Value Chain Development for Improved Livelihood Options in Village Tank Cascade Systems

Healthy Landscapes Project

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Consultancy Service for Undertaking Studies on Value Chain Development and Valuation of Ecosystem Services

Assignment 04: Conduct study on the analysis of multi-sector value chain and market illustrations

Report on Value chain development for improved livelihood options in Village Tank Cascade Systems

Submitted to

The UNEP-GEF project on Healthy Landscapes: Managing Agricultural Landscapes in Socio-Ecologically Sensitive Areas to Promote Food Security, Wellbeing and Ecosystem Health Project in
Sri Lanka

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Executive Summary

This a was carried under as a part of Assignment 04 of the consultancy undertaken by the consultant which is attributed to the Activity 1.4.2 of HLP and to successfully achieve the outcome 01 of the project. With this report we present the deliverable 02 stipulated in the TOR of the consultant.

This report provides comprehensive insights of the development nodes of the value chains for bee honey, food fish, traditional foods, and agro-eco tourism. It begins with an introduction that sets the stage for the study and outlines the objectives aimed at identifying potential development nodes within these value chains. The methodology chapter details the approach taken for the study, including the study Area, sampling methods, and tools used for the value chain study. It also describes the data collection and analysis techniques employed to gather and interpret the data. The core of the report is found in Chapter 03, where each value chain is explored in depth. For all value chain, a SWOT Analysis is conducted to assess strengths, weaknesses, opportunities, and threats, followed by targeted suggestions for development. The report concludes with an overall summary and conclusion in Chapter 04, synthesizing the findings and providing a strategic outlook for the future development of these key value chains. The insights provided in this report are intended to guide stakeholders in making informed decisions to enhance the productivity and sustainability of the bee honey, food fish, traditional foods, and agro-eco tourism sectors.

Chapter 01

1.1. Introduction

The advent of globalization in the contemporary economy has catalyzed the emergence of value chains as pivotal frameworks for understanding and optimizing economic operations across sectors. As markets integrate globally, a compelling need arises to dissect value chains comprehensively to enhance efficiency, sustainability, and competitiveness. This imperative stems from the interconnectedness of markets and industries, necessitating a deeper understanding of value chains to navigate modern economic landscapes effectively. Thus, value chain analysis becomes indispensable for stakeholders to identify opportunities, streamline operations, and maximize value creation and competitive advantage.

Understanding value chains is paramount in sustainable community development, particularly in Village-based Traditional Community Systems (VTCs). These systems encapsulate diverse operations crucial for livelihood sustainability and ecological restoration. Through meticulous examination and prioritization of these value chains, avenues for sustainable development can be unveiled, fostering economic prosperity while preserving environmental integrity.

A value chain is the full range of activities required to bring a product or service from conception to delivery to the end consumer. This includes every process step, from the initial design and sourcing of raw materials to the final product's production, distribution, and marketing. Essentially, a value chain encompasses all the activities that add value to a product or service as it moves through the various stages of production and distribution.

Value chains play a crucial role in the agricultural domain, epitomizing meticulously structured progressions of activities essential for producing and disseminating commodities such as rice. Each stage of the rice value chain, from cultivation to consumption, involves specialized actors and precise procedures, contributing to the creation of a high-quality product for end consumers.

However, despite the significance of value chains, there remains a dearth of empirical studies focusing on VTCs, hindering the identification of development opportunities and the formulation of evidence-based interventions. Undertaking value chain analysis is thus imperative to inform decision-making and drive inclusive development strategies in rural contexts.

Furthermore, exploring value chain analysis within village tank cascade systems represents a novel endeavor in research, offering insights into opportunities for livelihood enhancement and ecological restoration. By delving into the complex dynamics of these systems, researchers aim to discern stakeholder roles, resource flows, and power dynamics, laying the groundwork for informed governance and management.

Understanding and analyzing the value chain is crucial for businesses and policymakers alike for several reasons such as, by mapping out the value chain, businesses can identify areas to improve efficiency, reduce costs, or differentiate their products or services from competitors. This enables them to make informed strategic decisions about allocating resources and optimizing their operations. A deep understanding of the value chain can help businesses

identify their unique strengths and capabilities relative to competitors. This knowledge allows them to focus on areas where they can create the most value and gain a competitive advantage.

Value chain analysis helps businesses identify potential risks and vulnerabilities within their supply chains, allowing them to implement measures to mitigate these risks and ensure a more resilient and reliable supply chain.

By analyzing the value chain, businesses can identify opportunities for innovation and product development, such as new ways to streamline processes, incorporate new technologies, or create value-added products or services for customers.

The need for value chain development arises from the recognition that optimizing and enhancing the efficiency and effectiveness of value chains can have significant positive impacts on economic development, particularly in rural areas.

Value chain development based on VTCS is of paramount importance for several reasons. Many rural economies are heavily reliant on tank-based agriculture. By strengthening agricultural value chains, it is possible to enhance the productivity, efficiency, and competitiveness of the agricultural sector, leading to increased incomes for farmers, improved food security, and overall economic development.

Rural producers often face challenges in accessing markets due to limited infrastructure, information asymmetries, and other barriers. Value chain development initiatives can help to overcome these barriers by facilitating linkages between producers, processors, distributors, and consumers, thereby expanding market access and creating new market opportunities for rural producers.

Value chain development can also contribute to sustainable development by promoting environmentally friendly practices, supporting the conservation of natural resources, and fostering resilience to climate change and other external shocks.

Rural areas are often characterized by high levels of poverty and limited economic opportunities. By promoting the development of value chains in these areas, it is possible to create new income-generating activities and employment opportunities for rural populations, thereby helping to alleviate poverty and improve livelihoods.

Value chain development holds significant importance in fostering pro-poor economic development for several reasons, particularly in rural areas. Firstly, it provides insights into how impoverished individuals can engage more effectively in domestic, regional, or global trade, acknowledging their inherent lack of power compared to lead firms within the value chain. This understanding is crucial for empowering rural communities to navigate trade dynamics and extract fair value from their participation.

Value chain development emphasizes economic viability and sustainability by focusing on market dynamics and commercial feasibility. Unlike traditional enterprise development projects that often overlook market considerations, value chain analysis incorporates market systems into intervention strategies, promoting holistic and inclusive development approaches. It serves as a qualitative diagnostic tool, identifying critical issues and barriers specific to target groups and informing the formulation of effective development strategies. Offering a comprehensive understanding of existing realities and potential pathways for improvement, it enables the design of interventions tailored to the needs of impoverished communities.

Moreover, value chain analysis and development highlight core rents and barriers to entry within the chain, guiding efforts to facilitate the participation of the poor. Whether through upgrading strategies or market differentiation, it empowers marginalized producers to enhance their competitiveness and access higher-value markets.

The scalability of value chain development aligns to reduce poverty at scale, making it a relevant framework for large-scale development initiatives. By extending its logic from individual producers to entire regions or countries, it ensures widespread impact and sustainability.

Additionally, value chain analysis is evidence-based and action-oriented, grounded in empirical realities rather than theoretical assumptions. This pragmatic approach enables stakeholders to make informed decisions and drive tangible development outcomes.

Critically, value chains provide a clear pathway for policy and restructuring initiatives, fostering cooperation among stakeholders to enhance systemic competitiveness. By addressing both market and state failures, they promote inclusive growth and sustainable development.

In rural areas, such as those utilizing the village tank cascade system (VTCs), value chain development is particularly vital. The VTCs, a traditional water management system prevalent in many rural communities, presents opportunities for value addition and market integration across various stages of agricultural production and distribution. By applying value chain analysis to the VTCs, stakeholders can identify inefficiencies, barriers, and opportunities for enhancement, thereby maximizing economic benefits for rural populations.

In conclusion, the significance of value chain development in rural areas lies in its ability to empower marginalized communities, enhance market participation, and drive inclusive economic growth. By leveraging the principles of value chain analysis within systems like the VTCs, policymakers, and practitioners can unlock the full potential of rural economies, contributing to broader socioeconomic development goals at both local and national levels.

1.2. Objectives

Overall objective

To enhance the socio-economic resilience and ecological sustainability of rural communities by identifying potential value chain development options/strategies to strengthen the stakeholders within the Village Tank Cascade Systems in Sri Lanka.

Chapter 02

2.1. Methodology

A qualitative approach was undertaken in this study, a method commonly favored over quantitative approaches in value chain analyses. This approach entailed a thorough, descriptive examination of the various activities and processes within the respective value chain, facilitating the establishment of baseline status and the comprehension of opportunities for value chain development. Unlike quantitative analysis, which centers on numerical data and financial metrics, the qualitative approach accentuates the understanding of nuances, relationships, and dynamics among different components of the value chain.

Value Chain Study Procedure: The process of the value chain study, as depicted in Figure 2.1 involved several steps. Initially, sectors and subsectors/commodities emerging from Value Chain Transformation (VTC) landscapes were identified. This initial identification yielded a preliminary list of sectors and subsectors/commodities, along with their significance within VTC systems and the potential for inclusion of youth and marginalized individuals. Subsequently, this preliminary list underwent validation and updating before prioritization and identification of potential value chains for further analysis, based on predefined criteria outlined in the methodology section.

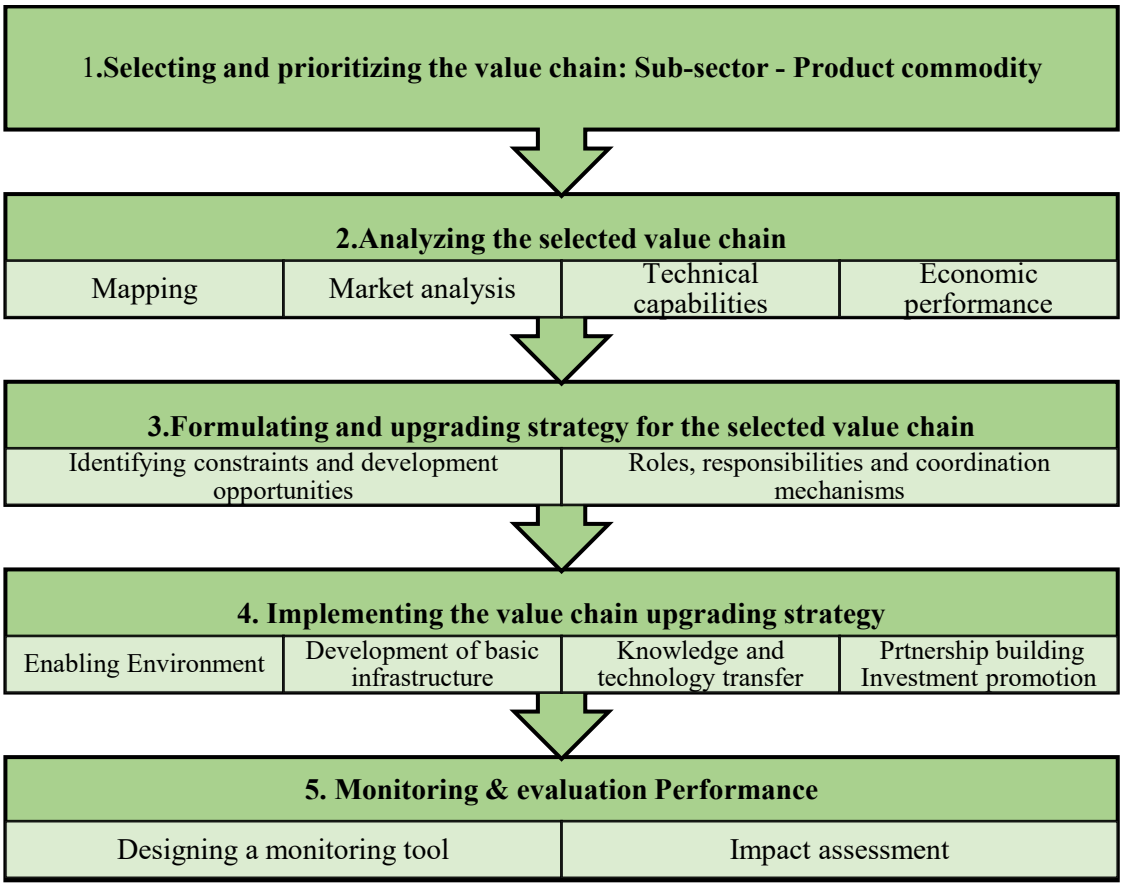

Figure 2.1. The schematic view of the process implemented in the value chain study

The subsequent step encompassed value chain analysis, which comprehensively covered all activities from raw material procurement to final customer delivery for the respective commodity. This phase involved the development of valuation maps for selected commodities, delineating all value chain actors, their linkages, the present status of value addition, gross margins, and market efficiencies. The evaluation of the value chain also entailed the identification of operational and market challenges.

Following the value chain analysis, attention turned to value chain development, focusing on strategic enhancements and optimizations of processes involved in product or service creation, manufacturing, and delivery. This endeavor aimed to analyze and enhance each value chain stage to bolster efficiency, reduce costs, and create value for producers and consumers. Opportunities for new market linkages, businesses, negotiations, and agreements were sought to address identified challenges.

The outcomes of the initial stages were consolidated into the first three deliverables of the assignment: a report on the baseline status of multi-sector value chains and marketing illustrations, a report on the review of value chain marketing options to enhance livelihood options within VTC systems, and the preparation of training documents for stakeholder and community capacity building to integrate value chain and marketing options. Resource support for organizing respective training programs was provided to the relevant stakeholders.

Tools employed for the value chain study included participant observation, crucial in qualitative research and particularly pertinent in anthropological studies encompassing value chain analyses. This method facilitated a deeper understanding of the characteristics of goods, and services, and the contextual intricacies of their value chains and developments. Additionally, semi-structured interviews (SSI) and focus group discussions (FGD) were utilized to gather information at various stages of the value chain study, fostering dynamic and iterative conversations yielding coherent insights and analysis, essential components of value chain analysis.

2.2. Study Area

This study covers the total project implementing area depicted in Table 2.1.

2.3. Sampling

The population of this study was delineated as comprising all multisectoral value chain actors and stakeholders within the respective market system. A two-stage sampling scheme was employed to select informants for data collection, incorporating non-probabilistic sampling methods at various junctures.

Initially, sampling occurred at the cascade level, with Grama Niladhari (GN) divisions serving as the primary sampling units, specifically targeting divisions with village tanks. Purposive sampling was applied in this stage, focusing on village tanks earmarked by the HLP for restoration, where the highest potential for the establishment of SVM was anticipated. The listing of selected village tanks, wherein some degree of restoration work had been initiated or was scheduled to commence, is detailed in Table 2.1.

Table 2.1. Primary sampling units selected based on purposive sampling

Tank	GN Divisions	Cascade	DS Division
Rambawalawewa	593 – Kelewa and Suburb GN divisions	Bellankadawala	Palugaswewa
Bulugahawewa			
Vidane Wewa			
Bellankadawala			
Hiriwadunna	591 – Hiriwadunna and Suburb GNs		
Thumbikulama	592 = Wayaulpotha and Suburb GN divisions		
Kapugama	603 – Horiwila and Suburb GN divisions	Horiwila	
Dumbuluwagama			
Thirappanewewa	562 - Walagambahuwa and Suburb GN divisions	Mahakanumulla	Thirappane
Pahalawewa			
Walagambahuwa			

The secondary sampling units are stakeholders in the respective market system and value chain actors sampled by the judgmental sampling method from the secondary sampling units. This is a commonly used sampling method in value chain studies that uses a qualitative approach.

2.4. Key Areas & Data Collection

Structured questions were developed under the following key areas to guide the data collection process, utilizing the above-mentioned tools across various stages of data collection. These questions served as guiding inquiries throughout the data collection process, constituting a dynamic checklist that was subject to updates as new inquiries emerged during data collection.

With consideration of personal background, respondents were queried about demographics and identity, tenure within their respective sector/production/business, roles therein, as well as relevant experiences and qualifications. Inquiries extended to familial aspects and involvement, alongside the extent of knowledge regarding VTCs, support mechanisms, and personal engagement.

For Identification of Sectors and Subsectors Functioning in VTCs, and Commodities Realized had aimed to elucidate major and minor sectors operative within VTCs, along with associated goods and services. Queries extended to key subsectors and the emergence of niche products within VTCs landscapes. Evaluation questions were posed to gauge the current status of sectors, subsectors, and their respective commodities, considering parameters such as popularity, family engagement levels, district-wise distribution, governmental and stakeholder involvement, economic contributions, market opportunities, as well as social and environmental impacts. Additionally, an assessment regarding the inclusivity of youth, gender, and marginalized individuals was conducted.

Prioritizing and Selecting Sectors/Subsectors/Commodities for Value Chain Analysis and Development entailed the identification of the ten most significant commodities originating from identified sectors and subsectors, followed by their ranking based on predetermined criteria detailed in Table 2.1.

2.5. Tools used for the Value Chain Study

The tools utilized for the value chain investigation encompassed a multifaceted array tailored to procure essential information and data across diverse tiers of the value chain examination, Participant observation, a pivotal component widely employed in qualitative research methodologies, notably finds application in anthropological inquiries inclusive of value chain investigations. This method facilitated a nuanced comprehension of the intrinsic characteristics of goods, and services, and the contextual nuances of their respective value chains and evolutions. Notably, this facet of the research endeavor was exclusively undertaken by the consultant and the collaborating expert vested in the comprehensive collection and analysis of data.

The employed methodology incorporated the utilization of Participatory Rural Appraisal (PRA) techniques, namely Transect Walk, Mapping, and Seasonal Analysis Pairwise Ranking, as tools for data collection. PRA, an established methodological approach within the realm of participatory research, was employed to engage local stakeholders in generating and interpreting relevant knowledge about the studied value chain.

Transect Walk, a fundamental component of PRA methodologies, involved systematic traversing through predefined geographical areas to observe and document environmental characteristics and socio-economic dynamics pertinent to the value chain under investigation. Mapping exercises complemented this observational process by facilitating the spatial representation of key elements within the value chain landscape, thereby elucidating spatial relationships and patterns of resource distribution.

Additionally, Seasonal Analysis Pairwise Ranking facilitated a structured assessment of seasonal variations in the perceived significance and performance of nodes and processes within the value chain. This methodological tool enabled the discernment of temporal fluctuations in value chain dynamics, thereby enriching the understanding of seasonal influences on value chain operations and outcomes.

By employing these PRA tools, characterized by their participatory nature and methodological rigor, comprehensive insights were garnered into the intricate dynamics of the value chain ecosystem under scrutiny.

Moreover, semi-structured interviews (SSI) and focus group discussions (FGD) emerged as indispensable tools deployed to elicit insights at varied junctures, encapsulating the value chain study's schematic. The interview protocol adopted was characterized by its dynamic and iterative nature, engendering a coherent tapestry of information. guided dialogues were premised upon predetermined thematic domains, yet remained flexible to accommodate emergent inquiries and insights stemming from the discourse. The consequential synergy between the dialogue participants and the ensuing visualized analyses assumed pronounced significance within the ambit of value chain analysis, amplifying the depth and granularity of the investigative endeavor.

2.6. Data Collection and Analysis

The field-level coordination of the data collection process was executed with the utmost support provided by the staff of the Health Project (HLP) Field Coordination unit.

During the data collection, both secondary and primary data were gathered to identify sectors and subsectors supplying goods/services linked to VTCS. Secondary data were obtained through a review of existing literature pertinent to similar valuation studies. Primary data collection involved participant observations and key Informant Interviews (KIIs) conducted with the community, various stakeholders, and subject specialists.

Collecting data was aimed to identify and prioritize potential value chains within VTCS anticipated for sustainable development. Concurrently, outputs from Stage 01 were updated. Community and expert consultations, employing Focus Group Discussions (FGDs) as the primary data collection instrument, constituted the primary method. Structured questions were utilized to guide FGDs effectively.

Data collection was targeted at the identification of value chain actors, input supply stakeholders, and stakeholders within the enabling environment of the market system for value chain analysis. Participant observations, FGDs, and KIIs were employed. The semi-structured questions within the checklist above facilitated efficient data collection.

And it was aligned with the objectives of value chain development. Data were gathered from all actors within selected value chains, input suppliers, and stakeholders engaged in the enabling environment. Guiding structured questions from the provided checklist were utilized. FGDs and KIIs were employed to collect data from variously identified informants. Data analysis was mainly done through a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis.

Value chain identification, prioritization, and value chain analysis were carried out and reported in the “Baseline Report on Value Chains based in the Village Tank Cascade Systems.

Chapter 03

Value Chain Development

3.1. Potentials and Development Nodes in the Bee Honey Value Chain

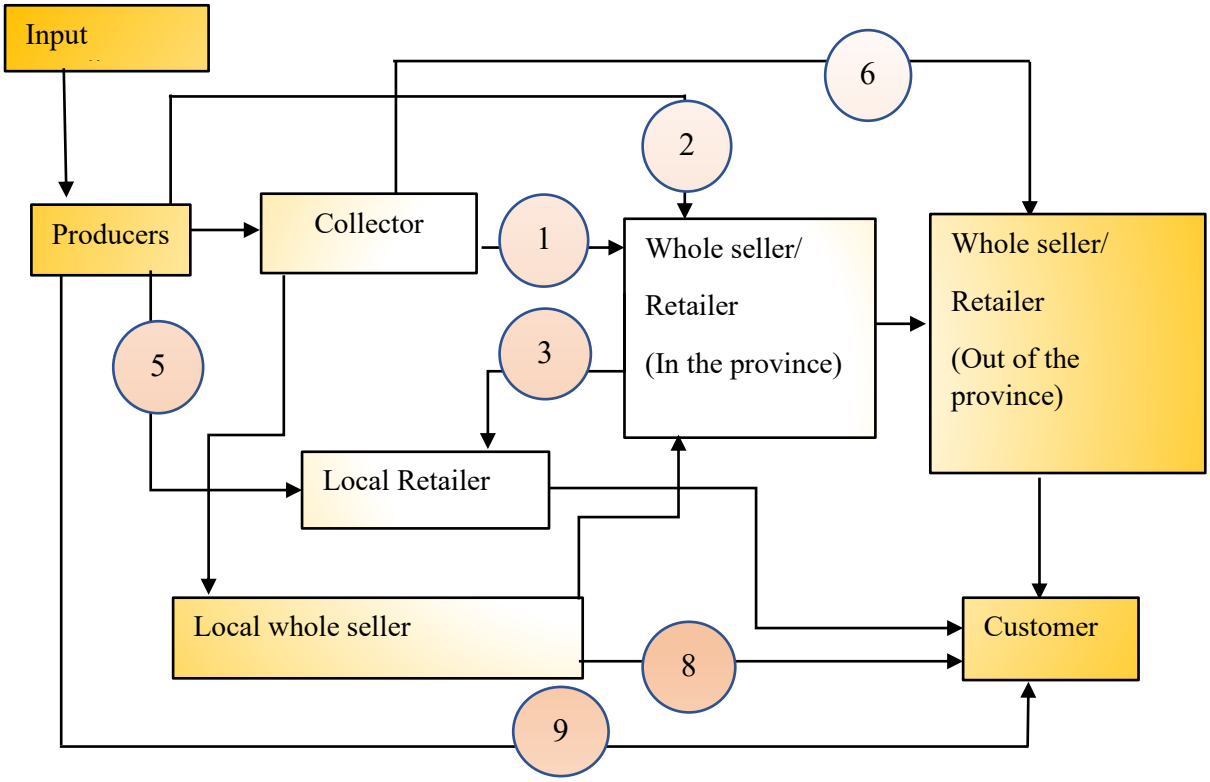

Figure 3.1. Bee honey value chain map under VTCS

The present status of the bee honey value chain in the Village Tank Cascade System (VTCS) in Sri Lanka, as depicted in the provided channels, illustrates a multifaceted and regionally diversified supply chain. Initially, honey is produced in villages such as Asirigama, Kudarambawa, and Kumbukwewa, with prices varying between Rs. 1000.00 to Rs. 1300.00 depending on the village. The honey is then collected by intermediaries, such as collectors and wholesalers, who further distribute it within and outside the Anuradhapura province to regions including Jaffna, Kandy, Colombo, and other provinces.

Channel 1 and Channel 3 show a progression from the producer to the collector, then to wholesalers, and ultimately to retailers, with significant value addition occurring at each stage. Channel 1, for instance, illustrates the honey moving from Asirigama to collectors at Rs. 1200.00, then to retailers and wholesalers within the province at Rs. 1300.00, eventually reaching out-of-province retailers and sold to customers at Rs. 3800.00. Similar paths are observed in Channels 2, 4, and 6, though with slight variations in pricing and regions of distribution. Channel 2 highlights product diversification catering to industries such as medicinal, beauty, and cosmetics, resulting in final prices up to Rs. 3500.00.

Channel 5 and Channel 9 focus more on direct sales to local customers, with products from Kudarambawa priced at Rs. 1200.00 and sold directly at Rs. 1800.00. Meanwhile, products

from Kumbukwewa in Channel 7 and Channel 8 highlight a different approach, where initial prices are lower at around Rs. 1000.00, reaching final customers for Rs. 3000.00 and Rs. 2750.00 respectively. Notably, Channel 9 indicates limited production with products priced at Rs. 2000.00, directly serving local customers in Mahanuwara and Kuliyapitiya.

Overall, the VTCS bee honey value chain is characterized by a series of steps involving local producers, collectors, wholesalers, and retailers, with prices escalating as the product moves through the chain, reflecting the added value and geographical spread of distribution. This network supports local economies by connecting remote villages to broader markets, while also accommodating diverse consumer needs and preferences through various product forms and uses

3.1.1. SWOT Analysis for the Bee Honey Value Chain

Actor	Strengths	Opportunities	Weaknesses	Threats	Suggestions
Producer	Low time consumption, low risk, easy harvesting process, higher yield, low energy consumption, minimal regulations	Suitable natural environment, high Ayurvedic value, high demand for value-added products	High time consumption, limited resources, lack of knowledge, low standards, limited equipment, distance to forest, single honey period	Wild animal attacks, wildlife conservation officers, pest attacks, price differentiation	Provide beekeeping practices and equipment, reduce intermediaries, permit forest honey processing, introducing private investment, requesting Vidatha center support
Collector	High demand Ayurvedic, food & cosmetic industries, suitable natural environment	Enhance supply to meet demand, maintain quality	Insufficient supply, variable product quality, price differentiatio n	Price conflicts, competition from commercial suppliers, environmental changes	Improve production, reduce intermediaries, provide beekeeping standards
Retailer	High foreign demand, suitable natural environment	High demand in Ayurvedic, food, and cosmetic industries	Insufficient supply, price conflicts, product differences	Market competition, regulatory changes, economic fluctuations	Improve production, provide beekeeping standards
Wholesaler	High foreign demand, suitable natural environment	High demand in Ayurvedic, food, and cosmetic industries	Insufficient supply, variable product quality, price conflicts	Market competition, supply chain disruptions, regulatory changes	Improve production, provide beekeeping standards

3.1.2. Suggestions for the Development of the Bee Honey Value Chain

To develop the bee honey value chain within village tank cascade systems, a multi-faceted approach is essential. First, establishing model villages for beekeeping is crucial. These villages should serve as centers of excellence where best practices and knowledge about beekeeping and processing are disseminated. Collaboration with government bodies and private organizations is necessary to secure investments for this initiative. Enhancing the technical knowledge of beekeepers and farmers on harvesting processes and value-added products is also vital. Empowering them with skills to assess the quality of their products will further improve the overall value chain.

Providing facilities, equipment, and expert human resources is necessary to advance techniques in storing, labeling, value-adding, and transporting bee honey. Introducing a robust market for bee honey and its related products is crucial for sustaining the value chain. Continuous supervision and motivational programs for farmers can emphasize the significance of bee honey production, ensuring consistent engagement and productivity.

Financial support in the form of funds and grants should be made available to purchase essential tools and equipment, such as beekeeping boxes and safety gear. This investment is fundamental to developing the value chain and enhancing production capacities. Additionally, a well-structured advertising campaign highlighting the superiority of Sri Lankan natural bee honey over imported varieties from countries like India, China, and South Africa should be developed, emphasizing its higher quality standards.

Market analysis is imperative to align production with demand, targeting sectors such as ayurvedic hospitals, cosmetic companies, and pharmaceutical centers to avoid oversupply. Public awareness initiatives on the environmental importance of bees should be promoted, as they play a crucial role in maintaining food value chains. Organizing workshops in schools can educate students on beekeeping, fostering a new generation of entrepreneurs.

By implementing these strategies, the bee honey value chain in village tank cascade systems can be significantly enhanced, leading to increased production, better quality products, and sustainable economic development for the community.

3.2. Potentials and Development Nodes in the Food Fish Value Chain

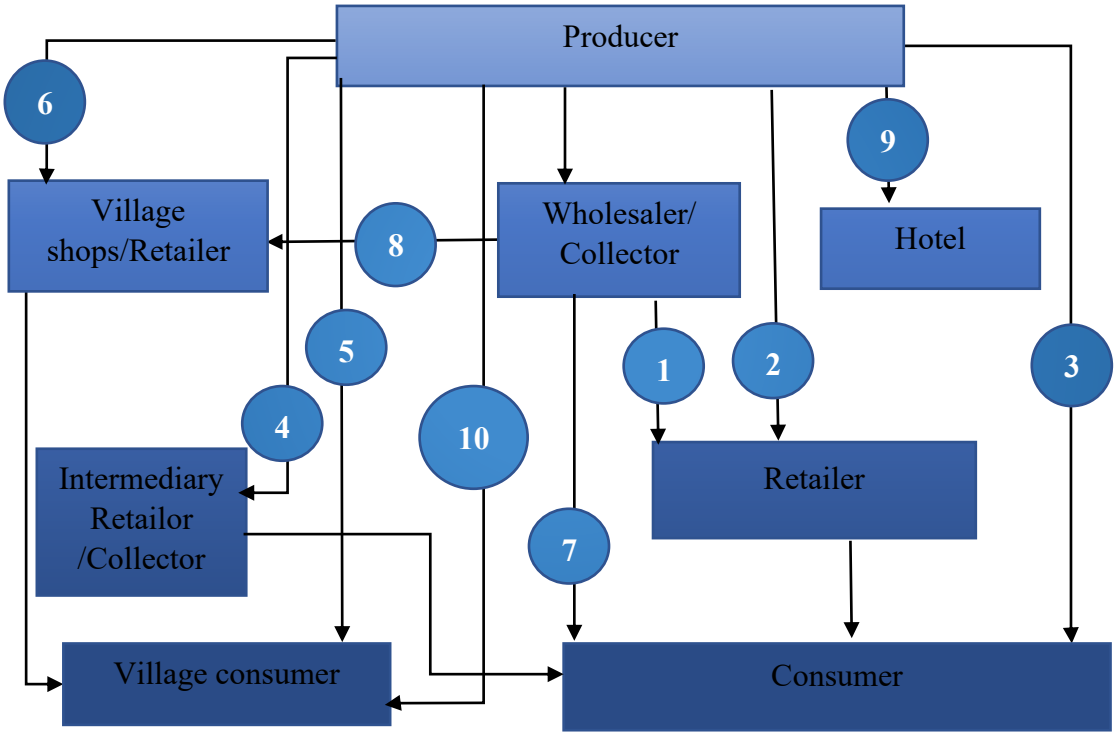

Figure 3.2. Food fish value chain map under VTCS

The present status of the food fish value chain within the Village Tank Cascade System (VTCs) in Sri Lanka highlights a diverse and regionally segmented supply chain. The fish production primarily originates from villages such as Bellankadawala, Thumbikulama, and Horiwila, with initial prices from producers ranging consistently around Rs. 450.00 to Rs. 500.00. The subsequent steps in the value chain involve varying degrees of intermediary involvement and value addition, reflecting regional distribution and price differentiation.

Channel 1 depicts the pathway from Bellankadawala producers to local wholesalers, then to retailers in Kekirawa, with final sales to customers at Rs. 800.00. Similarly, Channel 2 shows a more localized distribution within Bellankadawala, with producers selling directly to local retailers and then to customers at Rs. 600.00. Notably, Channels 3 and 5 bypass intermediaries entirely, with producers selling directly to customers for Rs. 500.00, indicating no additional processing or value addition.

Channels 4 and 7 illustrate producers in Bellankadawala and Thumbikulama supplying local retailers, who then sell to customers at increased prices of Rs. 700.00. In contrast, Channel 6 involves intermediary activity from Digampathana, leading to final sales at Rs. 600.00. Channels 8, 9, and 10 focus on Horiwila, where producers sell to local collectors and retailers, and the final products are sold at Rs. 700.00 to Rs. 900.00, reflecting additional handling and possible value addition. Channel 9 highlights limited production targeting local hotels, suggesting niche market dynamics.

3.2.1. SWOT Analysis for the Food Fish Value Chain

Actor	Strengths	Opportunities	Weaknesses	Threats	Suggestions
Producer	Traditional knowledge, availability of water resources, community involvement	Improved market access, government support, training programs	Insufficient inputs, high fishing time, damaged nets	Crocodile threats, decreased yield, economic fluctuations	Supply raw materials at subsidized prices, form Fishermen's Union, increase fish population, clean the lake
Processor	Expertise in fish cleaning and processing, established procedures	Advanced processing technologies, high demand for processed fish	Lack of modern equipment, high dependency on seasonal supply	Quality control issues, regulatory changes, supply chain disruptions	Invest in modern processing equipment, enhance quality control, and improve supply chain
Transporter	Efficient transport methods, use of ice containers	Improved logistics, better transport infrastructure	High perishability, need for efficient hygiene	Transportation delays, spoilage, increased fuel costs	Enhance transport efficiency, maintain hygiene standards, optimize logistics
Wholesaler	Ability to buy in bulk, consolidate supply, and distribute efficiently	High demand from retailers and hotels, market expansion	Lack of supply to meet demand, storage issues	Market competition, economic downturns, regulatory changes	Increase supply, invest in better storage facilities, enhance distribution networks
Retailer	Direct customer interaction, ability to sell fresh fish	High consumer demand, potential for direct sourcing	Insufficient supply, price conflicts, product differences	Competition from other retailers, economic changes	Improve supply chain, establish direct sourcing from producers, offer competitive pricing
Hotels	High demand for fresh fish, ability to prepare meals	Culinary innovations, attracting tourists	Dependency on suppliers, inconsistent supply	Supply chain disruptions, market competition	Establish reliable supplier relationships, diversify menu offerings
Consumer	Access to fresh fish, preference for local products	Health benefits, culinary diversity	Price variability, limited availability	Economic fluctuations, supply inconsistency	Support local producers, advocate for fair pricing, ensure quality standards

3.2.2. Suggestions for the Development of the Food Fish Value Chain

To develop the food fish value chain within the village tank cascade system, a comprehensive strategy incorporating policy, regulation, and community engagement is essential. Firstly, the government should introduce policies, rules, and regulations through official gazettes to support the formation of communities, unions, and gatherings aimed at empowering fish production in the area. Enforcing laws and imposing penalties on illegal fishermen is crucial to prevent overfishing and ensure sustainable production levels.

Introducing higher-yield fish species such as Indian carp, Chinese carp, and silver carp into the tanks can significantly increase harvest volumes compared to traditional fish varieties. The provision of boats and other essential materials for fish production, facilitated by government or private organizations, is necessary to support farmers. Annual stocking of tanks with fish fry is essential to ensure a continuous increase in yield and production.

Farmers should be provided with the necessary tools and equipment at reasonable prices. Appointing new officers to oversee each tank can enhance productivity and efficiency. Establishing new, high-quality fish-selling centers and creating a robust distribution channel among all fish producers are vital steps for market development.

Encouraging entrepreneurship within the fish food value chain can spur market growth. Improving post-harvest practices and developing value-added products are critical for maximizing economic returns. Distribution channels should be optimized to target specific markets, with particular attention to the tourism sector.

Developing a fisheries management system is essential for sustainable fishery practices. Additionally, introducing prawn and crab cultivation in village tanks can diversify and enhance the productivity of the aquaculture sector. By implementing these strategies, the fish food value chain in the village tank cascade system can be significantly improved, leading to sustainable production, better market access, and economic growth for the community.

3.3. Potentials and Development Nodes in the Traditional Foods Value Chain

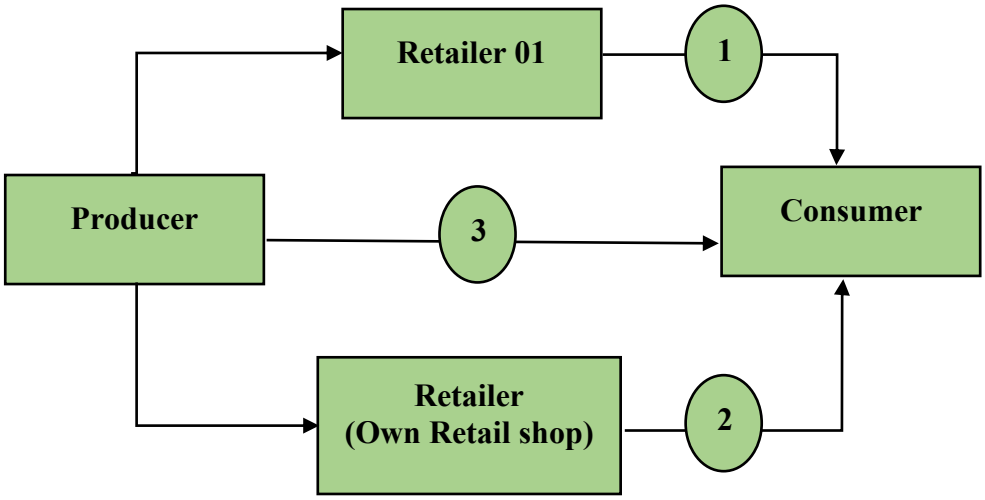

Figure 3.3. Traditional food value chain map under VTCS

The present status of the traditional food value chain within the Village Tank Cascade System (VTCS) in Sri Lanka reveals a complex and multifaceted structure involving various stakeholders from production to end consumers. Traditional food items such as Lawariya, Hoppers, String Hoppers, Mango Chatni, Polos cutlet, Asmi, Kurakkan helapa, Dodol, Kokis, tea, and rice & curry are produced primarily in villages like Palugaswewa and Kudarambawewa. Channel 1 depicts a straightforward flow where food products from Palugaswewa are issued to local retailers and sold within the village and to outside consumers, showcasing minimal value addition with producer costs at Rs. 12.59 and selling prices escalating to Rs. 50.00 and Rs. 70.00 for retailers.

Channel 2 presents a slightly more intricate chain, where producers also act as retailers, selling various traditional foods directly to local customers and tourists through government-supported retail shops. The average value addition here remains similar to Channel 1, but with additional increments due to packaging and presentation, resulting in increased prices for various packaging types. Channel 3 highlights a direct-to-customer approach in Kudarambawewa, where producers fulfill requested orders without intermediary involvement, achieving the highest potential for value addition and price escalation, with substantial increases in the average value added per unit.

The evaluation of these channels indicates significant variations in value addition and price escalation, primarily driven by packaging, unit size, and additional processing steps. Producers, retailers, and wholesalers each contribute to the cumulative effect of value addition, emphasizing the importance of these stages in enhancing overall chain performance. Despite these developments, the traditional food value chain faces challenges such as infrequent order scheduling, limited producer knowledge of value addition, and a lack of integration with the tourism sector. Showrooms and workshops funded and organized by local initiatives provide some support, but the absence of a centralized marketplace and stronger connections with government institutions hinders market expansion and profitability for local producers.

3.3.1. SWOT Analysis for the Traditional Food Value Chain

Actor	Strengths	Opportunities	Weaknesses	Threats	Suggestions
Producer	Traditional knowledge, use of natural practices, availability of local raw materials Expertise in traditional processing methods, local availability of raw materials	Government support, market for traditional foods, tourism potential Introduction of advanced processing technologies, high demand for traditional foods	Limited access to modern equipment, lack of value addition skills, infrequent orders High dependency on manual labor, lack of modern equipment	Economic fluctuations, competition from commercial products, lack of market expansion Quality control issues, supply chain disruptions, regulatory changes	Provide training on modern techniques, establish regular markets, and create awareness about rural tourism Invest in modern processing equipment, improve quality control, enhance supply chain efficiency
Retailer	Efficient transport methods, use of traditional storage practices Ability to buy in bulk, consolidate supply, and distribute efficiently Direct customer interaction, ability to sell fresh and traditional foods	Improved logistics, better transport infrastructure High demand from retailers and hotels, market expansion High consumer demand, potential for direct sourcing	High perishability, need for efficient hygiene Lack of supply to meet demand, storage issues Insufficient supply, price conflicts, product differences	Transportation delays, spoilage, increased costs Market competition, economic downturns, regulatory changes Market competition, economic changes	Enhance transport efficiency, maintain hygiene standards, optimize logistics Increase supply, invest in better storage facilities, enhance distribution networks Improve supply chain, establish direct sourcing from producers, offer competitive pricing
Consumer	High demand for traditional foods, ability to prepare culturally significant meals Access to traditional foods, preference for culturally significant products	Culinary innovations, attracting tourists Health benefits, culinary diversity	Dependency on suppliers, inconsistent supply Price variability, limited availability	Supply chain disruptions, market competition Economic fluctuations, supply inconsistency	Establish reliable supplier relationships, diversify menu offerings Support local producers, advocate for fair pricing, ensure quality standards

3.3.2. Suggestions for the Development of the Traditional Food Value Chain

To develop the traditional food value chain within the village tank cascade system, a multifaceted approach is necessary. Firstly, establishing and arranging suitable locations for traditional food selling, particularly targeting tourist attractions, is essential. This can be achieved by setting up small shops on both sides of the main road and providing enhanced facilities and services in suggested village houses. Programs, advertisements, and workshops should be organized to introduce village food and its cultural significance.

Developing an export market for traditional food goods is another crucial step. A thorough analysis of the market potential for these products will provide valuable insights and opportunities to expand distribution channels and reach international consumers. Establishing a well-managed system that offers an authentic experience of consuming traditional food, along with engaging in village activities such as Kamatha, Embula, Attalaya, bullock cart rides, and fishing, can significantly enhance tourism. Building a network of tourist resorts and outdoor accommodations around tanks like Kandugama, Dumbuluwagama, Udawalawa, Thalakola, and Panweliyaya will support this initiative.

Furthermore, setting up food-selling centers as part of a network showcasing traditional food products and showrooms will introduce these delicacies to tourists effectively. Engaging small-scale producers from areas like Palugaswewa is vital for sourcing raw materials such as rice flour, sugar, honey, and other ingredients from nearby shops, farmers, and city wholesalers. The production process should integrate organic practices and respect the natural ecosystem.

At the processing stage, traditional methods should be employed, such as pounding dehusked rice grains in wooden or stone mortars or grinding them between flat stone slabs. These techniques, though often replaced by commercial-scale flour mills and electric grinders, maintain the authenticity of the products. The processed raw materials can then undergo various value-adding steps, such as cooking, steaming, roasting, or fermenting, to create traditional Sri Lankan dishes like string hoppers (indi appa), hoppers (appa), and lavariya.

Retailing should be managed through small local shops and producer-owned retail establishments, connecting producers directly with consumers. These retailers are crucial for ensuring the availability of traditional foods both locally and beyond. Consumers enjoy a wide range of traditional Sri Lankan foods, often accompanied by sweets with honey, hoppers with lunumiris, and string hoppers with curry, sambal, curried vegetables, fish, or meat.

To further develop the market, a comprehensive fisheries management system should be implemented. Introducing prawn and crab cultivation in village tanks will diversify and enhance productivity. Additionally, creating new distribution channels tailored to target markets, especially tourism, and promoting the significance of traditional foods through exhibitions, workshops, and public awareness campaigns will boost market reach.

In summary, the traditional food value chain within the village tank cascade system can be significantly enhanced through strategic initiatives encompassing infrastructure development, market expansion, traditional processing methods, robust distribution networks, and tourism integration. Each step, from raw material sourcing to final consumer purchase, plays a critical role in maintaining the cultural heritage and economic viability of traditional Sri Lankan foods.

3.4. Potentials and Development Nodes in the Agro Eco-Tourism Value Chain

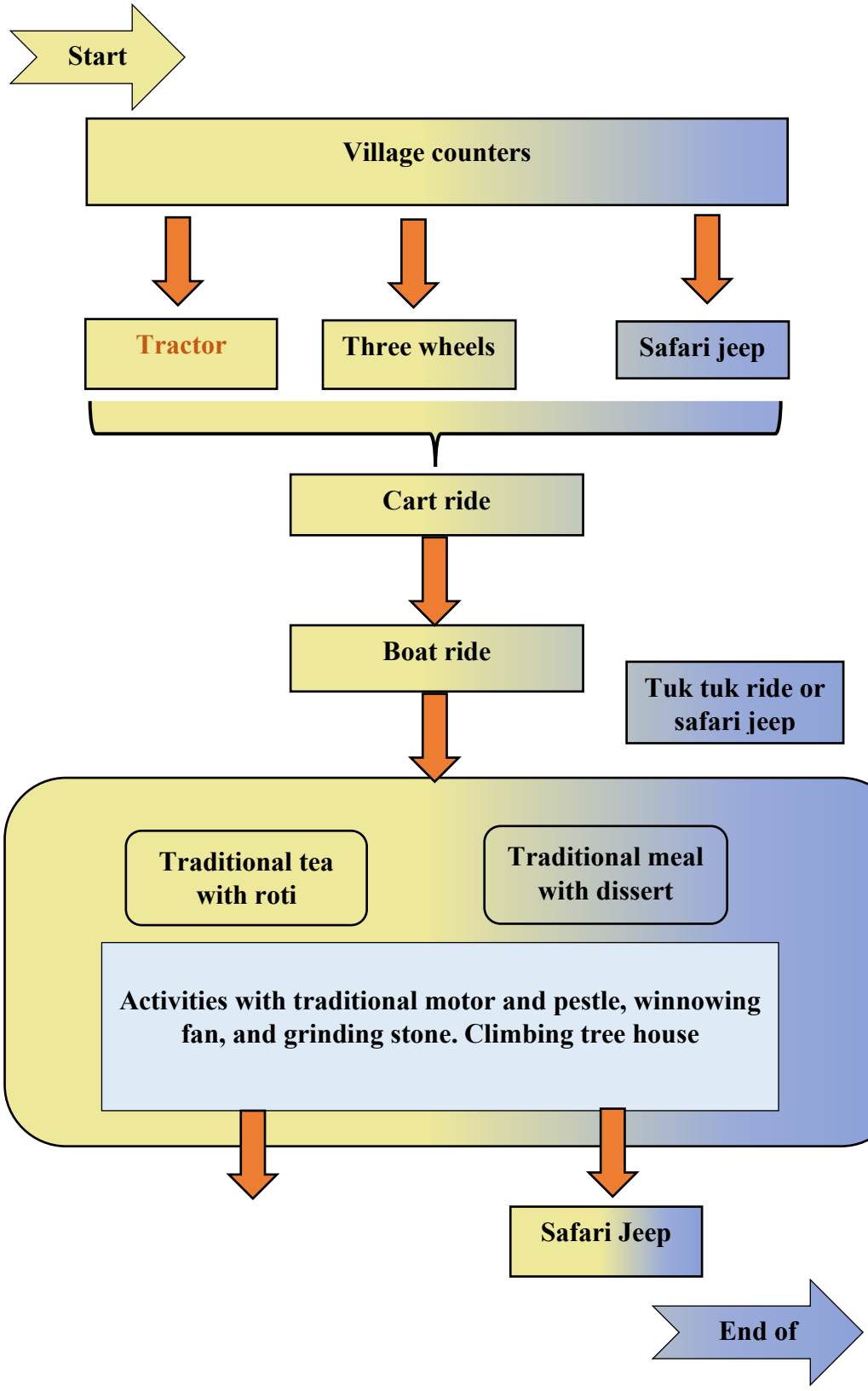

Figure 3.4. Agro-Eco Tourism value chain in VTCS

The present status of the agro-eco tourism value chain within the Village Tank Cascade System (VTCs) in Sri Lanka illustrates a diverse and multifaceted system involving various transportation methods, traditional activities, and the production and sale of local crafts. The counter-based tourism channels offer structured tours integrating traditional and local experiences. Channel Type 01 starts with a three-wheeler ride, followed by a cart and boat ride, a visit to a village house, and returns via a three-wheeler, emphasizing a comprehensive rural experience with activities such as cooking. This type incurs costs including Rs. 1500 to 2000 for cooking experiences and additional transportation charges.

Channel Type 02 mirrors Type 01 but includes an extra three-wheeler ride, providing a more varied transportation sequence. It maintains similar activities and costs, with counter staff earning approximately Rs. 45,000 monthly plus sales commissions and tips ranging from Rs. 2000 to 2500. Channel Types 03 and 04 incorporate Jeep transportation, catering to tourists seeking adventure and safari-like experiences, with costs for Jeep safaris between Rs. 8300 and 10,000. These types emphasize a higher price point and offer a more rugged experience.

The production channels within the agro-eco tourism sector reveal insights into traditional product manufacturing and distribution. Handicrafts made from palm and leaves, as well as coconut cups and traditional kitchen tools, follow distinct channels aimed at both local and external markets. Products like wooden mortars, pestles, traditional mats, and kitchen items are crafted in village houses ("gami gear") and sold directly to tourists or in external markets. Prices vary based on craftsmanship and size, with items like traditional mortars priced at Rs. 3500 and lunch boxes made from palm leaves at Rs. 3500.

The production process typically involves input collection, production, decoration, and sale, with some channels focusing on local distribution through village houses, while others target broader external markets. These traditional products are marketed to both local customers and foreign tourists, emphasizing their natural quality and cultural significance. The evaluation of these channels underscores the importance of maintaining the authenticity and sustainability of agro-eco tourism while ensuring fair compensation for local producers and enhancing their market reach.

Overall, the agro-eco tourism value chain within the VTCs showcases a blend of traditional experiences and modern tourism infrastructure. It highlights the potential for economic development through sustainable tourism practices that promote local culture and craftsmanship. However, challenges such as infrequent order scheduling, limited producer knowledge of value addition, and a lack of integration with broader tourism markets and government institutions need to be addressed to fully realize the potential of this value chain.

3.4.1. SWOT Analysis for the Agro Eco-Tourism Value Chain

Actor	Strengths	Opportunities	Weaknesses	Threats	Suggestions
Producer. Products maker Processors	Traditional knowledge, use of local raw materials, community involvement Expertise in traditional processing methods, local sourcing of raw materials	Government support, growing interest in ecotourism, potential for international tourism Introduction of advanced processing technologies, high demand for authentic experiences	Limited access to modern amenities, lack of marketing skills, dependency on manual labor High dependency on manual labor, lack of modern equipment	Economic fluctuations, environmental changes, competition from other ecotourism destinations Quality control issues, supply chain disruptions, regulatory changes	Provide training on marketing and modern techniques, create awareness about ecotourism benefits, improve amenities Invest in modern processing equipment, improve quality control, enhance supply chain efficiency
Transporter Service provider	Efficient traditional transport methods, use of local resources Ability to consolidate supply and distribute efficiently Direct customer interaction,	Improved logistics, better transport infrastructure High demand from tourists and hotels, market expansion High consumer demand, potential for direct sourcing	High maintenance needs, dependency on animal transport Lack of supply to meet demand, storage issues Insufficient supply, price conflicts, product differences	Transportation delays, increased costs, environmental impact Market competition, economic downturns, regulatory changes Competition from other retailers,	Maintain transport efficiency, enhance safety measures, optimize logistics Increase supply, invest in better storage facilities, enhance distribution networks Improve supply chain,
Tour Guides	In-depth local knowledge, ability to enhance tourist experience	Growing demand for personalized tours, opportunities for higher earnings	Lack of formal training, dependency on seasonal tourism	Competition from other tour operators, regulatory changes	Provide formal training, create diverse tour packages, and ensure sustainable tourism practices
Tourists	Access to authentic cultural experiences, preference for sustainable tourism	Health benefits, educational experiences, cultural immersion	Price variability, limited availability	Economic fluctuations, supply inconsistency	Support local producers, advocate for fair pricing, ensure quality standards

3.4.2. Suggestions for the Development of the Agro Eco-Tourism Value Chain

To effectively develop an agro-ecotourism value chain within the village tank cascade system, a multifaceted approach involving strategic recommendations, innovative suggestions, and practical ideas is essential. First, enhancing the marketing, retail, and booking processes through robust online platforms and leveraging positive tourist reviews can significantly boost visibility and attract potential visitors. These platforms should feature comprehensive information, vivid imagery, and detailed package options to engage prospective tourists. Collaborations with local tour operators to provide tailored packages and in-person booking options at strategic counters can further streamline this phase.

Second, sourcing inputs from both village-level and external suppliers must be optimized to support the local economy while ensuring quality and variety. Encouraging local farmers to supply raw materials such as paddy, vegetables, and coconuts, while integrating external sources for fertilizers and seeds, can create a sustainable supply chain. Establishing a cooperative model among village farmers could enhance bargaining power and ensure fair pricing, fostering economic resilience.

Third, the processing and maintenance stage requires meticulous planning to maintain high standards of service provision. Training local residents in food hygiene and transportation maintenance, coupled with regular inspections and condition checks, can ensure the reliability and safety of services. Implementing a local quality assurance team can oversee these activities, providing tourists with a seamless and enjoyable experience.

diversifying service provision by integrating cultural and educational activities alongside traditional food and transportation services can enrich the tourist experience. Initiatives such as cooking classes, agricultural workshops, and cultural performances can offer immersive experiences that highlight the village's heritage. Developing partnerships with cultural experts and educators can enhance the authenticity and educational value of these offerings.

service consumption must be analyzed and optimized to meet tourist expectations effectively. Gathering feedback through surveys and direct interactions can provide insights into visitor satisfaction and areas for improvement. Utilizing this feedback to refine services and adapt to changing preferences can enhance the overall tourist experience.

strengthening the support services network is crucial for sustainable agro-ecotourism development. Collaborating with local banks for financial services, health inspectors for food safety, and government agencies for regulatory support can ensure compliance and operational efficiency. Encouraging local governance bodies to facilitate necessary permits and approvals can smoothen operational hurdles while integrating environmental sustainability practices through collaboration with the Ministry of Environment and the Mahaweli Authority can preserve the natural ecosystem.

By adopting these comprehensive recommendations and suggestions, the agro-ecotourism value chain within the village tank cascade system can be developed into a vibrant, sustainable, and economically beneficial model, promoting local heritage and enhancing tourist experiences.

Chapter 04

4.1. Overall Summary

The development of value chains for bee honey, food fish, traditional food, and agro-eco tourism within the village tank cascade system presents a comprehensive approach to enhancing the economic, social, and environmental sustainability of rural communities. Each value chain requires targeted interventions to maximize its potential, leveraging the unique resources and cultural heritage inherent in these systems.

Establishing model villages for beekeeping with collaboration from government and private organizations is pivotal. Enhancing technical knowledge, providing essential equipment, and creating robust market links will improve production quality and sustainability. Promoting Sri Lankan natural bee honey over imported varieties through effective advertising campaigns will further bolster market growth. To develop the fish food value chain, it is essential to introduce policies and regulations that support sustainable practices and penalize illegal activities. Stocking tanks with high-yield fish species, providing necessary tools and materials, and ensuring continuous fish fry replenishment are critical steps. Establishing efficient distribution channels and quality fish-selling centers, along with introducing prawn and crab cultivation, will diversify and strengthen the aquaculture sector.

Enhancing the traditional food value chain involves establishing selling points that attract tourists, developing export markets, and ensuring high-quality processing practices. Engaging small-scale producers and using organic methods will maintain the authenticity of traditional foods. Workshops and advertising campaigns will raise awareness and promote market growth. Building a network of tourist accommodations and integrating cultural experiences will further enhance the appeal of traditional foods. Integrating agro-eco tourism with these value chains will provide a holistic experience for visitors, showcasing traditional village activities and local produce. This approach not only boosts tourism but also creates new revenue streams for local producers. Developing infrastructure, such as tourist resorts and outdoor accommodations around village tanks, will support this initiative. Promoting awareness of environmental conservation and the cultural significance of these activities will enrich the tourist experience.

4.2. Conclusion

The strategic development of value chains for bee honey, food fish, traditional food, and agro-eco tourism within the village tank cascade system holds significant promise for rural development. Each value chain, through targeted interventions and sustainable practices, can contribute to the overall economic growth and cultural preservation of these communities which will support the restoration process of VTCSs. By integrating modern techniques with traditional practices and fostering strong market connections, these value chains can provide a stable and prosperous future for rural populations. Implementing these strategies will require coordinated efforts from government, private organizations, and local communities, ensuring that the benefits are shared widely and sustainably.