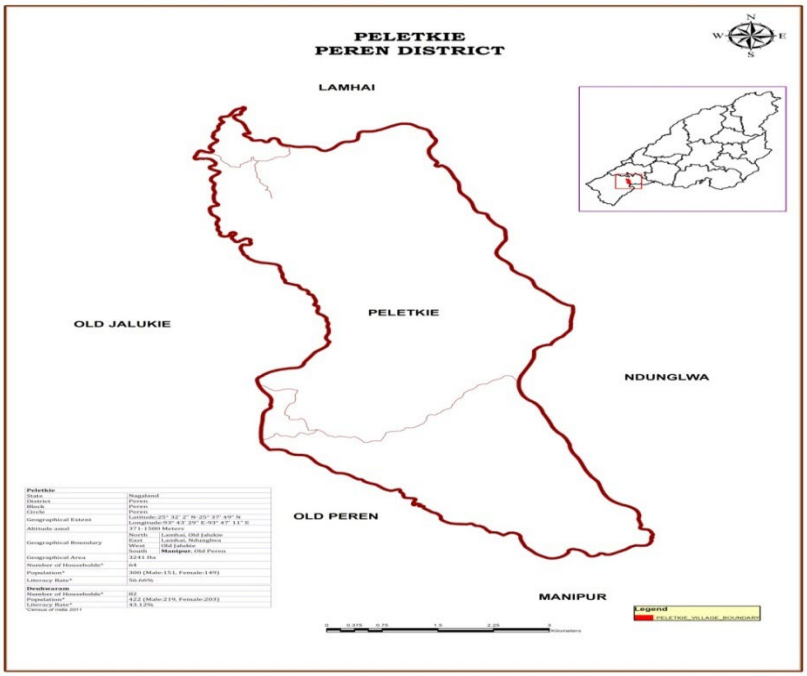

Fig. 4: Map of Peletkie Village. Source: NGIS & RSC

Following the consolidation of British rule in Kohima in 1879, the colonial administration recognised the need for proper communication networks. Consequently, link roads were constructed connecting Kohima with various outlying posts. One such link road, built in 1885, was a bridle path that ran through Khonoma to Tening outpost, passing through Peletkie village (Brief Industrial Profile of Peren District, 2015). An Inspection Bungalow constructed by the British during this period still stands in Peletkie village today.

There is no recorded evidence regarding the founding of Peletkie village, and its establishment is not within the collective memory of the local people. However, oral traditions suggest that the village was established during the same period as the present-day Kohima village. According to these traditions, Peletkie was founded by members of the '*Hau*' and the '*Heu*' clans, who migrated from Nkuilongdi village (presently located in Manipur). Peletkie village shares its boundary with Ndunglwa Village of Nagaland and Tampung Village of Manipur to the East, Jalukie to the West, Mhai Village to the North and Peren District to the South. The village comprises of three khels, namely Heneingpeiname, Nkangpeiname and Nkangtsame.

One of the first settlers and founder of the Village, whose name has not been preserved in oral tradition, is said to have a dream in which he prophesised that *"Lekie"* village would never grow beyond one hundred (100) households. According to local belief, this prophecy has been fulfilled, as the village has never exceeded 100 households. At present, the village comprises seventy-three (73) households. Over time, two new villages emerged from Peletkie: Deukwaram, also known as New Peletkie Village, and Lekieram. The name Deukwaram translates as "the land that is looked after" and was established in 1980 and recognised by the Government of Nagaland in 1989. The land on which Deukwaram was founded had been purchased many years earlier by a man from Peletkie belonging to the *Kenn* clan, and the story of this acquisition has been passed down from generation to generation. His eldest son, recognising the need to safeguard the land, initiated the establishment of the village in 1980. A second village, Lekeiram, was established in 2012 to occupy a vast tract of uninhabited land belonging to Peletkie. This area lies on the northern foothills, bordering Jalukie "B" to the north, Deukwaram to the

east and Old Jalukie Village to the west. The name *"Lekieram"* was proposed by the then Pastor of the village, and it became a second satellite village of Peletkie. Lekieram was formally recognised by the Government of Nagaland in 2017.

3.1.1. Peletkie Salt Springs

The salt spring used by the inhabitants of Peletkie for salt production is known locally as "*Kezai Dui Tekwa*". It is located on the western side of the village, about 3 km away, on the bank of the Nkwareu stream, and requires a walk of 45 to 50 minutes from the village (Plate No. 3). The salt-cooking season in Peletkie begins in February and continues until June, just before the onset of the rainy season. During this period, the salt makers stay overnight in huts built near the salt well. The salt-well area is often inundated by monsoon rain, and by late June, salt-making activities ceased till the monsoon season is over.

Plate No. 3. Peletkie Salt Well

Peletkie village possesses two salt springs situated approximately 1 (one) kilometer apart. The upper spring, used in earlier times, is referred to as the male pond (*pepei*), but it has been abandoned for many years. The lower spring, currently in use, is known as the female pond (*pepui*). According to the village elders, salt processing in the lower spring is easier and yields better quality. The salt spring is perennial, discharging a

consistent quantity of brine throughout the year. It is a community-owned well, and all village members have free access to it. Neighbouring villages are also permitted to draw brine from the salt well free of cost, provided they obtain permission from the villagers. The salt source is a natural spring and has a depth of six (6) feet.

3.1.2. Peletkie Salt Hut/Kitchen

The salt kitchens (*Ncaiki*) are constructed near the salt well along the bank of the River Nkwareu (Plate No. 4).

Plate No. 4. Peletkie Salt Kitchen

These kitchens are built by families possessing the necessary means, and in some cases are co-owned by two or more family members. A typical salt kitchen measures

about eight (8) feet in height and twelve (12) feet in length. The fire hearth (*Nimang*) within the structure is about two and a half (2.5) metres high, eleven (11) metres long, and three (3) metres wide (Plate No. 5).

Plate No. 5. Peletkie Fire hearth

Plate No. 6. Peletkie Salt Kitchen with double fire hearth

In some cases, salt kitchens are constructed with double wood-burning hearths placed side by side (Plate No. 6). The different parts of the hearths are designated with specific names. For instance, the “nose” refers to the opening of the hearth where firewood is deposited, while the “hand” denotes the upper part of the hearth on which the evaporating pots are placed. The hearth is constructed by placing stones inside and plastering them with mud prepared by mixing brine water, a technique believed to enhance durability. The mud used for plastering is extracted from the riverbank near the salt well. In earlier times, the clay deposit along the riverbank adjoining the salt kitchen was also used by the villagers of Peletkie for the manufacture of earthen pots.

Salt makers construct a makeshift camp by setting up a simple shelter, where they store provisions and maintain a fireplace for cooking. At the start of salt-cooking season, the salt workers organise into groups, co-coordinating their tasks such as collecting firewood, fetching brine, tending the furnaces and overseeing the boiling processes to ensure the smooth and continuous production of salt. The camp serves as a resting place for the night, and the fireplace to prepare and share meals (Plate No.7).

Plate No. 7. Makeshift Camp for Salt makers

3.1.3. Rituals: In the past, a ritual known as *'kela'* was performed at the salt well by individuals visiting the site for the first time. The ritual involved making an offering to the spirit of the salt-well. The first time visitors presented a few grains of rice *(hebi)*, two ginger buds (*kebei ku*) and two chillies (*herachi*). These items, carefully arranged on top of two broomsticks (*mpaik nei*), were placed near the well as a one-time offering. The purpose of the offering was to appease the spirit of the well, ward off evil or misfortune, and ensure the safety of the individual. With the advent of Christianity, however, this ritual is no longer practised.

3.1.4. Tools and Equipment: The tools and equipment employed by salt workers are primarily sourced from the local vicinity, although an increasing number are now replaced by market goods. (Plate No. 8).

a) Earthen pots were used prior to the introduction of iron pots. These earthen pots were locally manufactured or sometimes brought from nearby plain areas; however, they are no longer produced or in use. Presently, four (4) cast iron pots of varying sizes, along with one aluminium pot, are employed for the evaporation of brine.

b) An aluminium pitcher serves to transport brine from the salt well to the evaporating pots.

b) Bottle gourds (*caite*) are used to transfer the brine solution from one pot to another during the evaporation process (Plate No. 9).

c) A bamboo-woven net is employed to remove impurities from the heated brine solution (Plate No. 10).

d) A thin wooden spoon (*ncaitia*) is used to beat and whisk a small quantity of the brine solution, to form a paste-like cream that facilitates congealing and solidifying of the prepared brine solution (Plate No.11).

e) A long bamboo pole is employed to shove the burning embers inside the hearth.

f) The finished brine solutions, dispensed into bottles, are transported from the salt house to the village in a locally made bamboo basket (*Kerang*), usually carried by women.

Plate No. 8. Tools and Equipments

Plate No. 9. Topping Brine using Bottle Gourd

Plate No. 10. Bamboo Woven Net

Plate No. 11. Wooden Spoon *Ncaitia*

3.1.5. Salt Processing Methods: Peletkie village previously produced salt in the form of a solid cake; however, this method is no longer practiced. At present, salt is processed in a semi-liquid form and poured into bottles, as evaporating brine into dry cake is time-consuming and requires a large amount of firewood. The best season for processing salt is during the dry season. The salt cooking season usually begins in February, with the salt workers (*Cailangme)* starting preparations well in advance. They cut and transport

firewood to the salt huts to dry it. As the salt processing season begins, the *cailangme* carry their food provisions to the camp, depending on the number of days they plan to spend in the salt huts.

In the salt huts, repair work is undertaken in the kitchen and the furnace. The intense heat from the fireplace causes damage over the course of each cooking season. Fireplaces constructed of mud often become worn and cracked due to the previous cooking season's heat. Fresh mud (*hegamdei*) is collected from the nearby river, close to where the salt kitchens are located. This mud is then mixed with brine water, kneaded and applied as plaster to repair the damaged fireplaces.

Before the cooking process begins, the salt well is emptied to remove any rainwater contamination and is then refilled. Both the new aluminium pot and the cast iron cauldrons to be used are first cured with the brine solution. Once the salt well has refilled, brine water is drawn using an aluminium pitcher and the pots arranged successively on top of the furnace are filled. In total, five pots are employed by the salt worker: a large aluminium pot placed at the rear end of the furnace and four (4) cast iron cauldrons of varying sizes. The cast iron cauldron at the front is the biggest, with the subsequent pots a size smaller than the preceding pots. The aluminium pot has a capacity of approximately seventy to eighty litres of water, while the cast iron cauldrons hold between twenty to thirty litres of water, depending on their size (Plate No. 12).

Plate No. 12. Cast Iron pot and an Aluminium Pot

Once the necessary arrangements are completed, firewood is deposited and lit from the nose of the furnace. As the fire intensifies, the embers are pushed further inside

with a long bamboo pole to ensure the entire furnace is evenly heated. The first three cauldrons are added with wild banana leaves called "*lule*" to impart colouration (Plate No.13). The plantain leaves are carefully selected to ensure they are free from damage, tears or tattered edges, as any imperfection in the leaves can prevent the desired golden-brown hue and result in an overly dark salt during the cooking process. The salt worker closely monitors the fourth cauldron pot, which is placed between the other three cast iron cauldrons counted from the front, and the aluminium pot. Among the four cast-iron cauldrons, this fourth pot is the smallest and serves as the vessel from which the final semi-liquid salt is collected.


Plate No. 13. Wild Banana leaves *Lule*

Before collecting the brine from the fourth cauldron, a few steps are followed. As the brine evaporates from constant heat, it is frequently topped with hot brine from the preceding pot. After heating for more than twenty hours, the concentrated brine is transferred into a medium-sized aluminium pot for filtration (Plate no. 14) and allowed to rest, so that the residue can settle. After the residue has settled, the filtered brine is poured into the same cauldron, and a small portion of the concentrated brine is set aside by the salt-workers for personal use (Plate No. 15).

Plate No. 14. Brine collection from the fourth pot

Plate No. 15. Unprocessed Heated Brine

The ash-like residue that accumulates at the bottom is either used as livestock feed or discarded (Plate No. 16).

Plate No. 16. Brine Residues

The concentrated, filtered brine is poured back into the fourth cauldron for further heating. After approximately one hour, a shiny, silvery layer begins to form on the surface of the brine (Plate No. 17).

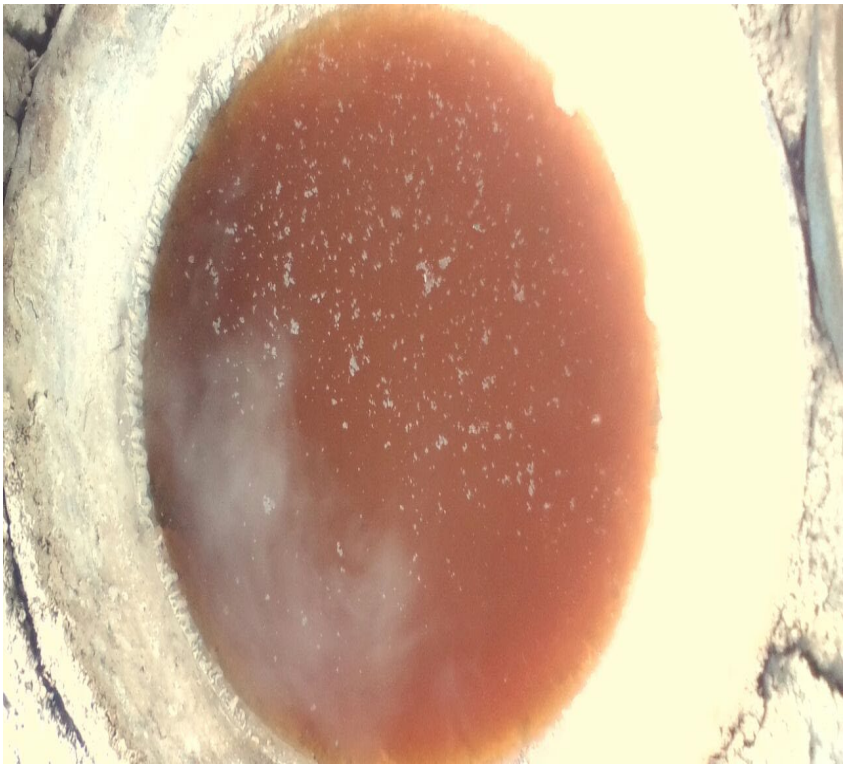

Plate No. 17. Forming of Silvery line

Once this shiny layer appears, the brine solution is ready to be collected again in the same aluminium pot used earlier for filtering salt residues. The brine solution is then decanted into bottles, leaving a small quantity of liquid in the pot (Plate No.18).

Plate No. 18. Brine solution decated into bottles

The retained liquid is stirred and beaten with a thin wooden spoon (Plate No.19), causing it to solidify into a paste with an ice-cream-like consistency. A small amount of this paste is added to each bottle containing the brine solution. The paste then congeals and solidifies the liquid inside the bottle. After more than twenty-four (24) hours of boiling, the brine in the fourth cauldron, with constant evaporation and frequent addition

of hot brine from the preceding cauldrons, the process yields about five and a half litres of bottled salt (Plate No. 20).

Plate No. 19. Brine solution for forming paste

Plate No. 20. Ready Salt of Peletkie

The fourth cauldron, now emptied, is refilled with brine transferred from the third cauldron placed adjacent to it, which has been heating for some time (Plate No. 21). As the brine is successively transferred from one cauldron to another, the big aluminium pot is filled with brine drawn from the well to begin the next batch (Plate No. 22), (Fig. 5 & 6).

Plate No. 21. Transferring brine

Plate No. 22. Refilling the aluminium pot

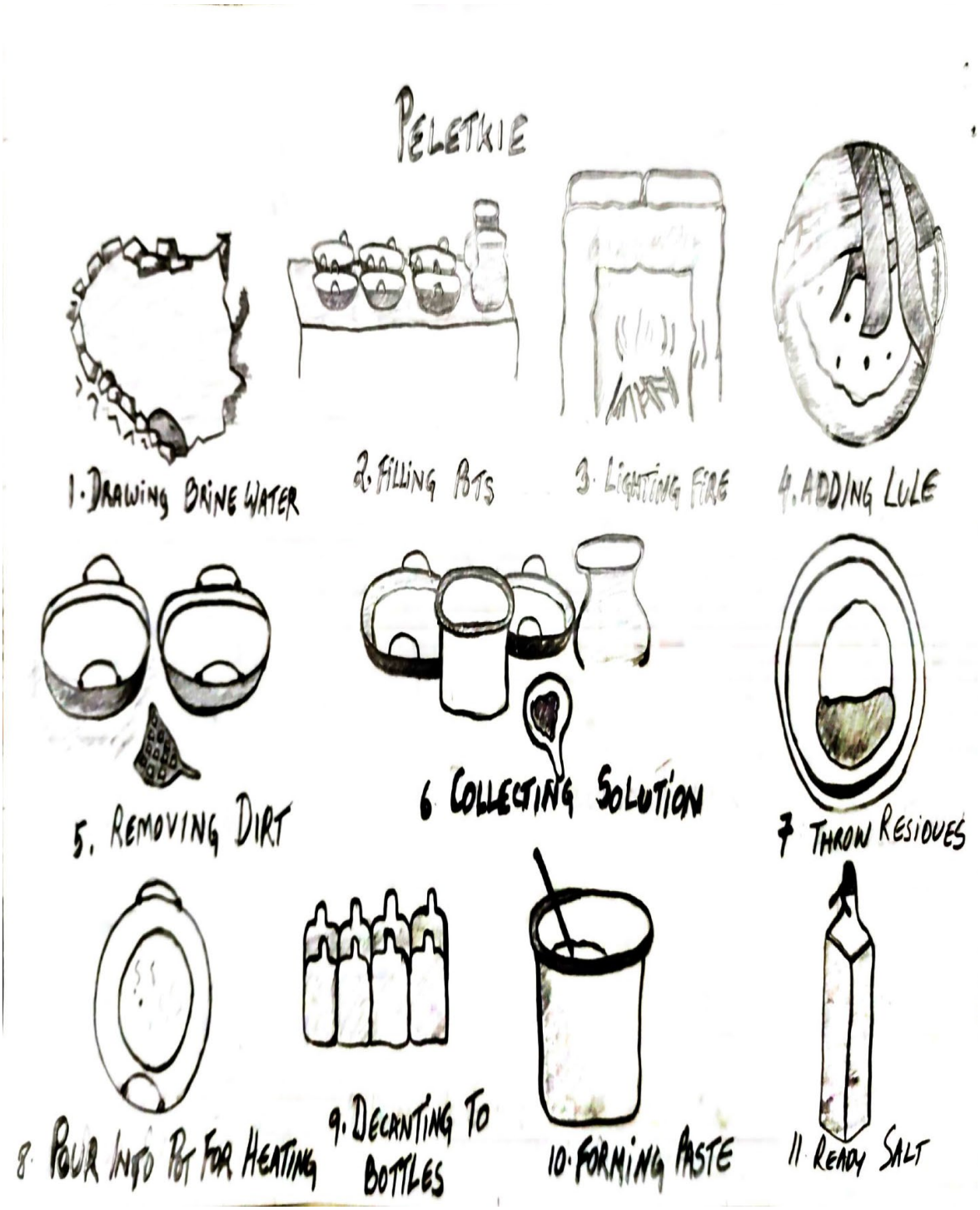

Fig. 5: Sketch of Salt processing stages in Peletkie

Fig. 6: Flowchart showing Salt Processing Stages in Peletkie

3.1.6. Gender Role: In Peletkie, salt production is a communal activity involving both male and female members of the community, each performing distinct and well-defined roles. Male members are primarily responsible for arranging and transporting firewood to the salt kitchens and generally oversee the management and administration of the salt-making operations. During the salt-production season, salt workers camp at the salt huts for several consecutive days. The process of boiling brine requires continuous heating for an entire day and extends through the night to obtain the final product. Salt production in Peletkie, therefore, is mainly undertaken by able-bodied men in their prime working age (below 60 years). This is largely due to the physically demanding nature of the work and the challenging location of the salt huts, which are situated at a considerable distance from the village. The road to the site is steep and precarious, and the shelter constructed for the salt workers is rudimentary, without proper walls and doors, offering them minimal protection.

Female members of the community play an equally important role in the salt-production system. They are responsible for preparing meals for the salt workers and for transporting the processed salt back to the village. The finished salt is carried in a traditional basket locally known as "*Kerang".* This division of labour reflects a well-established system in which gender-specific responsibilities contribute to the efficiency and continuity of the salt-making enterprise.

3.1.7. Transfer of Knowledge: The techniques of salt production in Peletkie are traditionally transmitted through the male line. Most salt workers acquire this specialised knowledge by accompanying an elder, usually a parent or close relative, who is already proficient in the practice. Young male members assist the elders with mundane chores in the salt kitchen, through which they gradually learn the operational procedures and technical nuances of salt production. This knowledge is transmitted intergenerationally through observation, hands-on experience and collective participation in the various stages of salt preparation, thereby ensuring both skill acquisition and cultural continuity within the community.

3.1.8. Ownership: The Peletkie salt well is regarded as communal property and does not belong to any individual or family. In contrast, salt kitchens are privately owned by those who construct them, either as individual families or larger clan units. Families that do not own a salt kitchen may still utilise one, provided they obtain permission from the owner when the kitchen is available. There is no monopolisation of salt production by any particular family or clan, and all members of the community have the right to access and work the salt well.

There was a time in the past when those who utilised the salt well were required to pay a nominal tax to two specific clans within the village. These clans were traditionally regarded as descendants of the individual who discovered the salt well and the person who assisted in its construction. The tax paid in the form of a portion of the salt produced functioned as a symbolic acknowledgement of the salt well's origin. This tax-paying tradition, however, has stopped as the clans formerly entitled to receive it no longer insist on it.

3.1.9. Changes Over time: Salt processing in Peletkie has undergone significant changes over time, not only in the materials employed but also in the processing technique. Traditionally, locally prepared salt in Peletkie was produced in the form of cakes and was dried using plantain leaves, a practice that continued until the present generation's parents. The crystallised salt, once removed from the evaporating pot, was carefully poured into plantain leaves shaped like shallow bowls and placed on the fire hearth for drying. To accommodate this process, four (4) small indentations were made in the hearth, each designed to hold a single leaf bowl. While still in a viscous state, the salt was allowed to dry gradually within these leaf moulds. Each bowl-shaped leaf was prepared by cutting a circular piece of plantain leaf, folding it along two sides, and securing it with tender bamboo sticks. In addition, a long bamboo split was laid along the rim of the leaf bowl to hold and retain the brine solution during the drying process. Once the salt fully

dried, the bamboo clips were removed, and the dry salt cake was wrapped in a fresh plantain leaf for storage (Plate No. 23).

Plate No. 23. Plantain leaf bowl

The community had been engaged in salt production for an extended period, and the procurement and use of firewood for the salt kitchen had become a major challenge. The traditional process of evaporating brine to obtain crystallised salt is highly labour-intensive and time-consuming, often requiring more than twenty-four hours of continuous heating. The salt workers, therefore, have adapted their processing technique by preparing it in semi-liquid form, which is subsequently bottled. This modification has, to some extent, reduced the demand for firewood, allowing for more efficient handling and storage of salt.

3.2. Hutsű

Hutsű is a Pochury village located in Meluri district, renowned for its salt cooking tradition. It lies approximately 84 kilometres from Meluri, the district headquarter (Fig. 7). Hutsü originally belonged to the *Yisi* community, a dispersed sub-group of *Thsüsha (Phor)*. The name Hutsü means "Huge Tableland/Hilltop" or Plateau, reflecting its geographical features. The village is situated between 94° 30' and 95° E longitude and 25°30' and 26° N latitude in a northeast-southwest trending zone of the Ophiolite belt of the Naga Hills (Hutsü Village Council Souvenir, 2014). The village comprises about one hundred and twenty (120) households.

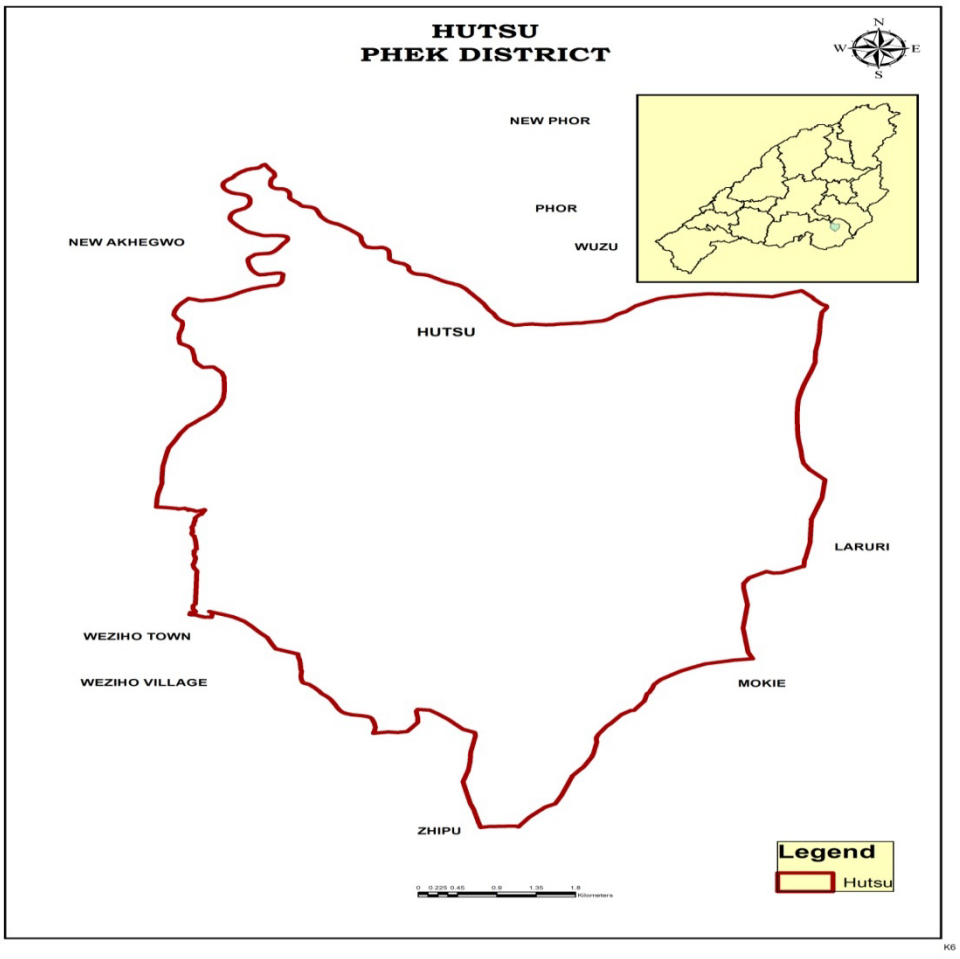

Fig. 7: Map of Hutsű Village. Source: NGIS & RSC

The Phor people, who identify themselves as *Phoyisha*, regard themselves as the original settlers who emerged at a place called *'Buraka'*. Yisi, a branch of the Phor group, was established several centuries ago through migration under the leadership of two hunters, Waghiechu and Wotüchu (Chukapa, 2021, p. 19). According to oral tradition, the hunters had lost their mithun (*bos frontalis*) and set out to search for it. As was customary, they first performed a form of divination using two sticks to determine the direction of their journey. One stick was laid on the ground, while the other was dropped from above so that it touched the one below. The alignment of the stick was interpreted as a favourable sign, following which they embarked on their journey. Due to ongoing headhunting and warfare of the time, the hunters sought a safe place of refuge while searching for their strayed cattle. From their hideout, they observed the mithun moving towards a stream, drinking from a spring and then ascending to a broad mountaintop. The wide mountaintop where the cattle came up to rest is the present Old Yisi village. It was later discovered that the water licked by the mithun had a distinctly salty taste (Meshuzu, personal communication). In addition to the presence of salt springs, the surrounding area offered other resources favourable for human habitation and was strategically located for defence against enemies during periods of conflict. Consequently, the two hunters decided to settle in the area where their cattle had strayed. They invited some friends and companions, one of whom was the forebear of the present-day clan in Hutsü village, and together they migrated to the site of the salt springs, where they established a new settlement named *Yisi*, meaning "new village."

Hutsü emerged as a splinter group from *Yisi*, and the village was founded somewhere around 1870 when seven (7) families moved out from Yisi to establish a new village. Following its establishment, the settlement experienced repeated forced evacuations. The first one occurred in 1898, during hostilities with the Kuki group. The second displacement took place in 1939, when British colonial authorities in India intervened in the region during World War II. As the war drew to a close, British forces bombarded the area in 1944, destroying numerous houses and granaries. The resulting devastation and its subsequent outbreak of disease forced many settlers to disperse in different directions in search of food, water and shelter. Another major displacement

occurred in 1960 during the Battle of Thuda, when atrocities committed by the Indian army once again forced the villagers to abandon their homes.

The present-day Hutsü village was re-established in 1964 (Hutsü Village Council Souvenir, 2014). The village consists of four (4) Khels: Bati, Putu, Khrutu and Ahu Khel. Like other Pochury villages, Hutsü village functions as a self-governing community under the leadership of its chief, *Athupa*, and assisted by the second chief, *Thupitsipa*.

The Yisi area is particularly rich in salt resources. According to the elders of Hutsű village, there are fourteen (14) brine sources in the region, some of which have multiple outlets. The Yisi people have a long-standing tradition of extracting and processing salt from these brine waters. They also possess indigenous knowledge for assessing the density of brine found in their locality. To determine its strength, the leaf of *Thiighiikhii* (*Stachyphrynium placenterium*) is dipped into the brine water. If the leaf turns white, the brine is strong, but if it appears reddish, it indicates that the brine content is relatively weak (Sipiru, personal communication).

Women primarily undertake salt cooking in the Yisi area. Due to their extensive engagement in salt production, weaving skills did not initially develop within the community. The practice of weaving was introduced at a later stage through their contact with the other tribes, particularly the Angamis, who served as educators and transmitted the weaving technique to them (Mrs. M. Chohie, personal communication).

3.2.1. Hutsű Salt Springs

The Hutsű community, at present, produces salt at a location known as *Troshii*, and the salt well is referred to as *Troshipii* (Plate no. 24). Salt huts are constructed in proximity to the salt well, enabling the salt workers to rest and spend the night during the production season. In recent times, however, salt makers generally depart early in the

morning and return home before nightfall. The salt huts are located at an approximate distance of 25 to 30 minutes' walk from the present settlement of Hutsü village.

Plate No. 24. Hutsű Salt well

The *Troshipii* salt well was originally discovered by a member of the *Yikhrula* Khel from Old Yisi village while searching for his mithun, which had strayed. Salt springs in the region are mainly located along animal trails, particularly those frequented by mithuns (*bos frontalis*), which are reared as livestock among the Yisi. As these animals licked saline water from natural springs and moved on, droplets fell to the ground, leaving behind visible white encrustations. These salt marks often led to the discovery of saline springs. Upon locating a salt source, the discoverer traditionally placed a cross-shaped stick at the site to signify ownership.

Salt wells could be claimed either by a group of clans or by individuals; however, the entire community have free access to draw brine water or to process salt. At the *Troshű* site, where brine water was discovered, a major landslide buried part of the salt

spring area. The individual who discovered the spring sought assistance from fellow villagers to clear the mud debris. From that point onward, the salt spring became a community-owned salt well (Sauchu, personal communication).

Once salt springs were located, the male members from the community prepared to dig the salt well. Rituals were performed before the salt wells were dug to assess whether the sites were safe, auspicious and free from harm. Only male members of the community participated in these rituals. When the rituals indicated a favourable site, preparations to construct the salt well commenced. The point of brine emergence was identified using cane straws, with two persons, both with cane straws, sipping and tasting the water. After identifying the brine source, a conduit for saline water was marked by placing a bamboo stem upright and sealing it with mud. The bamboo stem, with the node removed at one end and a small incision made below the node on the other, was placed where the brine water emerged (Fig. 8).

Fig. 8: Bamboo stem placed inside *troshű* salt well

A separate hole was then dug to insert a hollow tree trunk at the outer end of the bamboo stem. As saline water rose through the bamboo stem and overflowed at the cut

node, a hollow tree trunk was installed to help prevent the bank of the salt well from collapsing. Small stones were placed in the gap between the bamboo and the tree trunk to filter out mud, debris and dirt from the salt well. A protective cover shed was constructed above the salt well using either dried banana stem or split bamboo mat to keep the salt well protected from unwanted dirt.

Salt wells were traditionally dug and constructed after the harvest season. At *Troshű*, the salt well was discovered three generations back, and the trunk placed inside is that of a wild walnut tree. According to personal communication with a village guide, the tree trunk is estimated to be over a hundred years old. The well measures approximately 5 feet in depth and 3.5 feet in diameter.

In addition to the *Troshű* site, salt was previously produced at *Kupabii*, located below Phor village. This site, according to the locals, was highly productive. The *Kupabii* site has four salt springs. However, after the community moved down and settled at Hutsü, they ceased using the *Kupabii* site. According to village elders, the site posed a safety concern, especially for women, who traditionally undertook salt cooking and often remained in the salt kitchens until late in the evening. As the salt source is located near an area where human remains are deposited, travelling through the area after dark was considered unsafe for women.

The community also processed salt at another source called *Kuyebii.* However, salt processed from this source had a bitter taste, so they stopped using this salt source.

3.2.2. Hutsű Salt Hut/House

Hutsű salt huts are located outside the village and are strategically built near the salt spring for easy access to firewood (Plate No. 25). The construction of this hut is undertaken either by resource-endowed families or collectively by members of the clan. At present, there are five (5) salt huts in total. Although their structural design varies, with some having double fireplaces, all the huts are built approximately 7 feet in height, with variations in the interior layout. The walls are made of split bamboo woven together, and the roofs are thatched with grass. Corrugated galvanised iron (CGI) sheets are

unsuitable for roofing, as the steam generated during brine boiling rapidly corrodes them, creating large holes. Therefore, bamboo is used for ceilings, which are then covered with thatch grass.

Plate No. 25. Hutsű Salt Huts

Within each hut, a raised platform made of either woven split bamboo or planks serves multiple roles, such as seating, a resting bed and a table. Additionally, a small fireplace located in the corner of the hut is used for meal preparation (Plate No. 26).

Plate No. 26. Salt Workers Fire hearth

The main fireplace (*jwi*) used for evaporating brine is constructed at the centre of the structure and extends to the rear end of the salt hut. It is square in shape and accommodates three large cast-iron cauldrons. At the back end of the fireplace, a raised platform is constructed for drying firewood. In all salt huts, the fireplaces are made of mud locally extracted from the salt spring area. The mud paste is prepared by mixing it with brine water, which is believed to enhance its durability. The fire hearths follow a uniform structure; they measure approximately one (1) foot in height, 4 feet in width at the front, with a one-foot-wide opening for depositing firewood. The total breadth of the hearth is 4 feet with an opening at the rear for drying freshly cut firewood. The heat emitted from the hearth rapidly dries the fresh firewood, making the wood usable within a short period (Plate No. 27).

Plate No. 27. Fire place *'jwi'*

3.2.3. Rituals: In earlier times, rituals were performed during the search for brine water sources and the digging of salt wells. Once a brine source was discovered, a cross-shaped stick was placed at the site to signify ownership. These rituals, conducted exclusively by

the male members of the community, were intended to determine whether the newly identified site would be favourable for salt production.

Salt wells were dug and constructed after the main crops had been harvested. The preparation for digging a salt well involved ritual offerings, in which the use of animal blood was considered essential. A healthy, unblemished chicken was selected for the purpose. At the designated site, the blood of the slaughtered chicken was smeared onto the ground. Thereafter, pieces of rag cloths together with the chicken's feathers, legs, wings and head were burned as offerings to the salt well spirit, seeking blessings and protection against evil. Once the ritual was completed, the construction of the salt well commenced. The chicken slaughtered for sacrificial purposes was prepared using brine water from the source and consumed as a ritual meal. No leftovers of this food were permitted to be taken home. Any leftovers were discarded as carrying them back home was considered inauspicious.

The tree trunks placed inside the salt well were selected from one of the four tree species: *shüshükhüjüsüh, shüshüsüh, khwekhwesüh* and *neesüh.* These woods were chosen for their traditional symbolic associations with "luck, profit, wealth, good earnings and prosperity".

Before the advent of Christianity, it was customary for salt workers to conduct an annual ritual of worship at the salt well before commencing their work. The ceremony involved the collection of rag cloths, along with the feathers, legs, wings and head of a chicken, which were burned near the salt well as an offering to the spirit. These offerings were intended to ward off misfortune, ensure protection against unforeseen adversities, and work their salt productively.

3.2.4. Tools and Equipment: The tools and equipment employed by Hutsű salt workers include:

a) Cast-iron cauldrons, known as '*karai*', used for brine evaporation.

b) Dried bottle gourds were employed to draw brine water from the well and to transfer heated brine from one cauldron to another. (Plate No. 28).

c) Bamboo tubes used for transporting brine water back to the village (Plate No. 29).

d) Shredded pottery referred to as '*chapfű*', traditionally used as a base for shaping salt cakes; this has now been replaced by aluminium discs (Plate No. 30).

e) An earthen pot called '*katatupfű'*, used for storing brine water in the salt kitchen (Plate No. 31).

f) Spoons made from bottle gourd used for shaping salt cakes (Plate No. 32).

g) The handle and thin section of the bottle gourd, crafted to create hollow imprints as a design on the salt cakes.

h) A sieve utilised for straining the impurities from the brine.

i) An earthen pot known as '*lunupfű*' for storing finished salt cakes (Plate no. 33).

Plate No. 28. Bottle Gourd

Plate No. 29. Bamboo tubes

Plate No. 30. a) Chaphii and b) Circular disc Plate

Plate No. 31. '*Katatupfii'*

Plate No. 32. Salt cake shaping spoons

Plate No. 33. *Lunupfii*

3.2.5. Salt Processing Methods: Salt processing in Hutsü is a year-round activity, with rest observed on Sundays and Christian holidays. Some salt workers rest from salt cooking activities on Wednesdays in order to attend the weekly women's service. The activity of the salt workers begins early in the morning as workers leave the village for the salt huts at the crack of dawn, and concludes before nightfall to return home.

Hutsű salt workers employ three cast-iron cauldrons for the processing of brine. To begin a fresh batch, brine water is drawn from the salt well and poured into all three

pots. The pots vary in size, with two larger ones holding between 25 and 30 litres, and a smaller one with a capacity of 20 litres. Firewood is deposited at the opening of the *jwi* and ignited. As the heat intensifies, the embers are pushed further inside the stove for even distribution of heat, with maximum heat concentrated on the smaller pot. The smallest of the three pots is closely monitored, as it is the vessel in which heated brine evaporates and gradually precipitates into crystallised salt. During the evaporation process, the pot is repeatedly topped with hot brine from the other two pots. After approximately an hour, crystallisation begins at the bottom of the smaller pot, whereby at this point further topping of brine ceases (Plate No. 34).

Plate No. 34. Salt crystallizing

Another hour later, the entire brine content from this pot begins to crystallise. At this stage, the salt workers collect the crystallised salt in an aluminium pot, which is still in a viscous state (Plate No. 35). The small cauldron, once emptied of the crystallised salt, is immediately refilled with hot brine from the other two cauldrons, which are subsequently refilled to prepare for the next batch.

Plate No. 35. Crystallised salt

The crystallised salt is then carefully scooped onto circular disc plates lined with plantain leaves, which serve as a base (Plate No. 36). These disc plates are placed on top of the fire stove, where the workers mould the salt in succession while allowing it to dry simultaneously. As the salt gradually dries and hardens, the workers mark each salt cake by making an indentation at the centre using the handle of a gourd.

Plate No. 36. Salt shaping in process

A single batch of crystallised salt produces approximately six to seven salt cakes, each weighing around 300 grams. The salt cakes remain on top of the fire stove until all residual moisture has completely evaporated. The salt workers then smooth the rough edges and strike the cakes against the ground; a firm sound indicates to them that the cakes are ready. The plantain leaves used as the base now darken, turning deep brown from the heat (Plate No. 37). Finally, the salt cakes are removed and wrapped in paper for storage. (Fig. 9 & 10).

In a single day, salt workers can produce between 25 to 28 salt cakes, depending on the intensity of the heat and the season. Salt production is overseen by a village committee, whose members determine the design of the salt cakes and fix their prices.

Plate No. 37. Designing Salt Cake

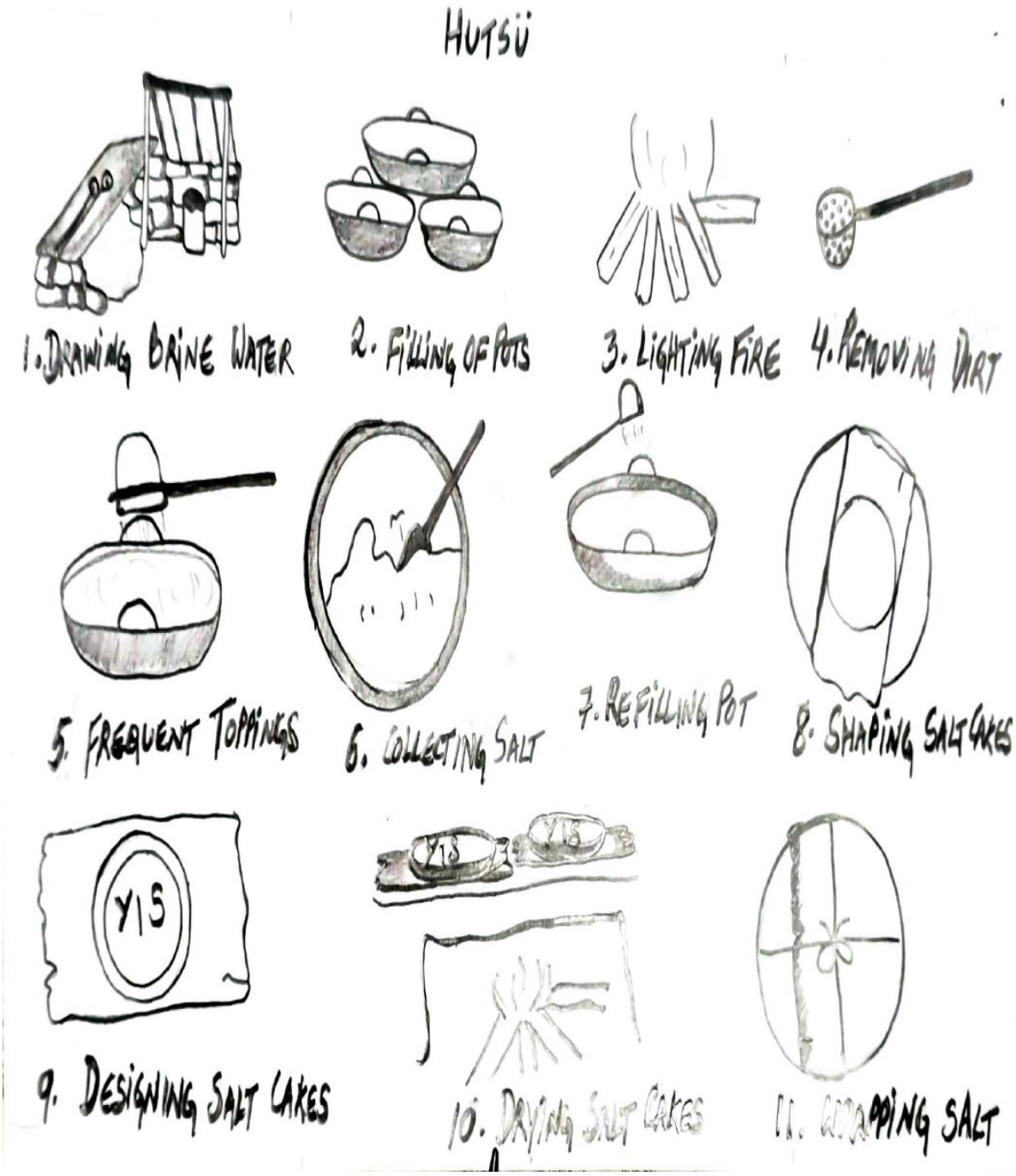

Fig. 9: Sketch of Salt Processing stages in Hutsű

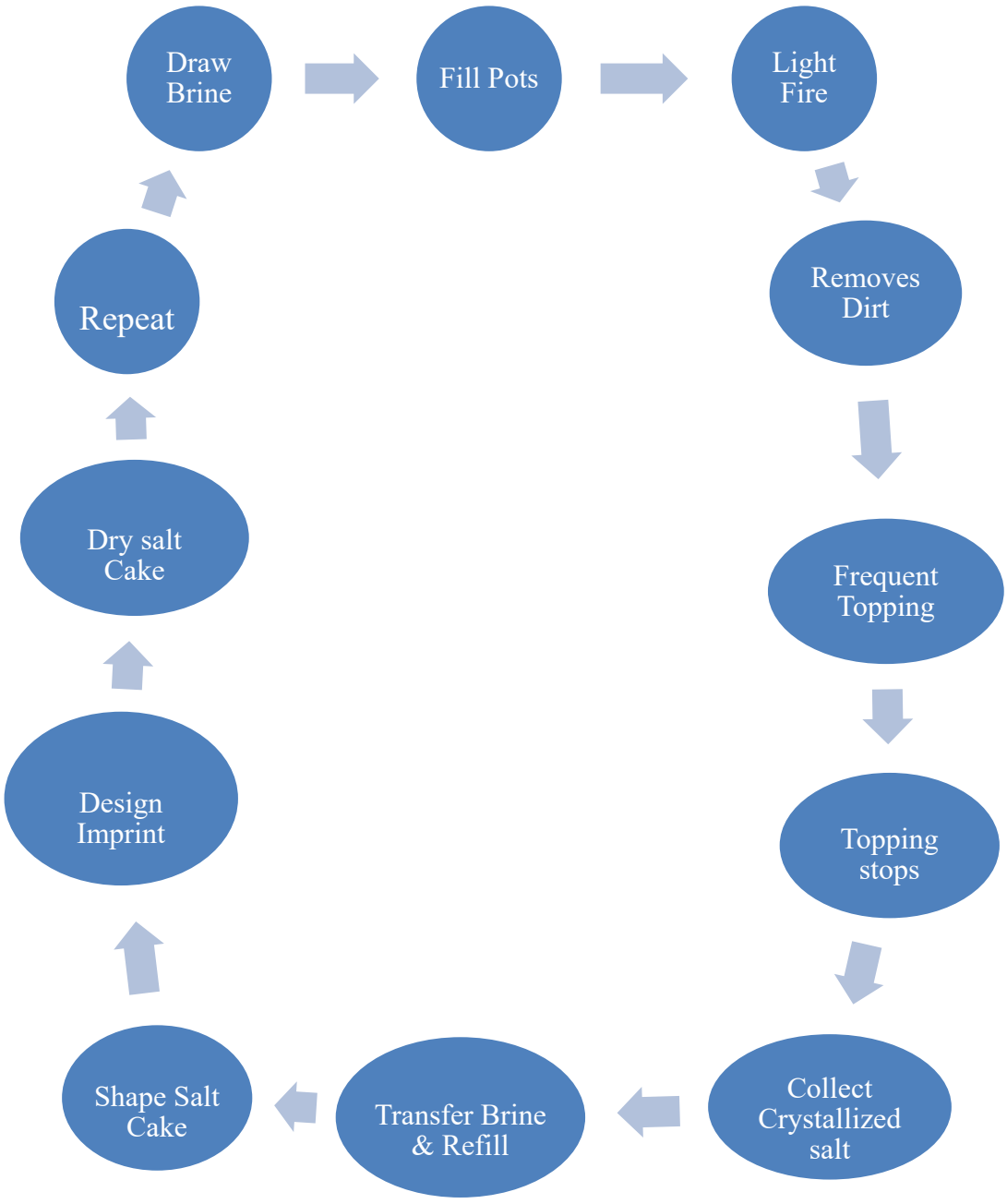

Fig. 10: Flowchart showing Salt Processing Stages in Hutsü

3.2.6. Gender Role: In Hutsű, both men and women actively participate in the traditional salt processing, with the division of labour organised along clearly defined gender roles. Men are primarily responsible for the physically demanding tasks, which include arranging and transporting heavy logs to the salt huts, splitting and stacking firewood, clearing the surrounding area of vegetation, and periodically cleaning the salt well.

Women, by contrast, manage the intricate tasks within the salt kitchen. Their responsibilities range from drawing brine water, lighting fire and regulating the heat, to overseeing the production process from start to finish, including the moulding, shaping, and designing the salt cakes, as well as packing the finished products. The transportation of the finished salt back home to the village is a responsibility shared equally by both genders. Children also contribute by assisting with minor chores in the salt kitchen and helping to transport the finished salt products.

3.2.7. Transfer of knowledge: The elaborate craft of salt cooking in Hutsu had traditionally been passed down from the line of women, from mothers to daughters, and from grandmothers and aunts to nieces. Young girls often accompanied their mothers, grandmothers or aunts to the salt huts, where they actively participated in various stages of salt production. At the heart of the salt kitchen, it was typically a daughter, daughter-in–law or niece who stood beside the matriarch, learning the intricate practices of salt cooking. This knowledge was not only conveyed through formal instruction alone; rather, it was acquired through careful observation and hands-on experience. Each technique tacitly demonstrated was witnessed by the novice, who gradually acquired the finer details of the craft. Over time, the novice refined her skill and grasped the rich heritage of salt production, ultimately becoming a skilled practitioner. This journey of learning was a collective experience, shared with practice and the accumulated wisdom of the elders, thereby ensuring that the art of salt cooking thrives in the present generation.

3.2.8. Ownership: Hutsü possesses several salt springs within the vicinity of the village. According to the Church Souvenir records (2021), the Yisi area contains 14 salt springs. Salt wells in Hutsű are community-owned; however, individuals who originally discovered the springs and undertook the responsibility for digging and maintaining them hold exclusive rights to their respective wells. The salt huts constructed near the salt well, along with the equipment used for salt processing, are owned either by individual kitchen owners or, in some cases, jointly by close clan relatives. There are also certain instances in which evaporating pots are purchased by extended family members of the salt maker, such as sons, daughters or other close relatives. The individual who bears the cost of purchasing the pots receives a daily share of salt proportional to the number of pots.

Families without their own salt kitchen may use the salt kitchen facility with the owner's permission on days when it is not in use. As a fee for using the facility, they pay the owner of the kitchen a piece of salt cake daily, depending on the duration of use. This payment serves as a contribution towards the maintenance and upkeep of the salt kitchen and its equipment, which may incur wear and damage during use.

3.2.9. Changes Overtime: The method employed by Hutsű salt workers has evolved over the years, particularly in the use of tools and equipment. In earlier times, brine was evaporated in earthen pots procured from Laruri, a neighbouring Pochury village renowned for its pottery. These pots were obtained through barter in exchange for salt. With the emergence of markets in Dimapur and Kohima after the Second World War, earthenware vessels were gradually replaced by iron cauldrons, which proved to be more durable and could be used over an extended production season.

In the past, salt workers evaporated brine using 4 (four) pots (Fig. No 11), whereas, at present, the process is carried out using three (3) pots.

Fig.11: Hutsű olden day salt cooking with four pots

The size of commercially produced salt cakes has also changed over time. Previously, there was no standardised weight, and the salt cakes varied in size from palm-sized pieces to larger cakes weighing 450 grams or more. At present, salt cakes are produced in a standardised size, with each cake weighing approximately 300 grams.

In addition to commercial salt cakes, the community once produced a smaller variety that was especially popular within the village, known as *'thiipfii-khiilii'*, meaning 'salt necklace'. This form was made by piercing two holes in the centre of the salt cakes and threading a colourful string through them, giving it the appearance of a medal. These salt necklaces were commonly given as gifts to children, who wore them around their necks as playthings (Plate No. 38). Today, they are rarely produced, except on special

occasions when they are presented as gifts to dignitaries or honoured guests invited to important village functions.

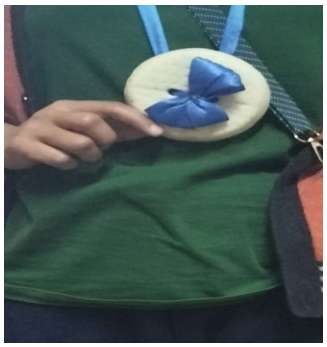

Plate No. 38. Salt necklace *Thiipfiikhiilii*

The design of the salt cake has also changed over time. Previously, a hollow dent was created using the handle of a bottle gourd. At present, the salt cake is stamped with a wooden seal bearing the letters '*YISI'* (Plate No. 39). This wooden seal, introduced in 2024, carries significant symbolic meaning. According to village elders, it represents the community's identity in salt production, marking the salt cakes as originating from the *Yisi* area.

Plate No. 39. YISI Seal

3.3. Matikhrű

Matikhrű village is situated between 94° 34’ 43” E longitude and 25° 35’ 46” N latitude, at an elevation of 1088 metres above sea level (Fig. 12). It lies approximately 32 kilometres from the district headquarter Meluri. The Tangkhuls, during their migration, reached as far as Phek district, and Matikhrű village, which falls under the Chakhesang identity, is one of their settlements (Imchen, 1987, p. 73). The village has a population of about five hundred residents (500) and comprises one hundred and fifteen (115) households. The present location is not the original settlement but the fourth established by the community. The first settlement was abandoned due to widespread diseases, which rendered it uninhabitable. The second site was also unsuitable as it was swampy and infested with mosquitoes. The third site was abandoned because its water source was reddish and undrinkable, resulting in an epidemic-like outbreak. Consequently, the community moved to the present village site, where they settled in the late 1950s.

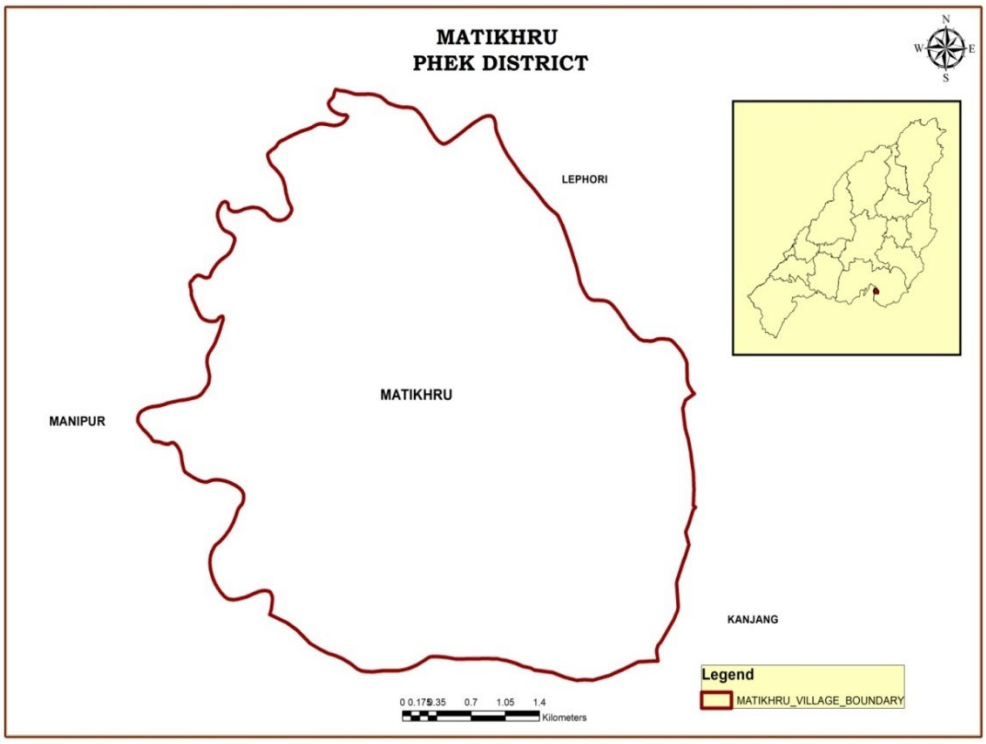

Fig. 12: Map of Matikhrű Village. Source: NGIS & RSC

Matikhrű village has a unique history, having endured atrocities committed by the Indian army in 1960, during which many men were massacred, and the surviving villagers were forced to flee. After nearly three years of sojourning, the community returned and re-established the village in 1963. Therefore, Matikhrü is inhabited by diverse groups, including the Khezha, Chakhesang, Sema, and neighbouring Sangtam tribes, as well as the more distant Rengma tribe.

The settlers of the present-day Matikhrü Village were known as '*Nokhombo*', meaning 'Brine Stream People' (Chukhapa, 2021). According to their oral tradition, a group of men from the Mao village of Rabünamei went hunting. During the hunt, they heard a flying lizard *(Unga)* melodiously singing nearby. One of the hunters followed the flying lizard and went far away from his companions. While following the lizard, he eventually arrived at another village, where he observed villagers making salt from brine water. He remained there for a considerable period before finally returning home. When questioned about his long absence, he responded, "I went to a place where salt has taste". After this, the Village was named 'Matikhrü', a combination of '*Mati*'(salt) and '*Khrü*' (salty), which means salty in the Mao Naga dialect (Nyusou, 2012, as cited by Chukhapa). The village comprises of four (4) khels: Upper, Lower, Middle and Wiekhu.

Matikhrű village is situated in the Kamalay range. The community traditionally practised shifting cultivation, and as the village lies between the Tizu and Araju rivers, wet permanent paddy cultivation is also practised in the river valleys, which provide sufficient rice production for the population. Buffaloes are also reared and employed for ploughing the paddy fields (Riepetho, 1993, p. 22, p. 65).

3.3.1. Matikhrű Salt Springs

Matikhrű village has several brine sources, the most significant being a natural flowing spring called *'thazhibou ezhiku'*, used by the community for processing salt.

They covered the brine spring, which is located near the stream *'Ezhukughi'*, with a roofing sheet to prevent contamination from rainwater and other pollutants (Plate No.40).

Plate No. 40. Matikhrű Salt spring

The village elders recount that this spring was first discovered by a woman of the *Hathemi* clan. They channel the brine water into the designated salt hut and collect it in a wooden trough, which is placed near the kitchen area (Plate No. 41).

Plate No. 41. Wooden trough

Another salt well is situated near the salt hut, however, it is not utilised, as its yield is not as pprolific as compared to the upper brine source (Plate No. 42).

Plate No. 42. Salt Well near salt hut.

3.3.2. Matikhrü Salt Hut

Matikhrű salt hut '*Ezhikhuke*'was originally constructed near the salt spring, in the upper course of the stream, but by the early part of the 2000s, it was relocated to its present site along a motorable road. The construction was financed through the initiatives of the Department of Agriculture, Government of Nagaland. The salt hut is situated at a distance of three and a half kilometres from the village, requiring a thirty-minute walk along the village footpath (Plate No. 43). The salt hut and its associated salt processing activities are community-owned, with free access granted to all village members under the management of the village authority.

Plate No. 43. Matikhrű Salt Hut

The salt hut structure measures approximately 36 fett by 9 feet, and has two fireplaces, '*Laghu*' constructed side by side the salt hut. These elongated fire hearths, each measuring about twelve metres in length and five metres in width, can accommodate five large cast-iron cauldrons. The hearths are construted by firmly wedging large stones together, and finishing them with a thick layer of mud plaster, providing a strong and stable surface on which the salt makers can stand or sit while refilling brine into the cauldrons and shaping the salt cakes (Plate No. 44).

Plate No. 44. Fire hearth

The other end of the salt hut has a raised platform constructed of planks and enclosed by wooden walls, which functions as bed for the salt makers, on days when they remain in the hut to process salt (Plate No.45). During the two nights spent in the salt huts, the salt makers take turns staying awake to monitor the fire and regulate the evaporating cauldrons. The hut is roofed with corrugated galvanised iron CGI sheets; however, the steam generated while evaporating brine water has begun to create large holes in the roofing.

Plate No. 45. Resting Place

Another resting shed was constructed nearby, however, it remained unused, as its location is inconvenient for the salt workers (Plate No. 46).

Plate No. 46. Resting Shed

A small fireplace built in the centre of the hut serves as a place for the salt makers to prepare their meals (Plate. No 47).

Plate No. 47. Salt workers fire place

3.3.3. Rituals: In the past, rituals and sacrifices were considered crucial in unfamiliar or sacred spaces. The Matikhrű community, prior to the advent of Christianity, performed rituals and sacrifices that were integral to the use of brine springs and the construction of fire hearths. These rites involved the slaughter of animals, either a chicken or a pig, whose blood was ritually sprinkled on the salt spring and the designated fire hearths. The observance of *genna* (ritual taboo) marked the day of the salt hut and fire hearth construction, to maintain the sanctity of the site. Any lapse in the rituals and sacrifices was believed to invite the wrath of spirits, leading to afflictions such as people going blind and lame; therefore, animal sacrifices had to be performed meticulously with care. Ritual performances were thus entrusted to knowledgeable and diligent men with ritual expertise. The selected specialists first consulted the village chief and maintained secrecy regarding their preparation, even from their own family members. On the appointed day, they departed for the site of the brine spring and the designated salt hut before dawn, carrying the sacrificial animal. The animal blood was then offered to the salt springs and the fire hearths, thereby sanctifying the area. The ritual also included the offering of meat, particularly the liver and a small piece of metal (iron), which were placed near the brine well (Mesezülo, personal communication).

3.3.4. Tools and Equipment: The tools and equipment used by the salt workers were originally materials found in the vicinity, but have now been replaced. The tools and equipment employed by the Matikhrű salt workers are as follows:

a) Cast iron pots are utilised for evaporating brine water

b**)** Brine water channelled from a distance is by bamboo tubes and rubber pipes and is stored in a wooden trough called *'thsűghü'*.

c) Bottle gourd, locally called *'űghaha'*, used by the salt workers to draw their brine water from the trough and transfer heated brine between different cauldrons. (Plate No. 48).

d) A net called *'műthsű'* in the local dialect is employed to sieve out flakes known as salt dirt. A cane-woven net was previously used, but now replaced by plastic nets (Plate No. 49).

e) A spoon made from a gourd referred to as *'lache'* is used to firm and shape the crystallised salt (Plate No. 50).

f) A thin, slender stick is used to make an incision in the middle of the salt cakes (Plate No. 51).

g) A long wooden pole is used to push the burning embers to evenly distribute heat inside the elongated fireplace (Plate No. 52).

Plate No. 48. Bottle Gourd

Plate No. 49. *Műthsű* net

Plate No. 50. *Lache*

Plate No. 51. Wooden stick

Plate No. 52. Wooden pole

3.3.5. Salt Processing Methods: Salt processing in Matikhrü is a year-round activity. Under the supervision of the village authority, the community has developed an annual calendar, excluding Sundays and Christian holidays. This schedule is prepared to accommodate all the residents who reside permanently in the village. The salt cooking annual calendar is prepared by putting eight families in a group. Each group is further divided so that four families utilise the salt kitchen during the first three days, while the remaining four families use it on the other half days of the week. During their stay in the hut, two families share a fire hearth.

To begin a fresh batch of salt, the five iron cauldrons that are permanently placed on the hearth are filled with brine water before lighting the fire. As the fire is lit and begins to intensify, the fire embers are pushed inside the fire hearth to evenly distribute the heat. Each cauldron has a capacity of twenty-five to thirty litres. The cauldron placed at the front of the fire hearth received maximum heat from the start, and is closely monitored by

the salt workers. The remaining cauldrons heat the brine to periodically refill the first pot as brine evaporates (Plate No. 53).

Plate No. 53. Topping brine

The salt worker uses a fine plastic net to remove flake-like substances from the evaporating cauldrons, except on the first pot. The first pot's continuous evaporation uses brine equivalent to two cauldrons. At about two hours from the time fire is lit, brine solution from this pot begins to crystallise (Plate No. 54).

Plate No. 54. Salt crystallizing

At this stage, the salt workers regulate the heat by reducing its intensity to prevent the brine from agitating or splattering. When the crystallisation process reaches an appropriate stage, the salt is collected on a plate (Plate No. 55).

Plate No. 55. Crystallised Salt

As the salt is collected, the cauldron is refilled with brine from the succeeding pot to prepare the next batch. The collected salt is then set on top of a banana leaf with a sturdy base support underneath. Using a spoon made from bottle gourd, the crystallised salt is shaped into a circular form (Plate No. 56).

Plate No. 56. Shaping salt cake

As the salt starts to take form, a small incision is made at the centre of each salt cake. This incision facilitates even and rapid drying. The salt cakes are then placed above the fireplace, where they are left to dry completely (Plate No. 57). As the cakes remain in the fireplace for some time, the salt workers check by knocking the cakes on a hard surface. Against knocking, a hard, firm sound indicates it is fully dry from the inside, at which point they are removed from the fire hearth (Fig. 13 & 14). The ready salt cakes are wrapped with papers or plantain leaves for storage.

Plate No. 57. Drying salt cake

During a period of three days and two nights spent in the salt hut, two families sharing a hearth can produce approximately 100 salt cakes. These are equally divided between the two families, with each family contributing a portion of its share to the Village Council. The salt cakes collected by the Council are allocated for the maintenance of the salt kitchen, including repairs related to wear and tear of the salt hut, replacement of damaged cauldrons and other necessary upkeep. Each salt cake weighs about 700 to 750 grams and is priced at 120/- in the village.

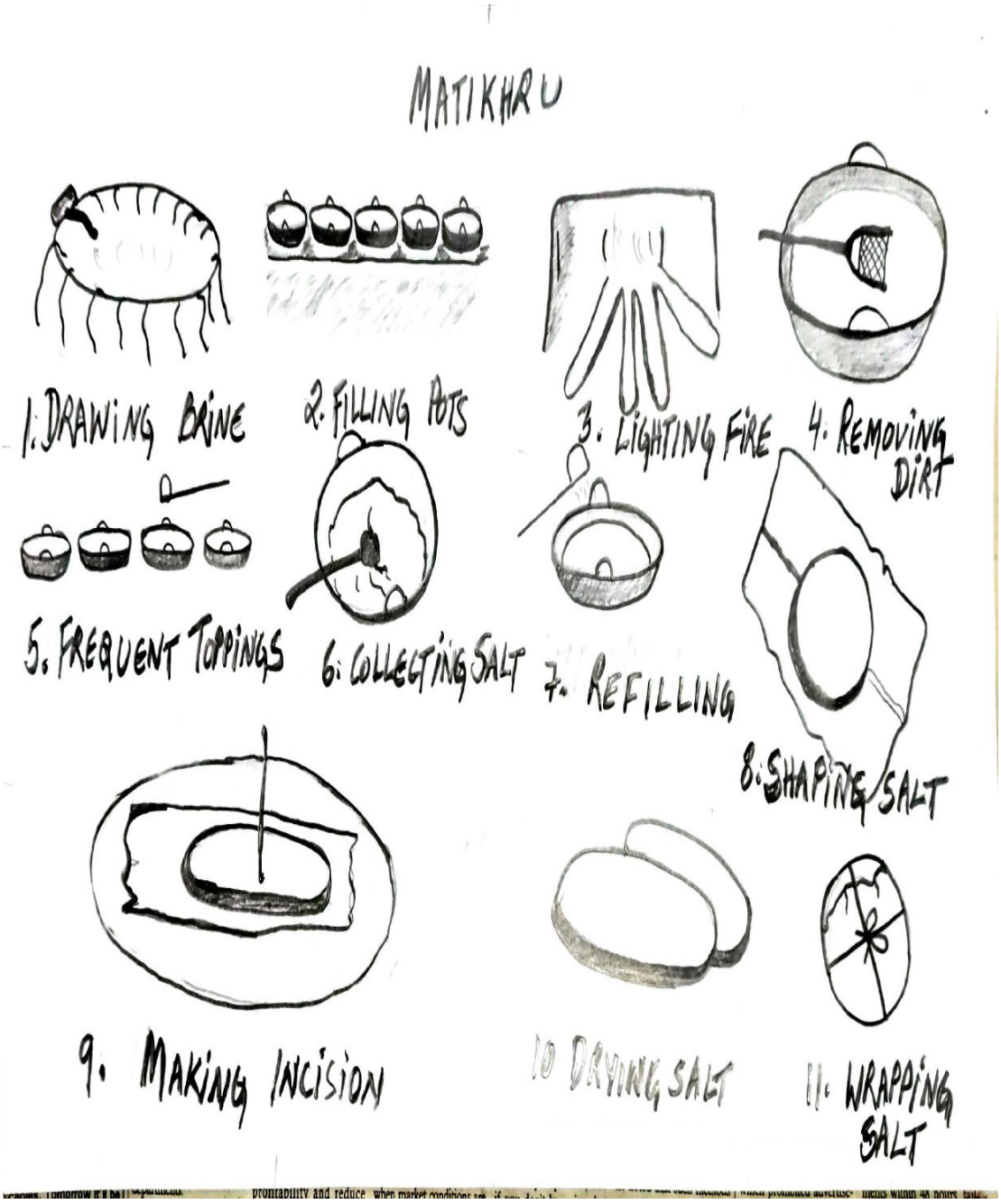

Fig.13: Sketch of Salt Processing Stages in Matikhrű

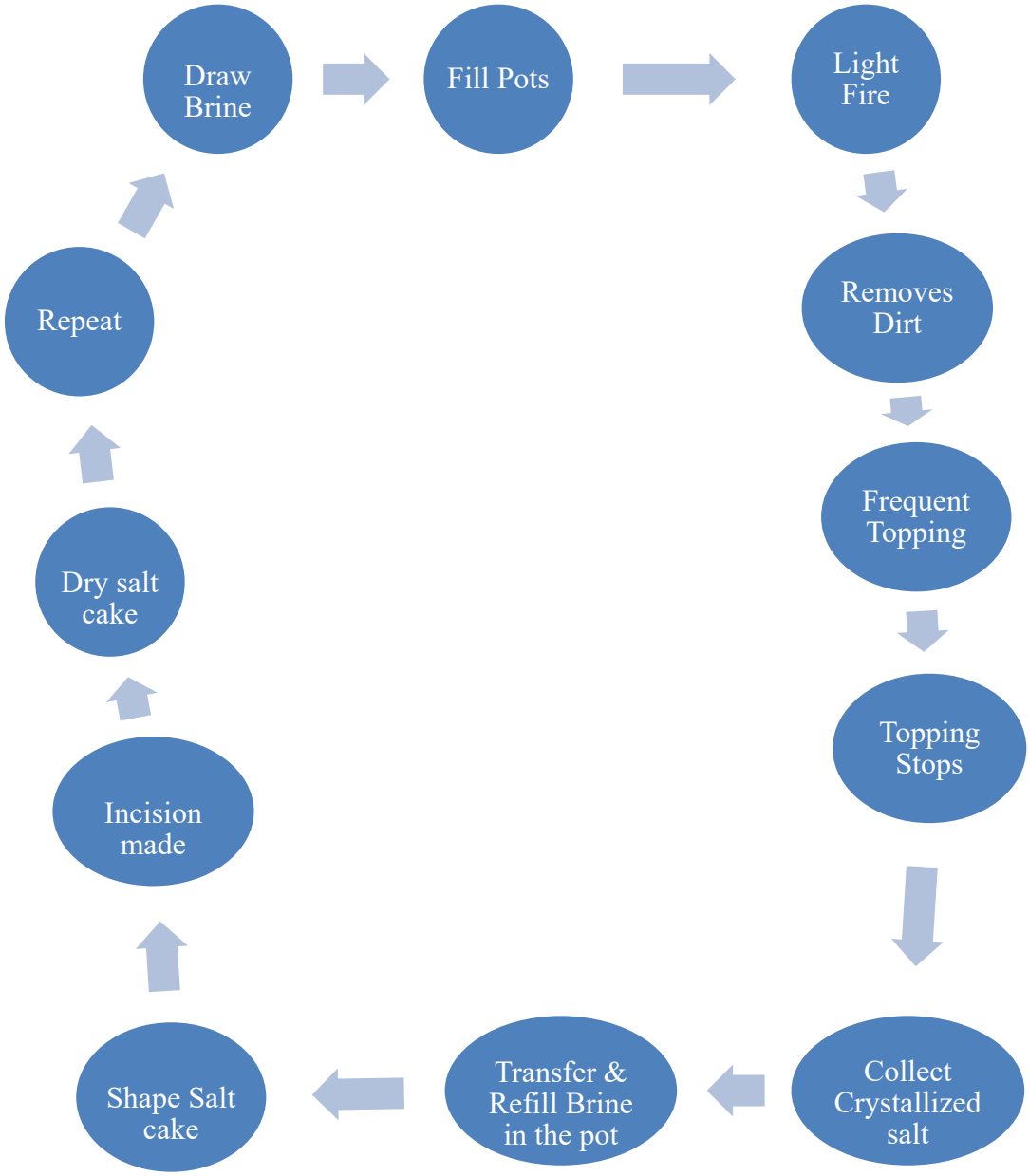

Fig.14: Flowchart showing salt processing stages in Matikhrű

3.3.6. Gender Role: The tradition of salt cooking in Matukhrű has been a shared task performed by both men and women since the olden days, with clearly defined roles. Men were responsible for physically demanding tasks such as felling and cutting firewood, transporting it to the salt hut, clearing vegetation around the hut and repairing bamboo tubes and rubber pipes, the salt hut and the fire hearths. Women, on the other hand, managed the intricate aspects of the salt production process, overseeing the salt kitchen from start to finish. Their responsibilities included lighting the fire, refilling the pots, moulding salt cakes and packing the finished product.

At present, both men and women share the work salt in the kitchen more equally, although the physically demanding task of arranging firewood remains primarily a male responsibility. The younger members of the community are entrusted with transporting the finished salt products back to the village.

3.3.7. Transfer of knowledge: The technique of salt processing in Matikhrű had traditionally been the domain of women, with knowledge transmitted along the female line. The atrocities faced by the community and the subsequent forced displacement interrupted this practice for nearly three years. Once the situation stabilised and the surviving members returned to their homeland, the women healing from the devastating effects took up the salt cooking practice unwaveringly, thus reviving the local salt-making tradition. The knowledge inherited from their elders was preserved through the continued engagement in the salt kitchen. Usually, a younger female member would accompany an elder, acquiring expertise through observation, hands-on experience and collective practice. Thus, the traditional knowledge of salt cooking has been perpetuated through women, and even today, salt production in Matikhrű continues under the stewardship of senior women who manage the salt kitchen.

3.3.8. Ownership: Matikhrü village, renowned for its salt production, has engaged in the craft as part of its occupation for generations. According to the village community, the brine source was originally discovered by a woman from the *Hathemi* clan. Although this particular individual made the discovery, the brine source is considered a community-owned resource rather than private property. The village authority maintains an annual

calendar to ensure the participation of all the members who reside in the village permanently. This calendar is organised in such a way that eight families are permitted to utilise the salt hut weekly to process salt, and the cycle continues to accommodate the entire household of the community.

All families in the village have the opportunity to manufacture salt at the community salt hut. If a family is unable to attend their scheduled turn, another family may take its place by requesting permission and paying a salt cake as a form of tax in return. Thus, the salt works in Matikhrü are collectively-owned, with no individual possessing exclusive rights.

3.3.9. Changes over time: The tradition of salt production in Matikhrű has undergone considerable changes over time. One of the earliest notable changes was in the materials used for evaporating brine. Before the introduction of markets, the Matikhru salt workers used earthenware pots for this purpose. Following the Second World War, these were largely replaced by cast-iron pots known as *'Karai'*, brought from the Tangkhul region of Manipur. These iron pots proved to be highly durable and lasted the salt workers a good number of salt cooking seasons.

The Matikhrű community has maintained its salt cooking tradition before the settlement at the present location. The village salt cooking based on a routine calendar where the entire communities who are bonafide member of the village get to cook salt, came into practice by the late 1980s, under the management of the Village authority.

Significant changes have also been made in the size and standardisation of the salt cakes. The community did not have a uniform weight, and salt was produced according to the convenience of individual salt workers. Today, however, salt cakes are standardised, weighing approximately 700-750 grams. In addition to standardising the size, the village council also regulates the rate of the salt.

3.4. Sanphure: Sanphure is a Sangtam-domiciled village situated 30 kilometres from its headquarter, Kiphire (Fig. 15). It falls under the administration of Longmatra subdivision. The village is situated at 94°43'40" E longitude and 25°48'34" N latitude. According to the 2011 Census, Sanphure comprises 225 households with a population of 1160 members (2011 census). The village is organised into four khels, namely: *Lenlorii, Lenturii, Tiiesinrii and Tiietarii.*

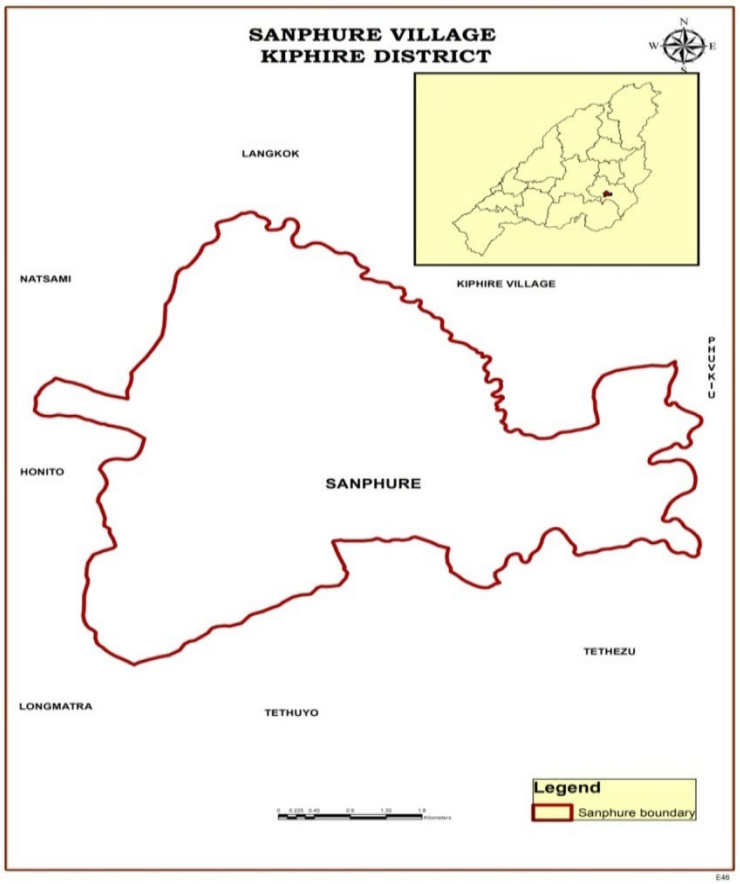

Fig. 15: Map of Sanphure Village. Source: NGIS &RSC

The village elders are unable to precisely determine the founding of Sanphure village. However, they maintain that three individuals played a central role in its establishment. According to oral account, "people gathered from the north and south and from the blood of three individuals, the population increased".

Brine springs are found in Sanphure as well as in two of its offshoot villages, Longmatra and Pungren. The brine spring at Sanphure was reportedly discovered by a man from a neighbouring village who was searching for his lost mithun. This discovery led to a bitter rivalry contested by the Sanphure people and was ultimately won through deception. Village elders recount that the Sanphure people used the help of a fellow villager, who posed as a spirit during the challenge, resulting in the death of the decoy person. The accounts remain well-known in the village, and the elders assert that the sacrifice was worth it, as it enabled the community to gain control over the brine springs, an asset considered both valuable and prestigious.

3.4.1. Sanphure Salt Springs: Sanphure is home to several brine springs, found along the bank of River '*Tsulote',* literally meaning 'salt river'. Salt wells are located along this stretch of the river and are owned either by individual families or clans. The family or clan that originally dug and maintains a salt well holds exclusive ownership rights (Plate No. 58). Any individual or family that does not own one can also process salt by getting permission from the well owners. Neighbouring villages were likewise permitted to draw brine water upon obtaining due permission. In cases of unauthorised use, severe punishments were imposed, the offender was chased, the straps of their carry baskets were broken, and fines were also exacted from the wrongdoer.

Plate No. 58. Thura Clan Salt Well

Wild animals and birds frequented the salt spring sources in the vicinity. During the winter months, herds of animals and flocks of birds gathered along the riverbanks where saline sources were located. Mithuns reared by villagers, which occasionally went missing, were often found in this area. The largest of these saline sources, locally known as *'*Singta', is regarded as the "mother of all salt sources" and bears visible furrow marks, believed to have been made by wild mithuns while licking the saline water (Plate No. 59). The initial experience of salty taste in water led the Sanphure people to use brine water in meal preparation. Over time, they observed a white encrustation stuck to their cooking pots. These visible white deposits gave them the idea that the brine water could be boiled down (evaporated) to produce salt. This technique of evaporating brine water to process salt was subsequently transmitted to neighbouring villages (Thsipongchu and Yangsekyu, personal communication).

Plate No. 59. Furrow marks of Mithun

Salt wells in Sanphure were constructed using various indigenous methods. In some cases, ditches were dug to divert water from the springs, with the brine being trapped by placing a hollow tree trunk. In other instances, rocks were gathered to enclose the saline water, which was then plastered with a locally prepared paste made from the tender bark of the '*nyunyu*' tree and fine ash. Most salt wells along the river were cemented with this mixture (Plate No. 60). The tender bark of *nyunyu*, when pounded, produces a slippery substance that functions as an adhesive agent. This bark was also used to stir the evaporating brine by tying the split strips of it to a bamboo rod. The use of the bark for stirring imparted a sticky quality to the brine, thereby making the salt process easier. The largest salt source, locally referred to as 'the mother of all salt sources', is approximately 8 feet deep, and a long bamboo pole with a hollowed section is inserted. In 1979, heavy monsoon rains caused the river to overflow, submerging the salt wells located along its banks.

Plate No. 60. Cemented Salt Well

3.4.2. Salt Hut/House: Sanphure salt huts, "*Shuhprih*", were erected near the salt well, at a distance of about one kilometer from the main settlement. The site required a walk of twenty-five (25) to thirty (30) minutes. The huts were constructed with woven split-bamboo forming the walls, while the roof was thatched with straw and supported by bamboo and wooden poles. The hut had an approximate height of six feet. At the centre of each hut, a fire pit was constructed for the purpose of brine evaporation. The pit, square in shape, was designed to accommodate five (5) pots of varying sizes (Plate No. 61).

Plate No. 61. Sanphure Fire Hearth

It was built by wedging stones together and plastered with mud, which was prepared by mixing with salt water to enhance its durability. The fire pit featured openings on the front and rear sides. The front serves as an inlet for depositing firewood, while the rear end was used for drying the firewood. On days when salt production was actively carried out, the salt huts also functioned as a resting place, where workers stayed

overnight while engaged in salt cooking. The villagers last practiced this craft collectively in 1979. However, knowledge of salt production has not been entirely lost; the younger generation of the village had not forgotten the process and demonstrated the traditional method of salt cooking at the request of the present researcher in April 2018.

3.4.3. Rituals: Rituals were an integral aspect of the Sanphure community's search for brine sources and the construction of salt wells. These rituals were performed exclusively by men, who observed strict ritual purity. Before departing for the site, the ritual performers observed a period of seclusion, refraining from visiting friends, neighbours or participating in communal activities. They also abstained from contact with their wives to maintain ritual cleanliness and preparation for the sacred task ahead. Upon arrival at the brine source site, they adhered to further restrictions and abstained from drinking water until the task was completed.

Job's tears were roasted and ritually scattered around the site as part of a ceremonial practice. An unblemished white or black rooster was sacrificed, after which its head and legs were carefully covered and placed underneath a bamboo as an offering to the salt well. These ritual offerings were intended to appease the spirits, serving both as a form of propitiation and as a protection. The belief was that such acts of sacrifice would ward off evil forces and safeguard the community from any adverse occurrences during their engagement in salt-making activities (Shapenthe, personal communication).

3.4.4. Tools and Equipment: Sanphure salt workers' tools and equipment were traditionally sourced from locally available materials. Over time, many of these tools have been replaced by items readily available in the markets. The implements employed in the salt-making process include the following.

a) Cast iron pot *Karai*: used for evaporation of brine to extract salt.

b) Bottle gourd *'tesu'*: employed to draw and transfer brine water.

c) Gourd spoon '*Asűsang*': made from gourd and used to shape the salt cake.

d) Bamboo splits *'fuh'*: Thin strips of bamboo used to divide salt cakes into desired sizes.

e) Cane ring: serves as a mould while shaping the salt cake

f) Bamboo tubes: utilised to store brine in salt huts as well as for transporting brine water.

g) Cane woven basket: specially prepared to store the salt cake and hung over the fireplace.

3.4.5. Salt Processing Methods: Salt processing in Sanphure was a year-round activity, with the dry season considered the most favourable period. Owing to the high demand for locally produced salt, processing continued throughout the year, except during the heavy monsoon season. During this time, salt-making activities came to a halt, as incessant rainfall made it difficult to cross the river and access the salt huts.

The fire hearth is constructed to accommodate five iron cauldron pots of varying sizes. One cauldron is placed at the centre of the hearth, while the other four are placed side by side around it. The cauldrons are first filled with brine, and firewood deposited through the front inlet is lighted. Gradually, the burning embers are pushed inside to uniformly distribute the heat. The salt worker sits beside the cauldron that requires close

monitoring. As the brine begins to heat, the other four pots, apart from the one the salt workers monitor, are stirred using the bark of *nyunyu* (Plate No. 62).

Plate No. 62. Stirring brine

The bark acts as a thickening agent, making the brine sticky, to shape the salt better (Plate No. 63). The monitored pot, as it begins to evaporate, is frequently refilled from the other pots. About two hours after the fire is ignited, the brine in the monitored pot begins to crystallise.

Plate No. 63. Bark and leaf of *Nyunyu* tree

At this stage, the salt is transferred directly into a basin lined with a plantain leaf, placed on top of the hearth. A cane ring is placed over the leaf to hold and set the salt in shape (Plate No. 64).

Plate No. 64. Cane ring

As the crystallised salt dries and begins to stick together, the cane ring is removed. The salt workers then shape the circular salt, and while shaping, cut a dividing line on the surface with a thin bamboo rod. These markings will then divide the salt cakes to indicate the value. The line helped to easily divide the salt without causing unnecessary breakage or damage to the salt cake. The salt cakes remain on top of the fire hearth until fully dried (Plate No. 65). Once dried, they are removed and stored in a specially woven basket designed for the salt (Fig. 16 & 17).

Plate No. 65. Drying Salt

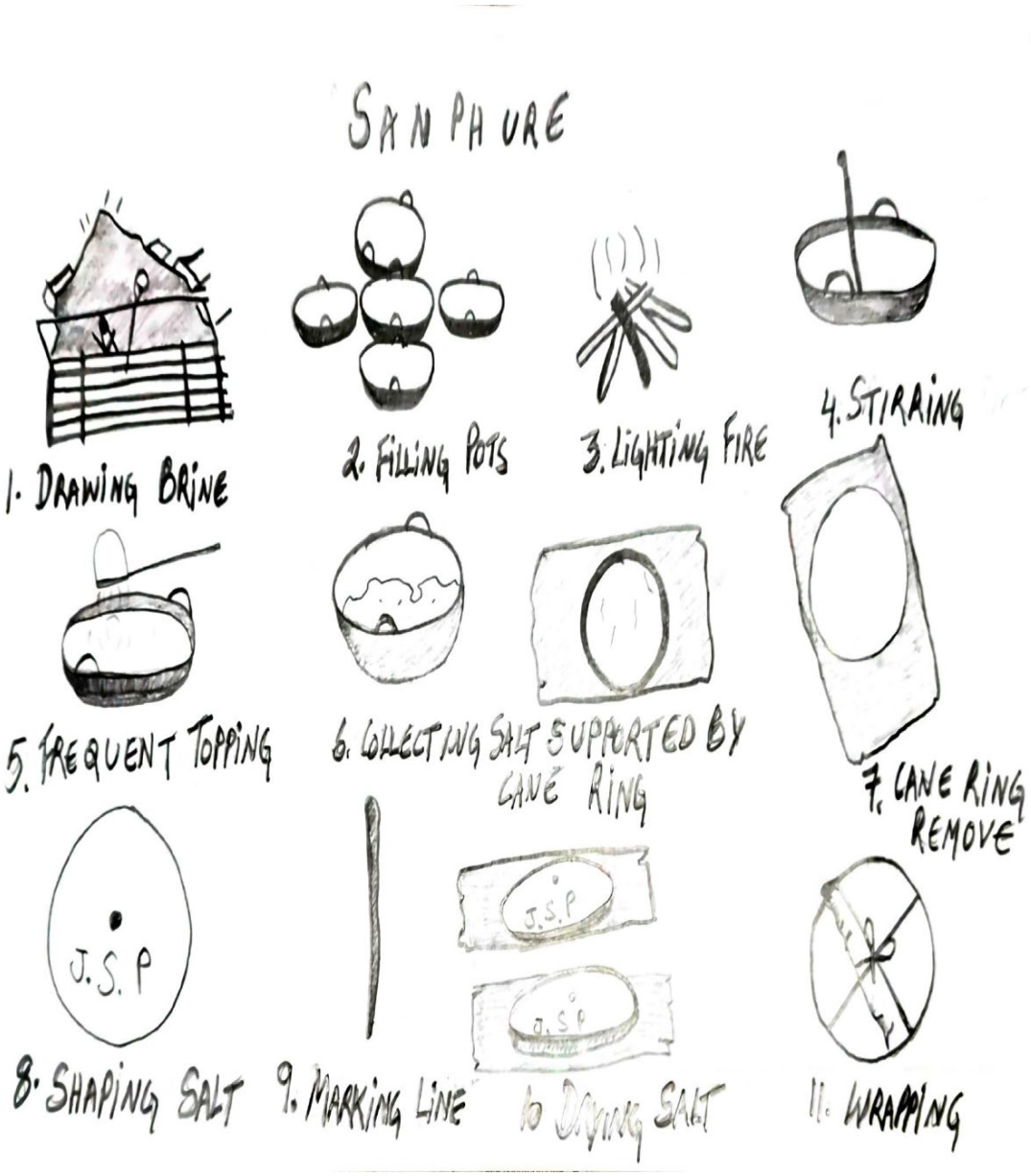

Fig. 16: Sketch of Salt processing Stages in Sanphure

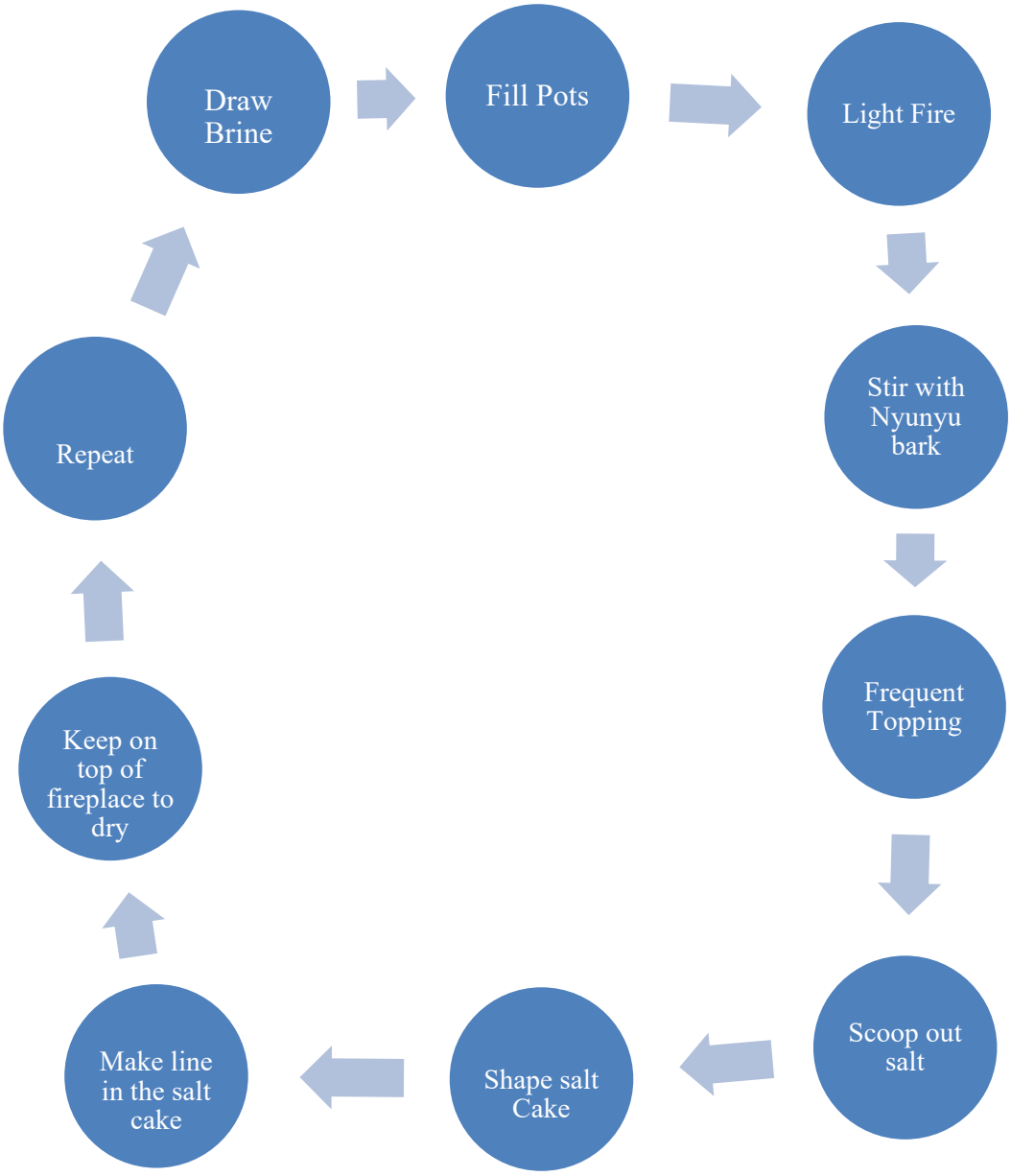

Fig.17: Flowchart showing Salt Processing Stages in Sanphure

3.4.6. Gender Role: The salt cooking process was diligently carried out by both men and women, with a clear division of labour. Men undertook the physically demanding tasks, such as arranging the materials required for salt processing, constructing the salt huts, and digging and maintaining the salt well. The management of salt activities within the huts from start to finish was also the responsibility of male members. Women, on the other hand, primarily contributed by preparing meals for the salt workers and by transporting the finished salt products back to the village.

3.4.7. Transfer of Knowledge: Knowledge transfer in the salt production primarily took place along the male line, as men were responsible for managing the salt cooking practices. Younger members of a family usually accompany the elders to assist in daily activities while simultaneously engaging in an informal learning process. These routine tasks provided opportunities for knowledge acquisition through observation and experience. Traditional techniques were largely transmitted tacitly, passed down through generations without formal instruction. This collective practice enabled novices to gradually develop into skilled practitioners of the craft. The village youth who demonstrated proficiency in salt cooking had gained their knowledge by accompanying elders to the salt huts and directly witnessing the cooking process firsthand.

3.4.8. Ownership: The numerous **s**alt wells in Sanphure are owned either by individual families or by members of a clan. While the brine source is considered the property of those who dug the wells, all community members have the right to access and draw brine water. In contrast, salt huts are regarded as the property of those who construct them. Those who do not have salt huts may still process salt, provided they obtain permission from the hut owner and pay a customary tax in the form of one or two salt cakes.

At the end of the cooking season, it is the tradition for the well owner to cover the salt well. Once it is covered, nobody except the owner has the authority to reopen it. Any violation without the owner's consent results in a heavy fine, which traditionally must be paid to the salt well owner in the form of pork (Mulain, personal communication).

Chapter IV: Role and Impact of Salt Production Site

Salt is a basic requirement for human survival; however, it was once a rare and highly valued commodity**.** Salt played an important role in many of the world's early economies, where it was extensively procured, traded, consumed and utilised (Yankowski, 2007). Historically, the control over salt sources and its distribution was crucial in shaping economic, social and political life (Good, 1972). Salt was an important commodity that played a major role in the functioning of both society and the economy due to its diverse uses. Beyond its role as a condiment, salt was valued for building relationships, facilitating political exchange, providing health remedies, and in exchange networks. Places capable of producing salt emerged as major trading centres, as their distribution required an extensive and long communication network (Saile, 2012, p.231).

In North East India, conflicts frequently arose over the possession of salt wells. In the Naga Hills, the Ahoms secured exclusive rights to some of these wells and, in certain cases, the right to share the produce through conflict with the Nagas (Barpujari, 1982). The Nagas subsequently raided these areas to regain control after losing the salt wells. The Angami Nagas also challenged the neighbouring Kachari tribe over the possession of the salt springs at Semkor, whose inhabitants relied chiefly on the produce of these springs (Barpujaru, 2003, pp. 6, 10). Lt. Grange (1839, p. 452) noted that "the Semkor people were considering leaving their village for another location, as they lived in constant fear of being attacked by the Angamis unless they appeased them with salt".

The central region of the Tangkhul area is known as Kathur, meaning "sour" or "sour-taste". The name reflects that the salt produced in the region at Somsai (near Ukhrul) was renowned for its saltiness, drawing traders from Mao-Maram-Poumei and the Chakhesang tribes. The Mao and Tangkhul regions became important meeting points for Naga traders due to their salt. The Angami tribes, particularly those from Khonoma and Jotsoma, brought salt from this region, which would then reach the Ao villages through various intermediaries, and they called this salt brought up from the south *teretlong,* which means 'bone stone' (Raikhan, 2016, p. 98; Imchen, 1987, pp. 73, 264).

The availability of salt was crucial for the development of early civilisation. Early settlements thrived and flourished around salty springs, where hunting tribes would locate by following animal trails and made their settlement (Bloch, 1963). The Naga Hills form part of the Indo-Myanmar Range and host several salines and hyperalkaline springs (Luirie *et., al,* 2023). Brine and saline springs played a significant role in the migration of Naga tribes, as these springs are located in areas associated with their origin myth, namely Makhel, Khimupu, Changsang and Chuliyimti (Imchen, 1987, p. 55). Sardeshpande notes that the Khiamnungans describe their migration from the Chindwin River to the present site in search of salt (1987, p. 11). Similarly, the Zemes are believed to have migrated to the Barail range in pursuit of brine (Kamei, 2004, p. 36). The Yimkhiung regard salt springs as an important factor in establishing their village, and their tradition recounts a person by the name Liongshe who discovered brine springs at Khimuphu, which they consider their origin (Venuh, 2014, p. 734; Imchen, 1987, p. 136).

Salt has long been a valuable commodity, and the presence of salt resources has influenced settlement patterns (Bloch, 1963). In the Naga areas, places such as Ngoromi, a village in Kiphire District, is named from an appellation meaning “where salt is found” (Thomas, Ngoromi Village, personal communication). Similarly, a Pochury village in Meluri district called “Sutsu”, means “Brine of Cattle” (Venuh, 2014, p. 365).

4.1. Myths and Beliefs: The origin and composition of salt had been a matter of tradition. Jones (1921), referencing the work of Hermetica, notes that salt is exalted with extravagant praise and described as a Treasure of Nature. Moreover, he asserts that whoever possesses salt secures not only material wealth but also happiness. He further highlights that in Germany, salt sources were linked to the practices of witches and their produce was regarded as a divine gift (1921, pp. 5, 9).

It is undeniable that salt had a deep religious significance. The Naga belief system permeates every aspect of their life, including their sacred sites. The newly discovered salt springs are considered sacred locations requiring the community to engage in rituals and sacrifices. The brine source sites also preserve rich tales of legends and myths, as well as belief systems that govern the use of brine resources.

a) Matikhrű (Meluri): Within the Matikhrü community, it is believed that their brine well is guarded by two spirits, a couple named '*Mütsachü*', the male spirit and '*Mezolhi',* the female spirit. In earlier times, before beginning the salt-making process, the salt makers would speak to the guardian spirits, "We are your descendants, do not disturb and do not dry the brine source". Salt processing in the salt hut continued late into the night. When the salt makers became tired and sleepy, they believed the spirit would awaken them and assist in completing the salt cooking process without overheating or damaging the salt (Mesezülo, personal communication).

Another belief associated with the brine source concerns the guardian stewardship of animals represented by a two-tailed snake and a two-horned lizard. According to villagers, if anyone committed misdeeds or crimes, these guardian animals would block the source, causing it to dry up. If the brine tends to dry out, a female member of the founding clan is tasked with cleaning the salt source. Upon arriving at the spring, she utters, "The people are in misery as their livelihood source is cut off; forgive them for their misdeeds and let the source flow again". With these words, the snake and the lizard move apart and open the channel, allowing the salt water to flow once more.

The village elders also recount a myth about the origin of brine springs. According to the story, a man with two wives, the first from *the "Nyuthepfü"* clan, was known for her delicious food preparation, and the second wife's cooking lacked flavour. One day, on the pretext of going to the field early, the husband peeked through and found how his first wife prepared and cooked such tasty food. He found that she peeled the dirt from her body, spat and picked her nose, and threw it into the curry. On seeing her action, he felt disgusted and chased her away from the household. The wife, being forced to leave, took with her a walking stick known as *Ezü kechü* (cane). As she departed the village, the places where she spat, urinated and picked her nose transformed into brine sources. So when the brine source dried up, the women from the *Nyuthepfü clan* were responsible for cleaning the well to ensure that the flow resumed. It is believed that if any other clan than the *Nyuthepfü* approached the well, the guardian snake would bite them. The first wife, driven away by her husband, died on her way to Hutsü, near a stone cave (Resipa, personal information).

The Pochury people also had a folktale about a woman named Tusatshu from the *Nyutheri* clan, a group known for processing salt from saline water. The story, as recorded in Fables from the Misty Mountain (2009, pp. 168,169) states:

"Tusatshu was married off to a man from a faraway village southwest. Food or wine, whatever she prepared, became salty. Her husband thought she could not cook. He was embarrassed, and he feared his wife's poor culinary skills would humiliate him. So he divorced her and told her to be gone to the forests. Before they broke up, Tusatshu requested her husband to give her a rooster to help keep track of time in the dense jungle; whenever the cock crowed, she would know a new day had dawned. Tusatshu roamed around the forest, living off wild fruits. But not everything in the forest was edible. She began starving; the cock, too, was devoured by wild cats, forcing her to lose her sense of time. She finally sat under a fig tree and died. People have since believed the water turned saline wherever Tusatshu's spirit urinated".

b) Sanphure (Kiphire): The Village of Sanphure in Kiphire is rooted in the legend of the discovery of salt spring sources. According to the tale, a man from a neighbouring village, while searching for his lost Mithun (*Bos frontalis*), found his animal near a brine source. The discovery of this brine source led to a bitter contest with a man from Sanphure. The challenge was to call upon the brine spirit by both men, and whichever man the spirit responded to would be recognised as the rightful claimant. Meanwhile, the Sanphure man, by deception, hid his own fellow villager in a distant place to act as a spirit by responding when he called to the brine spirit. The man whose mithun was lost called on the spirit three times, but received no response. When it was the Sanphure man's turn, his claim was answered with a resounding "YES". Thus, the Sanphure villagers declared the newly found brine source as their own. Tragically, the man who pretended to be the voice of the spirit died shortly thereafter, but for the Sanphure people, the sacrifice was worthwhile, as they had successfully claimed ownership of the brine source.

c) Longzang (Mon): Longzang village of Mon District is home to several salt spring sources. According to an informant from the village, they possess twelve sources in their vicinity. Their salt spring's discovery tale is embedded in myths. The story centres on a

woman named Wansho/Wancho, also known as the 'salt owner/ salt mother'. She was renowned in the village for her talent in cooking delicious meals, particularly in the field hut. One day, a friend of her daughter witnessed her unusual cooking method that involved using dirt. The meal she was preparing was with body dirt; she spat and picked her nose. Her cooking method was narrated in detail to her daughter. It so angered the daughter that she beat her mother so badly. The mother felt offended by her daughter's deed and decided to leave the house. She informed her neighbour before leaving to convey to her daughter that a package she left on the *'machaan'* (outhouse). The daughter, however, dismissed the message and did not bother to check for the package. As the days went by, she began to miss her mother and remembered the item her mother had left behind. She eventually discovered that the wrapped package contained salt. Feeling remorse for her deeds, she decided to search for her mother. On her journey, she came across a bunch of plantain plants and enquired about her mother. The plantain plant replied:

> "She is now far away. I was cut down when she left, but I have since sprouted back and grown tall since she passed by me".

After hearing this, the daughter gave up her search and returned to her village. As for the "salt owner/mother", she reached a place called '*Khunyu*' in Arunachal Pradesh, where she became the mother of all 'Wansho/Wancho'. It is believed that as she travelled, the places where she spat and urinated turned into salt springs and that the place where she settled in Arunachal Pradesh possesses the best sources of salt springs (Khamhi, personal communication).

d) Viswema (Kohima): Brine sources in Viswema village, under Kohima District, are still used in preparing traditional dishes and hold significant cultural and spiritual value. Trading or selling brine water is strictly prohibited, as local tradition warns that commercialisation would result in the source being "married off" to another location, causing it to dry up. An oral account suggests that a now dry brine source is symbolically relocated to a neighbouring Western Angami village through this process. Brine water, therefore, is not traded or used for commercial purposes to this day, but it may be shared

with neighbouring villages if proper permission is obtained. (Damo, personal communication).

The Viswema village community also possesses a profound understanding of the resources in the locality, particularly their brine source. An observation they had is that the brine content in the salt well remains constant and does not overflow. According to village beliefs, any abnormal increase in brine leading to overflow is considered an ominous sign, suggesting that the source may soon become depleted. Thus, the management of brine sources in Viswema reflects an intricate relationship between cultural norms, ecological stewardship, and traditional knowledge, ensuring the sustainability of these resources for communal use.

e) Hutsű: Pochury villages function as independent units under the leadership of the Chief, traditionally selected by the Village Elders. Each village exercises a degree of autonomous governance guided by the chief and assisted by a second chief. Like other Pochury villages, Hutsü village also functions as a sovereign unit under the leadership of its chief, *Athupa* and assisted by the second chief, *Thupitsipa*. The Village chief, as the head of the community, is bound by a series of prescribed rules and taboos that regulate both personal conduct and communal well-being. In Hutsu, where salt production is a key economic activity along with agriculture, the Village Chief and his wife are prohibited from participating in salt cooking practices. This restriction is rooted in traditional beliefs that the chief's involvement in salt production could result in crop failure and food shortages in the village.

Hutsű village, endowed with abundant salt springs, had been processing salt that had generated a substantial economy for its villagers. The village chief, who is prohibited by tradition, continues to abstain from this activity to reinforce his symbolic and protective role as the guardian of communal prosperity.

The salt well occasionally dries up, presenting a challenge to the continuity of salt production. During such occasions, a male member of the community was ceremonially chosen to address the salt well. This chosen individual placed his head into the brine source and uttered the phrase "Our *Athupa's* house is on fire" as if to alarm and appeal to the spirit of the well to restore its flow. The community held that this ritualistic utterance

helped revive the spring, thereby ensuring the continued availability of this essential resource (Gusoti, personal information).

The Hutsü people also maintain beliefs concerning territorial boundaries and inter-village relations. According to village elders, neighbouring communities that share boundaries with Hutsű exercised caution in their interactions to avoid conflicts over land and forest resources. This restraint is attributed to the large quantities of firewood required for the salt-making process, as trees are continually felled and fresh firewood is stacked near the salt kitchen for immediate use. Beyond its practical necessity, the drying of fresh firewood is understood symbolically as a deterrent against territorial encroachment. The community believes that acts of trespassing, illegal extraction of forest resources, or false land claims invite curses from the village, which may manifest as illness or even death among members of the offending communities. Consequently, neighbouring villages are believed to restrain themselves from confrontational actions, illustrating how the salt-making tradition, particularly the use of fresh firewood, functions as a cultural tradition for maintaining social boundaries, regulating inter-village relations, and safeguarding the community (Sauchu, personal communication).

f) Peletkie (Peren): Peletkie village has long been engaged in salt processing. In addition to meeting local consumption needs, salt was supplied to neighbouring villages and beyond, particularly during periods when salt was scarce in the region. Salt prepared as gifts for friends and guests constitutes a long-standing tradition that continues to hold social significance within the community. Local salt was also processed by mixing ash, reflecting customary methods of preparation. Salt from Peletkie was highly sought after, especially in neighbouring areas, for its perceived efficacy in treating minor ailments. The production and circulation of salt were governed by established ethical norms that ensured the quality and integrity of the product, a norm upheld since their forefathers' time. While salt prepared for non-commercial exchange could vary in its processing, strict standards were observed in relation to salt intended for trade. The community maintains that any deviation from these norms in commercial contexts would invite misfortune and hinder the community from prospering. Consequently, salt produced for trade purposes continues to be prepared in accordance with these principles of quality control.

The Peletkie people also demonstrate a profound understanding of the nature of their salt well and maintain beliefs regarding its volume. According to village elders, the salt well retains a consistent water level throughout the year without overflowing. Any unusual increase in volume resulting in overflow is interpreted as a negative omen for salt workers, potentially causing misfortune, accidents or injuries.

4.2. Salt and its role in building relations in the salt production sites: Salt trade necessitated significant military and political consequences, requiring a 'protection system' as salt was the most valuable trade good, necessitating powerful protectors (Bloch, 1963, p. 95; Williams, 2014, p. 19). In the Naga area, the remoteness of the hills, the rugged terrain and the tense political conditions arising from headhunting practices had isolated the different Naga tribes, both from the external world and from one another (Barpujari, 2003, p. 2). Within their villages, the Naga seldom engaged in trade; however, when the need for specific items arose, such goods were obtained through barter (Yaden, 1995, p. 47). In this barter system, the necessity of goods rather than their market value determined the terms of exchange (Bareh, 1970, p. 123). Un-husked rice, cotton, salt and *daos* served as the primary mediums of exchange in these transactions (Jamir, n.d., p. 42).

Salt was a crucial resource that fostered relationships both within and between villages. The Ahoms relied on the Nagas for salt, as it was not sufficiently available in the plains until market-produced salt was brought to Assam at a much later period (Shimray, 1985, pp. 266-270). Prior to salt becoming a widely accessible commodity, sites of salt production played a strategic role in shaping the social, economic and political life of the region.

a) Peletkie: Peletkie is one among the oldest villages of the Zeliang Villages in Peren District, and is well known for its traditional salt production. Salt was manufactured by evaporating brine drawn from the village's salt well using earthenware, made locally. These pots, crafted by women, were made from black clay called *Hegamdie,* extracted near the Nkwareu stream where the salt well is located.

Salt produced in Peletkie went far beyond the village boundaries and was a highly sought-after commodity. Khonoma, an Angami village flanking its northern border, has

long acknowledged this salt. The elders of Khonoma refer to it as "*Le-kie Chie"*, meaning "salt from Lekie", the original name of Peletkie.

Woods (1900), as cited by Hanneng (2018), noted that Khonoma once exerted considerable influence over its neighbouring tribes, causing many small Zeliang Naga villages to flee. During the era of headhunting, Naga villages lived in constant fear of attacks, often compelling villagers to flee to safer areas. Many Zeliang villages, including those neighbouring Peletkie village, faced similar circumstances.

Since its establishment, Peletkie has remained undisturbed and has not undergone any form of displacement from its original settlement site. This uninterrupted continuity distinguished Peletkie, a salt-producing village, from many other Naga villages that were compelled to abandon their settlements during periods of inter-village conflict, particularly in the headhunting era. Within the traditional society of Zeme communities, the act of abandoning and subsequently returning to one's village required a set of prescribed customary rituals. Villages that fled due to enemy threats generally return and reoccupy their original settlements once the situation becomes normal. However, traditional belief maintained that if a community had been forced to flee more than seven times, re-occupation was taboo. In such cases, the affected village needed ritual assistance from another community to re-establish itself. A notable example is Benreu, a neighbouring village, which, according to oral traditions, fled seven times during the headhunting period. Benreu could not directly return to its original site without performing prescribed rituals. In this context, Lekie village played an important ceremonial role by providing Benreu village with the traditional sacred fire, symbolising continuity of the community and enabling Benreu people to re-establish itself in its abandoned settlement (Peletkie Students' Union Golden Jubilee, Souvenir, 2018).

Peletkie village also played a significant role in supporting its eastern neighbour, Ndunglwa, particularly during times of conflict and displacement. Warfare and inter-village hostilities frequently disrupted the subsistence patterns, forcing entire communities to abandon their fields and thereby missing crucial periods of agricultural sowing and harvesting seasons. Such interruptions often resulted in acute food shortages and posed major challenges in the aftermath of conflicts. Most villages in Nagaland

practised traditional agriculture as their main occupation, and adherence to specific agricultural seasons/cycles was essential for sustaining livelihoods. Unlike many neighbouring villages, Peletkie village was never compelled to abandon its original site and thus maintained agricultural continuity and stability. This relative security in terms of food enabled Peletkie to extend material assistance, particularly in the form of food grains and other essential resources, to displaced communities such as Ndunglwa, facilitating their recovery and resettlement after periods of turmoil. Through such acts of support, Peletkie contributed to the sustenance of its neighbours and in supporting their eventual rehabilitation (Peletkie Students' Union Golden Jubilee, Souvenir, 2018).

The Zemi tribe feared the Khonoma villagers, who were renowned for their warrior-like nature and their fierce and harsh treatment (Sanyu, 2008, p. 59). During the troubled days of headhunting, Peletkie forged a strong alliance with Khonoma. In exchange for protection, Peletkie villagers accompanied Khonoma warriors in warfare, thereby ensuring the safety of their settlement. The Peletkie community had an understanding relationship with the village of Khonoma. This alliance was built through the customary system of host clans. Peletkie Village, comprising three *khels*, had their own host clans in Khonoma. A *khel* within the Angami Naga community is a clan-based territory and constitutes an autonomous unit within the village, and derives its name from its founding ancestor. In earlier times, each *khel* was enclosed by protective walls to guard against external threats, including members of other *khels* within the same village. Access to a *khel* was strictly through the gates, which were monitored at all times and closed during the night. Therefore, what are commonly referred to as the 'village gates", among the Angami were really *khel* gates (Kire, 2019). This host clan system facilitated inter-village alliances by extending hospitality to travellers by providing food, shelter and protection. Such practices were essential during a period when modes of transportation and communication were still underdeveloped, and kinship-based arrangements were crucial for safe mobility. Similarly, Peletkie villagers had host clans in the Kohima village from earlier days. These alliances were built and sustained through reciprocal obligations, including the circulation of essential resources such as salt (Teireisong, personal communication).

Earlier, among the Naga tribes, headhunting practices often compelled villagers to establish temporary encampments away from the village to seek refuge for their safety. Likewise, in the Jhum field of a Lekie villagers called *"Jene"*, located at a distance, to the west of the Village, could be strategically fortified and defended from impending attack. After the threat subsided, although the majority of villagers returned, some chose to settle permanently in these areas due to their suitability and convenience, giving rise to a new settlement now called Jalukie (Peletkie Students Union Golden Jubilee Souvenir, 2018). Through such provision of agricultural products and salt, Peletkie played a crucial role in sustaining neighbouring communities during times of crisis.

b) Hutsű: A distinctive feature of inter-village economic and cultural relationships among the Pochury tribe was exemplified in the interaction between the potters of Laruri and the salt producers of Yisi. Laruri village is about 34 kilometres from Yisi by motorable road and requires a walking distance of about 4 to 5 hours. The Yisi community was recognised for its salt production, and Laruri village had gained renown for its expertise in making earthenware pots. Hutsű, originally a splinter group of Yisi, continued to maintain the salt-cooking practices inherited from its parent village, reflecting the continuity of traditional knowledge across generations.

The Pochury tribe comprises eight identifiable dialect groups, each with distinct linguistic characteristics. The Yisi groups speak the Phoyisha dialect, while the Laruri group communicates in Laruthvii. These dialects were not mutually intelligible between the two trading villages, necessitating that the Yisi learn and use the Laruri dialect to facilitate the exchange of salt for Laruri earthen pots. This linguistic adaptation highlights the functional role of language in sustaining inter-community economic relationships and cultural exchange.

Laruri villagers produced pots of various sizes for different purposes, including cooking, brewing and storage. The salt cakes produced by the Yisi in earlier times were smaller than those produced today, roughly the size of a man's palm. The value of one salt cake was equivalent to that of a smaller earthen pot, and the number of salt cakes exchanged varied according to the size and quantity of pots involved in the transaction. A sizeable earthen pot was valued at fifteen salt cakes. Yisi and Laruri specialised in their

respective crafts and engaged in reciprocal exchanges of goods and services. Products were often exchanged as gifts without calculating the value. Small pieces of salt cakes were given freely to the Laruri community, while the Laruri in turn supplied pottery to the Yisi without material compensation. Such exchanges did not extend to traders from other villages, as the relationship between Yisi and Laruri was shaped by long-standing social bonds rooted in their specialised production.

Beyond the normal economic exchanges, the two communities also forged alliances during the turbulent period of headhunting. Like other Naga villages, neither community was immune to external aggression. Both the Yisi and the Laruri groups frequently faced threats from neighbouring tribes competing for land and forest resources. In such a situation, they maintained effective communication and coordinated their responses to ensure mutual protection. During periods of warfare, the two communities supported one another in matters of defence and security (Achipa, personal communication). Although the Phor people live in proximity to Laruri village, their relationship with Laruri was not as close as that shared with the Yisi group. Instead, Laruri developed stronger and more enduring ties with Yisi, largely due to the strategic and cultural importance of salt. This special bond persisted over time, with both communities continuing to acknowledge, respect and uphold their shared legacy, through sustained inter-village relations (Rütshowmong, Sutsu GB).

c) Matikhrű: Matikhrű is a salt-producing village located in the Meluri District. The people of Matikhrű are known as Nokhombo, which means 'Brine Stream People'. Before settling at the present site, the villagers produced salt at an earlier location that was reputed for its abundant salt source. According to village elders, salt production at this earlier settlement was particularly prolific. The name 'Matikhrü', itself derived from two words, *'Mati'*, meaning salt and *'Khrü'*, meaning salty. In present-day Matikhrü, the community initially used earthenware pots for evaporating brine before the introduction of cast-iron pots. These earthen vessels were procured from Laruri village.

In 1960, Matikhrű village faced a tragic incident that forced its inhabitants to evacuate. An outpost of the Indian Army was established in 1957 at Thuda in Phor

village under Meluri District. Intending to flush out the Indian armed forces, the Naga army targeted this post, leading to a confrontation known as the Battle of Thuda. The battle was fought from August 25 to 28, 1960 (Swu, 2020). This conflict resulted in the massacre of the men of Matikhru village, and the surviving members fled to seek refuge elsewhere. The aftermath of the incident made it impossible for the villagers to return for nearly three years. During this period, the community hid in the jungles and endured severe suffering and starvation (Katiry, personal communication). The production and trade of salt, which had earlier helped build relationships and foster communal understanding among Pochury villages, as well as neighbouring non-Pochury villages, later enabled the displaced villagers to seek refuge. The surviving villagers retain memories, and in some cases, records of the goodwill and assistance extended to them by these communities.

The surviving members, particularly women, upon their return, resolutely adopted the salt cooking culture and revived their specialised crafts. The revival of this craft brought back the peaceful environment and the mutual understanding they shared with the neighbouring tribes. The senior members of the village, who were conversant with the dialects of the neighbouring groups, had acquired such linguistic familiarity through repeated encounters and interactions that arose from the production and exchange of salt.

d) Sanphure: Sanphure village in Kiphire was well known for its local salt, which was supplied to neighbouring villages when salt was a scarce commodity. Earthen pots were obtained from Laruri in the present-day Meluri district. Laruri village, renowned for its pottery, traded these vessels with a limited number of neighbouring Sangtam communities, among which Sanphure was one. The Sanphure people have a term for the Laruri villagers through whom their pots were acquired, known to them as *Arote/Aroru* (Tsasemong, personal communication).

The Sanphure people produced several distinct varieties of salt, each serving specific purposes. These categories include: a) *turumih,* b) *kalamih* and *momih,* c) *thumihtsinak and* d) *phupunmih.* Each type of salt had a clearly defined function and carried significant social and symbolic meanings.

a) *Turumih*: This salt, shaped into a circular form, was used as a gift to promote and strengthen inter-community relationships. It held particular historical significance, especially during the period of headhunting. The act of presenting *turumih* to a neighbouring village implied a tacit understanding that the recipient community would refrain from engaging in warfare with Sanphure and avoid provocations, including hostile or harsh speech. (Tsasemong, personal communication).
b) *Kalamih* and *momih*: These two varieties were produced primarily for commercial purposes. *Kalamih* is a complete circular salt cake, while *Momih* refers to the same cake sliced in two halves. This division was necessary to determine the exchange value within the barter system.
c) *Thumihtsinak*: This type of salt was prepared by cutting a salt cake into four triangular portions and was reserved for hospitality, particularly for presentation to special guests.
d) *Phupunmih*: This variety functioned as a symbol of friendship or as a formal invitation extended to friends and guests for festive occasions. Both *thumihtsinak* and *phupunmih* were produced on a need-based basis.

Salt functioned as a crucial economic resource and, to a certain extent, as an economic weapon for the people of Sanphure. Owing to the high demand for salt from neighbouring villages and tribes, the community often struggled to meet the growing needs of its trading partners. In an effort to increase production, salt makers occasionally mixed ashes into the salt during the manufacturing process. This practice was intended to augment the quantity of salt available and meet demand, although it compromised its quality. During the salt-cooking season, most adult male members actively engaged in salt production and camped in the salt huts outside the village. Their prolonged absence rendered the village vulnerable to external threats. To ensure security, the Sanphure community entrusted a neighbouring Sema village with the responsibility of guarding their village during this period. In recognition of this service, the Sanphure people adhered to a strict custom of not trading or selling the adulterated salt to their guardian village, thereby demonstrating respect, trust, and reciprocity in their inter-village relations.

4.3. Salt's role in creating wealth in the salt-producing areas: Manufacturing salt is not a simple undertaking; it demands dedicated equipment, substantial time and considerable human effort. The process of boiling brine is particularly labourious and yields only limited quantities of salt despite the extensive resources invested. Large amounts of firewood were needed and required transportation, which added to the overall difficulty. Salt huts are constructed at a distance away from the village and are generally not secure. Despite this challenging condition, a few salt workers were able to accumulate wealth from their labour in the olden days.

a) Peletkie: The management of the salt-works in Peletkie is primarily supervised by men in their prime years, who are generally below 60 years of age. The salt huts are located at a remote site, approximately a 30-minute walk from the village. The pathway leading to the salt hut is steep and precarious. The temporary shelter constructed for resting and spending the night is very basic, with no protective walls, offering little comfort and security. Despite these harsh and insecure working conditions, a few individuals were able to acquire wealth through salt production in earlier times.

In the pre-monetary period, before the introduction of standardised currency, the social and economic status within agricultural communities was largely determined by the possession of iron and metal implements. Families owning such tools were regarded as affluent and occupied a prominent position in the village economy. The acquisition of these metal implements was typically achieved through the marketing or exchange of locally produced salt. Households lacking such tools borrowed from better-equipped families, thereby further reinforcing the economic significance of salt as a trade commodity.

The practice of salt making and trading significantly contributed to improving the living conditions of the Peletkie villagers. The construction of houses with corrugated tin roofs became possible through the income generated from the manufacture and sale of salt (Teireisong, personal communication). Although the process of salt production remains labour-intensive and physically demanding, it persists as an important economic activity due to the financial benefits it provides. The profits derived from the sale of locally produced salt enable households to purchase valuable market goods and to

support the formal education of their children. Notably, college students often engage in salt-cooking during the winter holidays to meet their educational expenses.

b) Hutsű: Hutsű village had been engaged in salt manufacturing since the period when the community resided in Yisi village. Presently, salt is produced by evaporating brine using cast-iron pots. In earlier times, however, when such vessels were unavailable, salt workers undertook long journeys on foot to the pottery village of Laruri. These journeys were typically undertaken during the winter season, and when agricultural activities were minimal. The earthenware pots acquired from Laruri were used for evaporating brine, although their durability was limited. Due to the intense heat required in the salt boiling process, these pots frequently cracked or broke after only a few uses. Even damaged earthen pots that were no longer suitable for household cooking, but remained partially usable, were repurposed by salt workers for evaporating brine.

Salt manufacturing in Yisi played a crucial economic role, enabling certain families to accumulate considerable wealth. One informant recounted how his father travelled to Laruri to procure earthen pots, produced salt and bartered the finished product, eventually becoming one of the wealthier individuals in the village. While agriculture remained the primary occupation and economic foundation of rural life, the possession of metal and metal tools served as a key indicator of household wealth and social status. According to village elders, these metal implements were acquired through the exchange of local salt from the Tuensang region. (Sipiru, personal communication).

c) Matikhrű: Salt cooking in Matikhrű was traditionally regarded as the exclusive domain of women. Women primarily managed the salt-cooking process, while men contributed to tasks that required physical strength. Male participation was largely limited to activities such as gathering and arranging firewood for the salt kitchen, repairing damage to salt huts and fireplaces, and cleaning and clearing the surrounding areas, including the salt spring. Within the salt kitchen, however, women exercised complete control over the production process. In the earlier period, before the Village Council standardised and regulated the size of salt cakes, considerable variation existed in the size of the salt cakes. Some were exceptionally large, reflecting the skill, experience and pride of the salt makers. The production of large salt cakes was not merely a matter of

craftsmanship but also a source of personal prestige and enhanced economic value for the women involved.

Salt cakes produced by women assumed considerable economic significance in the local barter economy. Through the manufacture and exchange of salt, women were able to participate actively in economic transactions and attain a measure of financial autonomy. Salt cakes were bartered for a variety of commodities and, in some instances, for substantial assets such as paddy fields. One notable example recounted by an informant illustrates the extent of this empowerment. In the late 1960s or early 1970s, the informant's grandmother reportedly exchanged a single large salt cake, approximately the size of a standard winnowing tray for a paddy field. The field was said to yield 600 *tinas* (1 tina =15 kgs) of paddy. This instance highlights the economic value of salt production and its role in enhancing women's participation and influence within the local economy.

d)Sanphure: Sanphure village is endowed with numerous salt wells located along the banks of Tsulote River. These wells were dug both through individual and collective efforts, with some being dug by single family members, while others were dug through the collaborative labour of clan members. The salt wells served as crucial resources for salt production and were extensively utilised until 1979. Although the dry season provided the most favourable conditions for salt processing, villagers continued production activities as long as the river levels allowed safe access. During periods of regional salt scarcity, the salt produced in Sanphure played a vital role in supplying neighbouring tribes and villages.

Winter, in particular, emerged as the most conducive season for trade, during which the majority of barter and exchange activities were conducted. Tribes from neighbouring areas, including the Sema, Tikhir, Yimkhuing, Chirr, Makware and Khiamniungan, frequently visited Sanphure, bringing with them a variety of goods to exchange for the village's salt. The arrival of these traders transformed the village into a commercial hub, prompting the local population to construct temporary camps to accommodate both the visitors and their goods. Designated places were organised for the display of articles intended for barter. According to village elders, Sanphure during this period was a prosperous settlement earning the name *"Sehphi"*, which translates as a

“popular place” or a “wealthy village” (Thsipongchu and Yangsekyu, personal communication).

4.4. Uses of salt: Salt possesses a wider range of applications than any other mineral substance. In the salt-producing communities under study, it functioned not only as a dietary necessity but also as a vital component in traditional medicinal practices. Salt was widely used as a remedy for various ailments, ranging from digestive disorders to skin conditions, and continues to be valued for its therapeutic and curative properties. In addition to its medicinal role, locally produced salt holds cultural significance, as it is preferentially used in the preparation of special dishes during festivals, ceremonies and other important social occasions. Beyond its culinary and medicinal uses, some communities utilise the brine water as a health tonic and incorporate it into therapeutic baths, reflecting a holistic approach to well-being that integrates nutrition with traditional healing practices.

a) Peletkie: From the early period to the present, the people of Peletkie have utilised both brine water and locally produced salt for a wide range of medicinal, nutritional, social and cultural purposes. These diverse uses reflect the community’s traditional knowledge of health, well-being, and social reciprocity.

i) Treatment for Low Blood Pressure: Individuals experiencing low blood pressure were advised to consume small quantities of brine water.

ii) Remedy for Stomach Discomfort: For cases of gastritis or general stomach discomfort, chewing a small piece of salt or drinking a solution of salt dissolved in hot water was commonly practised. This remedy was believed to provide quick relief by easing indigestion and restoring digestive balance.

iii) Care for Pregnant and Lactating Women: Pregnant and lactating women were given salt to alleviate physical aches and pains associated with childbirth. The community believed that the mineral content in the salt contributed to bodily strength and recovery.

iv) Tonic for General Weakness: A special concoction prepared by mixing brine water with a fresh local egg for individuals experiencing general weakness. This mixture was locally believed to function as a natural tonic that restored vitality and physical strength.

v) Cure and Prevention of Goitre: Moderate consumption of brine water or salt dissolved in water was believed to help prevent and alleviate goitre. Notably, the village reported no cases, except for a woman who married into the community. Following the intake of moderate doses of this mixture, her condition improved significantly. Owing to such accounts, Peletkie salt acquired a reputation for its perceived curative properties, attracting people from neighbouring villages who sought it for therapeutic purposes.

vi) As Energising Tonic: Brine water was also consumed by village youth, particularly during sports and wrestling matches, as a restorative drink. Similarly, during periods of heavy agricultural activity, farmers dissolve a small quantity of salt in water to alleviate fatigue and replenish energy after prolonged hours of fieldwork. Peletkie salt thus emerged as a valued commodity among neighbouring communities that relied heavily on human labour for cultivation.

vii) Culinary Uses: Peletkie salt continues to be an essential condiment in local cuisine. It is a key ingredient in preparing *takdui*, a traditional porridge commonly served during communal gatherings and feasts.

viii) Therapeutic Bathing: After a strenuous day's work, villagers often bathe in warm brine water. Such baths are believed to rejuvenate the body, relieve muscle tension and promote relaxation.

ix) Social and Symbolic Use: Beyond its practical applications, salt also carries symbolic significance as local salt is prepared and presented as a gift to visitors, guests and friends symbolising hospitality, goodwill and communal bonding.

b) Hutsű: The locally prepared salt in Hutsü is valued not only as a dietary necessity but also for its applications in health, livestock care, craftsmanship and cultural traditions. Its use extends beyond human consumption, reflecting the community's deep understanding of the natural properties of brine and its integration into everyday lives.

i) Role in Animal Life: Domesticated animals, particularly cattle, were given brine water before slaughter. This practice was believed to stimulate blood production, thereby enhancing the quality of meat. Salt was also used as an agent for taming animals; local traders employed it as bait to calm and domesticate buffaloes and mithuns.

ii) Medicinal and Health Applications: The Hutsü people attributed significant curative powers to brine water and recognised its perceived effectiveness in preventing goitre, as reflected in the reported absence of this ailment within the village. Regular consumption of brine water was believed to promote longevity and vitality. For respiratory ailments such as coughs, a small piece of salt cake was heated and either chewed like a tablet or dissolved in warm water to provide relief. Additionally, consumption of brine water at night was recommended to improve blood circulation and maintain healthy skin.

iii) Use in Maternal Care: Brine water also played a role in traditional prenatal practices. It was used to massage the abdomens of pregnant women, a practice believed to assist in positioning the fetus and facilitating an easier delivery. These practices reflect the community's reliance on natural resources and indigenous medical knowledge in maternal health.

iv) Craft and Tool Maintenance: Beyond its medicinal and dietary uses, brine water was also employed in the maintenance of tools and weapons. Machete, also called '*daos*', and spears were dipped in brine water to sharpen their edges, demonstrating an innovative application of brine in craftsmanship and tool preservation.

v) Culinary Practices: Among the Yisi community, brine water was directly incorporated into food preparation. On the way to their fields, villagers usually drew and carried brine water to cook meals in field huts and often brought it home for domestic use. This practice reflects brine's integral role in the local cuisine and its ready availability as a flavouring resource.

vi) Cultural and Religious Significance: Hutsű salt also held important cultural importance, particularly in the introduction of Christianity to the region. Christianity reached the Yisi area in 1946 through contact with neighbouring Khezha and Chakhesang tribes, a process facilitated by salt traders (Hutsű Baptist Church Platinum Jubilee

Celebration Souvenir, 2021). This highlights the role of salt as not only an economic commodity but also a medium of cultural exchange and transformation.

vii) Contemporary Cultural Revival: In 2023, the Yisi community celebrated the Salt Cake Festival, reaffirming their cultural identity and the enduring significance of salt in their heritage. This festival emphasised community unity and honoured ancestral memory associated with the pursuit of salt brine. During the celebration, a documented list of known heritage salt sources within the surrounding area was compiled and published, symbolising the preservation and continuity of traditional knowledge (Fig. 18).

Sl. No	Location	Source
1.	Kiiyebii	1
2.	Lukhukutiibii	1
3.	Shachitiibii	1
4.	Nitiipfiibii	2
5.	Kiitiiriisiibii	1
6.	Fahbii	1
7.	Thiighriibii	2
8.	Kupabii	4
9.	Mujutiibii	1
10.	Miiwubii	1
11.	Kiiliitiibii	1
12.	Troshipii	2
13.	Khrusibii	1
14.	Kaloupiibii	1

Fig. 18: A chart showing list of Brine Source Sites in Hutsii. Source: *Yisisha Ajiiti Liiphii* (Yisisha Original Group).

c) Matikhrű: Salt occupied a significant place in the daily life, health practices and socio-cultural systems of the Matikhrű people. Beyond the processing of brine and its use in food preparation, brine water was employed in diverse ways that reflected both practical knowledge and traditional beliefs.

i) Treatment for Eye Irritation: Brine water was traditionally used as an eye drop to treat irritation or infection. The saline solution was believed to cleanse the eyes, provide relief from discomfort and prevent potential ailments.

ii) Remedy for Coughs: For coughs and colds, a piece of salt was heated and dissolved in water to prepare a therapeutic solution. This preparation functioned as a home remedy, reflecting indigenous understandings of the medicinal properties of salt in soothing throat irritation.

iii) Relief for Arthritic Pain: Bathing in hot brine water was another common therapeutic practice. It was believed to alleviate joint pain and stiffness, particularly among individuals suffering from arthritis or rheumatic conditions. This practice underlines the community's awareness of the restorative potential of mineral-rich water.

iv) Treatment for General Weakness and Fatigue: Inhaling steam from salt water was believed to invigorate the body, particularly in cases of exhaustion. During the summer months, bathing in brine water after strenuous labour was thought to reduce excessive perspiration and rejuvenate the body. Such practices demonstrate the integration of health maintenance into everyday life by using natural resources.

v) De-worming Agent: Brine water was also used as a de-worming remedy for both humans and domesticated animals. Drinking brine water was believed to expel intestinal parasites.

vi) Treatment for Skin Irritation in Animals: Domesticated animals, particularly pigs suffering from skin infections or irritation, were bathed in brine water. This practice appears to have been based on observations of salt's antiseptic and cleansing properties, which were thought to improve the animal's skin condition and overall health.

vii) Socio-legal and Economic Significance: Besides its medicinal and other practical applications, salt held significant socio-economic and symbolic importance within the Matikhrű community. It functioned as a form of payment and restitution to settle fines imposed on individuals who committed offences or moral transgressions within the village. This practice highlights salt's value not only as a vital commodity but also as a medium of social and legal exchange, reinforcing communal accountability and social harmony.

d) Sanphure: The Sanphure community attributes multiple medicinal and therapeutic values to their locally produced salt. Apart from its dietary role, salt occupies a significant place in the community's traditional healthcare practices.

i) Treatment of Injuries and Ailments: Locally produced salt was used as an antiseptic for treating injuries caused by accidents. When applied directly or dissolved in water, the salt was believed to cleanse wounds and prevent infections. This practice reflects the community's indigenous understanding of salt's purifying and healing properties. In addition, local salt was used to treat a range of ailments, including coughs, general weakness, mumps and gastritis. Such practices demonstrate the community's reliance on natural and locally available resources for healthcare, particularly before the introduction of modern medical systems.

ii) Regulation of Blood Pressure and Digestive Health: According to Sanphure's oral beliefs, the consumption of local salt was believed to help maintain balanced blood pressure, a view that is in contrast to modern medical notions that excessive salt intake elevates it. This belief may be linked to perceived differences between naturally derived brine and refined commercial salt. The community's continued faith in the curative qualities of local salt emphasises the cultural dimensions of indigenous health practices. Furthermore, local salt has been and continues to be used as a remedy for stomach ailments and to aid digestion. Moderate consumption of brine water is believed to cleanse the stomach and enhance metabolic function.

iii) Pregnancy and Childbirth: Within the cultural practices of the Sanphure community, pregnant women were administered small doses of boiled salt water. This practice was

believed to facilitate easier childbirth and to enhance the mother's physical endurance. Such practices reveal the deep interconnection between traditional medicinal knowledge and maternal health within the community.

iv) Eye Care and Preventive Practices: Brine water also served a role in eye health, being used as an eye drop for prevention and treating eye infections, reflecting the community's experiential observations of the antibacterial properties of salt. The use of brine water for eye care demonstrates the indigenous knowledge system in preventive healthcare.

v) Economic Dimensions: Salt production in Sanphure extends beyond domestic use to encompass economic and subsistence dimensions. In certain years, entire households or groups devoted themselves primarily to salt production rather than agricultural activities. These groups bartered salt for paddy, thereby establishing a localised system of trade and interdependence. This system not only sustained livelihoods but also reinforced social and economic ties within and beyond the community.

The shared practices surrounding salt use among the studied communities reflect a rich system of traditional knowledge in which salt functions not only as a culinary ingredient but also as an essential component interwoven with health, livelihood and cultural identity.

4.5. Marketing of Salt: In addition to meeting local demand, salt-producing villages emerged as significant centres of trade across the Naga Hills. Over time, the salt network evolved in response to changing political, social and economic conditions. During the headhunting era, trade was largely conducted through personal visits by traders who travelled directly to salt-producing villages. Exchanges were negotiated within inter-village alliances, rivalries and customary obligations. Trade at this stage was limited in scale, shaped by security concerns, and the need to appease powerful groups who controlled salt wells. Nevertheless, these villages attracted numerous traders who visited not only to procure salt but also to exchange a wide range of goods and commodities.

A significant transformation began in the late nineteenth century with the arrival of Christian missionaries in the Naga Hills, particularly through the work of the American Baptist Mission. The gradual spread of Christianity marked a shift in the social

and cultural life of the Nagas. As inter-village warfare and headhunting practices declined and were eventually abandoned, hostilities diminished, and peaceful relations were fostered. Trade between villages became safer and more frequent, enabling more regular commercial interaction. The steady arrival of traders enhanced the socio-economic vitality of these communities, fostering exchanges that were both commercial and cultural, and reinforcing the strategic importance of salt-producing villages within broader trade systems.

This transformation had important implications for the salt trade. The reduction of conflict enabled freer circulation of goods, including locally produced salt from brine springs in the hills. Salt producers and traders could now move across village boundaries with less fear, strengthening inter-village networks and facilitating the expansion of trade beyond traditional territorial limits. In this way, the spread of Christianity indirectly contributed to the growth and reorganisation of the indigenous salt economy.

Subsequently, the expansion of administrative control, improved communication routes, and the growth of market in the plains of Assam further reshaped this network. Salt was no longer confined to reciprocal exchange among neighbouring tribes but entered into wider markets, whereby, at present, locally produced salt is frequently pre-booked by middlemen, who collect it in bulk from producers and transport it to nearby towns and onward to wider markets of the state capital for sale, reflecting the continued integration of indigenous production into contemporary market systems.

a) Peletkie: In earlier times, the practice of headhunting restricted inter-village mobility, limiting people's ability to travel freely. Under such conditions, traders from other villages travelled to Peletkie to obtain salt. With the cessation of headhunting and the subsequent easing of social tensions, women from Peletkie began to participate as itinerant traders, carrying locally produced salt to nearby Zeme and Liangmia villages. The salt, prepared in cake form weighing approximately 200 grams, was commonly exchanged for a basket of soybeans and other vegetable produce, thereby sustaining local trade networks (Teireisong, personal communication). With the improvement in transport and communication infrastructure, and the emergence of Peren and Jalukie as town centres, Peletkie's salt began to be marketed in these towns. During the late 1970s and

early 1980s, a cake of Peletkie salt cost Rs 15/ 20 in Peren town (N. Vakha, personal communication). At present, Peletkie salt is produced in a semi-liquid form. Traditionally, this form of salt was exchanged for crops such as chilli, yams and vegetables, particularly during periods of poor harvest. The local salt is in high demand among neighbouring villages that practice extensive paddy cultivation.

Presently, bottled salt is directly sold by producers in Jalukie and Peren towns, although middlemen occasionally handle its distribution. A one-litre bottle of salt, which cost Rs 600/- in 2018, in 2024 cost Rs 1000/-. Despite its relatively high price, demand remains strong, and the salt is widely sold within Peren district without reaching the State Capital (Kohima) or Dimapur, the State's principal commercial hub. One major factor contributing to this sustained demand is its dual purpose; it is valued both as a condiment for preparing traditional special dishes and as a medicinal product by many community members.

b) Hutsű: The salt cakes produced by the *Yisi* people constituted a vital trade commodity that linked them economically and socially with neighbouring communities. In earlier times, traders brought their agricultural products such as paddy, millets and maize for local salt. Oral accounts indicate, for instance, that a basket of paddy weighing approximately 15 kilograms brought by Longmatra, a neighbouring Sangtam village, was bartered for sixty pieces of salt cakes, each roughly the size of a human palm. Until the mid-twentieth century, Naga tribes such as the Angami, Sema and Chakhesang frequently travelled to Yisi either to purchase salt directly or to barter goods in exchange. Through these periodic interactions, the Yisi people became familiar with the dialects of the visiting tribes, thereby fostering linguistic exchanges alongside economic transactions.

Trade relations also extended to Laruri, a nearby Pochury village renowned for its earthenware production. Within this exchange network, salt was traded for pottery, with a large earthen pot valued at fifteen pieces of salt cakes (Sauchu, personal communication). The high regard for Yisi salt attracted traders from distant villages who undertook long and often arduous journeys to procure it. Its appeal extended beyond culinary use to medicinal purposes. According to local traditions, Yisi salt was believed to be effective in treating goitre and other ailments, thereby enhancing its status as a highly valued

commodity. Oral narratives further recount that in the post-Second World War period, traders from villages such as Lazami, Mishilimi of the Sumi tribe, as well as Chozuba of the Chakhesang, arrived with money specifically to purchase salt.

In the 1980s, a salt cake weighing approximately 300 to 350 grams was sold for around Rs. 2 in Hutsű (Gusoti, personal communication). In the present day, a salt cake of similar weight is priced at Rs 30 at the village salt hut. The marketing of salt has also evolved; some salt workers sell their products directly by transporting them to nearby towns through relatives or acquaintances who operate small shops, others rely on middlemen who book the salt in advance and sell it in Meluri Town, with some reaching larger markets such as the State capital, Kohima.

On average, a salt maker can produce twenty-five (25) to twenty-eight (28) salt cakes per day, depending on the season and the intensity of the fireplace. After reserving a portion of the production for household consumption, a salt maker typically earns a weekly income of Rs. 3500 to 4000/-. This income plays a crucial role in meeting the educational expenses of their children, many of whom pursue higher studies in the headquarter town of Meluri or in urban centres such as Kohima or Dimapur.

Despite being a labour-intensive process that required substantial effort in fetching firewood and maintaining kitchen facilities, salt production remains a significant livelihood activity in Yisi. Beyond its economic importance, the practice sustains a strong cultural tradition and reinforces the community's resilience in ensuring household subsistence and access to education.

c) Matikhrű: In earlier periods, traders from various regions travelled to Matikhrű to exchange their goods for locally produced salt. These traders primarily belonged to the Chakhesang tribe, the Khezha group from Manipur and neighbouring Tangkhul villages. Initially, salt production in Matikhrű relied on earthen pots for processing brine, before the introduction of cast-iron pots. Village elders recall that these earthen vessels were obtained from Hutsű, most likely sourced from Laruri village, with a large pot being valued at the equivalent of two salt cakes weighing approximately 700 grams.

Neighbouring tribes and villages came frequently with their agricultural produce, such as soya bean, perilla seeds and millet, to barter for salt. Tangkhul traders, in particular, exchanged metal and iron pots for Matikhrű salt. Over time, these iron vessels gradually replaced earlier earthenware in the brine evaporation process and were thereafter obtained chiefly from Tangkhul traders. Salt from Matikhrű was also exchanged for handmade baskets and clothing with the nearby village of Meluri. Chakhesang traders brought commodities such as rice, millet, perilla seeds and fruits, while traders from Jessami and Krowemi villages in Manipur exchanged cloth, spices, knives, earthen and iron pots and various cooking utensils for salt cakes.

By the 1980s, a salt cake weighing approximately 700 grams was valued at 30/-. In the present day, the same quantity commands a price of approximately Rs 120/- within the village. Locally produced salt continues to be marketed in the District Headquarter of Meluri and Jessami, a nearby town under Manipur State and is also transported to Kohima, the State capital. Individual salt producers sell their products directly to business owners in nearby towns, and middlemen also book salt in advance and purchase it in bulk for resale in markets at Meluri, Jessami and Kohima.

The salt production process in Matikhrű is regulated by the Village Council, which allocates specific turns to salt makers for the use of the communal salt hut. A salt maker assigned three days and two nights can produce approximately 50 salt cakes during this period. After giving the mandatory share to the Village Council, a salt maker earns an estimated income of Rs. 3500/- per week for their household. This income constitutes a significant economic incentive for villagers. Those without other sources of income often request to take over the allotted turns of others who forgo their production days. The earnings derived from salt production not only support daily household expenses but also contribute to meeting children's educational costs, thereby reinforcing the socio-economic importance of salt within the Matikhrű community.

d) Sanphure: The locally produced salt of Sanphure served as an important commodity of exchange and was traded extensively with neighbouring tribes, including the Sema, Tikhir, Yimkhuing, Chirr, Makware, Khiamniungan and Pochury. Trading activities generally took place during the winter or dry season, when travel conditions were most

favourable. During this period, Sanphure village became a centre of bustling activity as traders from different regions arrived to procure salt. The influx of traders often exceeded the accommodation capacity of local households, resulting in the construction of temporary camps and makeshift shelters to host visitors overnight. According to village elders, Sanphure was regarded as a commercial hub in the past and was popularly known as *Sehpih*, meaning "a prosperous" or "wealthy" village, a title it earned before the introduction of currency (Thsipongchu, Longmatra GB originally from Sanphure village, personal communication). Salt from Sanphure was highly valued and was bartered for various goods, including woven shawls and ready-made *daos* from the Khaimungam tribe, illustrating the reciprocal nature of inter-tribal trade networks. However, salt production in Sanphure came to a halt in 1979 when the Tsulote River, where the salt wells were located, became submerged during the monsoon season. This natural event marked the end of a significant local industry that once sustained the village's economy and established it as a vital centre of inter-tribal exchange in the region.

4.6. Similarities and differences between the four salt cooking study areas: Salt production has long been an integral part of the socio-economic and cultural fabric of many Naga communities. The four study areas each exhibit distinctive environmental conditions, cultural practices, and historical experiences that have shaped their respective methods of salt production and trade. Although techniques and resources vary from one locality to another, these communities share a common reliance on salt as both an essential dietary component and a significant medium of exchange. An examination of their similarities and differences provides valuable insights into the adaptive strategies, technological innovations, and inter-village interactions that characterise traditional salt production in the region.

a) Utilisation of Earthen Pots: Prior to the introduction of iron cauldrons, salt-producing villages relied on earthen pots for salt manufacture. As these villages did not specialise in pottery production, such vessels were generally obtained through barter. Peletkie village represents a notable exception, where women actively produced earthen pots for local salt preparation. In contrast, villages such as Hutsű, Matikhrű and Sanphure procured

earthenware from Laruri (Meluri) village, which was renowned for its pottery. Over time, particularly after the Second World War, cast-iron pots gradually replaced traditional earthen pots and became the preferred vessels for salt production across all study areas.

b) Replacement of Pottery: In the past, pottery played a crucial role in salt production, serving both cooking and storage purposes. However, in all the salt-producing areas under study, traditional pottery has largely been replaced by cast-iron pots, locally known as *'Karai'*. In Peletkie and Matikhrű, this shift is particularly pronounced, as no remnants of traditional pottery are found in the salt huts, indicating a complete transition to modern utensils. In contrast, Hutsű exhibits a stronger continuity of traditional practices. Here, earthen pots are used to store brine water, and broken pottery fragments serve a practical function as bases for shaping salt cakes.

c) Tools and Materials: In earlier times, salt workers relied on locally available, natural resources for the tools and materials used in salt production and processing. Items such as bottle gourds, bamboo materials and plantain leaves were commonly employed for tasks ranging from carrying brine to storing and wrapping salt cakes. These materials were not only accessible but also environmentally sustainable and culturally embedded in local salt-making practices. In recent times, however, there has been a noticeable shift toward commercially manufactured goods. Plastic mugs and buckets are used instead of bottle gourds, plastic net has replaced bamboo materials, and paper is used in place of banana leaves for wrapping salt cakes. This transition reflects broader processes of modernisation and accessibility, while also signalling a gradual detachment from traditional practices and locally sourced materials that were once integral to the cultural and ecological fabric of salt production.

d) Salt Hut Residency: In all the study areas (Peletkie, Hutsű, Matikhrű and Sanphure), salt-makers traditionally spend several consecutive days in their salt huts during the cooking season, remaining on-site to oversee the preparation and processing of salt. This practice ensures continuous monitoring of the brine and cooking process, which is crucial for salt production. Presently, at Hutsű, there has been a shift in this tradition, with some

salt workers returning home before nightfall rather than staying overnight in the salt huts. This change reflects evolving work patterns; however, the practice of extended hut stays continues to be maintained in the other study areas.

e) Brine Evaporation Duration: In Hutsű, Matikhrű and Sanphure, the process of brine evaporation and salt crystallisation is relatively rapid, typically taking less than three hours or less. The duration largely depends on seasonal conditions and the intensity of heat during cooking, with stronger heat accelerating the crystallisation process. In contrast, brine evaporation in Peletkie requires a longer period to reach the final semi-liquid salt.

f) Fireplace Design: The fire pits used for salt production in the four study areas exhibit notable structural variations, reflecting local adaptations and practices. In Peletkie (Peren) and Matikhrű (Meluri), the fire pits are similar in overall design but differ significantly in dimensions. The Peletkie fireplace measures approximately three (3) feet in both height and width, whereas the Matikhrű fireplace is lower but broader, standing about one and a half feet in height and extending approximately five feet in width. Despite these dimensions, both villages employ five pots for brine evaporation. In contrast, the firepits in Hutsű (Meluri) and Sanphure (Kiphire) are distinctly square-shaped, marking a structural departure from the elongated design of Peletkie and Matikhrű. The number of evaporating pots also differs between the two villages; Hutsű utilises three pots, while Sanphure employs five.

g) Transport of Salt: In all four salt-producing study areas- Peletkie, Hutsű, Matikhrű and Sanphure, the finished salt products are traditionally transported from the salt springs to the village using bamboo carry baskets. These baskets, locally crafted from bamboo strips, are designed to accommodate the weight of the salt cakes. To facilitate transport across rugged terrain, the baskets are fitted with support straps placed across the

forehead, allowing the weight to rest on the back and ensuring balance during movement (Fig.19).

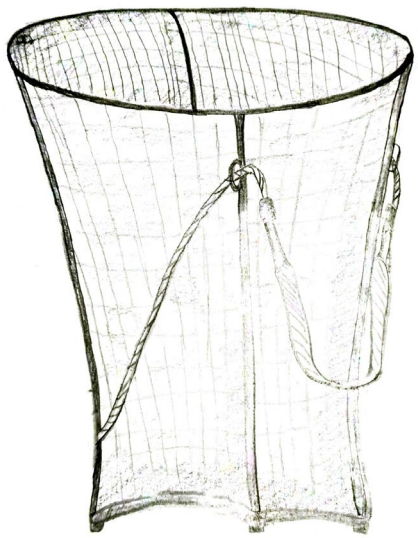

Fig. 19: Bamboo woven carry Basket *"Khang"* used by the Nagas

h) Salt Storage: Salt makers take great care to preserve the quality of their salt cakes by employing traditional storage methods aimed at protecting them from moisture and spoilage. In Peletkie, Matikhrű and Sanphure, salt cakes are wrapped in fresh plantain leaves, which act as a natural barrier against dampness and maintain the salt's texture and purity. These wrapped salt cakes are then placed in finely woven bamboo baskets and hung near the kitchen fireplace. The warmth and dry air from the hearth prevent the cakes from absorbing moisture, thereby extending their shelf life (Fig. 20). In Hutsű, a similar practice is observed, though with a distinct variation in the choice of storage container. Here, the salt cakes, also wrapped in plantain leaves, are stored in lidded earthen pots placed near the kitchen fireplace. These earthen pots provide an additional protective layer, shielding the salt from humidity. The storage methods adapted by the community

under study demonstrate a deep understanding of effective techniques for safeguarding their valuable salt products.

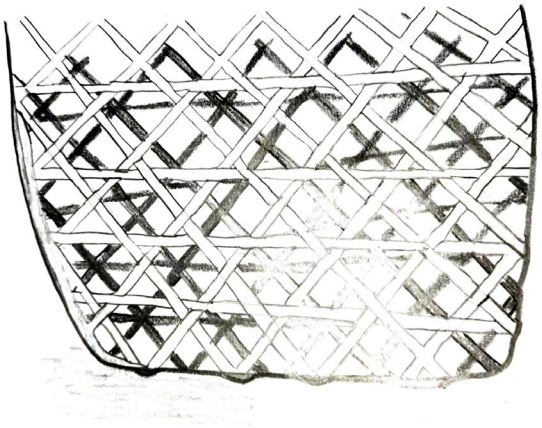

Fig. 20: Bamboo woven basket to store salt cakes in Peletkie, Matikhrű & Sanphure

i) Gender Role: Salt making is not a gender restricted activity; however, the division of labour and responsibilities varies across villages. In Peletkie and Sanphure, the process is largely male-administered, with men overseeing key stages of production such as managing the salt wells, supervising evaporation, and ensuring the overall operation of salt works. Women, on the other hand, play important supportive roles, primarily preparing meals for salt workers and transporting the finished product to their households. In Matikhrű and Hutsű, however, salt-making traditions reflect a more matriarchal organisation of labour. Women serve as the principal agents of production, supervising all stages from drawing brine to the formation and drying of salt cakes. Their knowledge and expertise form the foundation of the salt-making process. Men assume supplementary roles, engaging mainly in physically demanding tasks such as collecting and chopping firewood, repairing salt hut structures and cleaning and maintaining salt wells. Thus, while salt production in all four villages involves both men and women, the extent of participation and the nature of responsibilities reveal distinct gendered patterns shaped by local traditions, social organisation, and practical needs.

j) Salt Varieties of Sanphure: Among the four study areas, Sanphure is distinctive for producing different varieties of salt that carry symbolic and cultural significance. Villagers classify these varieties according to size, with each type assigned specific social meanings and customary functions within the community. Some salt shapes are associated with particular social contexts or customary practices, reflecting the deeper cultural values embedded in salt production and use. These symbolic distinctions are unique to Sanphure and highlight the village's distinctive salt-making tradition. In contrast, although Hutsű also produces salt cakes of varying sizes, these differences are purely commercial in nature. The size of the salt cakes in Hutsű only determines their market value and economic worth, without any associated cultural or symbolic meaning. Thus, while both villages exhibit variation in salt size, Sanphure's practice reflects a socially embedded tradition, whereas Hutsű production is primarily driven by economic considerations.

k) Slicing of Salt Cakes: In Sanphure, the division of salt cakes into uniform portions follows a distinctive local practice. Villagers use a thin bamboo stick, locally known as *fuh*, to mark precise lines on the salt cakes before cutting. This marking serves as a guide, ensuring that each cake is divided into a standardised size. This method of measuring and slicing salt cakes appears to be unique to Sanphure and was not observed in the other salt-producing villages, reflecting both the community's emphasis on precision and its culturally specific approach to salt production.

l) Salt Cake Necklaces: A distinctive practice observed exclusively in Hutsű involves the preparation of salt cakes that are intentionally pierced with two holes. A thread is passed through these holes and worn as necklaces. These salt necklaces are not only decorative but also hold cultural significance, traditionally given as gifts to young children, symbolising care and the community's enduring relationship with salt as both a valued resource and a cultural emblem.

m) Traditional Knowledge of Brine Testing: The villagers of Hutsű possess a distinctive indigenous knowledge system for assessing the strength of brine, which sets them apart

from other salt-producing communities. They employ the leaf of *Stachyphrynium* placenterium, locally referred to as *'Thüghikhü'*, as a natural indicator of brine concentration. When the leaf is dipped into the brine, a change in colour signals the strength of the solution; a white colour indicates a strong concentration, whereas a reddish hue suggests a relatively weak one. This traditional technique reflects a deep understanding of local ecological resources and demonstrates the community's ability to adapt natural minerals for practical use. Notably, this practice was not observed in the other study areas, making it a unique feature of Hutsű's salt-making tradition.

n) Restricted Firewood: In Hutsű, villagers hold the belief that burning certain types of firewood is harmful; consequently, such woods are deliberately avoided in the salt-making process. This precaution reflects a combination of traditional knowledge and cultural practice aimed at safeguarding both the quality of salt and the well-being of those involved in its production. No comparable restrictions or beliefs concerning firewood use were observed in the other villages. This distinction highlights a unique aspect of Hutsű's salt-making tradition, setting it apart from the other study areas.

o) Unique Sanphure Practices: In Sanphure, salt makers employ several distinctive techniques in the preparation and handling of salt. One notable practice involves using the bark of the *nyunyu* tree, which is tied to a stick and used to stir the evaporating brine. Owing to its adhesive properties, the bark facilitates the thickening of the brine, enabling it to be shaped into compact salt cakes. Additionally, tender *nyunyu* bark is crushed and mixed with ash to produce a natural cement or plaster, which is applied to strengthen and line the brine wells. Sanphure salt makers also place a cane ring atop plantain leaves to support the crystallised salt as it sets, ensuring uniformity in the size and shape of the salt cakes. These practices, combining plant-based tools with careful handling techniques, are unique to Sanphure and exemplify the ingenuity and depth of traditional knowledge within the salt-making community.

p) Age-related Roles in Salt Production: In Peletkie, salt-cooking is primarily undertaken by able-bodied men in their prime years, as the process requires considerable physical

strength and endurance. Once they pass this stage, they withdraw from direct participation, allowing the younger generations to assume responsibility. In contrast, in Hutsű, Matikhrű and Sanphure, individuals who remain physically capable continue to engage in salt production well beyond their prime years. Their sustained involvement reflects not only their enduring expertise but also the communal value placed on experience in maintaining the quality and continuity of salt-making traditions.

q) Salt Hut Ownership: In Matikhrű, the salt hut is community-owned, allowing all bona fide members of the village to participate in salt production according to a yearly calendar. This communal arrangement ensures equitable access to salt-making resources and fosters collective management of the salt industry. In contrast, the salt kitchens of Hutsű and Peltkie are generally constructed and maintained by individual families or jointly owned by several families or clans.

r) Brine Source Ownership: In all the study areas, brine sources are regarded as communal property, collectively owned and managed by the entire village community. Although certain clans have taken the initiative to dig and maintain their own brine wells, these do not function as private resources. Instead, access to the brine remains open to all villagers without restriction. This shared system of ownership and usage reflects the cooperative nature of traditional salt production, in which the preservation and sustainable use of natural resources are prioritised over individual or clan-based control.

s) Taxation Tradition: In Peletkie, there was a tradition of paying tax to two local clans for the right to use the brine well in earlier times. This practice functioned as a form of customary regulation and acknowledgement of the clan's authority over the resource. Over time, however, this tax-paying tradition has ceased and is no longer observed. In contrast, no such system of taxation or clan-based entitlement was found in Hutsű, Matikhrű or Sanphure, where access to the salt wells was traditionally open and unrestricted to all community members.

t) Rituals and Religious Influence: Rituals that were traditionally performed at the start of salt production are no longer practised. The introduction of Christianity to the Naga Hills beginning in the late nineteenth century and its gradual spread across different tribes by the early twentieth century brought profound cultural and religious changes to the region. As a result, the initiations of salt-making activities shifted from customary indigenous rituals to Christian practices. Today, salt workers often begin their work with Christian observances, such as prayers and blessings, reflecting the integration of new religious beliefs into traditional occupational practices. This transformation illustrates how external influences have reshaped long-standing cultural customs while retaining a ceremonial observance at the beginning of the salt-making season.

Chapter V: Discussion & Conclusion

Salt is a naturally occurring mineral found worldwide; however, its accessibility has been constrained by the level of technological development available to extract and process it. As one of the earliest commodities in human history, salt assumed a significance that extended beyond its dietary function. Salt scarcity and its excessive taxation had the potential to threaten communities and destabilise entire regions, transforming it from a simple nutritional necessity into a vital economic and political resource. Historical records indicate that wars were fought to secure access to salt sources, particularly salt springs, emphasising their strategic and economic value.

Within this broader context, the Naga Hills, endowed with several saline and hyper-alkaline springs, emerged as an important centre of salt production at a time when the commodity was rare. Colonial ethnographies and historical accounts demonstrate the importance of salt production and exchange in Naga territories. This activity was not marginal; it formed a structurally embedded and regionally economic system where salt manufacture at brine-rich sites formed the basis of inter-village trade networks that linked highland producers with neighbouring tribes and even the plains.

The neighbouring Ahom kingdom, for instance, depended on access to Naga salt for everyday consumption as manufactured salt was unavailable in the plains until the advent of colonial rule. They also sought to assert political authority over these salt sources, leading to recurrent clashes between the Nagas and the Ahom kingdom. Although the salt mines remained under the management of the local communities, arrangements for sharing production with the neighbouring state reveal the high economic and political value attributed to Naga salt in a region where sources were limited. Similarly, the Angami Nagas exerted pressure on the neighbouring Kachari communities of Semkor, as Lt. Grange (1839) observed, even the threat of attack compelled vulnerable villages to offer salt as a bribe. In conditions of scarcity, therefore, salt functioned not only as a dietary necessity but also as an instrument of power, tribute, and survival. These conflicts demonstrate that salt was regarded not merely as a subsistence item but as a strategic commodity crucial in shaping regional power negotiations. Scarcity of salt in the region transformed it from a mere subsistence

commodity into a strategic resource that significantly shaped inter-polity relations, warfare, and diplomacy in the Naga Hills.

The Naga tribes bordering the plains of Assam frequently engaged in cross-border trading in the *haats* (periodic markets), which functioned not merely as commercial centres but also as regions of sustained socio-cultural contact, facilitating interaction and mitigating linguistic barriers among diverse Naga communities. Similarly, the Ao valuation of Konyak salt, procured through indirect trade routes across the plains, illustrates the circulation of salt through multiple exchange networks and highlights its prestigious status.

Beyond its material value, salt also functioned as an important medium of inter-community interaction. The circulation of salt among the Zeliang, Konyak, Sangtam, Angami, Sema, Yimchunger, and Rengma communities reveals not only patterns of ecological specialisation but also an elaborate system of reciprocity and interdependence that predated colonial intervention. In this broader context, salt emerges as both a subsistence necessity and a strategic commodity that profoundly shaped political alliances, economic relationships, and regional connectivity across the Naga Hills.

Furthermore, the prominence of salt within inter-tribal trade networks, linking the Tangkhul, Mao-Maram-Poumei, Chakhesang, Angami, and Ao communities, demonstrates how control over natural resources structured patterns of mobility and economic interdependence.

The major findings of the thesis can be evaluated through interrelated components of these aspects taken together:

5.1. Discovery of Brine Sources: The Nagas skillfully adapted to their environment by utilising and modifying the natural resources available to them. Among these resources, brine water played a particularly significant role, forming an essential aspect of their subsistence and material culture. The raw materials contained in brine were processed to produce salt, a commodity of both practical and symbolic importance. Notably, the identification of brine sources often resulted from close environmental observation by members of the salt-producing communities. In Hutsű, for instance, oral traditions recount that the discovery of brine springs occurred incidentally while villagers were

tracing the trail of a lost animal. Domesticated animals, particularly the *mithun,* were naturally drawn to salt-rich areas, which led villagers to identify these locations as valuable sites. Recognising their importance, the community subsequently took measures to protect and conserve these areas, thereby ensuring that the salt springs remained a sustainable and vital resource for the community.

Similarly, in Sanphure, the discovery of brine sources was equally fortuitous. Initially, the community used brine water for cooking, unaware of its salt content. Over time, the appearance of a white crystalline residue on cooking vessels drew their attention. This discovery prompted them to experiment with brine evaporation, ultimately leading to the production of salt, turning the brine water into "white gold". Thereafter, salt-making became an established practice, first for domestic consumption and later as an integral part of their cultural and economic activities. This progression from casual observation to deliberate resource exploitation emphasises the Nagas' intimate knowledge of their environment and their capacity for innovation based on natural stimuli.

The discovery and exploitation of brine springs have been of considerable local importance, even influencing place names in the region. For example, "Sutsu" translate as "brine of cattle", while "Ngoromi" denotes "a place where salt is found". These toponyms attest to the long-standing recognition and utilisation of natural salt resources in the region.

5.2. Rituals and Sacrifices: Before the introduction of Christianity in the region, Naga communities practised animism, and rituals and sacrifices played a central role in mediating their relationship with the natural world. The discovery of unusual or extraordinary phenomena, including the identification of salt springs, was commonly accompanied by ritual practices. Land was regarded as sacred, and newly discovered resources, therefore, required sacrifice before they could be utilised. Salt spring sites were considered auspicious only after appropriate rituals and sacrifices had been performed. Animals were sacrificed to appease the spirit and to seek protection for the community, ensuring that the saline springs would not dry up and that the resources could be used sustainably. These rituals were intended to invoke blessings from the spiritual

realm, thereby safeguarding both the site and the community that depended upon it. Such practices reflect an intricate understanding of the interconnections between the environment, spiritual belief systems and resource management. By imbuing the landscape with sacred significance, these spiritual practices reinforced sustainable modes of resource management. However, with the advent of Christianity, these rituals and sacrifices are no longer performed.

5.3. Myths and Beliefs: Salt-producing villages have their own myths and beliefs, which are associated with salt springs that have played a crucial role in shaping the social and economic life. Interestingly, myths narrated by different tribes from places separated by considerable distance and lacking contiguous village boundaries display striking similarities, though with minor variations in their accounts. This pattern may suggest that certain migrating groups might have once inhabited the same space before dispersing to different regions, carrying with them a body of shared cultural knowledge.

In Viswema village of the Angami community, local belief systems explicitly prohibit undue profits through the trading or selling of brine. According to community lore, violating this tradition could result in the salt source drying up. Natural resources are considered communal property, thereby reflecting a broader ethical principle. Access to the resource is not restricted solely to the village members but is also extended to those in need beyond the community. Such accounts demonstrate a deep respect for natural resources and an attitude toward their equitable usage.

Similarly, in Hutsű village, the role of the village chief is highly regulated by customary norms. The chief is strictly forbidden from participating in salt-cooking activities, as it is believed that his involvement would bring misfortune, including poor crop yields and unproductive harvests. Despite the economic significance of salt production, the chief abstains from direct participation. Salt makers are under no obligation to offer him a share of their produce, nor does he demand one. The system illustrates the sacrosanct role of the village chief, whose adherence to ritual norms is intended to safeguard the welfare and prosperity of the entire community.

Furthermore, the intuitive environmental awareness of these communities is particularly noteworthy. Villagers closely observe their salt springs and believe that the volume of the salt springs remains constant. Any unusual fluctuation, such as

overflowing, is perceived as a sign of potential disorder and impending misfortune. This vigilant observation reflects the high value placed on salt spring sources as a vital resource and points to a deeper understanding of ecological balance, embedded within local belief systems and practice. Thus, myths and beliefs are not merely narrative traditions; they function as regulatory and ethical systems that guide resource management, communal welfare and environmental stewardship.

5.4. Traditional Knowledge: The salt-producing communities exhibit a profound understanding of their natural environment, particularly in relation to the discovery and management of brine sources. Their comprehensive knowledge and technical proficiency are clearly reflected in the construction and maintenance of salt wells, which demonstrate both practical ingenuity and an awareness of local ecological conditions. These wells are carefully designed to prevent contamination from water, ensuring the purity of the extracted brine.

In Sanphure, for instance, salt sources are located within the river '*tsulote*'. To safeguard these sources from contamination, the community strategically constructs salt wells by digging diversion ditches that redirect river water away from the brine points. This technique effectively preserved the purity of the salt springs by preventing adulteration from river inflow. Similarly, in Hutsű, the process of locating and accessing salt sources reveals a deeply rooted knowledge system. The initial identification of the saltwater sources was carried out using cane straws, through which two individuals sampled water directly from the ground to determine the point of saline emergence. Once identified, a conduit was dug and a bamboo stem inserted to channel the saline water. The bamboo stem not only entrapped the brine but also served as a protective enclosure, preventing contamination. To strengthen the structure, a hollow tree trunk was used as a supporting wall to prevent the salt well from collapsing.

In Sanphure, the community further demonstrated resourcefulness by using the tender bark of a local tree, *Nyunyu*, mixed with fine ash as a plastering material. This mixture was used to line the brine wells, making the brine more viscous and enhancing its quality. Another noteworthy aspect of traditional knowledge in Hutsű is the indigenous method used to test brine density. The community utilised the leaf of a local plant called

thüghikhü, which changed colour when dipped into brine, depending on the salt concentration. The colour variation allowed salt-makers to assess and determine the strength of the brine solution.

Overall, these practices highlight the remarkable ingenuity of the salt-producing communities, who skillfully adapted their techniques using locally available materials and traditional knowledge. Their methods illustrate a sophisticated traditional knowledge system that ensured efficient salt production while fostering a sustainable interaction with the natural environment.

5.5. Social Aspects: Salt holds significant social value in the salt-producing communities, extending beyond its economic and dietary importance. Its production and use are deeply embedded in communal life, reflecting the social norms, values and cooperative spirit of the villages.

In the Matikhrű community, salt production was more than an economic pursuit; it was a social activity that reflected the community's values of industriousness, diligence and prudent resource management. During the cooking season, community members would spend nights in their salt huts, an experience considered to instil discipline and a strong work ethic. The community believed that those who lived morally upright lives could produce salt successfully, reflecting the idea that prosperity depended on dedication, good conduct and the judicious use of one's allotted time and resources.

In Hutsű, the privilege of drawing the first brine water from a newly constructed salt well was traditionally accorded to those who achieved distinction within the community through wealth, status or exemplary livelihood. This practice carried deep symbolic meaning, as the continual flow of the brine source was seen as a metaphor for the sustained prosperity and enrichment of the community, inspired by the accomplishments of such respected individuals.

Salt huts were typically located outside the main village, near the brine wells. The operation of these salt works required collective labour, particularly in maintaining the brine sources and repairing salt huts and fire hearths. In Hutsii and Peletkie, salt kitchens

were constructed by families who had the means and in some instances, they were co-owned by closely related families or clans. In Matikhrű, the salt hut is communally owned. Although individuals occasionally discovered new brine sources, they did not claim exclusive rights and allowed equal access to all community members. While salt production was primarily organised at the household level, the broader community actively participated in building and repairing huts, cleaning brine wells and maintaining the surrounding areas. These collective efforts exemplify community co-operation, interdependence and the spirit of mutual aid that sustained traditional salt-making practices.

In Hutsű and Peletkie, families who owned salt kitchens often shared their facilities with those who did not possess one. In return, the beneficiaries expressed their gratitude by offering a portion of the salt cakes they produced. Similarly, in Matikhrű, families that could not utilise their allotted cooking rotation would pass their turn to another household in need, receiving a token piece of salt cake as a gesture of appreciation. These reciprocal practices promoted equitable resource distribution and strengthened social cohesion and solidarity within the village. The tradition of compensating the salt hut owners with salt continues to be observed, signifying enduring respect for customary practices.

The layout of salt huts also reflects community relationships. In Hutsű, salt huts were built separately but situated closely together, creating a compact and co-operative working environment. In contrast, in Peletkie and Matikhrű, salt makers shared common hearths for preparing meals during their stay at the salt sites. Although salt-making is arduous, in the salt huts their labour was compensated by a comradely spirit and mutual support that developed as community members worked, dined and shared tools in an atmosphere of companionship and peaceful environment.

A particular noteworthy social feature among the villages that possess salt springs is the practice of sharing brine water with neighbouring communities without hesitation. This act of generosity demonstrates that brine not only sustained livelihoods but also served as a medium for fostering social unity, goodwill and inter-village harmony beyond geographical boundaries.

5.6. Economic Aspects: Agriculture constitutes the principal economic activity of the Naga communities. Salt production, on the other hand, functioned as a specialised craft carried out alongside agricultural pursuits for subsistence. Salt, being an essential commodity, was manufactured not only for domestic consumption but also as a valuable item of trade.

Salt production and its associated trade activities played a crucial role in strengthening the local economy and uplifting the living standards of the community. In a traditional agrarian society, the possession of metal tools and implements symbolised wealth and status. Oral accounts revealed that the community in Peletkie acquired such metal tools through the production and barter of salt, which served as a medium of exchange. The income generated from local salt production also enabled the villagers to construct durable shelters and houses that could withstand the harsh vagaries of nature.

In Matikhrű, salt production and trade had significant socio-economic benefits, particularly in empowering women and providing them with economic independence. One remarkable instance recounts a woman salt producer who exchanged her salt cakes for a paddy field, which she then bestowed upon her children; an act symbolising both economic agency and intergenerational transfer of wealth.

With the gradual transition from a barter economy to a money economy, the marketing of local salt has continued to play a pivotal role in sustaining livelihoods. The income derived from salt production has supported the education of children and enabled families to meet essential needs such as healthcare, clothing and household items. As Matikhrű salt worker aptly expressed, “Everything on earth has its season: paddy, millets, perilla, and vegetables, but salt is one item that has no season”, emphasising its year-round production and its consistent contribution to household income.

Among the Sanphure communities, elders recalled that local salt held both economic and strategic importance. During the salt-making season, men camped in their salt huts for an extended period to oversee production. The need for protection led to the formation of an alliance with a neighbouring Sema village, which acted as their guardian. As an expression of gratitude and trust, the Sanphure community ensured that this allied

village received only pure, unadulterated salt, unlike the adulterated varieties occasionally prepared to meet the overwhelming market demand.

5.7. Political Aspects: Salt as a strategic resource played a crucial role in shaping inter-village relations, fostering alliances, and serving as a defensive measure against adversaries among different communities. In the past, Peletkie village, renowned for its salt production, demonstrated the political and social strength derived from this resource. During periods of conflict, when many neighbouring villages were forced to abandon their settlements to escape attacks from the ferocious Angami villages, Peletkie remained unaffected. As a salt-producing village, it had not abandoned, and the sacred traditional fire in their kitchen hearths continued to burn symbolising endurance and stability. Remarkably, Peletkie shared its sacred fire with its displaced neighbouring villages, an act that held profound symbolic significance. In the cultural belief system, sharing sacred fire was as good as restoring life and vitality to the community, reinforcing inter-village solidarity and community continuity.

Similarly, the production of salt varieties, such as the *thűrihmih* salt of Sanphure village, illustrates the diplomatic and symbolic functions of salt. According to local elders, this salt was not merely a commodity but a medium through which alliances were cultivated and peace maintained. The gifting of *thűrimih* salt carried profound symbolic significance; to recipient villages, who are expected to honour the relationship and refrain from aggression against Sanphure. Through such practices, salt became a tool for conflict prevention and a tangible expression of trust and mutual obligation among communities.

Salt also facilitated enduring inter-village alliances based on specialised crafts and mutual defence. The relationship between Yisi, renowned for its salt, and Laruri, known for pottery, demonstrates how economic interdependence evolved into political solidarity. Beyond trade, these villages co-operated to protect one another from external threats, including raiding parties during the era of headhunting. The legacy of this cooperation continues to be honoured, reflecting how salt-mediated alliances contributed not only to immediate security but also to long-term social cohesion and collective memory.

In essence, salt operated as a political instrument extending beyond its material utility. It enabled villages to negotiate peace, secure survival, and build enduring networks of mutual support. Through the control and distribution of salt and its ceremonial uses, communities asserted influence, formed strategic alliances and mitigated conflict, underlining the complex interplay between natural resources and political power in traditional Naga society.

5.8. Uses of Salt: Salt, beyond its fundamental role as a dietary necessity, serves multiple functions within communities. In villages such as Hutsű and Matikhrű, locally produced salt is valued not only for meal preparation but also as an integral component of traditional culinary practices. One of its primary uses is in the preparation of a hot and spicy side dish known as *Chutney*, a staple accompaniment in most Naga cuisines. According to local belief, the indigenous salt moderates the pungency of pepper, thereby enhancing flavour and making the *chutney* more palatable. During festive occasions and in the preparation of culturally significant dishes, community members express a strong preference for using their own locally produced salt, accentuating its cultural and culinary flavour.

Moreover, locally produced salt is esteemed for its perceived medicinal properties. Many salt-producing communities regard it as an effective home remedy for treating minor ailments and maintaining general well-being. In addition to its dietary and therapeutic uses, salt is also used in social and recreational contexts. Among the Zeliang Nagas, traditional games and sports, in their village-level wrestling competitions, brine water plays a vital role in fostering community spirit. During such events, participants, particularly the youth, customarily drink brine water, believing it enhances stamina and replenishes energy. Elders from Peletkie further assert a distinct preference for their locally produced salt, noting that it differs in taste and quality from commercially market salt. This preference reflects not merely a matter of taste but also a sense of identity and attachment to indigenous resources that embody the community's cultural heritage and traditional knowledge.

5.9. Gender role & Transfer of Knowledge: The production of salt is a complex technological practice that requires a systematic sequence of operations and a deep understanding of both material properties and practical knowledge. Traditionally, the art of salt-making has been acquired through experiential learning and the intergenerational transmission of indigenous knowledge. Among the salt-producing communities, the acquisition of these specialised skills is closely linked to social organisation and gender roles.

In villages such as Sanphure and Peletkie, salt production was traditionally the domain of men. Hence, the knowledge and techniques of salt processing were passed down through the male line, from fathers or uncles to their sons and nephews. The young male members of the family often accompanied their elders to the salt kitchen, assisting in minor tasks and gradually learn the intricacies of the process through observation and participation. Contrarily, in villages such as Hutsű and Matikhrű, salt production was primarily undertaken by women. Here, the transmission of knowledge occurred from the female line; a mother, grandmother, or aunt's expertise was passed down to a younger member. The salt kitchen served as an informal learning space where young girls participated in routine chores, observed the preparation process and acquired the necessary skills through guided practice.

This gendered division of labour reflects the cultural organisation of work and knowledge transmission within the salt-producing communities. The intergenerational transfer of knowledge not only ensures the continuity of the salt-making tradition but also reinforces familial and gendered structures within the community. Participation in salt production provides younger members with practical skills, respect for tradition and a sense of identity tied to their village and its unique natural resources.

5.10. Challenges: Technological innovations have revolutionised salt production, leading to the decline and eventual disuse of many traditional salt sources. Among these, brine springs are particularly vulnerable as their low brine content made them economically unattractive for large-scale production (Lovejoy, 1986, p. 4). Traditional salt production methods, such as boiling brine, also posed significant environmental challenges, notably through the extensive consumption of firewood. Historical examples, such as in China,

where salt works were produced by boiling seawater, demonstrate that this practice led to severe deforestation and resource depletion, which led to the adoption of the solar evaporation method as firewood became scarce.

Operating salt works required considerable time, labour and dedication, as constant maintenance was needed to repair damages in the salt kitchens and the fireplaces. In Nagaland, the Konyaks of Mon district, the Chang tribes of Tuensang and the Khimanungans of Noklak district traditionally manufactured salt from their brine springs, when salt was a rare commodity. However, significant transformation following the First World War introduced monetary exchange systems to the Nagas, particularly through their interactions with the plains of Assam. Naga tribes living near the Assam plains began working as wage labourers on construction sites, earning wages in silver coins that enabled them to purchase salt from the plains and trade it with neighbouring communities. The introduction of a cash-based economy reduced reliance on indigenous salt-making practices eventually, leading to their decline.

Traditional salt production through the boiling method is not only labour-intensive, but also demands large quantities of firewood. One plausible reason for the discontinuation of salt-making among the Konyaks, Changs and Khiamnungams was the growing scarcity of firewood to sustain the salt kitchens. In Peletkie, the shift from producing dry salt to semi-liquid salt was largely due to the excessive amount of firewood required for evaporating brine water. Globally, salt production by artificial evaporation over fire has consistently faced the challenge of high fuel costs, given the large quantities of firewood it requires. The Naga salt-making communities have faced similar constraints. Prolonged boiling of brine has further contributed to the depletion of local forests, as extensive firewood consumption has gradually reduced the vegetative cover in their surroundings.

The Naga’s indigenous knowledge systems reflect a profound understanding of sustainable resource management. Their subsistence practices are grounded in principles that emphasise the utilisation of natural resources without causing long-term ecological degradation. Trees serving them for different purposes are carefully managed through practices such as pollarding, reflecting a conscious balance between resource use and

conservation. The Hutsü community, for instance, actively safeguards the wooded areas surrounding their salt wells. Firewood for their salt kitchens is felled from communal lands. The village also enforces rules that a wooded area should not be completely denuded. The community members also undertake initiative efforts in conserving and planting native tree saplings along the pathways leading to the salt huts. The standing trees near the salt kitchens are regularly pollarded, allowing new shoots to grow. The community possessed knowledge of a locally known species, *Thiiliisii* (belonging to the *Alnus* genus), which matures within five years and provides a source of firewood. Despite these conservation efforts, the rate of tree growth cannot meet the high demand for firewood for the salt kitchen. The hollowed stumps of wild walnut (*juglans regia*), placed inside the Hutsű *troshipii* salt well, are now no longer found except in their reserved forest. Hutsű salt huts continue to be constructed from locally available forest materials. Traditionally, thatch straw served as roofing material; however, its availability has sharply declined. Currently, Hutsű has five salt huts, with one of them in a dilapidated state. Attempts to use corrugated tin sheets as roofing have proven ineffective, as the steam emitted during brine evaporation corrodes the metal, creating large holes. The scarcity of thatch grass has further constrained repair and maintenance efforts, as the plant no longer grows in sufficient quantities to meet the community's needs.

While salt production provides essential economic benefits, it simultaneously places pressure on forest resources. The significant firewood requirement has forced communities to fetch firewood from increasingly distant areas; a physically demanding and time–consuming task. The salt workers of Matikhrű have expressed concerns about how salt cooking and its related activities now raise health issues arising from prolonged exposure to heat during salt boiling, as well as the increasingly warm climatic conditions.

The Peletkie community faces a similar challenge. Salt production here is primarily managed by able-bodied men in their prime years, given the physical demands of transporting large logs of firewood from distant locations. The firewood used in their salt kitchen is seldom split into smaller pieces. It also takes a full twenty-four hours or more for salt to crystallise, and therefore, the salt workers in Peletkie keep the unprocessed brine as their share. Echoing the same problems experienced by Matikhrű,

Peletkie salt makers also expressed growing concerns over heat-related health problems and the physical toll of their labour-intensive practices.

5.11. Importance of salt to the community: Inquiries in the salt-producing areas have shown that salt has long held, and continues to hold, significant importance for the communities. In Hutsű village, a designated committee oversees all matters related to salt production, including determining the price and the design of the salt cakes. The contemporary design of the Hutsű salt cake bears the inscription "YISI", which, according to a committee member, symbolises the village's identity and heritage as a traditional salt-producing community. Similarly, in Matikhrű village, the village council exercises authority over the size and pricing of salt cakes, as well as being responsible for the maintenance and upkeep of the salt huts, tools and other essential equipment used in the production process. Among the Nagas, who are inherently community-oriented, salt production and its associated activities serve not only as an economic enterprise but also as a vital social institution that fosters collective participation, reinforces communal bonds, and preserves cultural identity.

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5.12. Aspirations of the Salt Producing Villages: The Sanphure community last engaged in salt production from their salt springs in 1979. The practice of salt production, once a deeply rooted cultural tradition, was regarded by the village elders as an integral part of their ancestral heritage. However, the increasing accessibility and affordability of commercially produced salt diminished the significance of local salt production. The situation was further aggravated when a major flood submerged the salt sources, bringing an abrupt end to the community's salt-making practices. Despite these challenges, the elders of Sanphure also express a strong aspiration to revive the traditional practice of salt and to transmit to the younger generation the associated knowledge, values, and traditions of their forebears.

Similarly, the communities of Peletkie, Hutsű and Matikhrű share concerns regarding the potential erosion of their salt-making heritage. The communities also face environmental challenges, as large numbers of trees are felled annually to supply firewood for the salt kitchens, posing a threat to the surrounding green vegetation.

Recognising these challenges and having ecological concerns, the communities collectively aspire for government intervention and support, through the introduction of modern technologies and sustainable methods, both conventional and alternative, to facilitate the revival of local salt production in an environmentally responsible manner.

5.13. Limitations of the Study: The primary focus of this research was to document and analyse the traditional methods of salt production in communities where the practice continues to persist. Particular attention was given to the processes and techniques employed in salt-making, including the energy inputs, materials used by salt producers, and the nature of salt trade within these communities. The findings revealed that the salt-producing communities highly value their locally produced salt, considering it not only a commodity but also an important cultural and economic resource with its perceived medicinal properties. However, a study of the chemical properties of brine and the types of soil in which salt occurs could not be accomplished during the research. Proper scientific investigation and analysis of the brine sample from the study area could help the communities fully understand the potential benefits or risks of consuming local salt.

5.14. Conclusion: Traditional salt production remained deeply rooted in the cultural fabric of the Naga community, transmitted across generations through inherited knowledge and practice. However, the period following the First and Second World Wars marked a decisive shift among certain Naga salt-producing communities. The expansion of colonial administrative control and the improvement in transport networks facilitated the influx of market salt, which was brought to the hills, leading to the reduction of the importance of locally manufactured salt, which was more labour-intensive and time-consuming to produce.

Salt-making had functioned not merely as a subsistence activity but as a specialised adaptive strategy rooted in local resource management and inter-village exchange networks. The availability of commercially produced salt, however, altered local consumption preferences and reduced the economic viability of indigenous production. As barter systems weakened and money-based exchange gained prominence, the incentive to sustain traditional salt production diminished.

Thus, unlike the villages that continue the tradition of salt production through intergenerational transmission and adaptive modification, salt production among the Konyak, Chang, and Khiamniungan communities experienced a gradual decline and complete cessation following the two World Wars.

Salt production remains integral to the community's cultural life, perpetuated through the continued transmission of traditional knowledge and practice. A younger member of the community learns the technique from an elder, ensuring the continuity of salt-cooking tradition, though with certain changes over time in their techniques, tools and materials. Despite such changes, the basic exigency remains unchanged, as reflected in the continued use of locally available resources that salt-workers adapt and manipulate to meet their needs.

The opening and expansion of markets and trade in the inter-war years significantly transformed the material culture associated with salt production. One notable example is the replacement of fragile earthen pots with more durable cast-iron pots that could withstand several cooking seasons. While this change marked a practical adaptation, it also symbolised a shift from purely local craftsmanship to the partial adoption of market-supplied tools.

Hutsű remains distinctive among the salt-producing communities for its continued use of traditional earthenware in various stages of salt production: *katatupfii* for storing brine water, *lunupfii* for storing finished salt cakes and *chapfii* as the base for shaping the cakes are still in use. In addition, bottle gourds, bamboo tubes and spoons shaped from gourds represent tools handed down from earlier generations, maintaining tangible links to ancestral practices. By contrast, the salt huts of Peletkie and Matikhrű show little evidence of earthenware materials being used in any form. In Matikhrű, bottle gourds are still employed as scoops for drawing and transferring brine, while gourd fragments shaped into spoons are used for moulding salt cakes. However, most of the remaining tools are sourced from the market. Peletkie salt workers, on the other hand, continue to rely on bamboo implements, demonstrating a balance between traditional and adapted materials.

Despite changes in the materials employed, the salt cooking culture across the study area continues to thrive, as recounted by elders from Hutsü and Matikhrű. One possible explanation for this resilience is the accessibility of the salt huts, which enables even elderly individuals to participate actively. Remarkably, senior members of the communities in these two villages are still actively involved in salt production activities. Nevertheless, the elders express concern over the declining interest among younger generations. When enquired about the future of salt-making, they remarked that "Nowadays only those who have a genuine interest in making salt go to the salt huts as proper salt workers", indicating that participation is becoming increasingly voluntary rather than collective. In Matikhrű, young independent families often forfeit their turns in the salt-making roster to allow the elderly to continue the practice, as many of the younger members are engaged in employment or other activities outside the village. In Peletkie, salt production presents additional challenges due to the difficult terrain and the precarious road conditions leading to the salt kitchens. Moreover, the processing of salt is labour-intensive, requiring more than a day for the brine to crystallise. Hence, salt operations are primarily managed by able-bodied men of prime age. Many youths have migrated to urban areas for education or better job opportunities. During winter breaks school and college-going students engage in salt production, to fund their educational expenses.

The perception and value of salt have undergone a significant transformation over time. Salt, due to much labour required for its production, was once a rare and valuable commodity; however, it has now become a common and insignificant commodity due to industrialisation and technological advances applied in production (Lovejoy, 1986, pp. 3-4). The ease of availability and low cost of commercial salt have diminished its once valued and prestigious position. Nevertheless, in many traditional communities, including the Nagas, locally produced salt continues to hold an important place. Communities initially used local salt out of necessity but later developed a preference for it due to its unique taste and perceived medicinal properties.

Salt remains an essential commodity, but many use commercially produced salt, which is readily available, rather than the traditionally made salt. Moreover, the dominance of large coastal salt producers using modern solar evaporation techniques has

increasingly marginalised small-scale salt makers who continue to employ the traditional salt working methods. As a result, many indigenous salt-making practices that once flourished for centuries are rapidly disappearing.

Local salt production, though a deeply rooted tradition, faces the threat of extinction due to its labour-intensive nature, concerns over forest resource depletion, and the migration of the younger generation to urban centres in pursuit of better economic opportunities. With the gradual disappearance of practitioners, knowledge of traditional salt-making techniques is also at risk of being lost.

The present study not only contributes to the preservation of an endangered traditional practice but also highlights the broader cultural and historical importance of indigenous technological knowledge. By recording and documenting the methods, tools, and traditions associated with salt production, this research serves as a record of a heritage that is disappearing. It also emphasises the need to recognise, protect and revive this practice within the community's living cultural tradition. The study reinforces the premise that indigenous knowledge systems embody sophisticated environmental adaptations, social values, and cultural continuity. Preserving indigenous salt-making is thus critical not only for safeguarding cultural heritage but also for maintaining the ecological, social and technological knowledge embedded in Naga communities. Their preservation is therefore not merely an act of cultural remembrance but a vital component of sustaining collective identity, ensuring cultural resilience, and enriching our understanding of humanity's diverse technological heritage.

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Lists of Interviewees:

Peletkie Village (Peren): Interview held between April 12 to 14, 2018 and December 30, 2024.

Sl. No	Name	Age	Designation	Additional Remarks
1.	Teiriesong	63	Pastor	
2.	Hangciambe	58	GB	
3.	Apumbe	60		
4	Ariang	56	VC Chairman	
5	Peusie	58	GB	
6	Pekang	60		
7	Keisulule	30		
8	Mahiebe	23		Guide
9	Isizu	21		Cooking salt
10	Ichizuibe	18		Cooking salt
11	Namsuirangbe	26		

Hutsu Village (Meluri): Interview held between April 22 and 23, 2018 and December 18 and 19, 2024.

Sl.No	Name	Age	Designation	Additional Remarks
1.	Meshuzu	78		
2	S. Pfithu	72		
3	L. Pfithu	52	Head GB	
4	T. Zethong	62	Village Crier	

5	Sauchu	74		
6	Achipa	64	Village Council Chairman	
7	S. Throchu	59		Cooking salt
8	Lusi	65		Cooking salt
9	Chiisi			-do-
10	Zighochu			-do-
11	Kusa	60		-do-
12	Karhie	73		-do-
13	Liisii	73		-do-
14	Liikhi	40		Guide
15	Gusoti	50		
16	Riitshowmong (Sutsu)	68	GB	
17				

Matikhru Village (Meluri): Interview held on April 24 and 25, 2018.

Sl.No	Name	Age	Designation	Additional Remarks
1	Kewezulo	65		
2	Lupuchu	69		
3	Resipa	76		
4	Rhuthosie	65		
5	Mesezulo	60		
6	Khrusi	62	Cooking salt	

7	Kaghii	65	-do-
8	Tasi	50	-do-
9	Chuwotho	32	-do-
10	Rev. Zhiwotho Katiry	65	
11	Kwetsiilo	95	
12	Kuzumolu	67	
13	Kukhwetsulo	70	

Sanphure, Longmatra and Pungren (Kiphire): Interview held between April 19 and 21, 2018.

Sl.No	Name	Age	Designation	
1	Thsipongchu Senosinru (L)	72	GB	
2	Yangsekyu Yingpithonger (L)	72	DB	
3	Kulimong (L)	50		
4	I Shapenthe (S)	65		
5	Tetsangmong (S)	68		
6	R Tetsongmong (S)	58	DB	
7	Techumong (S)	78		
8	Mulain (S)	70		
9.	Tsasemong	60	DB	President of Salt Project, Sanphure Village
10	Tsoinchu	72		
11	Tsokhurang	73		
12	Thsipenchu	73		

13	Thsipong (P)	78	Head GB	
14	I Thomas (Ngoromi)	62	GB	

Tuensang and Kuthur Village (Tuensang): Interview held on November 20 and 21, 2019.

Sl.No	Name	Age	Designation	
1	Imlong Chaba (Tuensang Village)	85	GB	
2	Kebo Mung (Tuensang Village)	78		
3	Neojuchung (Kuthur Village)	70	GB	
4	J Shokum (Kuthur Village)	76	GB	
5	S Chukim (Kuthur Village)	52		

Mon District: Interview held in the month June 2019.

Sl.No	Name	Age	Designation	
1	Khamhi (Longzang Village)	58	DB	
2	Bonzai (Chui Village)	57		
3	Wenlong (Chui)	94		
4	Nyukhao (Chui)	90		
5	Nonlong (Chui)	88		
6	Phejin (Chui)	86		
7	Yanyam (Chui)	83		
8	Shelih (Chui)	80		
9	P. Yalam (Chui Village)	64		
10	Nyamwang Wangsha (Mon Village)	89	Ex DB	

11	Minpo Konyak (Mon Village)	87		
12	Y. Chingang (Kongan Village)	86		
13	Ms. C. Konyak (Kongan)	72		
14.	Mr. Ganjun (Hongpoi)	89		
15.	Ms. Anon (Leangha)	91		
16	Ngiplih (Leangha Village)	104		
17	Chingkam (Leangha)	100		
18	Anglong (Leangha)	99		
19	Wentan (Leangha)	98		
20	Tonglong (Leangha)	86		
21	Phuhton (Leangha)	86		
22	Esrong (Longching Village)	95		
23	Elang (Longching)	75		
24	L Pange (Longching)	77		
25	P Longchi (Longching)	70		
26	E Petok (Longching)	62		

Viswema and Kohima:

Name	Age	Designation	Interview held
Damo, Viswema village	80		11th Jan 2018
Daniel K, Viswema Village	70		12th Jan 2018
Yotoho K, Viswema Village	68		20th Jan 2018
N. Vakha, Khonoma Village	72		25th Jan 2019

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NU/AC/Ph.D-789/2018 3032 Dated Lumami, the August 2018

To,

The Dean,
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Nagaland University,
Kohima.

Sub:- Registration of Ph.D – Reg.

Sir,

With reference to the subject cited above, the undersigned is directed to inform you that **Ms. Tenosenuo Angami** has been registered for research work leading to Ph.D degree under Nagaland University as detailed below;

1. Name of the supervisor : Dr. R. Chumbeno Ngullie
2. Department : History & Archaeology
3. Registration No. : 824/2018
4. Date of Registration : 13/8/2015
5. Topic of the Research : **"Historical analysis of the Indigenous salt springs and salt production in Nagaland ."**

The scholar has to deposit the fees regularly and produce Clearance Certificate of Library, Laboratory and Finance at the time of submission of Thesis.

Yours faithfully,

(ANTHONY V. RICHA)
Deputy Registrar (Acad.)

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School of Social Sciences **Ph.D. Course Work Award Sheet** **Department of History & Archaeology**

The Following is the record of the assessment of **TENOSENUO ANGAMI** *bearing Roll No.* **H&A/Ph.D-09/2015** *in the Ph.D. course work Examination of the year 2015-2016.*

Paper: Research Method-501			**Paper: Oral Sources in Historical Research-502**			**Paper: Historiography-503**			**Term Paper- 504**	**Total sessional Work**	**Total Semester Examination**	**Grand Total**	**Result**	**Percent**
Max Marks:100 Pass Marks: 50%			Max Marks:100 Pass Marks: 50%			Max Marks:100 Pass Marks: 50%			Max Marks:100 Pass Marks: 50%					
Sessional Works 25	Semester Exams 75	Total 100	Sessional Works 25	Semester Exams 75	Total 100	Sessional Works 25	Semester Exams 75	Total 100	Total 100	75	400	400		
17	42	59	18	50	68	20	44	64	86	55	222	277	Cleared	69.25%

Note: 1. A student is required to secure a minimum of 50% of marks (Sessional+Semester) in each paper to clear the same.

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This is to certify that the plagiarism check has been performed for Ph.D. Thesis, "**Historical Analysis of the Indigenous Salt Springs and Salt Production in Nagaland**" submitted by **Ms. TenosenuoAngami,** under the Supervision of Dr. R. Chumbeno Ngullie, Department of History & Archaeology, School of Social Sciences, Nagaland University. The check performed by the Scholar is found correct and authentic software **Drill Bit** has been used for the similarity check.

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