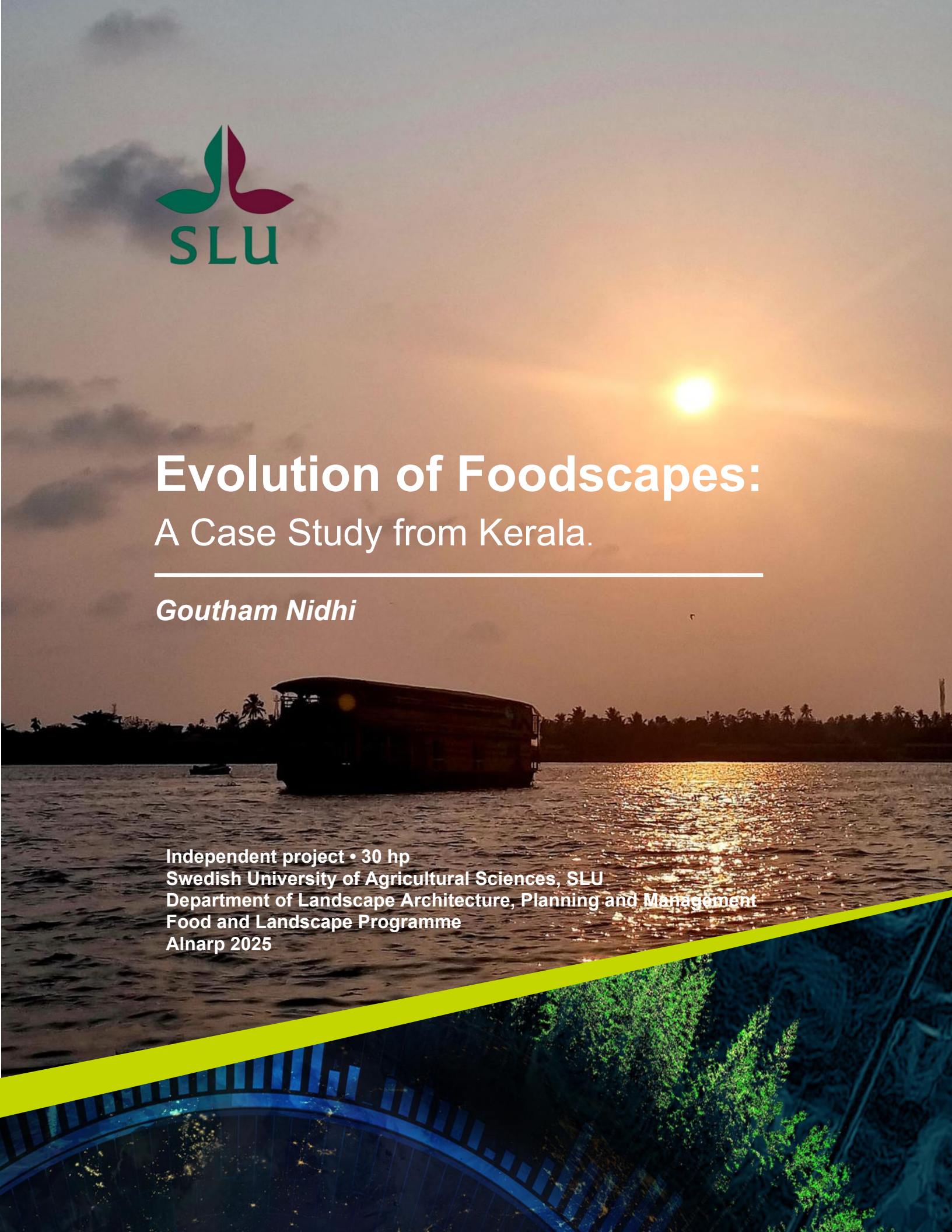

Evolution of Foodscapes:

A Case Study from Kerala.

Goutham Nidhi

Independent project • 30 hp
Swedish University of Agricultural Sciences, SLU
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ABSTRACT

This study explores the evolution of foodscapes in Kerala through temporal dimensions, analysing how food environments, where food is produced and sold, along with the food culture, have evolved over time. The past and present foodscapes were analysed to suggest possibilities for future foodscapes. The study primarily examines the changes in the production of staple foods such as rice, coconut, and fish, as well as other food crops and marketplaces. The evolution of food culture and its importance in Kerala's culinary heritage will be discussed considering the changes that have occurred in foodscapes. A mixed-methods approach is employed to conduct the study, incorporating both quantitative and qualitative methods, which include a literature review, an on-site observational study, and a survey. The data collected was thoroughly analysed to identify the changes that have taken place in foodscapes over time and to discuss the future foodscapes of Kerala. The study yielded several key findings, the most significant being the transition of Kerala's economy from agrarian to the service sector. Traditional practices and local markets have evolved into modernity and hypermarkets. As time has progressed, farming has declined in urban areas, paving the way for hypermarkets and online food platforms. The study also investigates Kerala's food culture, which has been continuously evolving for centuries. The rise in hybrid diets and fast foods has adversely affected public health, increasing non-communicable diseases in the state. Based on a survey focusing on the youth and other analyses of past and present foodscapes, a hybrid model is proposed to strengthen the future foodscapes of Kerala. This model suggests that both traditional and modern practices can work harmoniously to build a sustainable food system. Integrating technology into traditional farming, especially in homesteads, increasing urban farming using traditional knowledge, and implementing a hybrid market model where both local markets and hypermarkets support local produce can contribute to a better foodscape in Kerala for the future.

CONTENTS

ABBREVIATIONS

FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel for Climate Change
HLPE	High Level Panel of Experts
AEUs	Agroecological Units
KSPB	Kerala State Planning Board
POWER	Prediction of Worldwide Energy Resources
e-NAM	Electronic-National Agricultural Market
COVID-19	Coronavirus Disease of 2019
IMD	Indian Meteorological Department
INP	Indo-Norwegian Project
NCDs	Non-Communicable Diseases
AI	Artificial Intelligence

1. INTRODUCTION

Humans had an intricate relationship with food even before ancient civilization. Agriculture was one of the major factors initiating early human settlements. Human beings were shaped by food, having a lasting impact on biological, cultural and spiritual developments. 28.9% of the global population is facing moderate to severe food insecurity (FAO, 2023). The global dietary patterns are shifting rapidly and have an influence on food security in many regions. The cost of the global food system is about 10% of the global GDP, estimated at 12.7 trillion dollars (Reynolds 2023).

A foodscape is an environment where food is produced, distributed, consumed, disposed of, and interacted with, encompassing agricultural fields, gardens, stores, outlets, and dining (Vonthron et al., 2020). It is defined by the physical, social, economic, and cultural aspects of the food system and analyzes how food interacts with the environment (MacKendrick, 2014). The neo-food culture creates a gap between food and people, transforming food into a purchasable commodity (Vivero-Pol, 2020). Food holds power that can elevate the place it comes from and always carries a taste essence from its origin (Trubek, 2008).

The current food system has a significant impact on the local foodscapes across the world. This had resulted in the loss of culinary heritage and local food diversity. The emergence of standardized diets such as fast food and processed foods has severely impacted dietary patterns and local food traditions (Anthropology of Food, 2024). This shift in the food system has influenced the loss of biodiversity, soil health and agricultural practices. The food system is a major contributor to climate change, emitting 21% to 37% (10.8 to 19.1 billion tons) of total greenhouse gas emissions (IPCC 2025). Conventional farming destroys local foodscapes by affecting the ecosystem, creating a gap between people, nature and local traditions (Fanzo et al, 2024).

The shift towards a neo-food system has profoundly affected the foodscapes, and people have lost their connection with the land and their food. The traditional farming practices and indigenous crops started to diminish before the new market trends (Mathew 2024). Monocultures and Agri-corporations have become more powerful, reducing local farming (Norberg-Hodge, 2024). The new food system created fast food and supermarket chains, and their over-presence in the local foodscapes disrupts local markets and consumer habits (Hasty et al., 2025). The overreliance of

people towards more convenience makes it more difficult to understand the origins of food and its production (Sawjana, 2023).

The prices of all food commodities are increasing day by day. Disruptions in global trade and fluctuations in the price of crude oil influence food pricing (Abbott et al, 2008). Supermarkets and food companies have shaped the food economy by controlling the prices of food commodities. In some parts of the world, supermarket giants hold a monopoly over the entire food sector and dominate a significant portion of the food supply, ultimately controlling the market. They adversely affect both customers and small-scale farmers by prioritizing efficiency over diversity. Food is only considered a commodity or a public good, but it is a human right and a part of our culture. Treating food as a cheap commodity for mere profit rather than sustainability leads to environmental and social injustice (Vivero-Pol 2019).

There is often a tendency to criticize the present system, glorifying the past as if everything worked better then. In some cases, it works the opposite, blaming the past for the present. However, when we delve deep into each era and analyze the system, we can find that the same problems we currently face exist in different forms. For example, the global food chain is frequently criticized for its negative impact on the world, yet global trade, especially in food, has been occurring for centuries. Therefore, the problem lies not with the system itself, but with the way it functions. To build a better future, we can examine both the past and the present and identify the positive aspects that can serve as a foundation for improvement. This also aids in understanding what works and what does not. The evolution of foodscapes through a temporal dimension can facilitate the examination of past and present foodscapes and help in discussing the future of foodscapes. Identifying the changes that have occurred in both the past and present can help define what needs to be done to create sustainable future foodscapes.

Kerala is the southernmost state of India, which has a long history of food culture, and food is the centre of everything. The foodscapes of Kerala are shaped by the culture and local food traditions, deeply interacting with the people and the way of life. This study examines how local foodscapes in Kerala have changed over time and their impact on the interaction between food, people, culture, and health. It focuses on the evolution of foodscapes through temporal dimensions in which food is produced and sold in Kerala.

2. RESEARCH BACKGROUND

2.1 Foodscapes

The term 'foodscapes' gained importance in understanding the interaction between food, space, people, culture, economy, sustainability, and environment. It is a combination of food and landscape, where food is produced, distributed and consumed (MacKendrick 2014). It refers to physical, spatial, social, economic and cultural environments which were interlinked with food (HLPE 2019). The concept of foodscape was defined etymologically by Adema (Adema 2019, see Vonthron et al., 2020), but it had appeared in academic literature since 1995 (Yasmeen 2023). The foodscapes can be of different forms, like rural foodscapes (farmlands, local markets), urban foodscapes (supermarkets, restaurants, fast food outlets) and digital foodscapes (online grocery stores, social media).

Table 1: Different approaches to foodscapes (Vonthron et al, 2020).

Approaches	Definitions (Foodscapes)	Subgroup
Spatial approaches	• Spatial distribution of food outlets. • Community nutrition environment	1. Characterizing the diversity of foodscapes 2. Foodscape effects on diet 3. Methodological suitability of foodscape databases
Social & Cultural approaches	• Representations and material form of places and spaces linked to food, a socially constructed landscape	1. Food access and structural inequalities 2. Cultural and ethnic foodscapes 3. Every day food practices as routines
Behavioral approaches	• The foodscape as physical, organizational, and sociocultural spaces in which clients/guests encounter food	1. Institutional foodscapes 2. Domestic foodscapes 3. Retail foodscapes
Systemic approaches	• The foodscape as a systemic concept close to the food system, but about places linked to food	1. Local and ethical food networks 2. Urban food policies 3. Territorial marketing

Foodscapes can be viewed as the "spatialization of food-related practices", where a place can shape food choices (Steel 2020). It can be shaped by local governance, cultural values and food systems (Mikkelsen 2011). Power dynamics also impacts foodscapes, where policy framework and socio-economic factors determine access to nutritious food (Johnston & Baumann, 2009). An article by Vonthron et al (2020) presents four approaches to foodscapes: spatial, social & cultural, behavioral and systemic approaches.

The foodscape addresses various food-related issues, such as social justice, the sustainability of food systems, and public health, across different scales, from macro to global (Vonthron et al., 2020). Spatial approaches statistically analyze urban foodscapes to assess their diversity and health effects. Social and cultural approaches examine food access through qualitative and quantitative studies, revealing social influences and systemic inequalities. Behavioral approaches focus on how consumer perceptions shape food choices and education. Systemic approaches critique the unsustainable global food system, advocating for local and ethical alternatives. All these approaches address issues related to food security (Vonthron et al., 2020).

Foodscapes are strongly connected to culture and social values. Traditional foodscapes represent agricultural practices and dietary patterns that positively impact health, sustainability, and food security. In contrast, modern foodscapes are shaped by hybrid food cultures resulting from globalization. These standardized foodscapes affect local food diversity (Moragues-Faus & Morgan 2017). Furthermore, foodscapes create spaces for cultural exchange and social interaction. The modern food system is also responsible for creating several foodscapes that directly impact public health. The overuse of high-calorie and processed foods results in obesity and chronic diseases within populations, creating "obesogenic" foodscapes. Conversely, low-income populations suffer from food deserts (limited access to food) and food swamps (access to unhealthy food) (Newby 2018).

Beyond all this, foodscapes play a major role in enhancing sustainability through local food production, mitigating climate change, and biodiversity loss. Practices like permaculture, urban farming, and sustainable fisheries help build sustainable foodscapes (Kneafsey et al., 2013) and strengthen food security. Foodscapes offer a transdisciplinary lens to analyze food systems through spatial, social, cultural, and economic perspectives. In the future, foodscapes can integrate AI and technology for sustainable food environments.

2.2 Kerala: The God's Own Country

Kerala is a narrow strip of land situated on India's southwest coast (Malabar coast), located between 8°18’ & 12°48’ N latitude and 74°22’ & 77°22’ E longitude. This Indian state has only 1.18 % of India’s total land area (38,863 sq km) and stretches from north to south in about 520 km. The state was formed in 1956, joining the Malayalam-speaking regions and borders with Karnataka, Tamil Nadu, Lakshadweep Sea and the Arabian sea (Noble 2025). It is a home for approximately 35 million people, which makes it three times denser than the Indian average (860 people/sq km). Most of the population settled in the coastal regions, with 2.5 times more than the state’s population density (World Population Review, 2025).

In 1989, as a part of a tourism marketing slogan, Walter Mendez coined the phrase “God's Own Country” (Yadav, 2021). This tagline for Kerala wasn’t derived based on any reason, it had a strong connection to the state’s culture, biogeography and ecology. For centuries, various religions such as Hinduism, Christianity, Islam, Judaism, etc., coexisted harmoniously, which is often seen as a sign of a divine land. Even now, temples, churches, and mosques coexist in the same space. Kerala is also acclaimed for its vibrant nature, having beaches, backwaters, mountains, tropical rainforests, numerous rivers and waterfalls. The state also owns 25% of the country’s plant species in just 1.2% of India’s land area, making it one of the species-rich spots in the world (Sreedharan 2004).

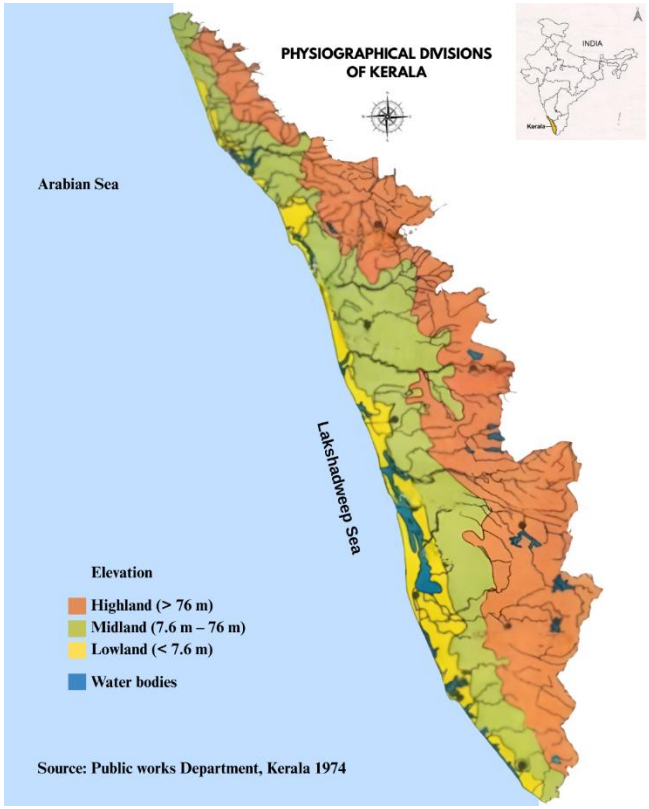

Figure 1: Physiographical Divisions of Kerala, Created in Canva. (Source: Public Works Department, Kerala)

Kerala’s topography is characterised by three distinct physiographical divisions based on its elevation from sea level: the western lowlands (coastal plains), the central midlands, and the eastern highlands. The coastal lowlands comprise only 10% of the state’s area and are known for

their rice fields and coconut plantations. The Rice Bowl of Kerala (the Kuttanad region), one of the few places where rice cultivation occurs below sea level, is located in this region. Forty-two per cent of the state's area is covered by the Midlands, where most crop cultivation takes place. The highlands are areas above 76 meters and cover 43% of the state's area. The Western Ghats, one of the biological hotspots in the world, runs parallel to this region, making it a species-rich area in Kerala. This forms an ecological wall that traps the monsoon winds, resulting in abundant rainfall (George 2001). Kerala has a tropical monsoon climate, with an average temperature range from 20 to 32 degrees Celsius throughout the year. The state receives abundant rainfall of about 3000 mm of average annual precipitation, with some regions in the Idukki district receiving over 5000 mm (EIACP, 2011). Climate change has also impacted Kerala, with an alarming annual mean temperature increase of 1 degree Celsius and 10% more rainfall in the coming decades (CarbonBrief 2024). 2024 was recorded as the hottest year since 1901, with an annual mean temperature rise of 0.9 °C (Thomas 2025).

Based on altitude, rainfall patterns, soil types and topography, Kerala is divided into five major agroecological zones and 23 agroecological units (AEUs). The agricultural zones are the Coastal plains. Midland Laterites, Foothills, High hills and Palakkad Plain (KSHIS 2019). These agro-ecological zones facilitate the production of different kinds of crops throughout Kerala.

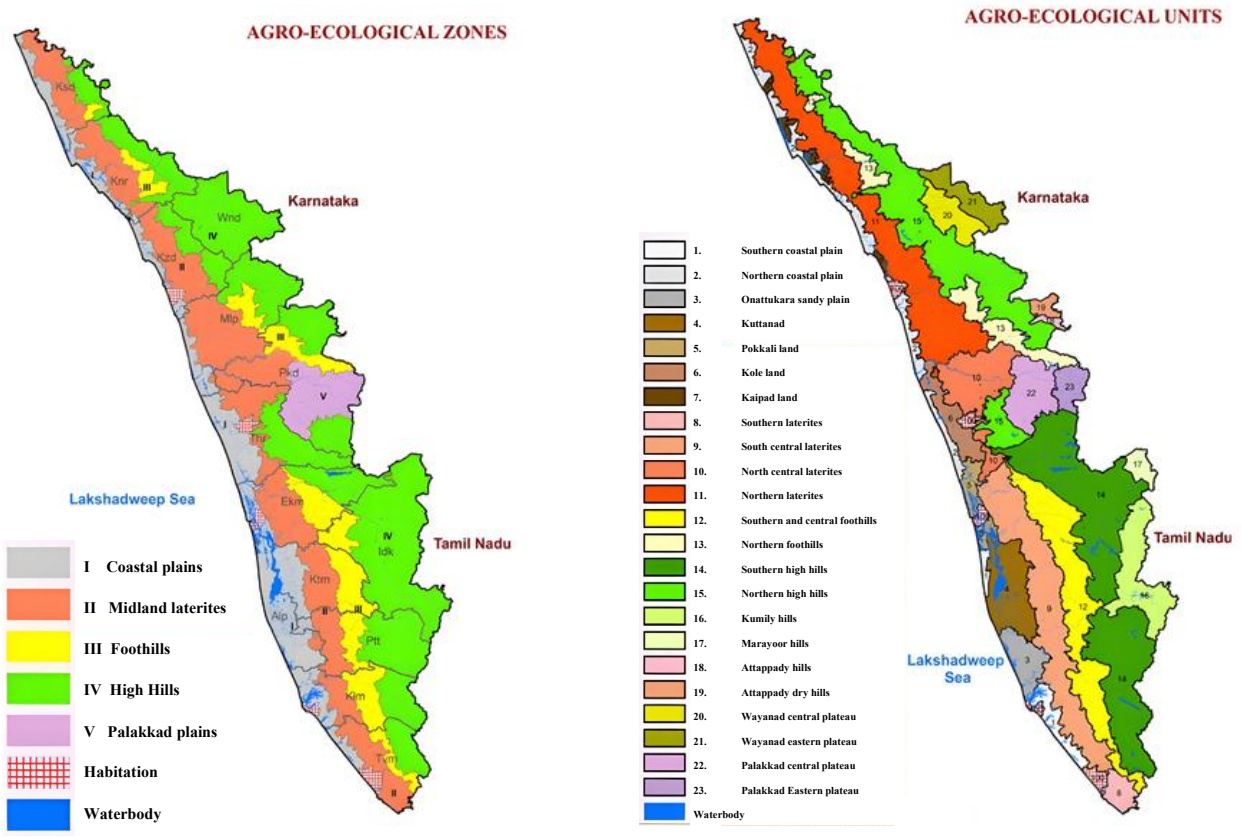

Figure 2: Maps of Kerala showing different agro-ecological zones and agro-ecological units throughout Kerala. (Source: Keala Soil Health Information System)

Due to the geography, agro-climatic conditions and water resources, Kerala has an excellent agrarian economy. 44 rivers flowing through Kerala and the extensive backwater system help shape the state's agriculture. Agriculture has been a cornerstone for the livelihood of people and the state's economy, contributing 50% of the state's income (KSHIS, 2025). Prennial and plantation crops are cultivated more commonly in Kerala and produce the majority of pepper and cardamom for the country.

2.3 Agrarian History of Kerala.

Archaeological evidence suggests the origin of agriculture in the southern part of India can be traced to 3000 BCE, during the south neolithic period (Krishna & Morrison, 2009). Rice was a staple food and a major crop for the population in ancient Kerala (Nagasuhasini & Umajyothi, 2023). In the ancient Tamil Sangam Literature, a long history of paddy cultivation in Kerala is mentioned, with ¬ 600 Indigenous varieties (Kumar & Kunhamu, 2021). In ancient times, land was categorised into sub-segments such as hilly areas (Kurinji), parched areas (Palai), pastoral

tracts (Mullai), wetland (Marotam) and littoral land (Neital), each having unique geographic features (Thomas 2005). This knowledge about their land helped in the flourishing of agriculture in Kerala. Spices like pepper, cardamom and ginger are native to the region and have contributed to trade even before the colonial period (Nagasuhasini & Umajyothi, 2023). The spice trade existed in this region before the Middle Ages, where Muziris (an ancient harbour on the Malabar coast) served as a trade link between South India and Persia, North Africa, China, the Middle East and the Mediterranean region (Edward 1871). Pliny the Elder (Gaius Plinius Secundus) hailed this region as "the first emporium of India" in Natural History, with black pepper being the most well-known commodity exported (Srinath 2016). The value of spices, especially black pepper (Black Gold), sometimes exceeds that of gold and made this region the 'Spice Garden of India' (Lemieux 2012).

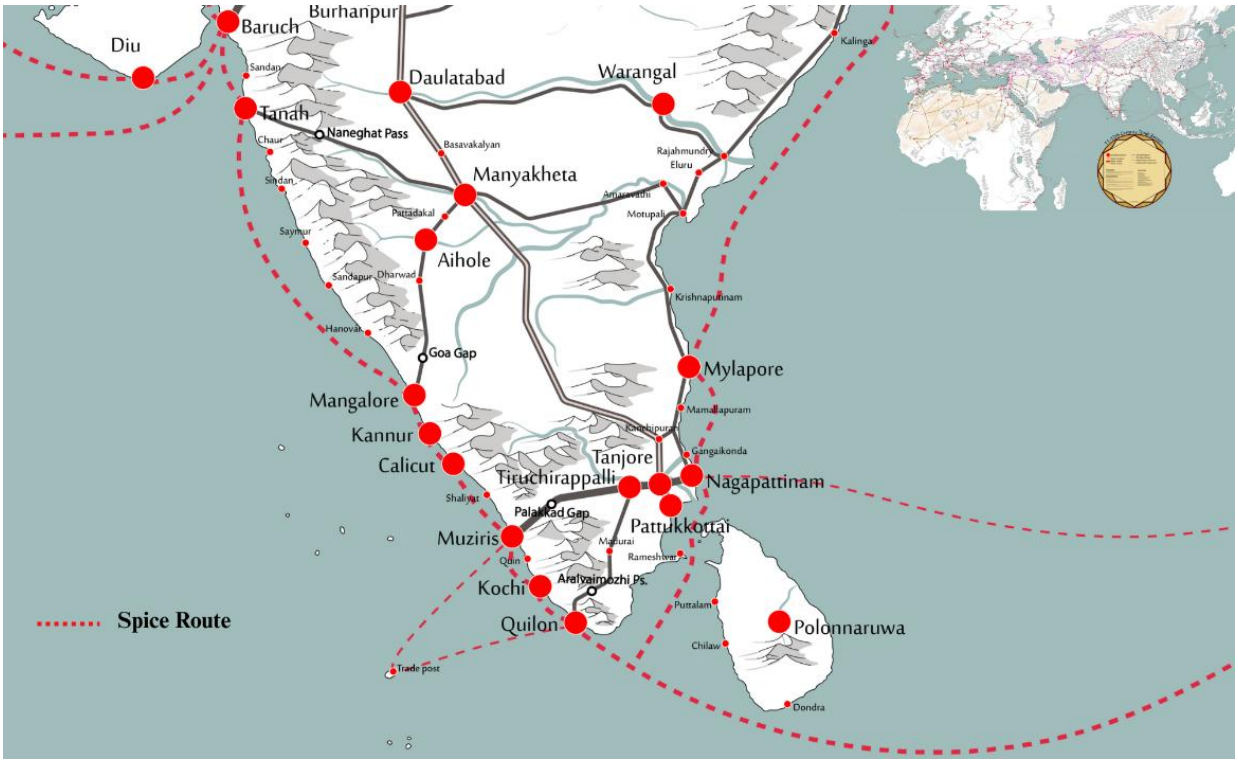

Figure 3: Enlarged portion of a trade route map of the 11th-12th century created by Martin Jan Mansson (2018), showing the important trade centres in Kerala (Mansson 2018)

Traditional farming in Kerala depends on agricultural practices adapted to monsoon cycles, connecting them with rituals and cultural beliefs. Uchaaral velakal is such an example, which is still followed by some regions in Northern Kerala. The cultivation land is considered the Mother

Earth (God), she needs rest after harvest, and the soil should not be manipulated till the coming monsoon (Jayashree et al 2005). The Mavilan tribe, a tribal community in north Kerala, practised shifting cultivation (Kumeri) involving the burning of debris after the harvest and sowing a variety of crops (paddy, maize, pulses and vegetables) (Suresh 2010). Traditional irrigation systems were used extensively throughout Kerala. The Kuruma tribe in Wayanad used unique cylindrical wells (Panam Keni) made of palm stems (Chaitanya 2018), and in the Travancore region, dams were constructed before 1800 for irrigation (Prakash 1987).

The agriculture of Kerala has undergone a drastic change due to the introduction of new crops by the Portuguese and the British, starting from the 16th century (Nagasuhasini & Umajyothi, 2023). Crops like cashew, papaya, tapioca, tomato and pineapple were introduced by the Portuguese and tea, rubber, indigo, cotton and coffee were later introduced by the British. An agrarian shift occurred during the colonial era, with more focus on cultivating crops that had high demand in the European market. The British controlled the supply of commodities and established monopolies (Prakash 2018). Agricultural practices were also changed during this period with the introduction of modern farming methods and machines. Electric pumps and oil pumps were started to be used by farmers in the early 1900s (Wikipedia 2025). Colonial powers compete for the market and spice trade routes, leading to conflicts between the English, Dutch and Portuguese. During this period, rubber emerged as a major crop in Kerala. The policies by the colonial powers also impacted the agrarian practices in Kerala. The introduction of complete ownership rights to the landlord by the British destroyed the traditional land tenure system (Prakash 1984). This new system affects the rights of tenants and the exploitation of labourers by additional rents, illegal dues and the threat of eviction (Prakash 2018). These changes in the system lead to economic vulnerabilities and food shortages throughout the region.

The Green Revolution, the third agricultural revolution in India, began in the 1960s with the introduction of new technologies to boost food crop production (Kumar & Kunhamu 2021). This initiative, which was a huge success in the country, has less impact in Kerala compared to other regions. This can be due to the state's climatic and geographical conditions and land ownership patterns (small and fragmented holdings) (Valliyangal & Kasim 2025). Also, the shift of the agricultural sector towards the production of commercial crops like coconut, rubber and spices impact on its success (Karunakaran 2015). In addition to this, the rice production in Kerala started

to decrease during this period (Johnson 2018). Several studies suggest that the technologies adopted by the state are minimal compared to other states, and farmers face challenges such as a lack of knowledge about the technologies and high input costs (Jeromi 2007). This initiative also affects the socio-economic conditions in Kerala, the increased use of chemical fertilizers and pesticides has raised concerns about water pollution, soil fertility and long-term health problems (Joseph 2021). Farmers were also worried that this would create a gap between small and large-scale farmers in the unequal distribution of inputs and resources (Sebby 2010). The shift from the production of cash crops to food crops led the state to depend on the neighbouring states for essential food crops like rice to tackle the food security issue in the state.

In the late 20th century, the cropping patterns constantly shifted in Kerala with a decrease in the production of traditional crops like rice and tapioca (Kumar and Kunhamu, 2021). Commercial crops like rubber, coffee, tea, arecanut and banana started to dominate the state's agricultural landscape (Karunakaran 2015). The increase in wage rates and the high profitability of commercial crops influenced the shift (George 2020). At present, due to climate change and market demands, new cropping patterns have arisen with the cultivation of exotic fruits like avocado, rambutan, dragon fruit, passion fruit and mangosteen (IIM 2024). Use of modern technologies and conventional farming practices increased in Kerala, but to mitigate the negative impacts, several farmers adopted organic farming and sustainable farming methods. The Kerala Organic Farming Policy also aims to increase organic farming in the state. Currently, the major crops produced in Kerala include rubber, coconut, rice, banana, arecanut, pepper, cardamom, ginger, nutmeg, clove and turmeric.

The agrarian sector of Kerala faces several challenges such as low productivity, high input costs, high wages, labor shortages, climate change, land degradation, and market fluctuations (Jeromi 2007). The floods of 2018 in Kerala had drastically impacted the agricultural sector, especially regions like Kuttanad, with the highest rice production (KSPB, 2025). The conversion of agricultural land for housing development and urbanization also poses a challenge.

The below table only shows the widely cultivated food crops in each district, and these crops can be grown in any region of Kerala. A lot of small-scale farmers and home growers have different varieties of food crops grown on their farms and home gardens throughout Kerala.

Table 2: Various crops produced in each district of Kerala. (AgriFarming 2015)

No	Districts	Major Crops Cultivated
1	Thiruvanathapuram	Banana, jackfruit, mango, papaya, pineapple, amaranthus, cucumber, snake gourd, bitter gourd, okra, pepper, ginger, nutmeg, clove, coconut, cashew. arecanut, tea,…
2	Kollam	Okra, amaranthus, cowpea, snake gourd, mango, jackfruit, cashew, pepper,…
3	Pathanamthitta	Paddy, tapioca, coconut, banana, pepper, ginger, cashew, pineapple, cocoa, sugarcane, pulses,…
4	Alappuzha	Paddy, coconut, banana, mushrooms, vegetables,…
5	Kottayam	Banana, jackfruit, mango, pineapple, drumstick, amaranthus, cucurbits, okra, aubergine, chillies. Pepper, ginger, cardamom, nutmeg, turmeric, coconut, cocoa, tea,…
6	Idukki	Tea, coffee, cardamom, pepper, coconut, bananas, tapioca, mushrooms, vanilla, vegetables,…
7	Ernakulam	Paddy, finger millet. Maize, sorghum, foxtail millet, wheat, red gram, sugarcane, ginger, turmeric, cardamom, arecanut, cloves, nutmeg, garlic, mango, banana, pineapple, cahew, sweet potato, sesamum, coconut, drumstick, green chillies, potato, groundnut, papaya, tea, coffee, cocoa, cucumber, pumpkin, tomato, okra, cabbage, aubergine, bitter gourd…
8	Thrissur	Paddy, tapioca, coconut, arecanut, Drumstick, Amaranthus, Bitter gourd, Snake gourd, okra, aubergine, Chillies, Little gourd, Ash gourd, Pumpkin, Cucumber, Mango, banana, Cashewnut, Papaya, Pineapple, Pepper, Nutmeg, Ginger, Turmeric,..
9	Palakkad	Paddy, coconut, tapioca, maize, ragi, Drumstick, Bitter gourd, Okra, Green chilies, Amaranthus, Snake gourd, Brinjal, Ash gourd, Little gourd, Pumpkin, Cucumber, Banana, Mango, Plantain, Jack, Papaya, Pineapple, Cardamom, Arecanut, Pepper, Ginger, Turmeric, Tamarind, Vanilla, Clove, Nutmeg, Cinnamon
10	Malappuram	Paddy, Coconut, Tapioca, Arecanut, Cashew, Banana, Pulses, Ginger, Pepper, Sesamum, Lemongrass, Cucumber, Pumpkin, Ash gourd, Bitter gourd, Okra,...
11	Kozhikode	Drumstick, Amaranthus, Bitter Gourd, Snack Gourd, Okra, aubergine, coconut, Green Chillies, Little Gourd (Kova), Ash Gourd (Kumbalam), Pumpkin, Cucumber, arecanut, cocoa, tarmarind, Jackfruit, Mango, Banana, Plantain, Pineapple, Papaya, Cashew, Pepper, Ginger, Turmeric, Cardamom, Tamarind, Vanilla, Cloves, Cinnamon, Nutmeg,...
12	Wayanad	Coffee, pepper, tea, banana, paddy, cardamom, ginger, vanilla, vegetables,...
13	Kannur	Paddy, coconut, cashew, tapioca, arecanut, pepper,…
14	Kasargod	Cashew, ginger, pepper, cocoa, arecanut, paddy, coconut, tapioca, cowpea, turmeric, nutmeg, cloves, vegetables,…

4.4 Food Culture of Kerala.

In Kerala, food is everything that unites the people. It has an identity that reflects the culture, norms, and values of the region. Kerala cuisine is distinct from South Indian cuisine, which primarily focuses on non-vegetarian dishes. Rice and fish are major staples, supported by the state's rice production and extensive coastal areas. The cuisine in Kerala is known for its rich flavors and aromas, with coconut and spices forming the backbone of its culinary heritage (Osella & Osella, 2008). Coconut is more than just an ingredient in Kerala's cooking; it is utilized in various forms. Rice, particularly indigenous red rice (Chamba Pachari), serves as the main component of a meal and a primary source of carbohydrates. The use of spices such as black pepper, ginger, turmeric, cloves, cinnamon, and cardamom infuses a unique essence into the cooking (Kerala Tourism 2025). A hallmark of Kerala cuisine is its wide variety of vegetarian and non-vegetarian options, including seafood. Each household in Kerala has its own unique cooking techniques and ways of preparing dishes (Nashi 2025). Various methods, such as boiling, steaming, frying, and baking, are employed alongside traditional cookware like clay pots.

Food is central to every occasion, whether it be a celebration, festival, marriage, or any event; it is the major attraction. Furthermore, food is secular, harmonizing all communities. Weddings in Kerala feature a feast that brings together various communities to enjoy the meal. Hindu weddings offer traditional vegetarian cuisine called sadhya, featuring a wide variety of dishes that reflect Kerala's vegetarian culinary heritage (Experience Kerala 2020). Conversely, Muslim weddings showcase rich flavors in non-vegetarian meals, like biryani (Experience Kerala, 2019). Christian weddings present a blend of local and western cuisines, boasting a wide variety of vegetarian and non-vegetarian options (Sprague 2001). These unique culinary traditions, associated with different religions, strengthen the food culture and culinary heritage of Kerala.

Figure 4: Chemba Pachari (Red rice), the traditional rice variety of Kerala. (Image: Biobasicsin 2023).

Food plays a significant role in various religious ceremonies, particularly in Hindu temples, where it is regarded as sacred. In the temple, food is an offering (Prasadam) to the deity and consists of sweet dishes like payasam (creamy pudding) and unniyappam (sweet fritters) (Poojn 2025). Temples in Kerala also practice Annadhanam (offering of food), where food is provided to the community. It is believed that feeding others is a higher offering to God. During the Ramadan season, mosques prepare a special porridge that is distributed to people to break the daily fast (Jamooji 2024). Food is deeply intertwined with the identities, social connections, and hospitality of the people in Kerala.

Food is the focal point of every festival in Kerala. Onam (the harvest festival) is the state's official celebration, and Vishu (Kerala New Year) features a grand feast of vegetarian food served on banana leaves (Sadhya). Several vegetarian dishes accompany rice, with some meals offering more than 70 dishes (Valla Sadhya). Among the dishes are Avial, Thoran, Olan, Erissery, Kaalan, Pachadi, Kichadi, Parippu Curry, Sambar, Rasam, Pulissery, Pappadam, banana chips, along with various pickles and payasam varieties (Prakash 2024). In Kerala, rice is the core of a meal, typically served with fish curry or vegetable dishes. A typical Kerala breakfast includes options like idlis, dosas, appams, puttu, and idiyappam, paired with different curries.

Figure 5: A traditional Kerala Sadhya, created in Canva. (Source: Thinkstock Photos)

Food holds immense power in Kerala, fostering communal bonds and social interactions. Renowned for its hospitality, Kerala reflects the practice of offering fresh home-cooked meals to

guests, highlighting the importance of sharing food among people. The state's culinary heritage extends beyond mere dining; it brings communities together and promotes social equality, as everyone in the social structure shares the same meal (Meda 2024). This culinary culture helps shape personal identities and connects individuals to their place and family, aiding in the conservation of regional cultural identities (Osella & Osella, 2008). The food culture of Kerala has evolved over centuries, representing a blend of various cultural influences globally. Diverse food cultures have shaped the culinary landscape of Kerala. The Arabs influenced the flavorful Malabar cuisine found in northern Kerala; later, ingredients such as chili, tomatoes, cashew nuts, and potatoes introduced by the Portuguese became integral to local cooking. The presence of the Dutch and British also impacted cooking practices in certain regions, such as Fort Kochi (Desk 2024). The mildly spiced fish moilee reflects the influence of Portuguese and Dutch ingredients. In contrast, Travancore cuisine in southern Kerala is celebrated for its subtly spiced coconut milk-based curries and the addition of tomatoes for a tangy flavor.

The culinary heritage of Kerala is transforming due to globalization, urbanisation, and lifestyle changes (Chandran 2016). There is a major shift in food habits, with people increasingly relying on restaurants and takeaway options for meals. This trend is fueled by the emergence of fast food, alongside the rise of processed and packaged foods. The younger generation tends to adopt more standardized diets, driven by their busy lifestyles and the influence of global food culture. Fusion cuisine is another notable trend, where Kerala cuisine is blended with cuisines from around the world, resulting in a unique Kerala twist on international dishes. Consumption of rice has drastically declined, whereas meat consumption has increased (Retheesh et al 2021). Many traditional dishes and cooking practices have begun to diminish, with some dishes now only served during festivals or special celebrations. These changes directly impact public health and contribute to the erosion of traditional culinary knowledge (Wilson 2010). Food is more than a commodity in Kerala; it connects people to the culture and heritage of the region. However, the shift in food culture presents issues that can be addressed to preserve the state's culinary heritage.

4.5 Seascapes and Seascapes in Kerala.

The seascapes are marine landscapes which were not discussed much as terrestrial landscapes. These marine environments also had a significant role in the global food system. The marine landscapes and their sustainability are overlooked areas which need immediate attention. The

seascapes are marine environments that are shaped by human interactions, either for food production or livelihoods. Human activities like fishing, foraging, gathering and aquaculture are associated with these marine environments (Roe 2018).

Kerala has a coastline of 560km and consists of 222 fishing villages; thus, seascapes in the state are vibrant, connecting thousands of people and their cultural heritage. Vizhinjam, Poonthura and Neendakara as some of such places that hold immense interactions with the marine ecosystem. Fishing and foraging from the sea are the livelihood of these people, and they consider the sea as their "Mother". These landscapes in Kerala tell a different story of people interacting with the sea, living their entire life on the shores, creating their heritage. The food culture of these people is also different, where fish is the cornerstone of their meals, following a different food tradition (Kurein 1980).

Figure 6: A fishing Village in Vizhinjam, Kerala (Image: Amrith, 2023).

3. AIM, OBJECTIVES & RESEARCH QUESTIONS.

3.1 Aim of the Study:

This study aims to explore the evolution of local foodscapes of Kerala across the temporal dimensions, by examining past and present foodscapes and discussing future foodscapes to understand the changes in the food environments where food is produced and sold, in relation to the food culture of Kerala.

3.2 Objectives:

I. To analyze the foodscapes of Kerala in the past.
II. To investigate the current foodscapes in Kerala.
III. To discuss the future of foodscapes in Kerala.
IV. To find out the impact of climate change, biodiversity loss and public health on the foodscapes of Kerala.

3.3 Research Questions:

1. How had the foodscapes of Kerala evolved through time?
2. How do the changes in the foodscape of Kerala impact food culture, biodiversity and health?
3. How are the foodscapes of Kerala imagined in the future?

4. METHODOLOGY

This study explores the changes that have occurred in the foodscapes of Kerala using a temporal method. A mixed-method approach was employed to analyze the past, present, and future of these foodscapes, including both quantitative and qualitative methods. This methodology enables me to gather extensive information to understand the transformation of foodscapes over time. The methods include literature reviews, research on historical records, on-site observational studies, informal conversations, and an online survey. The collected data were analyzed to understand the changes in foodscapes and discuss the future.

4.1 Study area

The case study was conducted in Kerala, the southernmost state of India. The topography of the state is diverse, with wetlands, coastland, plains, hills and mountains. Rice is the staple food of Kerala, along with coconut, tapioca, banana, jackfruit and fish. The state is distinct from the rest of India not only geographically, agriculturally and ecologically but also economically, socially and culturally (Fox et al, 2017). The changes that happened in the foodscapes of the state of Kerala are examined through the temporal dimensions in finding the transformations that occurred in the food environments where food is produced and sold.

4.2 Examining Foodscapes through Temporal Dimensions

i. The Foodscapes of the Past.

To understand past foodscapes, in-depth research on historical data was conducted, including searches of online archives, government websites, articles, maps, and old photographs. Informal conversations with elderly individuals and others about their personal experiences help reveal where food was produced and sold during their youth. Additionally, a literature review was performed to analyze and synthesize the collected data.

ii. Present Foodscapes

An on-site observational study was conducted to investigate current foodscapes. I visited various foodscapes where food is produced and sold, including cultivation sites, grocery stores, local markets, and supermarkets. These food environments were photographed to analyze the availability of food, consumer behaviour, and market trends today. A literature review was also carried out on articles and research papers discussing the current food system to study present

foodscapes, alongside other collected data. My personal experiences of the foodscapes I visited, and my knowledge of the subject significantly impacted on my analysis of the current foodscapes.

iii. Future Foodscapes

To envision future foodscapes, a survey was conducted focusing on young adults (18-20 years old) and their visions for the future of food. The survey explores what the food system should look like in the future, with an emphasis on local food and market trends. The survey results were analyzed alongside literature on future food systems and my knowledge to discuss foodscapes in the future.

4.3 Survey

An online survey was conducted to explore the preferences and vision of the young generation regarding future food systems. A Google form was utilized to create and distribute the survey to participants. The target group consists of young adults aged 18 to 35 years residing in Kerala. The online survey was distributed through various social media platforms, such as WhatsApp. Sixty-five participants have completed the survey and shared their vision for the future of foodscapes. The responses from the survey have contributed to predicting the future of foodscapes in Kerala.

4.4 Observational study

An on-field observational study was conducted to examine the present foodscapes of Kerala. I spent more than one month in Kerala conducting this study. I visited the agricultural fields, local markets, supermarkets and talked to people to find out the current condition of the foodscape. I had also visited Kuttanad, the prominent rice cultivation region of Kerala, and documented the changes in the foodscape. I also travelled to fishing harbors, coastal regions and parts of Kerala to find out the changes happening in the state in terms of food systems.

4.5 Lived Experience

As a person born and raised in Kerala, my lifetime experience and knowledge about my home had a significant impact on the study. I personally experienced some changes that happened in the foodscapes of Kerala. Also, as a student of the Food and Landscape programme, it helped me with a deeper understanding of the concept of foodscapes and related topics. When I was living in Kerala, the foodscapes were evolving rapidly, but I could not understand these changes and their

impact on the local food system. The food and landscape programme provided adequate knowledge to analyze these changes and understand the interplay between food and people.

4.6 Analysis and Discussion.

All the data collected were analyzed to find the changes that occurred in the foodscapes of Kerala over time. It includes the changes in local food production, traditional food consumption, dietary patterns, and health. Photographs of past and present foodscapes were visually compared to analyzing the transformations. The survey responses helped to discuss the future of food, keeping the vision of the youth on future foodscapes. These results were used to predict the future of foodscapes and their impact on the food system. The role of technology and AI in strengthening future foodscapes was also discussed. Based on the analysis of data, I proposed a hybrid model which links traditional, local and global food harmoniously in building a new foodscape for the future.

4.7 Tools and Software

Several tools and software were used for the study in compiling the data as well as analyzing it. DALL-E by Openai, Sora and Canva were used to create the images and maps used for the report. Grammarly was used to check the grammar errors in the written text. Google Forms was used to create and distribute online surveys. The POWER (Prediction Of Worldwide Energy Resources) Project by NASA's Earth Science was used to obtain the weather data. The annual average temperature and annual average precipitation data for the last 25 years were collected from NASA POWER. Databases like Google Scholar, PubMed, Scopus and Web of Science were used to access the literature materials needed for the study.

4.8 Ethical considerations

For informal conversations and survey, the participants were ensured consent and anonymity. The purpose of the study was clearly explained to the participants, and their responses were only recorded with their permission. A copy of the survey response was sent out to each participant to verify their response. To protect the privacy of the participants' names or no details about them were ever mentioned in the analysis or the report.

RESULT
&
DISCUSSION

5. THE CASE STUDY.

This study explores the evolution of the foodscapes in Kerala through various temporal dimensions, focusing on the food environments where food is produced and sold. The temporal dimension represents infinite time; therefore, this study will explore changes that occurred within a specific time frame. The transformations in the foodscapes of Kerala from 1956 to 2000 were primarily utilized to examine the past, whereas the period from 2010 to 2025 was analyzed to investigate the present. Most of the data gathered for the study was derived from these timeframes. The future foodscapes discussed in this study will extend over the next 20 years (2045).

The past and present foodscapes of Kerala have been analyzed to discuss future foodscapes. The major staple foods of Kerala, particularly rice, form the cornerstone of the study, alongside fish, coconut, and other crops. Changes in production and market trends can be discussed concerning the food culture of Kerala.

5.1 Evolution of Foodscapes through temporal dimensions

i. The Past.

Kerala had a rich culinary heritage even before the formation of the state in 1956. After the formation of the state, various culinary traditions were combined to form the food culture of Kerala. To study the foodscapes of Kerala in the past, we can examine the foodscapes from the time of state formation to the 21st century. At that time, the Kerala economy is primarily agrarian, with 53.1% of the population engaged in agricultural activities (Directorate of Agriculture 2016). A drastic transformation in foodscapes occurred during this period, particularly during the Green Revolution. The most significant changes include a decrease in paddy production and a rise in commercial crops (Johnson, 2018). The change in land ownership enacted in 1957 by the first state government substantially impacted foodscapes. This included granting ownership rights of agricultural lands to tenants, providing land to the landless, and assigning ownership rights of homestead lands to agrarian workers; these strategies ensured land for every citizen of the state to live (Johnson 2023). During this period, every household was involved in farming in one way or another, striving to grow food products on the land they had, as it was crucial for their survival. This led to homestead farming becoming a vital part of all households to satisfy consumption needs and generate income (Kumar & Nair, 2004).

Homestead farming (*parambu*) became an integral part of Kerala's agricultural foodscape, and these micro-farms became a part of a household with a high degree of crop diversity. Coconut was the most dominant crop among them, as were majority of the state's coconut cultivation happened in the front and backyards of these homesteads. It constitutes 39.4% of the net area of the total state's coconut plantation (Directorate of Agriculture 2016), highlighting the importance of coconut in the lives of the people in Kerala. Different food crops were grown within the homesteads, along with livestock. Cattle and poultry were common in every household, along with pepper, areca nut, cocoa, coffee, mango, jack fruit, cashew, banana, tapioca and vegetables. During that period, every household to an extent was self-sufficient in terms of food, and a micro circular economy existed within their community. The primary objective of homestead farming is to meet the daily needs of a family in terms of food, rather than large-scale production (John, 2014). Regional variations in agriculture were evident in Kerala during this period; the southern part (Travancore) had achieved progress in agriculture during the first half of the 20th century, while the north (Malabar) remained an exporter of food grains and spices (Prakash 2018).

Figure 7: A graphical representation of a homestead farming in a household of Kerala before the 21st century, created using Dalle and Canva.

Traditional agricultural methods were practiced throughout the state, including manual labour and the use of animals (oxen) for ploughing the land. Certain regions in Kerala developed ecological rice cultivation systems. In Kochi, rice cultivation in saline-prone fields was integrated with aquaculture, showcasing a sustainable use of coastal wetlands (Vijayan 2016). A similar system also existed in the northern part of Kerala (Kaipad), where rice cultivation was integrated with aquaculture in the brackish water marshes (Chandramohanan & Mohanan 2011). Intercropping was extensively practiced by farmers, where multiple crops were cultivated in the same field at the same time. Growing bananas, pineapple and pepper within coconut groves is such an example, which increases the income source of farmers and maximizes land usage. During the 1960s, more importance was given to food production, especially paddy, in achieving self-reliance. But in the later part of the 20th century, Kerala's agrarian structure shifted towards cash crops and commercial agriculture (Kumar & Nair, 2004).

In the mid-1970s, the agricultural land used for rice and tapioca cultivation was transformed into growing cash crops like rubber, banana, tea, coffee and cardamom. This trend towards cash crops started to spread throughout the state, and primarily, rubber plantations started to conquer the paddy fields (George & Sharma 2020). Rubber suddenly became the most cultivated crop in the state after coconut (Karthiayani 2014). This shift towards commercial production for higher income generation also impacted on the success of the green revolution within the state. The initiative aims to increase food production, especially grains, didn't have any effect in Kerala. The increase in agricultural labour wages and higher literacy rates fueled this transition (George & Sharma 2020). The introduction of new rice varieties by the green revolution initiative had a rise in productivity during the initial years, but eventually it started to decline along with the loss of traditional rice varieties cultivated in the region (Krishnankutty et al 2021). The area under paddy cultivation decreased from 8,54,374 hectares (1976-77) to 3,22,368 hectares (2001-02) and even declined by 1,71,398 hectares in 2017 (Prasad & Kuruvila, 2024). Coconut production also increased during this time; it went up from 6,29,576 hectares (1971-72) to 9,05,718 hectares (2001-02), with most plantations existing within households. On the other hand, rubber plantation skyrocketed from 1,88,612 hectares (1971-72) to 4,75,039 hectares (2001-02) (Prasad & Kuruvila, 2024). This shift towards commercial production creates a demand for staple foods like rice,

forcing Kerala to depend on neighboring states to meet its needs. Even with the decrease in paddy cultivation, rice continued to be the cornerstone of Kerala's food culture.

During conversations with elderly individuals, they shared their experiences of foodscapes from the past. According to a 70-year-old man, the foodscapes of Kerala changed significantly during his lifetime. He stated that he had planted rubber on his land, which was once paddy, for greater profit, and now he regrets that decision. Once you lose the paddy fields, it is very difficult to revive them, requiring a lot of money that small-scale farmers cannot afford. A 65-year-old woman also mentioned the changes in land use due to the cultivation of commercial crops. The cashews, once a leading cash crop, have now diminished from the landscape. She recalled the cashew trees she had in her homestead, which were cut down for rubber plantation. At that time, cashew was a major ingredient in many dishes, but now it has greatly diminished. She also added that cashews have evolved into a premium food item that common people cannot afford. My parents also spoke of the vast paddy fields surrounding their homes during their childhood and the various activities they engaged in during cultivation and harvesting. They remarked that people were much closer to their food during that period and that they have lost this connection now.

Another elderly man shared his experience from his youth; he described the crops he had grown around the house and how his family ate their meals together. He also pointed out the seasonal foods and traditional meals he enjoyed, including the fish he caught from the nearby pond. He recollected the paddy fields, which were seen everywhere, and the gatherings of the community for planting and harvesting. He loved how lively the village became during these times. He also mentioned that when he buys produce now, he doesn't experience that old feeling; in the past, the curry leaves and fresh produce had a special kind of scent, but it now feels so different. He conveyed a message about not losing the connection with the land and the food. From the perspective of these elderly individuals, foodscapes have changed significantly in ways they never imagined in their youth; as one of them said, food was once a relationship that now feels like a business.

During the late 20th century, the food culture of Kerala also started to change. The migration of people within India and internationally paved the way for new culinary practices. The movement of people within the state led to the exchange of ingredients and culinary traditions between different regions of Kerala. The migration of people, mainly to Gulf countries, had a profound

effect on the Kerala cuisine, especially in the Malabar cuisine (Shajitha 2022). As the people returned to Kerala, they brought new cooking techniques and food items, which helped in the evolution of a hybrid food culture. During this period, the food markets of Kerala were localized. Each locality or panchayat has its own market to sell food products grown in that region. Small shops were places where people bought urgent groceries for their daily needs. These markets served as a communal space for the people in that region, and most of the products sold in the markets originated within the region. Only some rare products were brought from other places or states. Fresh fish were also sold in these markets, which were caught from the state's coastal regions.

During the time of state formation in 1956, the fishing industry mainly followed traditional artisanal fishing methods using rafts made of logs and canoes (Platteau 2008). Fishermen catch fish primarily for local consumption. A significant change began in the fishing sector in 1953 through the Indo-Norwegian project (1952-72) with the introduction of mechanization in the fishing industry. The initiative aims to improve the infrastructure and techniques used by fishermen to promote export-oriented fisheries due to increasing international demand (Storli 2022). Intensive fishing started during this period with mechanized boats and trawl nets. This shift towards a modernized fishing resulted in the loss of traditional fishing practices, where traditional fishermen were compelled to work on mechanized trawlers due to increased competition and profit from the modern methods (Platteau 2008). The fish markets during this time were also traditional, informal places located near coastal areas or fishing villages. The women from fishing communities played a central role in selling and distributing fresh fish. These markets served as vibrant community spaces and a place for economic exchange (Zimberoff 2016).

The land use changes began during the later part of the 20th century, with traditional paddy being replaced by modern cultivators (Banana, coffee, areca nut) or for non-agricultural purposes (Kumar 2005). The transformation begins with a banana plantation taking over paddy cultivation, where bananas were planted in the raised bunds, which reduces groundwater recharge. This also made the soil compact and dry, paving the way for coffee and areca nut. In turn, the soil becomes so compacted, thus making it suitable for non-agrarian purposes. The pesticide usage and soil degradation further induced land use change, reducing the productivity of crops. The conversion of these plots into a paddy field requires intensive labour and costs about 20,000 rupees per acre.

This economic feasibility forced farmers to continue with bananas, coffee or areca nuts in these fields. The increasing demand for residential plots and urbanisation in Kerala triggered the final stage of land use change from agricultural to non-agricultural purposes. The demand for housing increased the market value of these lands than the original paddy fields and the profit generated by paddy cultivation (Jose & Padmanabhan, 2015).

Figure 8: The side-by-side visual comparison of land use changes in rural homestead and farmland. On the left side is an image before land use changes, the home is surrounded by a lot of crops like mango, coconut and other food crops along with a vegetable garden. Behind the house, a large paddy field is cultivated with a mix of modern and traditional rice varieties. On the right is an image showing the changes that happened in the same homestead and farm. The crops behind the house and most of the paddy fields have been replaced by areca nuts and bananas. Some areas were used for ginger and tapioca cultivation. The paddy cultivation has reduced with modern varieties. Both images depict the changes that happened in the landscape after the change in land use patterns. (Image created in Sora, prompt: See appendix)

ii. The Present

The foodscapes in Kerala had a tremendous transformation at the start of the 21st century. The service sector has become the primary contributor to the Kerala economy, which was once agrarian. Only 27% of the population is engaged in agriculture, livestock and fisheries. Even though the agriculture and allied sectors contribute 12% (2023-24) of the state's GSDP (Gross State Domestic Product). The export of spices and fish played a crucial role in contributing to the state's revenue (KSPB 2025). The land area of Kerala also evolved during this time. The rise in the population and the need for more housing and facilities converted the agricultural land into built-up areas.

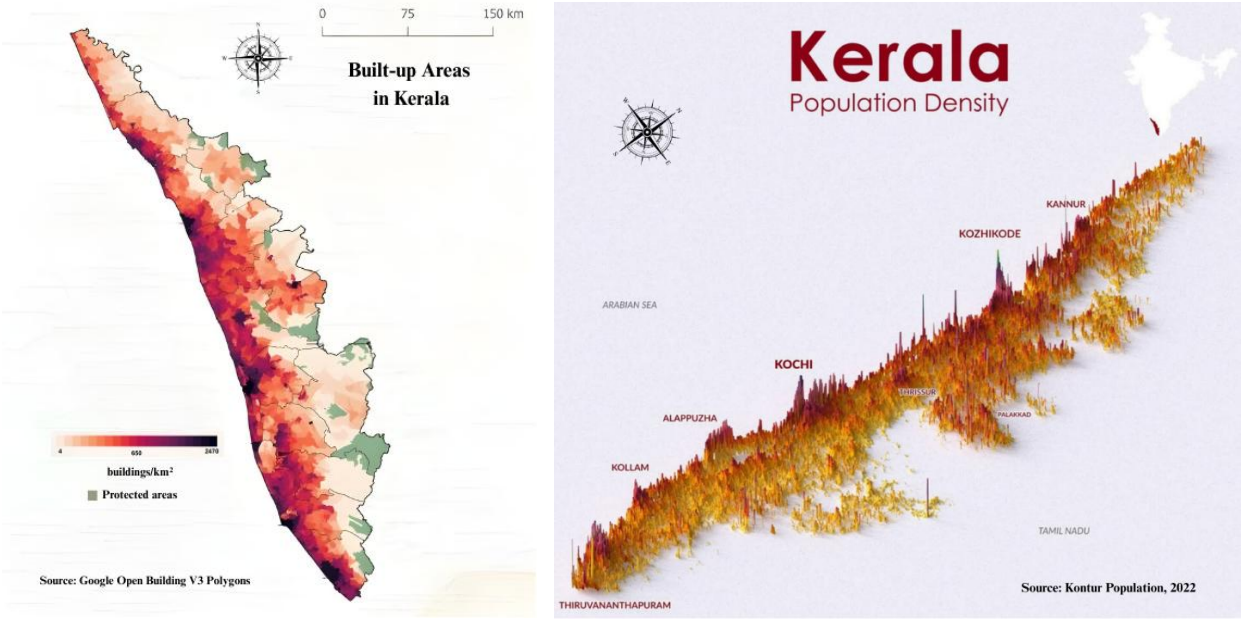

Figure 9: The map shows the distribution of built-up areas across Kerala. Dark shades represent regions with higher building density and light shades with lower density. Edited in Canva. (Source: Google Open Building V3 Polygons). Figure 10: The map of Kerala showing the population density of the state. The elevation depicts the population density in each area. Source: Kontur Population, 2022 (Vardhan, 2022)

The urbanisation in Kerala was entirely different from the rest of India; rather than a few metropolitan cities, small, well-distributed urban centres were established throughout the state. The high living standards achieved by the state through welfare policies lead to the development of the state, which is completely different from the rest of India. The state displayed a unique rural-urban continuum, where people prefer to live in single-family housing that requires more land for

housing. This triggered housing development throughout the state, with more developments near the coastal plains. The paddy fields and other agricultural regions, which are more prominent in the lowlands and midlands, were gradually transformed into settlements and urban centres. Some of these urban centres developed rapidly, becoming cities with larger populations. The population pressure and fragmentation of land holdings have impacted the land holdings in the state from 0.49 ha (1976-77) to 0.23 ha (2005-06) (Devi & Kumar, 2011).

Even though the decline in paddy cultivation doesn't change dietary preferences, rice remains Kerala's staple food. The area under paddy cultivation in 2017 reduced to 1,71,398 ha from 1 million hectares during the state formation. More than 80% of rice consumed within the state was sourced from neighboring states (Kaumudi 2022). Only some regions in Kerala, like Palakkad and Kuttanad, were the major sites for rice cultivation in Kerala. The state government launched initiatives to increase paddy cultivation by restoring paddy fields and aims for self-sufficiency (Kumar et al, 2021). In 2023, because of these initiatives, the area under rice cultivation achieved a gradual rise to 1,91,712 ha, with a production of 5,95,860 tons and a productivity of 3108 kg/ha (Prasad & Kuruvila, 2024).

Coconut cultivation also declined due to changes in land use, particularly in homesteads. Homestead farming gradually began to disappear in urban areas and cities. With increasing population density, individuals' land holdings decreased, which reduced the space available for cultivating crops like coconuts. Urbanisation and shifting housing patterns left residents living in apartments with no option to cultivate crops because of limited space. Consequently, homestead farming completely vanished in urbanised areas and cities. Coconut cultivation decreased from 9,05,718 ha in 2002 to 7,60,354 ha in 2023 (Prasad & Kuruvila, 2024). In contrast, rubber plantations dominate, covering 21.6% of the state's gross-cropped area (State Planning Board 2017). As of 2023, 5,51,030 ha are covered by rubber plantations, producing 5,33,500 tons of rubber annually (Prasad & Kuruvila, 2024).

Kerala contributes significantly to India's spice exports (20%) and is a leading producer of cardamom, black pepper, ginger, turmeric, cinnamon, cloves, and nutmeg (Grant Thronton 2025). However, the state faces a severe shortage of vegetable production. It requires 5,500 tons of vegetables per day, while domestic production is approximately 4000 tons. To fulfil the requirements, the state relies on neighboring states for bulk vegetable supplies (KSPB 2025). This

often affects the local market, where imported vegetables are low-priced and compete with local products. Tapioca was a staple food in Kerala, alongside rice, but dietary changes have impacted on its consumption. The decline in production and unavailability of the product in the market, coupled with a price hike, has turned tapioca into a premium food, which once served as a staple for low-income individuals. Kerala remains a major producer of jackfruit and contributes to national production. However, the price of jackfruit, especially in cities, has skyrocketed compared to rural areas due to product unavailability. These crops, while not dominant like rice, still play a major role in the diets of the people in Kerala (Dept. Economics & Statistics 2023).

Kerala has a coastline of 590 km, with 222 fishing villages where fishing is the primary occupation and livelihood of 0.8 million people (Dept. Fisheries 2025). A wide variety of fish were caught based on different seasons, including the common oil sardine and mackerel. Marine fishing has had a declining trend over the past several years, but the state contributed 13% of the national marine fish production (Dept. Fisheries 2025). Due to the presence of rivers, freshwater lakes, brackish water areas and backwaters, inland fishing is well established in the state. Inland fishing has seen a significant increase in recent years, rising from 0.2 million tons in 2020 to 0.25 million tons in 2024. Aquaculture practiced in the state also had a substantial growth in recent years. Both inland fishing and aquaculture strengthen the state's fishing sector and help in meeting the consumption needs (Dept. Fisheries 2025).

The dietary pattern in Kerala also evolved; rice consumption has declined over the past decade. In urban areas, it fell from 6.74 kg per month (2011-12) to 5.25 kg (2022-23), while in rural areas, it decreased from 7.39 kg to 5.82 kg during the same time (The New Indian Express 2025). The consumption of vegetables and fruits was insufficient, with a higher percentage of the population consuming less than the required daily servings (Abraham & Mohandas 2024). Fish consumption remained prominent, with over 50% of the population consuming fish daily (Salim et al 2024). There is an increase in the consumption of fast foods and processed foods among the urban population and the younger generation. The lifestyle change, along with the exposure to global food trends, drives people to adopt new food habits.

The local markets in Kerala still offer vibrant shopping experiences. These open markets sell fresh produce (fruits and vegetables), fish, meat, flowers, and spices. Most of the products are sourced locally, but recently, vegetables, fruits, and even flowers from neighboring states have begun to

be sold in these markets. Middlemen bring these products into the local markets and sell them to local vendors. These centres are also places where locals gather not only to purchase items but also to socialize. Primarily, these local markets serve as a direct bridge connecting producers and consumers, supporting local businesses. Bargaining is common in these markets, where the price of products can vary. On the other hand, supermarkets and hypermarkets are increasingly present in Kerala. Their presence is more common in cities and urban centres, but recently, there has been an emerging trend of supermarket culture in towns and peri-urban areas. The growth of these modern markets reflects changing consumer behaviour, along with increased convenience and accessibility. These outlets serve as one-stop shops for complete shopping experiences, offering a wide range of products. The expansion of these supermarkets has impacted on local markets and vendors, posing competition and delivering lower prices. Still, a percentage of the population relies on small stores and local markets for their daily essentials. Online food shopping has also gained popularity in Kerala, particularly post-COVID-19. The rise in the use of digital currency and the convenience of shopping from home drive this trend. The state government has even initiated a platform (e-NAM) to facilitate online trading of agricultural commodities. Currently, online food shopping is limited to cities and some urban centres, with only a small percentage of the population utilising this service for food purchases (Mohan 2025).

The prevalence of homestead farms has decreased due to urbanisation and a lack of space, especially in cities and urban centres. Marginal and small farmers living in rural and peri-urban areas continue to practice homestead farming. The lack of space and time is the main reason for the reduction of homestead farms. To counter this decline, a new farming method has been adopted by individuals who lack space to grow crops. People living in urban centres have started growing crops like vegetables on the rooftops of their homes or in spare areas within their households (Devi 2017).

Figure 11: Image showing a rooftop vegetable garden in an urban area in Kerala. (Created in Sora, Prompt: see appendix)

While visiting the paddy fields in Kuttanad, I observed changes in the land. The soil has become more compacted and needs to be loosened. The paddy fields are also unevenly scattered with houses and other cultivations. Kuttanad is a region that lies below sea level and can retain water year-round, but its water-retaining capacity has drastically reduced (Sonu et al, 2024), resulting in drier soil. Most of the highlands in Kerala are nearly covered by rubber plantations (Vijayan et al 2024), with tea, cardamom, and coffee cultivated only in some areas (George & Chattopadhyay). Even the fields near my home are mostly surrounded by rubber and banana plants. These changes in the land also affect biodiversity. When I was a child, there were many frogs and fish near my home, but now I rarely see any of them. Fish used to thrive in small canals and bunds in the fields, but now they seem to have completely disappeared. During a visit to a leading hypermarket in my city, I was shocked to see certain food products being sold there. One example is the Australian mutton available in the supermarket. The state has adequate lamb rearing and meat production, and also depends on neighbouring states to fulfil demand (KSPB 2022); however, the introduction of Australian mutton may reduce the demand for the locally produced meat. I purchased this Australian mutton for 750 Indian rupees per kg during my visit to a supermarket, which is cheaper than the mutton I buy from the local butcher, priced at 950 Indian rupees per kg. Thus, the price of imported mutton is significantly lower than the actual market price of local mutton. This kind of marketing strategy by supermarkets has negatively impacted local foodscapes and farmers' livelihoods. Another example was the fish sold there; you can find fish available out of season. Most of that fish was not caught off the shores of Kerala, which again adversely affected the local food system and the lives of fishermen (The Hindu 2025). One of the hypermarkets in my hometown sells pre-cut vegetables for popular dishes like Avial and Sambar. For making a dish, you don’t even want to know what ingredients to use; just buy this product and follow the instructions. It is a very convenient option in our busy lifestyles, but it may eventually lead to the erosion of culinary knowledge and heritage. On one side, products from local farmers struggle to enter the market, while on the other, items from other regions flood the markets, affecting both foodscapes.

I had personally experienced the changes that occurred in the foodscapes of Kerala. According to my parents, the home I grew up in was surrounded by vast paddy fields, but I never saw a single

patch of paddy cultivation in that region. The elimination of paddy fields for other plantations happened so quickly that it turned from a reality for one generation into a story for the next. I witnessed the loss of my own homestead, which once had coffee, mango trees, jackfruit trees, pepper plantations, coconut groves, and many other food crops. These crops gradually disappeared from the homestead for various reasons, such as housing development and other land use changes. Now, my homestead has only a few coconut trees and bananas, along with some food crops. I have also experienced the rise of supermarkets; it started in the cities and spread across urban centres. The convenience shopping provided by supermarkets influenced my preference for choosing modern marketplaces for a one-stop shopping experience. These supermarkets have now evolved into hypermarkets, large complexes of food markets where you can find almost every food item in the world. I also enjoyed this experience because, at that time, I was unaware of its effects on the food system. In my view, these changes in the foodscapes were considered by most people as the development of a region, and in a way, it's a progression. The way it works is the only problem, and there needs to be a perfect balance between the old and new food systems.

iii. The Future

The future of foodscapes in Kerala can be anything, there are so many ways we can predict the future foodscapes of Kerala. But how the food system will look in the future is entirely dependent on the people; the preferences, attitudes and behaviour of the people would define the future of food in the state. Throughout the history of Kerala, foodscapes have evolved and been molded according to the changes in the food system. To discuss more about the future foodscapes, an online survey is carried out to find out the attitudes and preferences of the people, and their vision for a future food system. The survey primarily focuses on young people (18-35 years old), inquiring about where they would love to buy food in the future. A total of 22 questions were given to 65 participants who are living in Kerala to find their vision of the future. From the 22 questions, some selected survey responses were primarily used here to discuss further the future foodscapes. All survey questions and their responses can be found in the Appendix Section of this report.

The survey questions can directly explore the future of the food system, emphasizing where and how the markets work in the future. Currently, 78.8% of the respondents access most of their food from local markets, where 65.2 % buy from supermarkets. Only 10.6% of respondents are using homegrown produce. 89.9% of respondents would consider it important for them to buy the food

directly from farmers and want to know the origin of their food. 89.1% of respondents also consider it important for them to buy locally produced food. 68.2% of respondents would love to grow their own food at home if they had space and tools. Where 30.3% of respondents would like to grow food if it is easy and not time-consuming. Most of the respondents buy food from supermarkets, and 66.7% of them were unsure that the products are safe and healthy. Quality and freshness were the most important factors that motivated respondents to buy more from local farmers

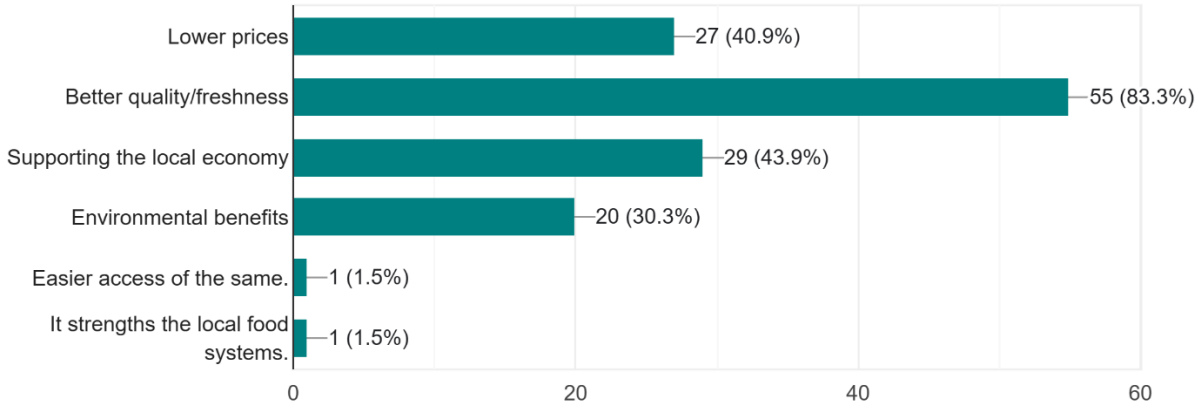

Figure 12: The chart shows the main motivation of the respondents to buy more produce from local farmers.

62 out of 65 respondents would love the idea if supermarkets and local markets worked together to sell both local and imported food. They believe it would be a good balance. 52 of them also love the concept of a hybrid market model that combines big retailers with local farmers' produce. They think it would make local food more accessible. 59.1% of respondents prefer homemade meals, which are a traditional local dish or a family recipe. On the other hand, 37.9% of respondents would love to have a mix of homely meals and fast foods (delivery, takeout, frozen), depending on their time and mood. Several factors influence their choice between homemade and fast food, time and convenience are most crucial among them in defining their preference.

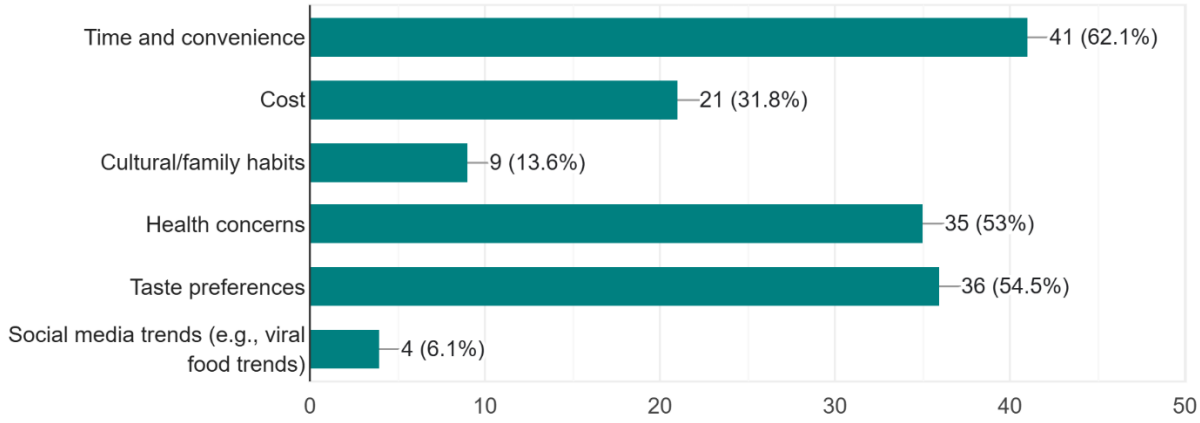

Figure 13: The chart shows the factors which influence the participants' choice between homemade meals and fast food.

All the participants are young people, and 63.6% believe traditional homemade food is losing popularity among young adults, because of busy lifestyles and fast-food marketing. If fast food and homemade traditional food were equally available, half of the participants would prefer a mix of the most options. Most respondents think convenience, time, lifestyle, availability and cost are the major factors driving young people towards fast food. Some of them point out that social media trends influence their behaviour, and the enhanced flavours make them prefer fast food rather than homemade meals. The lack of knowledge and cooking skills is also a major reason for this shift in young adults. There is a gap between youth and local food, where the traditional meals have shrunk into a key feature during celebrations and festive days. According to a participant, the unavailability of ingredients and their cost, which were previously grown at home, trigger this shift.

The future of the food market is something that is going to define future foodscapes, most of the participants would like the idea of a hybrid market which has the essence of both supermarket and the local markets. They love the shopping experience provided by the supermarkets and want to integrate local markets into it. Some of them also promote community farms as well as home and rooftop farming to produce more food within a locality. They also want supermarkets to sell more locally grown food and have special sections to sell products from local farmers in the future. 53% of the respondents would love to buy food from all available mediums such as supermarkets, online shops and local markets; they want to experience different kinds of shopping experiences in the future.

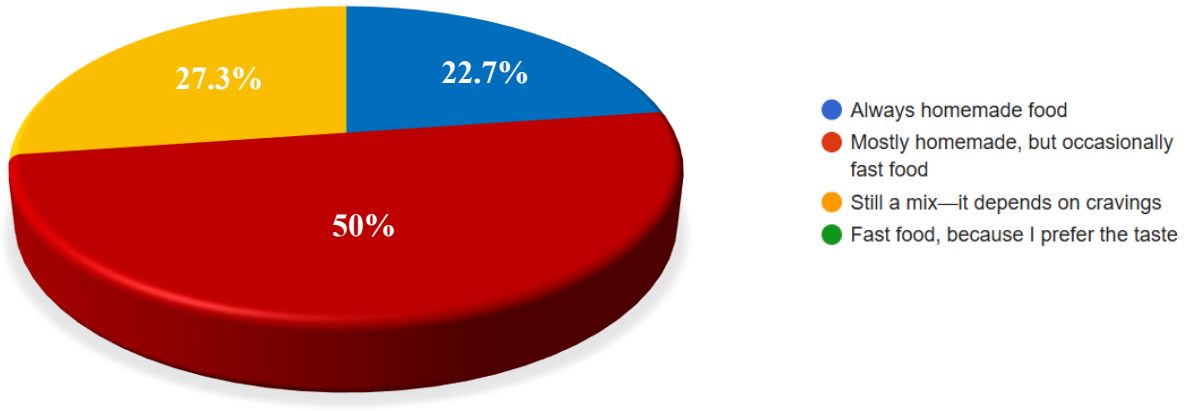

Figure 14: The pie chart shows the preference of the participants if fast food and homemade meals were available equally.

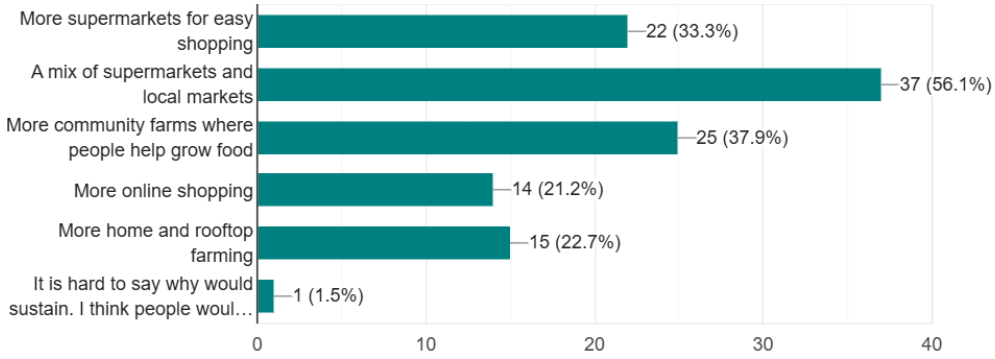

Figure 15: The chart depicts the vision of the participants on the "Future Food Market".

The participants had different visions for Future foodscapes, and most of them were highly sustainable, which would build a stronger food system. One of the respondents say, "In the future, food should be grown in eco-friendly ways, like indoor farms and soil-less cultivation, vertical farming, etc., to protect the environment. Local markets would focus on fresh, nearby produce, and technology would help people buy directly from farmers, which ensures a good income for farmers. Everyone could have access to healthy, affordable, and diverse food options." Another one says, "I want the future foodscapes to be a harmonious one, where the supermarkets and online grocery stores sell products that were grown locally. A mixture of everything can be a perfect solution. We can't produce all the food that exists in the world, but we can increase the number of products which are locally grown and try to follow the seasonal foods. This would help to reduce monoculture happening in some parts of the world to feed another part and can strengthen the local

food systems around the world. The food utopia is a far dream, but I still believe people have the power to achieve this."

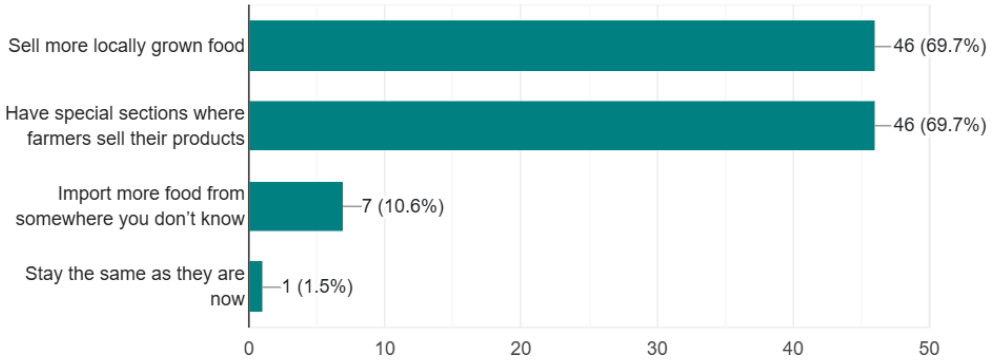

Figure 16: The chart shows how supermarkets should work in the Future, according to the responses of the participants.

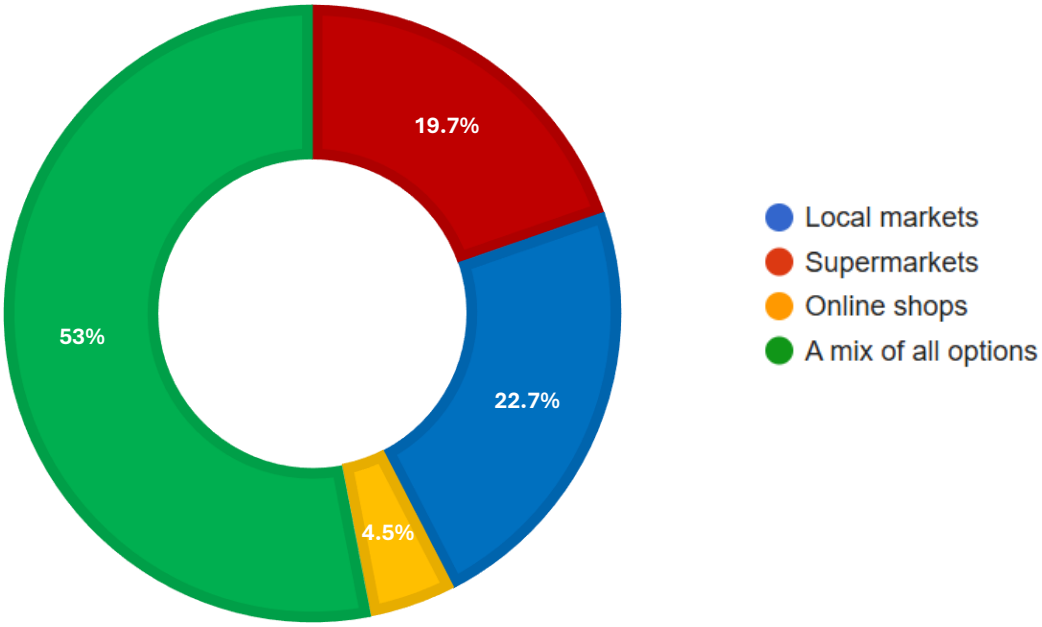

Figure 17: The doughnut chart shows the participants' responses regarding where they will access fresh food in the future.

The participants' visions towards the future of food were different, but all of them want a sustainable and healthy future. They were concerned about the environment and worried about the food they consumed. One added, "In my vision, future foodscapes could strengthen local communities and help to develop a direct connection between producers and consumers to promote transparency." Another one says, "Recognize food as an essential resource or source of community

well-being rather than a mere commodity." Most participants shared their visions of building a stronger and more sustainable food system in the future.

The future of foodscapes in Kerala presents many scenarios based on several factors. Global warming and climate change (Thomas 2023), along with limited land area and human behaviour, can create different versions of future foodscapes. It can be a food system where food is produced nearby or one in a distant location. However, the ultimate power to decide the future food system lies within the people of Kerala. Even though there are challenges in the food system, Kerala still possesses a robust foodscape, with the potential to build a better food system for the future. Amid changes in food habits, local markets and traditional food culture have significantly impacted the people. Developing a new, stronger, and sustainable food system in Kerala, with its traditional food culture at the core, is not a significant challenge.

The foodscape of Kerala in the future may face many challenges, with climate change being one of the major threats. Recent fluctuations in weather patterns, particularly in rainfall, have significantly impacted the state's agriculture (Varghese 2024). Moving forward, efficient climate resilience and improved agricultural infrastructure are essential solutions to this problem. The limited space in urban areas and the reserved forests in the Western Ghats also contribute to a lack of available land for agriculture. Higher population density, combined with limited space, presents a significant challenge (Fox et al 2017), but well-organised land use practices can address this issue. The state has numerous opportunities to develop a better foodscape in the future.

Based on the analysis of the foodscapes of the past and present, we can propose the future of foodscapes in Kerala. The lessons learned from both past and present foodscapes can help build a sustainable future. It could combine the positive outcomes seen in foodscapes, blending traditional and modern practices. The state's agricultural sector needs to adopt new practices and technologies while aligning them with traditional methods to become more self-sufficient moving forward. As a first step, the remaining homestead farms in Kerala could be maintained, and those that are endangered could be revived. Modern homesteads can integrate technology for irrigation and energy management alongside crop production and livestock. The traditional food crops that have disappeared from these homesteads can be reintroduced to help preserve heritage and biodiversity. These farms can exemplify a circular economy through efficient resource use and waste management.

In urban areas, the lack of space is a major challenge, but urban agriculture presents a solution to address this issue. The terrace farming and rooftop farming practices used in the state can be intensified by incorporating new techniques (Devi 2017). Vertical farming and bio walls are examples that work well in limited space (Charania 2023). Food gardens can also be implemented in home gardens, generating fresh produce for daily needs. In terms of future marketplaces, a hybrid market model may be an effective approach. It can be a collaboration of all existing market models in the state, promoting local products. Both local markets and hypermarkets can source their products and produce from local farmers and small enterprises. Fresh produce and food products unavailable within the state can be imported accordingly. Local markets support this notion and can be flexible in shifting back and forth. However, hypermarket and supermarket chains can take this thought seriously; their concept of selling products with convenience is good, but their methods to achieve this goal are problematic. For example, rather than sourcing local produce like lamb meat, which is easily available, they imported the meat from Australia. These markets can help local and small-scale farmers sell their produce directly to consumers in these regions. Local markets and supermarkets also can work together as a bridge connecting local farmers and consumers. With this hybrid market model, a sustainable food marketplace can be built in Kerala.

Figure 18: The image on the left depicts a future homestead in Kerala, which blends tradition and technology. The image on the right is a future rooftop farming in an urban area of Kerala. (Created in Sora, Prompt: see appendix)

Thinking about the food culture of Kerala in the future, it may evolve by adding new aspects to its cuisine. Rice, coconut, spices, and fish may be at its cornerstone, because people have an immense connection to these ingredients. On the other hand, loss of culinary knowledge is a challenge. The young generation needs to understand their cooking heritage and preserve the knowledge on preparing the traditional dishes. The information about this is available around them, and they can even talk to their parents and grandparents to acquire the family recipes. Conserving the culinary heritage of Kerala can have a drastic impact on the food culture in Future. The young generation is aware of their food choices, and most of them were forced to follow a dietary pattern. The major reason for the dietary changes is the fast-paced lifestyle, with limited time to cook and a financial burden to choose their desired food. Most of their dietary choices could be influenced by external factors, such as a hypermarket. For example, presenting cheap, imported products may encourage consumers to purchase these options. Even though the food is accessible, there is a hidden unavailability of local produce that common people never think about due to their busy lives. Making more local products accessible in the markets may change the dietary pattern followed by the people, especially in the urban areas. Online platforms selling local fresh produce and meat from the local farmers can also help the cause. Global cuisines may continue to influence the food culture of Kerala, with new fusion dishes combining international cuisines along with flavours of Kerala, creating modern cuisines in the future (Thampi & Priya 2023).

Based on the survey, it's clear that people, especially the younger generation, want a better foodscape in Kerala. The question is how to create one that encompasses everything positive that has happened to the food system thus far. The future food system could include both traditional and modern aspects, blending them perfectly without altering Kerala's food culture. Keeping people's visions and needs in mind, a hybrid approach can be proposed for the future foodscapes of Kerala. For example, a supermarket could sell local products while supporting farmers in their livelihoods. Local markets could work together with supermarkets to supply products and build a bridge connecting everyone in the community. Homestead farms, which have been diminishing in urban centres, can be revived with new concepts. Future homesteads might be developed to thrive on limited land using roof farming, food gardens, and bio walls. People can start growing even a

small amount of food in their spare time, which is beneficial for both the environment and their well-being. The new food system could incorporate local markets, supermarkets, fast food, traditional meals, home farming, and other aspects of the food system in perfect balance.

Building a sustainable foodscape in Kerala is not a challenge. Its success lies in the mindset of the people and the collaboration of all stakeholders. The government is working towards achieving self-sufficiency in food production, and new projects and funding have been allocated for this purpose (LSGD 2025). The people can utilise these resources and want to reconnect with the land. Together, they can create a robust food system for the state. Kerala possesses the resources and conditions to become a model food system in the Global South.

5.2 Evolving Foodscapes: Past and Present

Figure 19: The paddy fields of Kuttanad, Kerala, in the 1980s (Image: Kuttanadan, 2025).

The landscape was so different during that period, especially since the soil was wet and perfect for paddy cultivation. The fields were logged with water, and the soil was loosened. The workers had to work manually using hand tools made of wood and iron. These paddy fields spread across everywhere and have a unique ecosystem fostering many organisms like frogs, snails, aquatic fishes and crabs. These fields were also home for birds like egrets, herons and kingfishers, along with fireflies. Planting and harvesting in these fields was a festive bringing everyone in the community together. More than that, these fields are an integral part of the community, connecting different classes of people.

Figure 20: The paddy fields of Kuttanad, Kerala, in 2025 (Image: Nidhi, 2025).

The fields had evolved due to shifts in agricultural practices and climate change. The soil becomes harder and drier, the landscape also undergoes several changes as seen in the picture. Modern rice varities were used in these fields, which can grow in dry conditions. Due to these changes, organisms like frogs, snails and crabs can't survive in these fields and have gradually started to

become endangered. All the work in these fields was mechanised, which further compacted the soil. People lost connection with these fields, which were once a part of them. Traditions and festivities surrounding these fields also diminished. The fields were becoming patches and scattered unevenly in the landscape, surrounding houses and other agricultural land. This paddy field in Kuttanad is one of the remaining fields in Kerala and needs to be conserved. Government initiatives alone can't save the paddy fields in Kerala, the people can come forward and act. Rice is a trademark and still the staple food of Kerala; reviving paddy requires the collaboration of every stakeholder, including the people of Kerala.

Figure 21: The image on the left is the ploughing of a rice field in Kerala in 1901. (Image: University of Southern California Digital Archives, 1901-12). The other image on the right is of women workers aerating the land by breaking hard blocks of soil after ploughing in Kattayodakkal, Kerala, in 1921. (Source: George-easaw.blogspot.in/).

Both images depict the work of people in the paddy fields in the past. Every work was done manually, where the ox was used to plough the fields. The tools made from wood and iron were used for various farming activities. Even though the work is hard, they seem to enjoy it. They have created several folksongs to sing when they work in these fields. The class system existed during this period, where people who belonged to certain classes could only work in these fields. The people who are from higher classes mostly don't work in fields and manage workers in various farming activities. Social injustice towards the workers was common during this time, especially in providing wages, but after the state formation social structure had changed, and several polices had helped in uplifting the working class.

Figure 22: The first image on the left is a modern tractor used for ploughing the paddy fields now. (Image: Shalin, 2024). The second image on the right is a machine used to plant the paddy sapling into the fields, which was done by the labourers using their hands in the past. (Source: Kerala Agricultural University, 2020)

The mechanization of agriculture in Kerala is evident from these pictures. Tractors and other machines for different farming purposes, from planting to harvesting, were used in the farmlands. The increase in wages for agricultural labourers forced farmers to use more machinery in their fields. In most cases, farmers learn how to use these machines and carry out most of the work on their own.

Figure 23: The traditional paddy cultivation practices still exist in Kerala. The image on the left shows the preparation of paddy saplings before planting them in the field (Image: Kayangan, 2025). The image on the right is the women workers planting paddy saplings using their hands in the paddy field (Image: iStock/ D Talukdar, 2025)

Some parts of northern Kerala still follow traditional farming practices. Preparation of saplings and planting paddy saplings were carried out manually using hands. Farming done by collectives like Kudumbashree follows these practices. Farming becomes more lively when people work in the fields, it also connects them to the soil.

Figure 24: The first image on the left is a drawing of the Chalai market in Thiruvanathapuram, Kerala, in 1891. (Sketch: The Chronicle, 1891) The second image on the right is the Chalai market at present (Image: Akhil, 2025).

Figure 25: The image on the left is the Connemara market on Palayam, Kerala, in the 1980s.(Image: Benny Kuriakose, 2022) The image on the right is the present state of Connemara market. (Image: Nidhi, 2025)

Figure 26: The image on the left is the Kannur market of Kerala in 1932 (Image: KalliValli, 2025). The image on the right is the present Kannur market (Image: Untold Stories, 2025).

Several local markets in Kerala were established before the post-independence era, and these markets are still an integral part of the community. The major changes that happened in these markets were in infrastructure. Some markets were developed, while others remain the same. These places still offer vibrant shopping experiences and a place for people to gather. In the past, most of the produce sold in these local markets originated from the same locality. People in the nearby areas bring their products to the market and sell them. Surplus produce from the homesteads was also sold in these markets, and the essential products needed for the households were purchased from here. Only some products, like fish, cardamom, and tea, were imported from other regions of Kerala. During that time, a food product from a neighboring state sold in this market was a rare event. But now, most of the produce sold in the local markets is imported from neighboring states. Only a small percentage of the products originate locally, even fish sold here are from some other place rather than Kerala. The influence of middlemen has increased in the local markets, as they mediate the distribution of products to the local vendors. There is no change in the way people interact with these markets, and still these markets offer a place for communal gatherings.

Figure 27: An old bakery in Kozhikode, Kerala, in 1908 is on the left. (Image: KalliValli, 2025). A modern bakery in Thiruvanathapuram, Kerala, is on the right. (Image: Nidhi, 2025)

The bakeries of Kerala had an unprecedented change. In the past, they were very rare in an area or only found in some towns or cities. Traditional Kerala snacks were the major products in the shops, along with buns, rusk and and halwa. Sometimes, some imported products like dates were also seen in these shops. But now, most of these shops have every sweet and snack in India. They even

sell international products like croissants and doughnuts. Now bakeries sell diverse varities of products from all over the world.

Figure 28: Country crafts like dugout canoes (made of single logs) were used for fishing until the mid-twentieth century. These types of boats are still in use in Kerala (left). Flying Fish, a trawling boat made as part of the INP. The metallic structure to haul the net can be seen behind the cabin (right). (Image: NIFPHATT, Ernakulam, 2023)

The traditional canoes were used for fishing by fishermen in the past. These are a symbol of fishing communities and their courage in fishing in the sea. After the Indo-Norwegian Project, most of the fishing industries were mechanized using boats with engines. This shift reduces the use of canoes and increases in motorized boats for fishing. The traditional canoes were now used for inland fishing and inshore fishing. Only large trawl boats were used for deep-sea fishing. The fishing industry has changed a lot, which also affects the way of life of the fishermen.

5.2.1 Supermarket Culture.

Figure 29: The first image shows the vegetable section and the second shows the fruit section inside a hypermarket in Thiruvanathapuram, Kerala. The origin of these products was not mentioned on the labels. (Image: Nidhi, 2025).

Figure 30: The image on the left is a section inside a hypermarket for bananas; it is presented exactly as the local shops sell the bananas. The second Image is a section in a supermarket at Kattakada, Kerala, selling cut vegetables for desired meals. They can use this product to make dishes like avial or sambar without even knowing the names of any vegetables. (Image: Nidhi, 2025)

The hypermarkets in Kerala provide a complete shopping experience. These one-stop shopping destinations have every food product in the world and attract consumers through their marketing strategies. These marketplaces utilize the busy lifestyle of individuals to their advantage in increasing their sales. The majority of these products, especially fresh produce, are imported from other regions within the country, some sometimes from other countries. They also never mention the origin of this fresh produce to make to more local. They also use many strategies, like cut vegetables and pre-marinated meat, to attract the consumers.

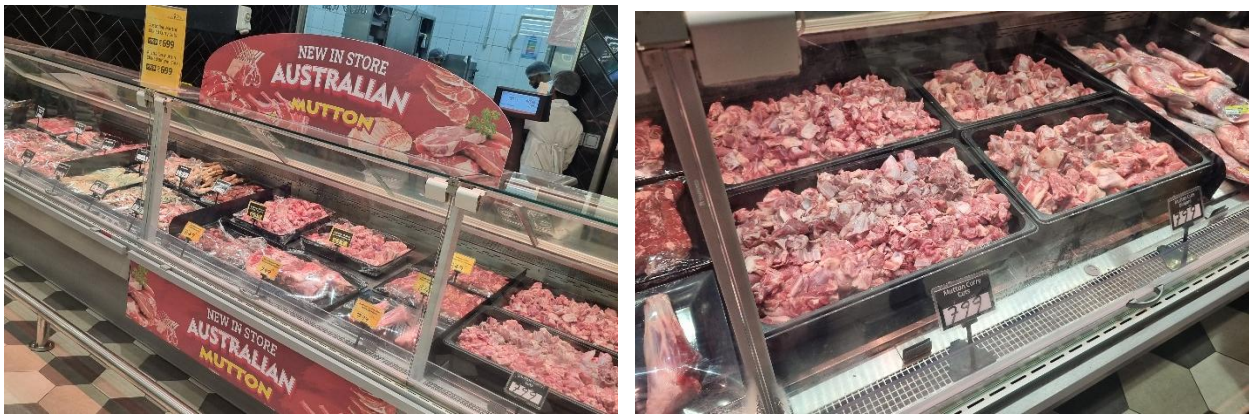

Figure 31: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling meat. The lamb meat imported from Australia is the main product in this section. The price of the product is lower than the local meat and affects the local markets. (Image: Nidhi, 2025)

Figure 32: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling fish. Almost every fish variety is available. The majority of the fish were imported from places other than Kerala. (Image: Nidhi 2025)

The supermarket sells a range of imported products that may reduce the demand for local products. Australian mutton is an example which affects the local lamb rearing industry and the livelihoods of the farmers. They even sell meat, sepcializing in specific parts which were not seen in local butchery shops. This convenience shifts the preference of the consumers along with its cheap price (Sivaprasad et al 2023). The same goes with the fish, selling any variety of fish year-round. From a consumer point of view, they can access any products without seasonal variations. But it also impacts the local fishing industry and the lives of the fishermen. These products create competition in the market and try to replace local produce.

Figure 33: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling frozen and ready-to-cook meat and pre-marinated meat products. (Image: Nidhi,2025)

Figure 34: A bakery inside a hypermarket in Thiruvanathapuram, Kerala. They offer everything, from local to international baked products, sweets and snacks. (Image: Nidhi, 2025)

These large food complexes had everything even takeaway meals. Supermarkets had evolved into food hubs, every food products are accessible. Sometimes, these places feels like dumped with a lot of food, maybe they are trying to achieve a food paradise (for money). These hypermarkets also were the places of communal gatherings, but most times it feels like a crowded enviornments. The concept of supermarkets providing a most convienet shopping to the consumers where you can buy any products is good, but the problem is the way its working. Maybe gives more importance to local products rather than importing goods can be a starting point in acheieving a sustainable marketplace.

5.3 Climate Change

Climate change is affecting Kerala's foodscape, especially regarding agricultural production. The state experienced rising temperatures and abnormal patterns in rainfall in recent years. The monsoon season, which had a significant impact on the state's agriculture, has increasingly become unstable. The state receives intense precipitation and intense rainfall events, impacting agricultural production. The temperature rise also worsens the situation, where some places in Kerala experience drought. Some studies show the average temperature of the state increases by 0.013°c per year, resulting in an overall rise of 0.54°C over the 40 years (Valappil et al, 2022). The heat stress affects the crop growth and development, exceeding its optimal range. Soil erosion, floods and droughts have affected productivity and increased the crop losses throughout the state (Kaushik et al, 2023). The health of livestock was also affected due to these extreme weather

events. The floods in 2018 completely devastated the state's agriculture, affecting 59.345 ha of crops and 0.3 million farmers (Sivan & Anitha, 2024). In 2018, Kerala received 2346.6 mm of rainfall from June 1 to August 19 (IMD, 2018). Many crops like paddy, pepper, cardamom, and vegetables are affected by reduced yields of up to 70% and quality issues due to abnormalities in the monsoon periods.

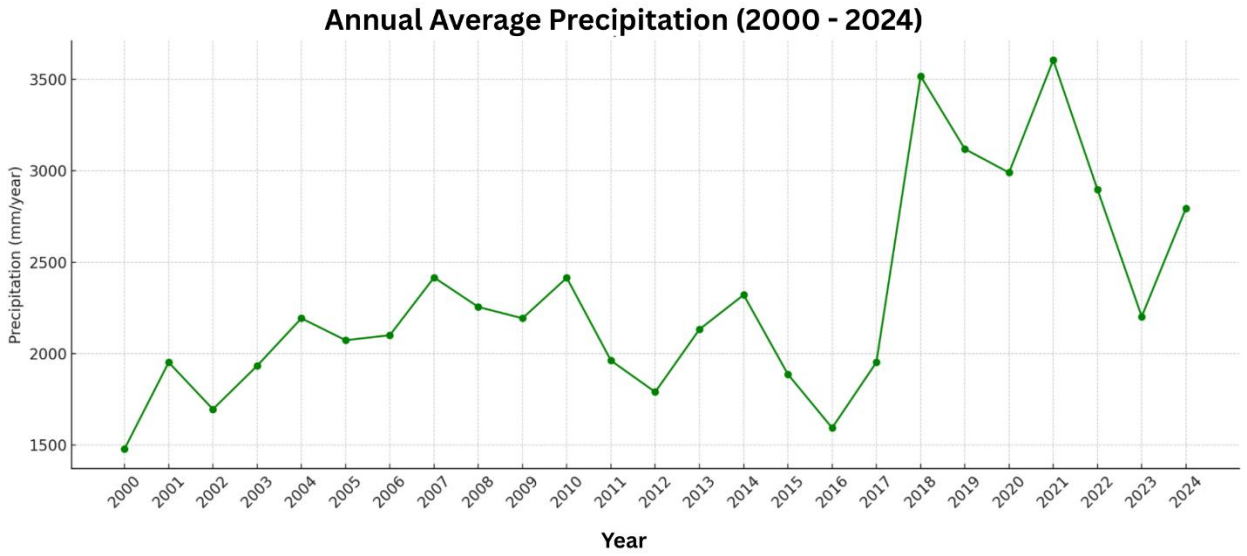

Figure 35: The chart shows the annual average precipitation of Kerala from 2000 to 2024. The data is collected from NASA's POWER project, taking the average of the average annual precipitation (ANN) of 36 different points in Kerala. In 2021, the state received 3.606 mm of rainfall, the highest recorded in this century. There was an increase in rainfall for the last five years in Kerala, and it is expected to follow the same pattern in the coming years.

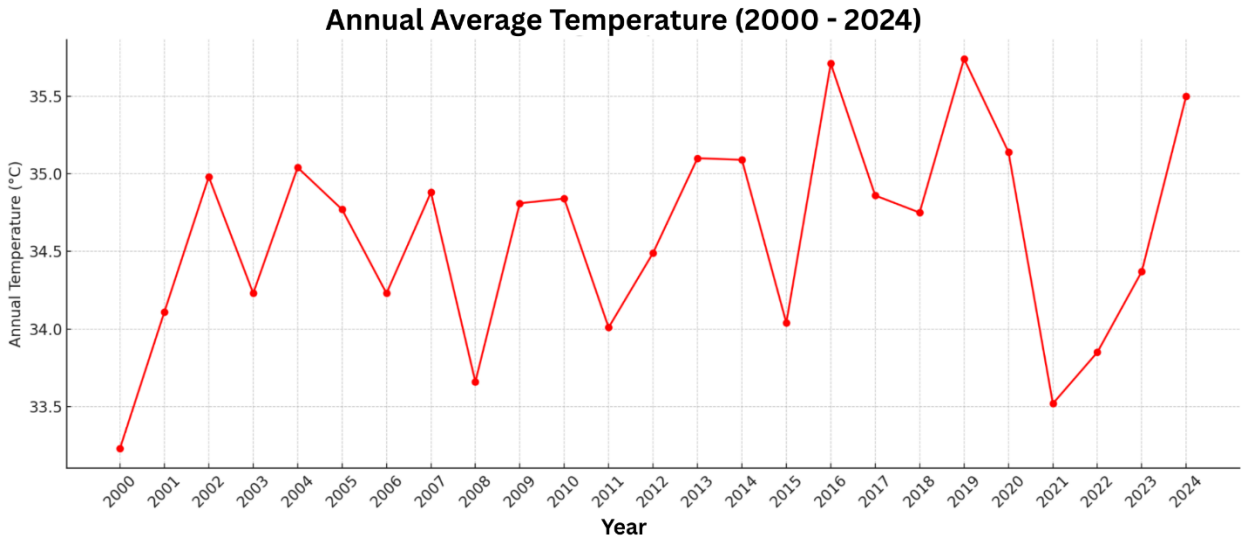

Figure 36: The chart shows the annual average temperature of Kerala from 2000 to 2024. The data is collected from NASA's POWER project, taking the average of the average annual temperature of 36 different points in Kerala.

The rise in the temperature of the Arabian Sea alters the ocean currents and impacts the migrating patterns and breeding of various species of fish. There is also a decline in the fish caught in recent years, like sardine and mackerel. The warming of coastal areas forces fish species into deep seas for cool environments, posing challenges in fishing (Gills et al, 2025). Climate change directly affects food security in Kerala, impacting food prices and food availability.

5.4 Biodiversity Loss

Western Ghats, a biological hotspot, run parallel through Kerala, making the state a species-rich area in the world. This entire area is protected by the government to conserve the biodiversity of the region. During the time of state formation in 1956, a lot of forest areas were cleared up for agriculture and settlements. Currently, 29.7 % of the state's area is reserved forest, which was about 70% during the 1950s (Easa & Rajesh 2025). The state's forests are now fragmented and exist as several discontinuous patches. The deforestation, encroachment, climate change and overexploitation of resources have drastically reduced the biodiversity of the state. Many plants as well as animal species are on the edge of endangerment. The biodiversity loss has impacted ecosystem services and indigenous communities (Easa & Rajesh, 2025).

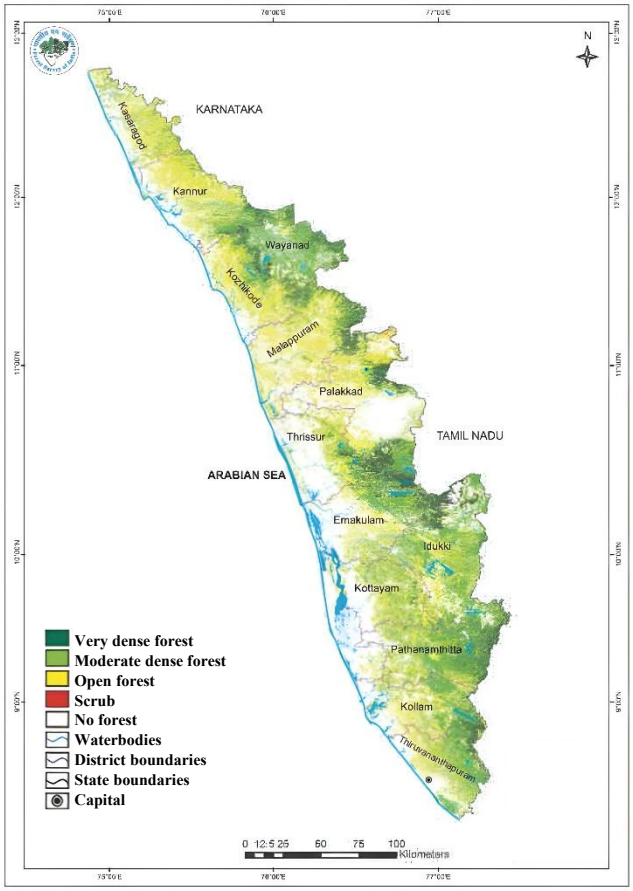

Figure 37: The forest cover map of Kerala (Source: Indian State of Forest Report, 2019)

The loss of biodiversity has also impacted on the foodscapes of Kerala. A shift towards high-yielding and exotic crop varieties has resulted in the endangerment of many traditional and local crop varieties. The biodiversity loss also impacts pollination, which is crucial for the propagation of food crops and disrupts natural pest control mechanisms, leading to a decrease in productivity. The introduction of alien species and exotic species into the ecosystem also poses a threat to the local biodiversity (Mani et al, 2020).

5.5 Public Health

There is an increasing change in dietary patterns in Kerala. The food habits of the population shifted from traditional diets to a hybrid diet. Typically, the Kerala diet contains a higher amount of carbohydrates and fibers (rice, milk, milk products and fruits) (Sinha et al 2011), but it moves towards foods with saturated fat, salt and sugars. The main reason for this change is the economic development of the state, along with lifestyle changes (Kumar et al, 2022). The youth and urban population are consuming more fast and processed foods, which is because of their busy life and convenience (Shanibha 2025). The junk food culture has become a trend in the state due to the influence of food corporations and their advertisements (Chandran 2016). Traditional diets started to decline due to the introduction of international brands along with Western dietary patterns (Bishwajith 2015). The hybrid food culture and fusion dishes have also become popular in Kerala; in some cases, they can be unhealthy for consumption.

The transition in food habits results in various health implications, especially the rise of non-communicable diseases (NCDS) in Kerala. This includes cardiovascular diseases, type 2 diabetes, hypertension and various cancers. The prevalence of these diseases is higher in Kerala than in other Indian states, and non-communicable diseases have become the primary cause of illness and death in the state (Sarma et al, 2019). This had impacted all the different age groups, with an increased risk of NCDS and obesity in adolescents (Pinheiro 2022). On the other hand, the adult population in Kerala is suffering from diabetes and hypertension, with women exhibiting a higher frequency of abdominal obesity. The change in culinary practices to more fried and roasted food instead of boiling or steaming, along with the overuse of vegetable oils, may increase the chances of NCDS. The high intake of refined meat, rice and wheat, with the increase in the consumption of snacks and sweets, also had a direct impact on health (Muraleedharan et al 2024).

6. DISCUSSION

The study explores the changes that occurred in the foodscapes of Kerala through different dimensions of time. The foodscapes were constantly evolving even before the formation of the state, and these changes had both positive and negative impacts on the state's food system. Several factors, such as climate change, agricultural shifts, cultural exchanges, market trends, and even socio-economic politics, played their part in transforming these foodscapes. Analysing the changes undergone in the past and present can help in presenting many insights and ideas to build a sustainable foodscape for the future.

The food environments where food is produced and sold had evolved during these periods. The shift in agricultural production, emerging market trends, and consumer preferences impact the local foodscapes. Kerala's economy completely depended on the agricultural sector during the time of the state's formation, but now the service sector provides most of the state's economy. Even in the mid-20th century, the agriculture of Kerala started to shift from the cultivation of traditional food crops to commercial crops. This agricultural shift continues till now, significantly reducing the paddy cultivation and substantially increasing the cash crops, especially rubber. Paddy, which was once the backbone of the state agrarian sector, declined from ca 1 million ha (1956) to 0.17 million ha (2016) (Prasad & Kuruvila 2020), leading the state to depend on other neighboring states to fulfil their rice demands.

In the past, almost every household had its homestead farms, growing different varieties of crops for their daily needs, along with livestock. This represented a way of life where people have a strong connection to their land and strengthen food security. But now most of the population lives in urban centres and lacks space for cultivation, leading to the downfall of homesteads, especially in urban areas. The decline of homestead farms has impacted food security in Kerala, particularly the coconut cultivation (John 2014).

The food markets of Kerala also evolved from traditional *chantha* to online food platforms. In the old times, local markets and small retail stores were the only marketplaces where people could access their food. But now they have different options, from hypermarkets to online delivery services offering convenient shopping experiences. Traditional markets (Chanthas) are still a vital part of the state, selling fresh produce and providing a place for communal exchanges. These markets once only sold local produce, but now most of the produce sold in these markets is

imported from other places or neighboring states. The supermarket culture has impacted the people of Kerala a lot. Presently, it has evolved into a large food complex called Hypermarkets, having groceries, fresh produce, meat, fish, bakery and even takeaway restaurants providing a one-stop shopping experience. A lot of international products are sold in these places, where some of them compete with local products and impacting the local producers.

The food culture of Kerala has evolved through the centuries, and various parts of Kerala have their own identity in food culture. Global trade to colonization has impacted on the food culture, where each cuisine has its own stories to tell. The migration of people to Gulf countries has influenced Malabar cuisine with an Arab touch, where the Travancore cuisine presents a taste of the traditional culinary heritage of that region (Desk 2024). The different cuisines of Kerala are still evolving, and now a hybrid food culture is evident throughout the state. Amidst these changes, rice, coconut, spices and fish remained the cornerstone of Kerala's food culture. But the loss of culinary knowledge about the traditional dishes among the younger generation poses a challenge. The modern lifestyle changes also force people to depend more on processed and fast foods (Thampi & Priya 2023).

Looking back at the foodscapes in the past and present would help us in suggesting a future foodscape for Kerala. Laying down the findings and looking through a food lens presents a lot of opportunities in building a strong food system in the state. The future of foodscapes needs to include all the good aspects that occurred in the food system of Kerala. It can be a blend of traditional practices with modern techniques. Modern technological innovations and sustainable practices incorporated with the pre-existing system can create a strong foodscape. A lot of good things have happened in the local foodscapes, gathering the positives and leaving the faults leads the way in developing a sustainable food system. There are a lot of problems in the way some aspects of the food system work; eliminating such issues and using alternative options can strengthen the foodscapes in the future. For example, the supermarket is a great concept for convenient shopping, but the products sold there might present issues. They could be addressed by showing more commitment towards local produce and only importing the food products that are not available in that region. Promoting local produce has a lot of benefits, not only to the farmers but also to the environment and the community.

In the future, modern farming methods that align with traditional knowledge could be implemented. Modern homesteads and urban agriculture, utilizing both traditional and new technologies, can offer an effective and sustainable solution for food production in limited spaces. The reintroduction of endangered traditional food crops to these farms may help preserve the state's heritage and culinary identity. Extensive paddy cultivation may present challenges because it requires a significant land area, and the soil has to be loosened. However, it is important to maintain the existing paddy fields in regions like Kuttanad and Palakkad and introducing new rice varieties that can thrive in dry conditions may reduce the state's reliance on rice imports from neighbouring states. Climate change may threaten the achievement of these goals, but implementing climate-resilient agricultural practices can provide a solution. Climate-resilient crops, micro-irrigation, mixed cropping, and integrated farming can help mitigate risks in the state's changing climate (Sahoo et al 2025).

The food markets of the future could adopt a hybrid model, combining all aspects of existing marketplaces. Supermarkets and local markets, along with online food platforms, can collaborate in promoting local food products. They possess the power to elevate local foods and make them accessible to consumers. These marketplaces can also offer food products from around the world, provided this does not undermine local food or negatively impacts the livelihoods of farmers. When locally produced foods are accessible, the dietary habits of the people may gradually shift back. The people of Kerala are conscious of the food available around them, particularly the youth. They may be influenced by following current dietary patterns due to their busy lifestyles. If alternative and affordable options are accessible, they may be more likely to consume more local and traditional food. The people desire a strong and sustainable foodscape for their future.

AI and technology have significant potential to enrich foodscapes (Zatsu et al 2024). Technologies like machine learning, precision agriculture, and sensors can help both farmers and the environment by improving yields, enhancing resource management, and promoting biodiversity. AI can be used to reduce food waste, improve food safety, and even predict consumer demand. Using these tools in foodscapes boosts efficiency and strengthens sustainability. Integrating AI and technology into the foodscape of Kerala can enhance farming by monitoring soil health and forecasting weather patterns. It can also assist in identifying local products and predicting consumer demands. This can further aid in connecting farmers directly to consumers through

online platforms and mobile applications. These technologies could create new opportunities for digital foodscapes, which could virtually connect with all the stakeholders of the food system. Thus, AI and technology promote food security and environmental sustainability (Aijaz et al 2025).

The food sovereignty of Kerala has its strengths and weaknesses. McMichael's framework helps identify its current nature, indicating that the state possesses incomplete food sovereignty. The state has democratic control over food (Kudumbashree) and land sovereignty. Additionally, land reforms and resistance to the corporate agri-industry further strengthen this cause. However, the domination of commercial crops, dependence on neighbouring states for food imports, and reliance on migrant labourers pose major challenges to the food sovereignty of Kerala (McMichael 2013). Kerala also presents an opportunity to lead a post-commodity food system and prove "food as a common is not utopian but a lived reality" (Vivero-Pol, 2019). The commons-based governance already exists within the state, an alternative to commodification, by maintaining a public and community-based food system. The food culture of Kerala shows the role of food in people's lives, and it may continue to evolve. Food is central to identity, ecology, and memory, revealing how it connects history, religion, ecology, and social hierarchies in the state (Dirks & Hunter 2013). Food also serves as a cultural identity in Kerala, where traditional food is celebrated as a heritage.

In the article "Quiet sustainability, " the practice of food self-provisioning in central and eastern Europe is mentioned, where a significant part of the population grows their food (Smith & Jehlicka, 2013). The homesteads in Kerala exemplify a quiet sustainability initiative from the Global South. Biel (2013) in "The Future of Food" emphasises the importance of local control over production to reduce dependency on global food chains. In the future, adopting Biel's models and vision could help Kerala reduce its dependence on importing food produce and strengthen its food system. In the book "A Long Food Movement: Transforming Food Systems by 2045, " transforming the food system by 2045 is expected to reduce food-related emissions and could promote equal access to food for all (IPES-Food, 2021). If Kerala focuses more on localising food production and strengthens the food system against climate impacts, the state could become a model for a sustainable food system by 2045.

Evaluating a system within a specific timeframe helps in identifying both the mistakes and achievements made within that system, as well as facilitates discussions about the future.

Therefore, examining the past and present foodscapes in Kerala may reveal numerous opportunities that can contribute to building a sustainable foodscape for the future.

7. CONCLUDING REMARKS AND FUTURE PERSPECTIVES

The evolution of the foodscapes of Kerala presents an opportunity to explore the changes that have occurred in the foodscapes and the food system of the state. Examining the foodscapes through different time frames aids in identifying how they have adapted to various circumstances within the food system. It is likely to continue evolving, driven by shifts in climate change, technology, culture, market trends, farming practices, and consumer behaviours. The transformation of Kerala's foodscapes tells a unique story, from traditional farming to the rise of commercial crops and from homesteads to urban agriculture. Although the state has lost some traditional knowledge, it has maintained a balance between modernization and heritage. By analyzing the past and present and gathering the positive changes that have occurred in the food system, a sustainable future for Kerala can be proposed. Future foodscapes could integrate tradition and modernity; modern homesteads and the hybrid market model may help build a sustainable foodscape for Kerala. Maintaining a balance in the food system could support the preservation of Kerala's culinary heritage, along with modern innovations. This approach may support the state in achieving food security while building a robust food system for the future.

This study only explores some aspects of the food system in Kerala, mainly food production, marketplaces and food culture in Kerala. The study mainly stresses the food environments where food is produced and sold. There are other aspects and foodscapes where food interacts with the environment that can be addressed. The changes that happened in food processing techniques, from traditional preservation to modern packing and distribution of food, to food waste, can be discussed. Most importantly, the evolution of the government structure and policies over time could be evaluated, in finding its role in defining the structure of foodscapes in Kerala. The changes in the environment, biodiversity and soil also can be examined. Future research would delve deep into different aspects of the food system that are outside the scope of this study, to find its importance in the evolution of the foodscapes and how it helped in shaping the food system of Kerala. This case study only focuses on Kerala. I intend to apply this method by analyzing different foodscapes and aim to explore how it has evolved over time. For example, Kerala presents an example of a foodscape in the Global South, where I can do the same in a region at the Global North and want to explore the similarities and differences in the food system. It could also help in understanding the interplay between different foodscapes around the world.

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Figure 12: The chart shows the main motivation of the respondents to buy more produce from local farmers.	38	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 13: The chart shows the factors which influence the participants' choice between homemade meals and fast food.	38	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 14: The pie chart shows the preference of the participants if fast food and homemade meals were available equally.	39	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 15: The chart depicts the vision of the participants on the "Future Food Market".	40	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 16: The chart shows how supermarkets should work in the Future, according to the responses of the participants.	40	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 16: The chart shows how supermarkets should work in the Future, according to the responses of the participants.	41	Goutham Nidhi (Based on survey)	Author's own	Yes
Figure 18: The image on the left depicts a future homestead in Kerala, which blends tradition and technology. The image on the right is a future rooftop farming in an urban area of Kerala.	43	Goutham Nidhi (Created in Sora)	Copyright (Author's own)	Yes
Figure 19: The paddy fields of Kuttanad, Kerala, in the 1980s (Image: Kuttanadan, 2025). Page 45	45	Kuttanadan	Open Source (CC BY License)	Yes
Figure 20: The paddy fields of Kuttanad, Kerala, in 2025 (Image: Nidhi, 2025). Page 45	45	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 21: The image on the left is the ploughing of a rice field in Kerala in 1901. The other image on the right is of women workers aerating the land by breaking hard blocks of soil after ploughing in Kattayodakkal, Kerala, in 1921.	46	University of Southern California Digital Archives, 1901-12 George-easaw.blogspot.in	Open Source (CC BY License)	Yes
Figure 22: The first image on the left is a modern tractor used for ploughing the paddy fields now. The second image on the right is a machine used to plant the paddy	47	Shalin Kerala Agricultural University	Copyright Open Source (CC BY License)	Yes Yes

sapling into the fields, which was done by the labourers using their hands in the past.				
Figure 23: The traditional paddy cultivation practices still exist in Kerala. The image on the left shows the preparation of paddy saplings before planting them in the field. The image on the right is the women workers planting paddy saplings using their hands in the paddy field.	47	Kayangan iStock/ D Talukdar,	Open Source (CC BY License)	Yes
Figure 24: The first image on the left is a drawing of the Chalai market in Thiruvanathapuram, Kerala, in 1891. The second image on the right is the Chalai market at present.	48	The Chronicle Akhil	Open Source (CC BY License) Copyright	Yes Yes
Figure 25: The image on the left is the Connemara market on Palayam, Kerala, in the 1980s. The image on the right is the present state of Connemara market.	48	Benny Kuriakose Goutham Nidhi	Open Source (CC BY License) Copyright (Author's own)	Yes Yes
Figure 26: The image on the left is the Kannur market of Kerala in 1932. The image on the right is the present Kannur market.	48	KalliValli Untold Stories	Open Source (CC BY License)	Yes
Figure 27: An old bakery in Kozhikode, Kerala, in 1908 is on the left. A modern bakery in Thiruvanathapuram, Kerala, is on the right.	49	KalliValli Goutham Nidhi	Open Source (CC BY License) Copyright (Author's own)	Yes Yes
Figure 28: Country crafts like dugout canoes (made of single logs) were used for fishing until the midtwentieth century. These types of boats are still in use in Kerala (left). Flying Fish, a trawling boat made as part of the INP. The metallic structure to haul the net can be seen behind the cabin (right).	50	NIFPHATT, Ernakulam.	Open Source (CC BY License)	Yes
Figure 29: The first image shows the vegetable section and the second shows the fruit section inside a	50	Goutham Nidhi	Copyright (Author's own)	Yes

hypermarket in Thiruvanathapuram, Kerala. The origin of these products was not mentioned on the labels.				
Figure 30: The image on the left is a section inside a hypermarket for bananas; it is presented exactly as the local shops sell the bananas. The second Image is a section in a supermarket at Kattakada, Kerala, selling cut vegetables for desired meals. They can use this product to make dishes like avial or sambar without even knowing the names of any vegetables.	51	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 31: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling meat. The lamb meat imported from Australia is the main product in this section. The price of the product is lower than the local meat and affects the local markets.	51	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 32: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling fish. Almost every fish variety is available. The majority of the fish were imported from places other than Kerala.	52	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 33: Section inside a hypermarket in Thiruvanathapuram, Kerala, selling frozen and readyto-cook meat and pre-marinated meat products.	52	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 34: A bakery inside a hypermarket in Thiruvanathapuram, Kerala. They offer everything, from local to international baked products, sweets and snacks.	53	Goutham Nidhi	Copyright (Author's own)	Yes
Figure 35: The chart shows the annual average precipitation of Kerala from 2000 to 2024. The data is collected from NASA's POWER project, taking the average of the average annual precipitation (ANN) of 36 different points in Kerala.	54	Goutham Nidhi (Based on data from POWER project)	Copyright (Author's own)	Yes

Figure 36: The chart shows the annual average temperature of Kerala from 2000 to 2024. The data is collected from NASA's POWER project, taking the average of the average annual temperature of 36 different points in Kerala.	54	Goutham Nidhi (Based on data from POWER project)	Copyright (Author's own)	Yes
Figure 37: The forest cover map of Kerala.	55	Indian State of Forest Report	Open Source (CC BY License)	Yes

APPENDIX

Appendix 1: Prompt for Image generation (Sora).

1) Figure 8: The side-by-side visual comparison of land use changes in rural homestead and farmland.

Prompt: Create a realistic, side-by-side landscape illustration showing land use change in a tropical rural Kerala. The left side should depict the landscape before land use change: a traditional rural house surrounded by a diverse home garden with coconut and banana trees, a small vegetable garden, and paddy fields (rice fields) with a mix of traditional and modern rice varieties on gently sloping land. The right side should depict the landscape after land use change: the same rural house remains, but the vegetable garden and upper paddy terraces have been replaced by arecanut plantations. Some of the paddy land has been converted using bunds (small embankments) for banana cultivation, and filled fields now grow tapioca and ginger. Paddy cultivation is reduced and only modern rice varieties are grown in a small remaining section. The scene should be realistic, with natural lighting, visible topography, and clear details of crops and landscape features. It includes subtle terrain elevation and plant textures for authenticity. The transition between the two panels should be clear but seamless, as if looking at a "before and after" in the same location over time.

2) Figure 18: Image showing a rooftop vegetable garden in an urban area in Kerala.

Prompt: A realistic image of a vibrant terrace garden on the rooftop of a contemporary house in a Kerala city like Kochi or Thiruvananthapuram. The house features modern architecture with clean lines, flat concrete roof, and minimalist design in white and grey tones. The terrace is filled with grow bags and pots containing lush green vegetables such as spinach, okra, chillies, and tomatoes,

along with potted banana plants and herbs like mint and curry leaves. A compost bin and a small water tank for harvesting rainwater are visible. The garden is well-organized, with tiled flooring and narrow walkways between the plants. In the background, there are other multi-storey apartment buildings, electric lines, and tall coconut trees typical of Kerala. The sky is bright with scattered clouds, capturing a tropical urban setting that blends sustainability with modern city living.

3) Figure 11: The image on the left depicts a future homestead in Kerala, which blends tradition and technology (prompt 1). The image on the right is a future rooftop farming in an urban area of Kerala (prompt 2).

Prompt 1: A highly realistic futuristic terrace garden on the rooftop of a smart home in a Kerala city like Kochi in the year 2045. The house has sleek, energy-efficient architecture with solar panels, green walls, and smart glass railings. The terrace garden features an advanced vertical farming system with hydroponic and aeroponic towers growing a variety of leafy greens, herbs, tomatoes, and chillies. Modular grow beds use automated irrigation and nutrient sensors connected to a home AI system. Compact fruit trees like banana and papaya are grown in climate-controlled smart pots. A compact composting unit processes organic kitchen waste, and a sleek rainwater harvesting and filtration system supplies the garden. In the background, you can see other buildings with green rooftops, rooftop wind turbines, and vertical gardens cascading down the sides. Tall coconut trees still dot the skyline, maintaining the tropical Kerala identity, but now mixed with a highly organised, green-smart cityscape under a clear, climate-controlled sky

Prompt 2: A realistic futuristic homestead in Kerala, India, blending traditional architecture with modern eco-friendly elements. A medium-sized tropical modern household compound surrounded by lush greenery. The land includes multi-layered farming: coconut trees, banana plants, mango tree, jackfruit tree, pepper vines, and a vegetable garden with raised beds and vertical grow towers. A solar panel system is installed on the rooftop. A biogas unit and compost bin sit discreetly in one corner. Rainwater harvesting tanks and a small aquaponics pond with fish and water plants are integrated into the garden. A young couple, one using a tablet to monitor crop health and another harvesting vegetables, shows tech-assisted farming. The background features misty hills, neighbouring homesteads, and a clear Kerala sky. The scene blends tradition, innovation, and

sustainability in a tropical setting. no people in the scene, add a pathway to the house, with a small flower garden. Somewhere in the background, a car is parked and it's charging.

Appendix 2: Survey Questions.

Q1: Have you ever heard about Foodscapes?

Q2: How do you currently access most of your food?

Q3: How important is it for you to buy food directly from farmers?

Q4: How much do you trust that the products sold in supermarkets are safe and healthy?

Q5: How important is it for you to buy locally produced food?

Q6: Would you grow your own food at home if you had the space and tools?

Q7: Would you support supermarkets and local markets working together to sell both local and imported food?

Q8: What makes it hard for you to buy local food?

Q9: Would you support a hybrid supermarket model that combines big retailers with local farmers' produce?

Q10: What would motivate you to buy more from local farmers?

Q11: Have you ever tried cooking a traditional dish?

Q12: Which type of food do you prefer most often?

Q13: What influences your choice between homemade and fast food?

Q14: Do you think traditional homemade food is losing popularity among young adults?

Q15: Why do you think traditional homemade food is losing popularity among young adults? (Optional)

Q16: Which would you choose if fast food and homemade traditional food were equally available?

Q17: What does the Future Market look like?

Q18: What should supermarkets do in the future?

Q19: Where would you like to buy fresh food in the future?

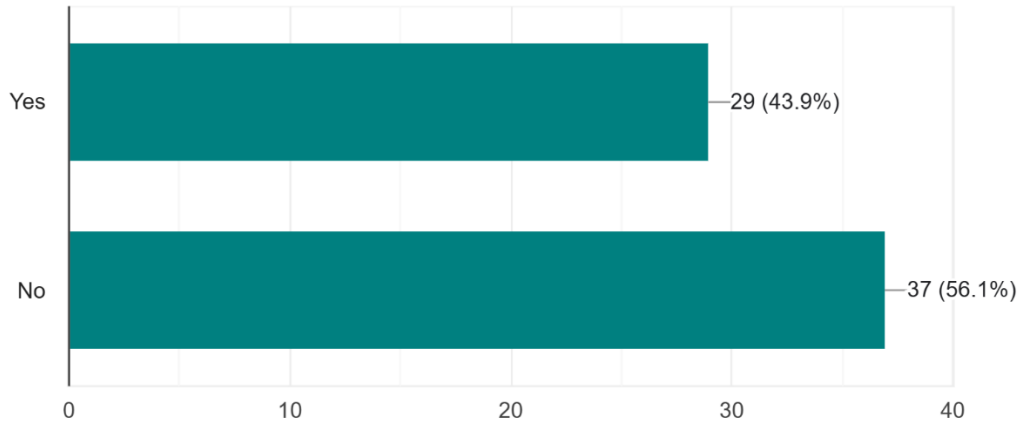
Q20: Do you believe the future of food should be more localized (produced and sold within a region)?

Q21: Why do you think that way? (Optional)

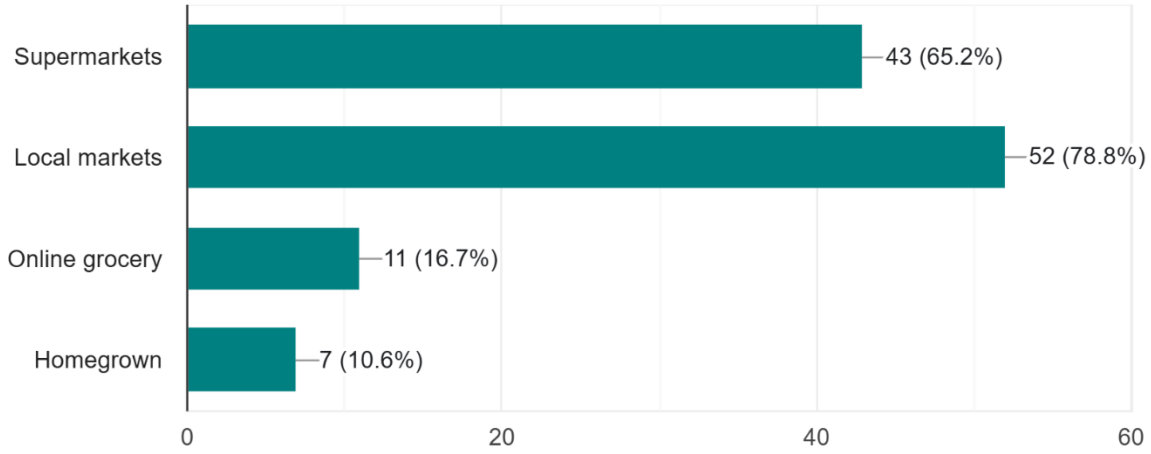
Q22: What is your vision for future foodscapes? (Where and how would you like food to be produced and sold?)

Appendix 2: Survey Responses.

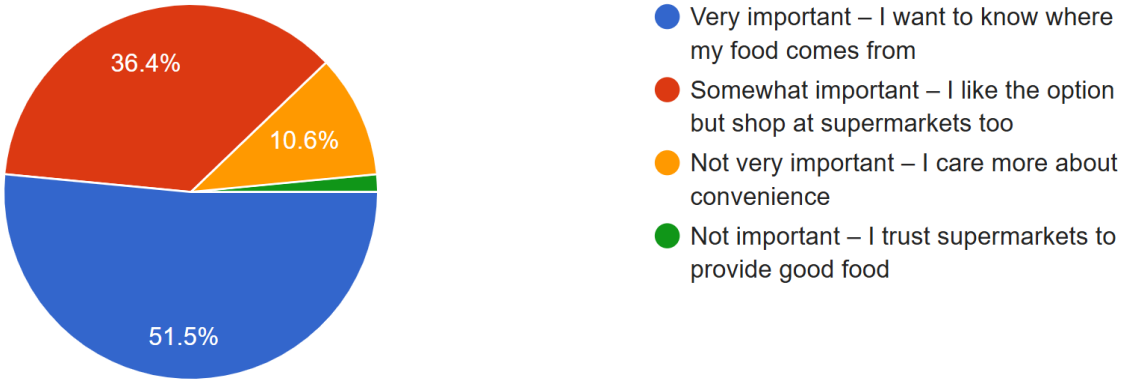
Q1: Have you ever heard about Foodscapes?



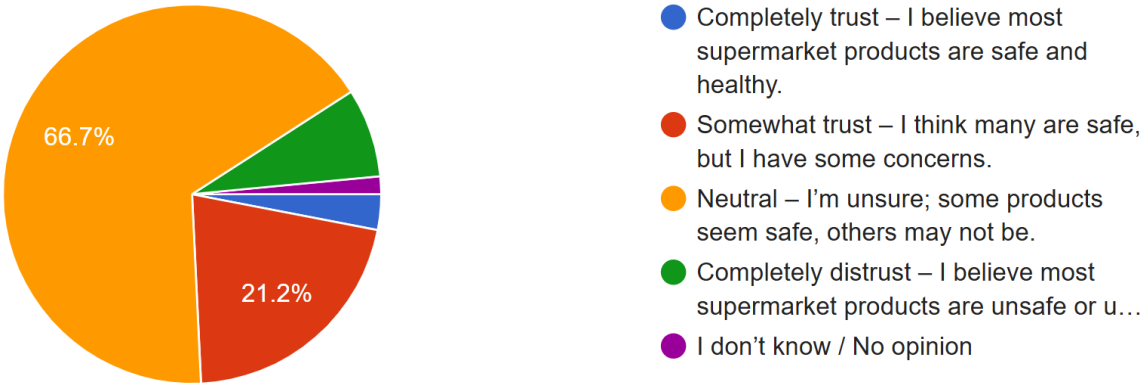
Q2: How do you currently access most of your food?



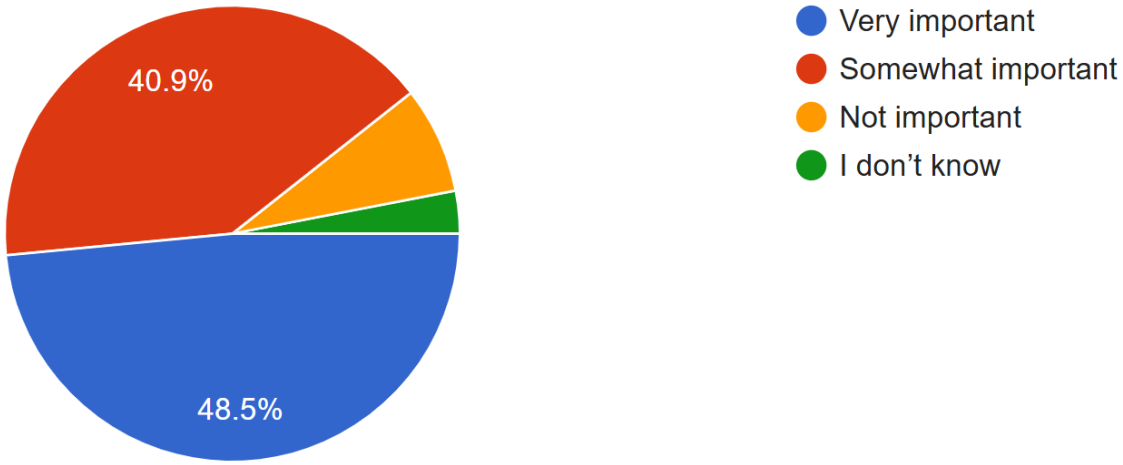
Q3: How important is it for you to buy food directly from farmers?



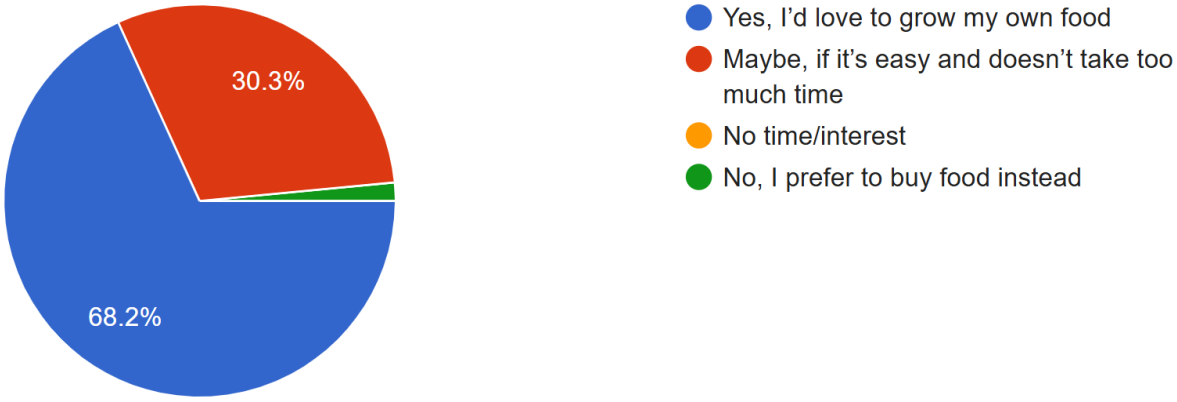
Q4: How much do you trust that the products sold in supermarkets are safe and healthy?



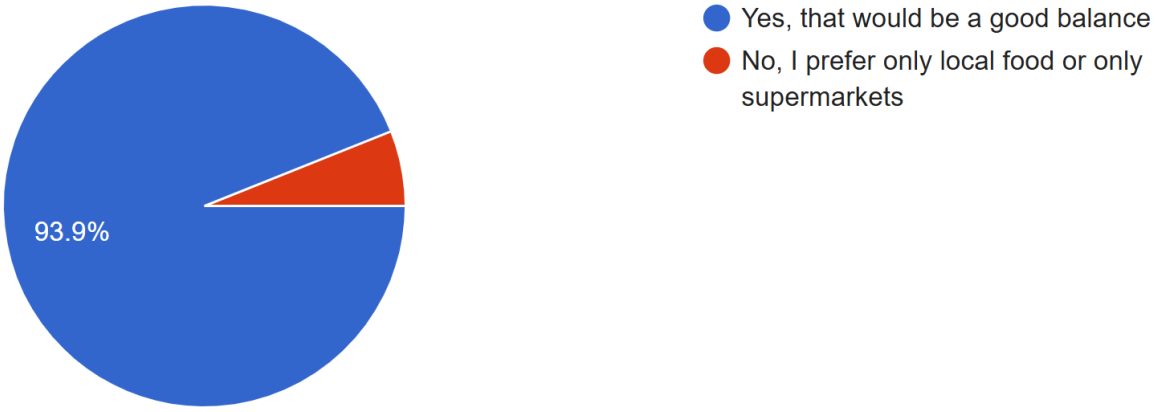
Q5: How important is it for you to buy locally produced food?



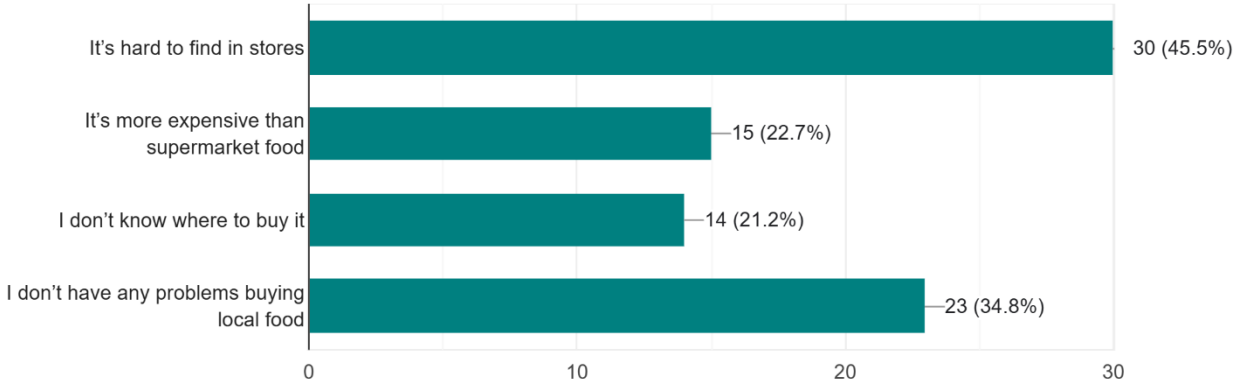
Q6: Would you grow your own food at home if you had the space and tools?



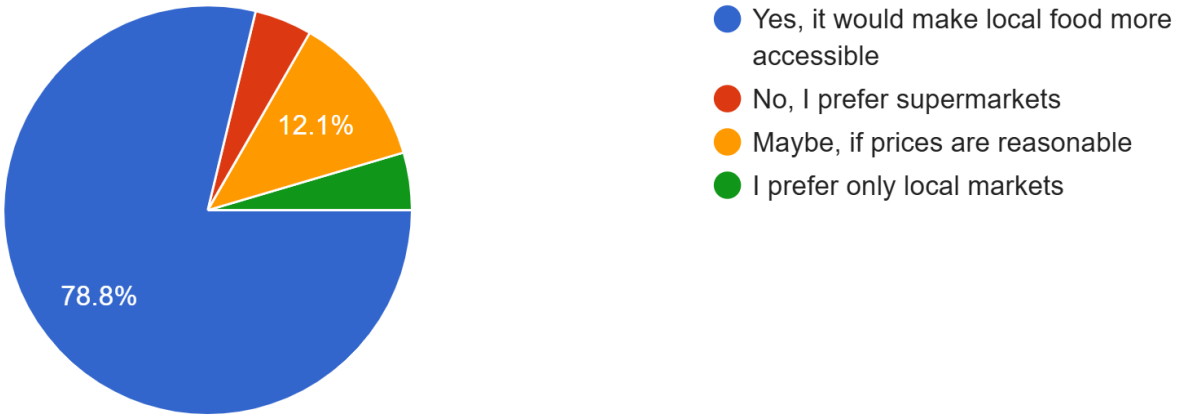
Q7: Would you support supermarkets and local markets working together to sell both local and imported food?



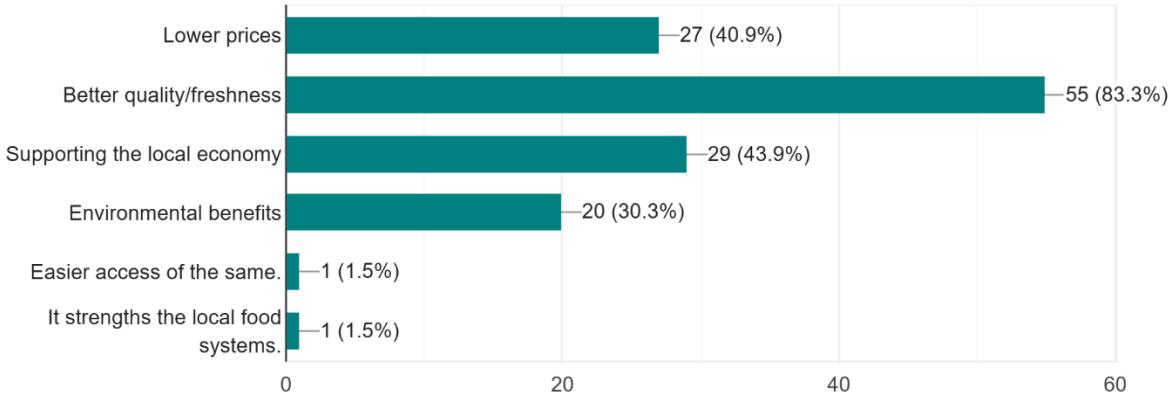
Q8: What makes it hard for you to buy local food?



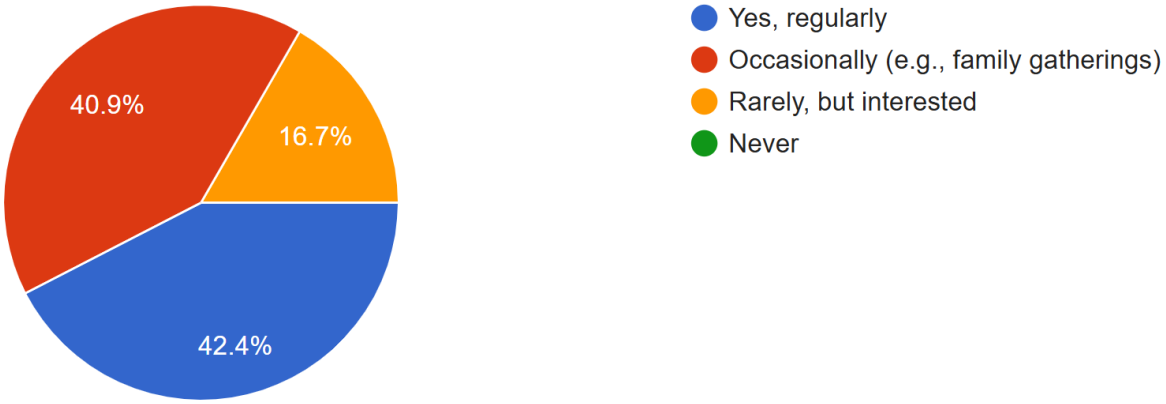
Q9: Would you support a hybrid supermarket model that combines big retailers with local farmers' produce?



Q10: What would motivate you to buy more from local farmers?

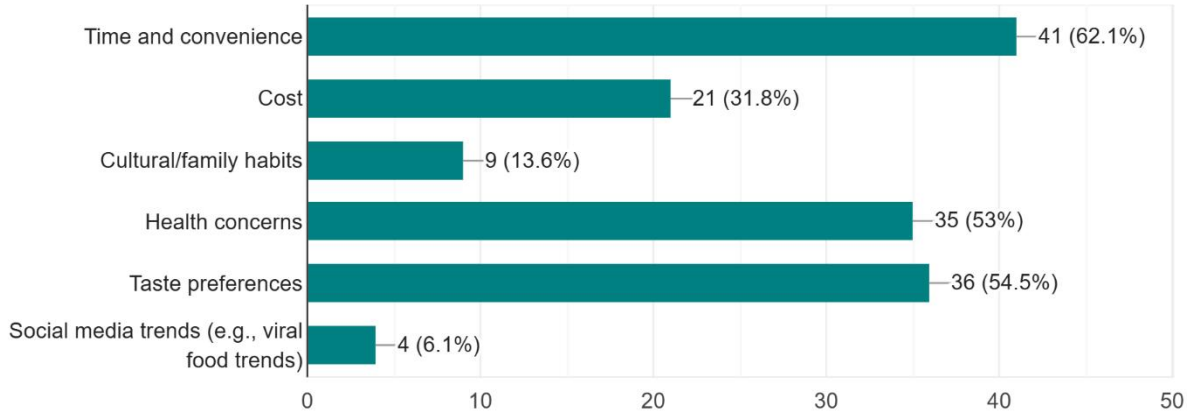


Q11: Have you ever tried cooking a traditional dish?



Q12: Which type of food do you prefer most often?

Q13: What influences your choice between homemade and fast food?



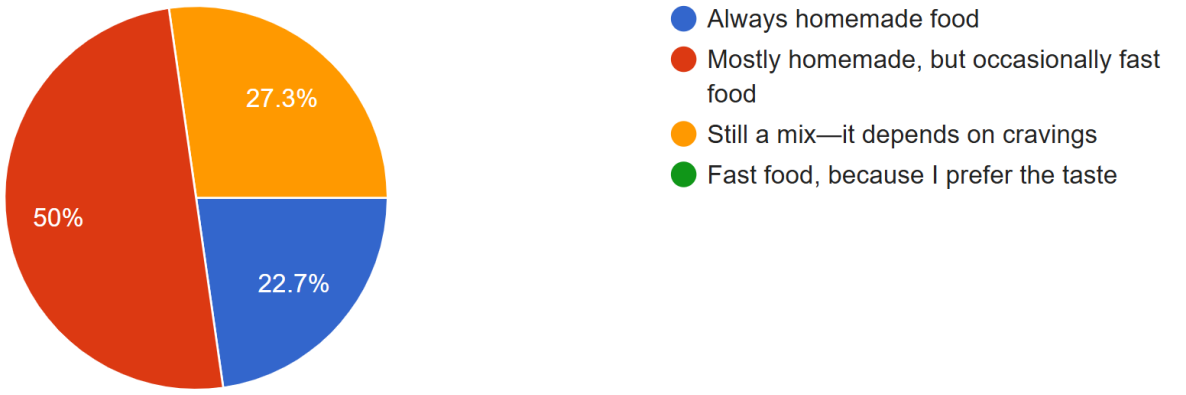
Q14: Do you think traditional homemade food is losing popularity among young adults?

Q15: Why do you think traditional homemade food is losing popularity among young adults? (Optional)

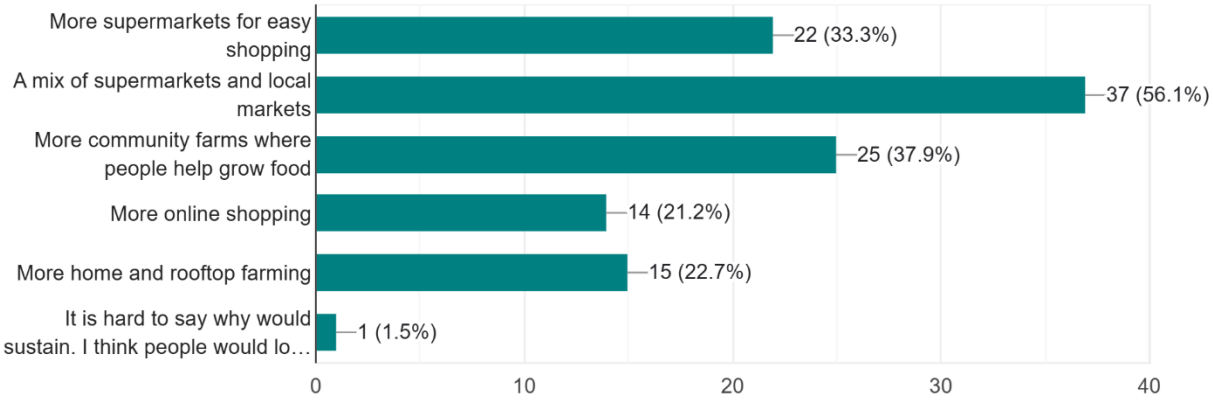
1. Convenience with fast food and takeouts
2. Availability & cost
3. Fast food more tasty and low time prepare it
4. Young adults are seldom left with enough time to cook a homemade meal all by themselves due to demands from their employers
5. They need more popular food items
6. Because of Lifestyle changes
7. Social trend is influencing a lot on this matter. Additionally the fast food is also gaining popularity due to its addictively enhanced taste compared to homemade food. Hence, youth prefers more of outside food when compared to homemade meals.
8. The decline in the consumption of local food might have reduced due to the unavailability of the same, especially for the people who are working at metro cities. In such cases, even if we prefer to eat healthy, we are left with no options but rely upon the fast food which are more convenient in accordance with the busy schedule.
9. i think there are a number of reasons like busy lifestyles, convenience of fast food, lack of cooking skills, changing tastes, difficulty finding traditional ingredients, health trends, and perceptions of tradition as outdated.
10. Homemade food has now turned to be a luxury for the younger generation. Time, Money plays an important role too. Many prefer the ease of access of readymade food. Be it eating out or ordering online proves to be much more efficient for individuals. Living with your family also matters as many depend on their family (parents) for homemade food. Individuals either don't have the time or knowledge to make food at home. So any convenient way would be appealing.
11. Changing lifestyle, convenience of fast food etc.
12. Time and convenience
13. Lifestyle changes and time

14. Because they are busy with their work and most of them might not have started the habit of cooking early in their life. Also, frozen food is readily available in the form of meals.
15. Not really in hometown
16. The standardization of diets, especially the introduction of fast food chain gained popularity among the youth. The fast life style and not havrhe knowledge about cooking or the importance of local foods create a gap in youth losing the traditional values. The traditional foods had shrunken into the meals consumed only during the festive days and celebrations.
17. Because fast food is easy to buy and some adults didn't like to spend too much time to make food.
18. Because it's time consuming and ingredients are expensive now, back in the time ingredients were home grown , easily available and cheap.
19. Accessibility of fast food and processed foods, modern lifestyle and influence of social media.
20. I don't think it is losing popularity. It is the matter of ti.e or busy schedules. The young adults still enjoy cooking tradional meals if they have time.
21. Because of the fast paced lifestyle.

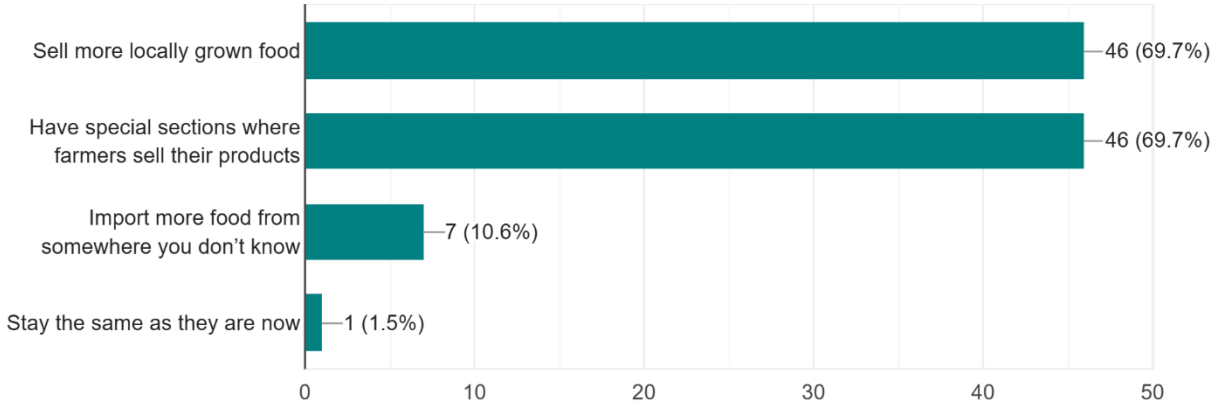
Q16: Which would you choose if fast food and homemade traditional food were equally available?



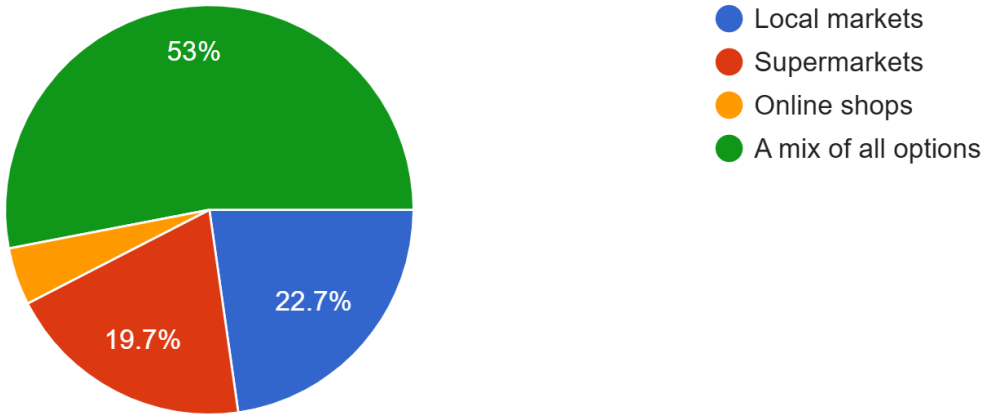
Q17: What does the Future Market look like?



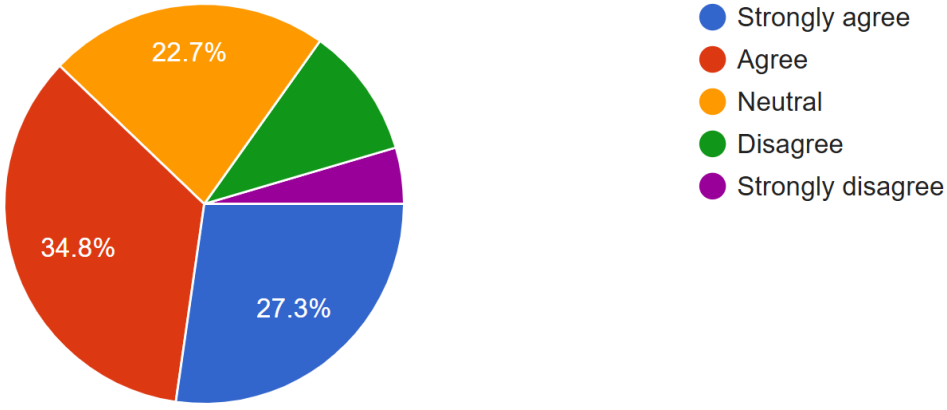
Q18: What should supermarkets do in the future?



Q19: Where would you like to buy fresh food in the future?



Q20: Do you believe the future of food should be more localized (produced and sold within a region)?



Q21: Why do you think that way? (Optional)

1. Can promote stable food supply
2. No one intrested in farming everybody like white collar jobs
3. I believe that not all type of food products can be grown in a specific region and if food access is restricted to what is being grown in that region, then it would lead to serious nutritional deficits.
4. Its is because the food should be available everywhere and all people should get equal access to good product
5. This can help us to understand the source of the food which enables to define its quality. Also, if we can cultivate and use from our own regions, the proportion of food imported from neighbouring states or countries can be considerably reduced which can be economically profitable.
6. Ensure stable food supply
7. I don’t see that happening. You can’t grow everything in a single region.
8. Helps in the stability of food supply
9. I live in Switzerland and we don't grow that much in the mountains
10. Because it is not possible to grow food in all the regions every time of the year especially in nordic countries.
11. Everyone needs to taste all kinds of food. Cannot be limited to food in one area
12. The importance of local food production is gaining more popularity. After th covid 19, weakness in the food supply chain is evident forcing nations to take action on producing as much food they can. It's also important to revive the food production around us. Eventually, a shift will happen with more people were interested in the local food systems.
13. Nowadays people are health conscious so in future all need fresh and healthy food.
14. Low environmental harm, fresh movement of products
15. Can ensure more stable food supply and it can also support local economies.
16. I totally agree that locally grown food should ve encouraged at its home but I feel there is no harm in exporting it too, if we have a surplus.
17. It will boost the local economy instead of helping the cooperations.
18. The produce would stay fresh for longer, and it encourages people to support local producers more

Q22: What is your vision for future foodscapes? (Where and how would you like food to be produced and sold?)

1. Should help to strengthen local communities and provide consumer transparency
2. Locally and sold through every store
3. No idea
4. I would like the food to be produced by experienced and passionate farmers in well thought out and well placed farmlands across the fertile plains of the country but their crops should be facilitated to be sold over big chain supermarkets to ensure proper sales and income as well as widespread availability to consumers.
5. Buy food from local markets where farmers sell their products. Buyers will get quality vegetables and meats.
6. I would prefer more organic and less treated products produced locally. Inorder to make local food accessible it should be available both in local and supermarkets.

7. In the future, food should be grown in eco-friendly ways, like indoor farms and soil less cultivation, vertical farming etc to protect the environment. Local markets would focus on fresh, nearby produce, and technology would help people buy directly from farmers, which ensure good income to farmers. Everyone should have access to healthy, affordable, and diverse food options.
8. I don't mind food being produced anywhere as long as it don't doesn't cause grave health concerns.
9. Healthy and organic food production
10. Decentralized markets can provide fresh foods to the consumers
11. Should promote transparency by developing direct connection between producers and consumers
12. People are getting busier, they always will go for convenience even though they want to support local markets. Making local goods available conveniently may be the better choice!!
13. Should promote transparency
14. locally - but here we have to depend on supermarkets
15. More homemade food
16. A mix of local and supermarket
17. The food system needs to be environmentally responsible, minimizing resource depletion and pollution, and promoting biodiversity.
18. Organic food in cheaper means and more accessible
19. I want the future foodscapes to be a harmonious one, where the supermarkets and online groceries stores sell products that were grown locally. A mix of everything will be a perfect solutions. We can't produce everything food exist in the world, but we can increase the products which were locally grown, and try to follow the seasonal foods. This would help to reduce monoculture happening some part of the world to feed another part and can strengthen the local food systems around the world.
20. The food utopia is afar dream, but I still believe people had the power to achieve this.
21. Everything should be produced and sold within a region.
22. Locally made fresh food by online
23. Super markets must have a section for local food
24. In my vision future food scapes should strengthen local communities and help to develop direct connection between producers and consumers to promote transparency.
25. If given a chance, I would like to have small farm gardens in the city, where residents can grow home grown vegetables. But it wouldn't be sufficient, so people can turn to local markets or other stores to have balance.
26. Local food becoming more accessible for everyone through local and super markets.
27. The people are still trying to find a balance in their food habits and until the market settles and aims to help farmers and customers alike instead of maximising profits, we customers are unsure as to what is good for us and what's not. We end up sticking to what we know best and buy from trusted supermarket/local market etc and would not actively seek a change in the origins of our food.
28. The knowledge about food and where it was produced should be given to the people. The gap between people and food needs to be filled, they want to break food as commodity to the something of their own.
29. Recognise food as an essential resource or source of community well-being rather than a mere commodity.
30. In most of the places, I believe these local markets are not by farmers completely, so rythu bazaar or farmers markets should be more encouraged. I strongly feel we need to have a fair system for our farmers to sell their produce at fairer prices.

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