Cascade Profile & Basic Development Plan

(Siththan Odai Middle and Lower)

Under

Climate Smart Irrigated Agriculture Project (CSIAP)

In

Mandekkal Aru River Basin

Poonakary DSD

Kilnochchi District

Northern Province

Contents

1. Introduction

A cascade system is described as a connected series of tanks organized within a micro-catchment of the dry zone landscape, storing, conveying and utilizing water. It provides water for irrigation, domestic purposes, animals and ecosystems. In a broader sense, the system can be considered as a sustainable ecosystem.

Small water storages are recognized as a key invention that facilitated the colonization of the dry zone of Sri Lanka. These small reservoirs are referred to as "*Kulam*" (tanks). In the dry zone of Sri Lanka, natural or man-made tanks have served for the collection, storage and distribution of rainfall and runoff and provided irrigation water for the cultivation of paddy and Other Field Crops (OFC) for more than 2000 years.

The tank cascade system (*wewa-ellangava* in Sinhala or *viluneer kulathodar* in Tamil) is an ancient Sri Lankan irrigation infrastructure. The system is a network of small tanks draining to large reservoirs that store rainwater and surface runoff for later use.

The main principle behind the Tank Cascade System is recycling and re-using of water through a network of small to large-scale tanks. The advantage of such system is that excess water flowing from a reservoir along with the water used in its command area is captured by the next downstream reservoir and, thus, put to use again in the command area of the second reservoir. This water is continuously filtered and recycled in subsequent tanks. Tank Cascade Systems buffer the effects of climatic fluctuations and work as a cornerstone in coping with future climate change in the dry zone of Sri Lanka.

The management of Tank Cascade Systems is intimately associated with their sociological setting and the evolution of rural settlements. Therefore, the overall objective of cascade management is to enhance the living standards of rural communities and the environment through the restoration and improvement of the system on a sustainable basis.

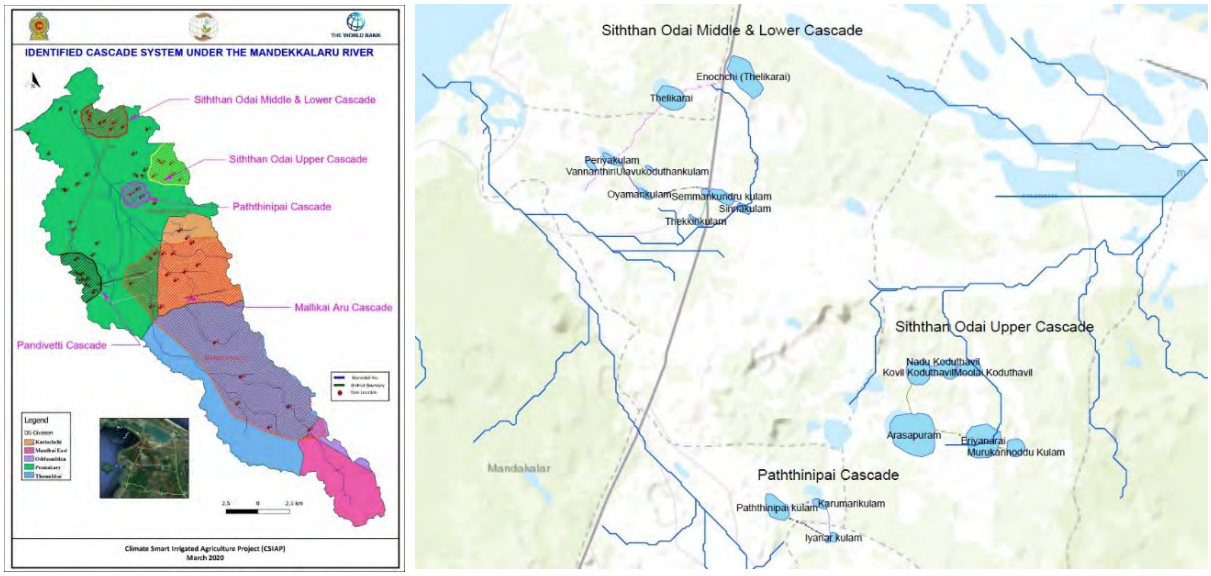
4.2.1 Brief introduction to the cascade situated in the area

The Manderkallaru river basin is mainly located in Kilinochchi district. It consists five cascades: Siththan Odai Middle & Lower, Siththan Odai Upper, Paththinippai, Pandivetti & Mallikai Aru. Siththan Odai Upper & Paththinippai cascades are identified as nearby cascades of Siththan Odai Middle & Lower. General information of nearby cascades of Siththan Odai Middle & Lower are given below in Table – 01.

Table 01: General information of nearby cascades

Details	**Name of nearby cascade**	
	Siththan Odai Upper	**Paththinippai**
Name of District	Kilinochchi	Kilinochchi
Name of the Divisional Secretariat/s	Poonagary	Poonagary
Name of the river basin	Manderkallaru	Manderkallaru
Name of the Agrarian Development Centre/s	Poonagary	Poonagary
Name/s of Grama Niladari Division/s	Pallikuda/ Alakkeni	Pallikuda
Extent of the cascade (ha)	923	263
Command area in the cascade (ha)	72	82
Number of Total tanks in cascade	06	03

Number of families living in the command areas of the Cascade	55	85
Number of tanks located within the forest	0	1



Map 1: Maps of the cascades under Manderkallaru, Poonagary DS

Source: Climate Smart Irrigated Agriculture Project

4.2.2 Siththan Oddai Middle & Lower cascade system

The tank cascade system did not exist in Mandakalaru river basin until the implementation of CSIAP. Tank cascade systems were identified from the Participatory Rural Appraisal (PRA), Hydrology studies, Engineering Surveys, and Preliminary Investigation Report (PIR) reports during the project period. Finally, it was declared as a cascade by Department of Agrarian Development (DAD) & Provincial Department of Irrigation (PID) at the Divisional Agriculture Committee, Poonakary.

The net catchment area of the Siththan Odai Middle & Lower cascade is 14.94 km^2. Gross designed capacity of existing tanks in the cascade is 762,480 m^3 (635.7 acft.).

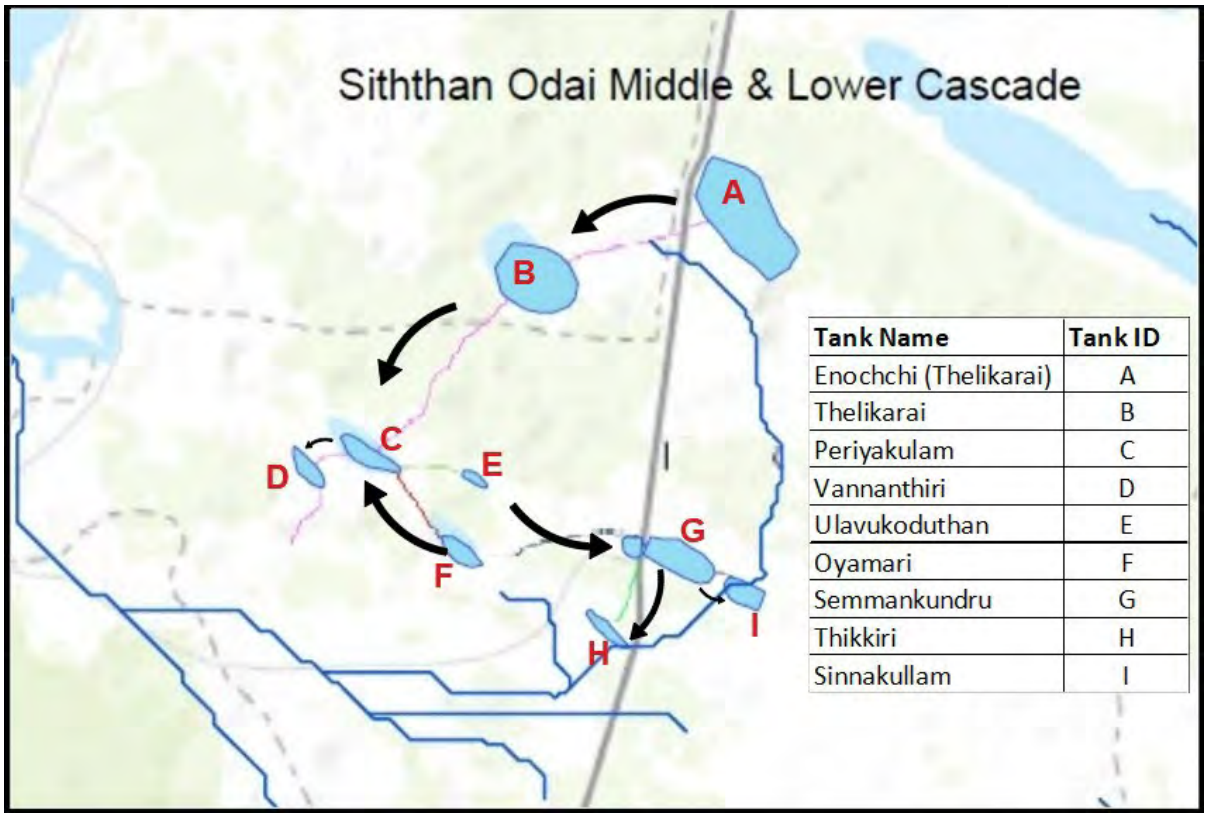
1.2.1 Map of the Siththan Odai Middle & Lower cascade system

Siththan Odai Middle & Lower cascade is located in the Mandakkal Aru river basin in Poonakary DSD. The general information of the cascade is given in Table 2.

Table 02: Administrative details of the Siththan Odai Middle & Lower cascade system.

Information	Details
Name of the District	Kilinochchi
Name of the Divisional Secretariat/s	Poonakary
Name of the electorate	Jaffna
Name of the river basin	Madakkal Aru
Name of the Cascade	Siththan Odai Middle & Upper

Name of the Agrarian Development Center/s	Poonakary
Name/s of Grama Niladari Division/s	Pallikuda
Extent of the cascade (ha)	1494
Command area in the cascade (ha)	84
Number of sub-watersheds	-
Number of Total tanks in cascade	9
Number of tanks used for agriculture	4
Number of families living in the command areas of the Cascade	139
Number of tanks located within the forest	2



Map 2: Map of the Siththan Odai Middle & Lower Cascade

Source: Climate Smart Irrigated Agriculture Project

1.2.2 Information of the small tanks within the cascade system

There are 9 tanks under the Siththan Odai cascade, namely Thelikarai, Enochcchi (Thelikarai), Uzhavukoduththan, Periyakulam, Oyamari, Theekkiri, Sinnakkulam, and Semmankunru in Poonagary DSD in Kilincochchi district. All these 9 tanks are proposed to use for recharging the groundwater, and some tanks are used for lift irrigation for other field crop cultivation.

Cultivation was continued under Periyakulam, Ulavukoduththan, and Oyamarikulam until the displacement in 2006. Later, restoration of these tanks was initiated by ACAD in 2012 and did not commence due to the intervention of the Department of Forest & Wildlife. Thikkiri and Vannanthirikulam act as buffer tanks and are used to cater drinking water for wild animals and recharge groundwater.

Table 03: Details of the small tanks situated within the cascade system.

No	Tank's name	Tank ID Name	GND	Coordinate	
1	Ennochchi kulam	25/6/P/W/17	Pallikuda	9°27'4.42"N	80°12'14.32"E
2	Thelikarai kulam	25/6/P/W/173	Pallikuda	9°26'50.17"N	80°11'42.92"E
3	Periyakulam	25/6/P/W/076	Pallikuda	9°26'15.51"N	80°11'0.41"E
4	Vannanthiri kulam	25/6/P/W/077	Pallikuda	9°26'12.44"N	80°10'50.29"E
5	Oyamari kulam	25/6/P/W/078	Pallikuda	9°25'55.35"N	80°11'12.99"E
6	Ulavukoduthan kulam	25/6/P/W/166	Pallikuda	9°26'9.80"N	80°11'24.33"E
7	Semmankunru kulam	25/6/P/W/079	Pallikuda	9°25'56.69"N	80°11'56.69"E
8	Sinna Kulam	25/6/P/W/080	Pallikuda	9°25'49.47"N	80°12'13.90"E
9	Thikkiri kulam	25/6/P/W/082	Pallikuda	9°25'43.47"N	80°11'48.44"E

4.2.3 Importance of managing the Siththan Odai Middle & Lower cascade

The management of the Siththan Odai Middle & Lower tank cascade system holds immense importance across various dimensions. The 1,494 ha extent of the cascade area directly influences water availability, enhancing agricultural productivity and food security. The 09 number of tanks within the cascade system amplifies its significance as a reliable water source for paddy cultivation and OFCs necessitating careful maintenance to ensure consistent supply. Moreover, the 174 number of farmer families' dependent on this cascade system underscores its role in supporting to the entire rural livelihoods and uplift economic conditions of Pallikuda GND. In this context, the 09 number of minor tanks assumes significance as they regulate water distribution, impacting equitable access for all users. Effective management strategies are crucial to sustainably harness the potential of the tank cascade system, ensuring optimal agricultural output, livelihood support, and water resource equity.

4.2.4 Cascade Management Committees (CMCs) for sustainable management

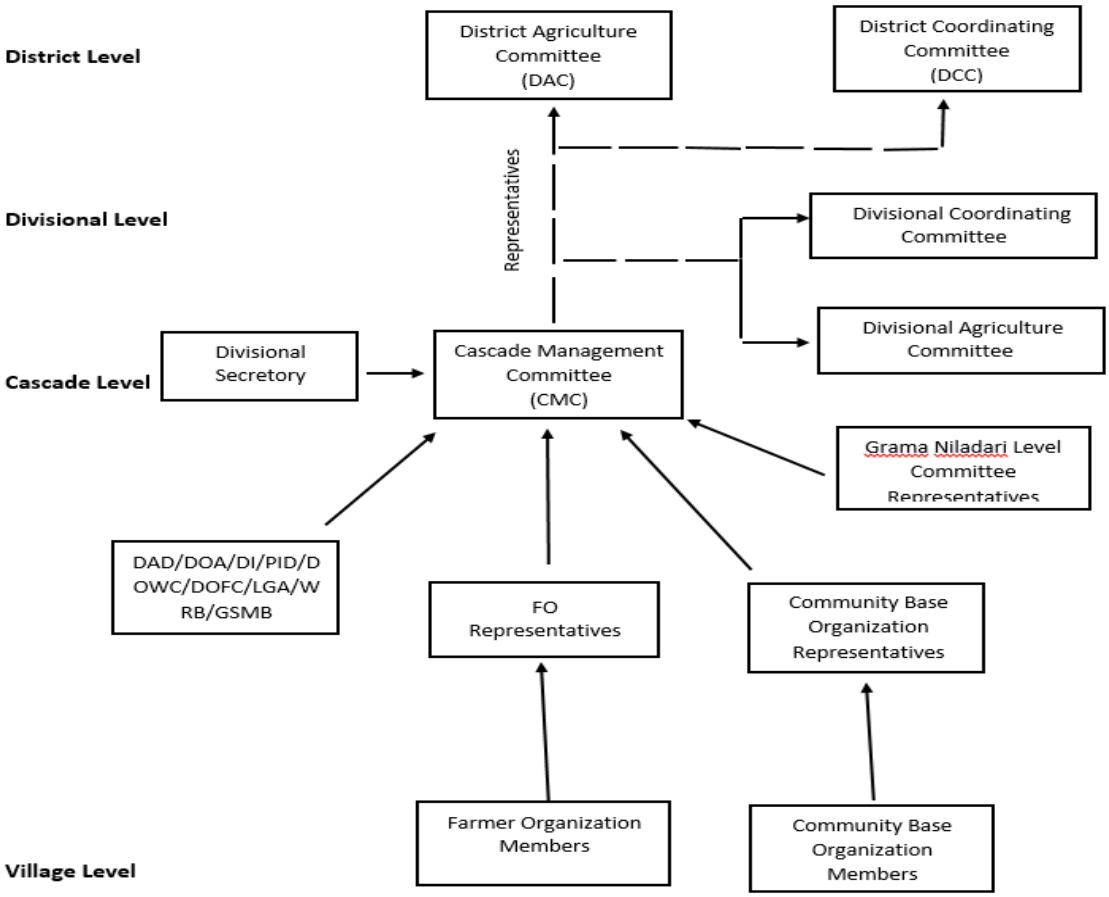


Figure 1: Major stakeholder agencies currently involve for managing the affairs of the Siththan Odai Middle & Lower cascade system.

Composition of the cascade management committees

i. Representative of the Divisional Secretary (DS) - Chairman
ii. Divisional officer of Department of Agrarian Development (DAD) - Secretary
iii. Agriculture Instructors (AIs) in the cascade
iv. Representative of the Department of Irrigation (DOI)
v. Representative of the Department of Wildlife Conservation (DOWC)
vi. Representative of the Provincial Irrigation Department (PID)
vii. Representative of Department of Forest Conservation (DOFC)
viii. Representative of Geological Survey and Mines Bureau (GS & MB)
ix. Representative of Water Resources Board (WRB)
x. Representative of the Local Government Authority (Pradheshiya Saba)
xi. Representatives of the Grama Niladhari level Committee

xii. Representatives of Department of Land Use Planning

xiii. Representatives of NACTA

xiv. Department of Police

xv. Representative of Farmer Organizations (FOs)

xvi. Representative of Community Base Organizations (CBOs) in the cascade

The Co-Chairman of the CMCs must be a representative of the farmer organization.

4.2.5 Necessity of a cascade management committee

The established Siththan Odai Middle & Lower Cascade Management Committee is essential to ensure the coordinated and effective management of a series of interconnected tanks. This committee would oversee critical aspects such as tank maintenance, operational protocols, safety measures, and resource allocation, optimizing the functionality, water sharing, water safety and maintaining ecosystem of the entire cascade system. The appointed CMC concluded the representative from each & every tank for centralizing decision-making and fostering collaboration among relevant stakeholders, the committee would help prevent disruptions, minimize downtime, and enhance the overall efficiency and reliability of the tank cascade.

4.2.6 Necessity of preparing a profile for Siththan Odai Middle & Lower cascade

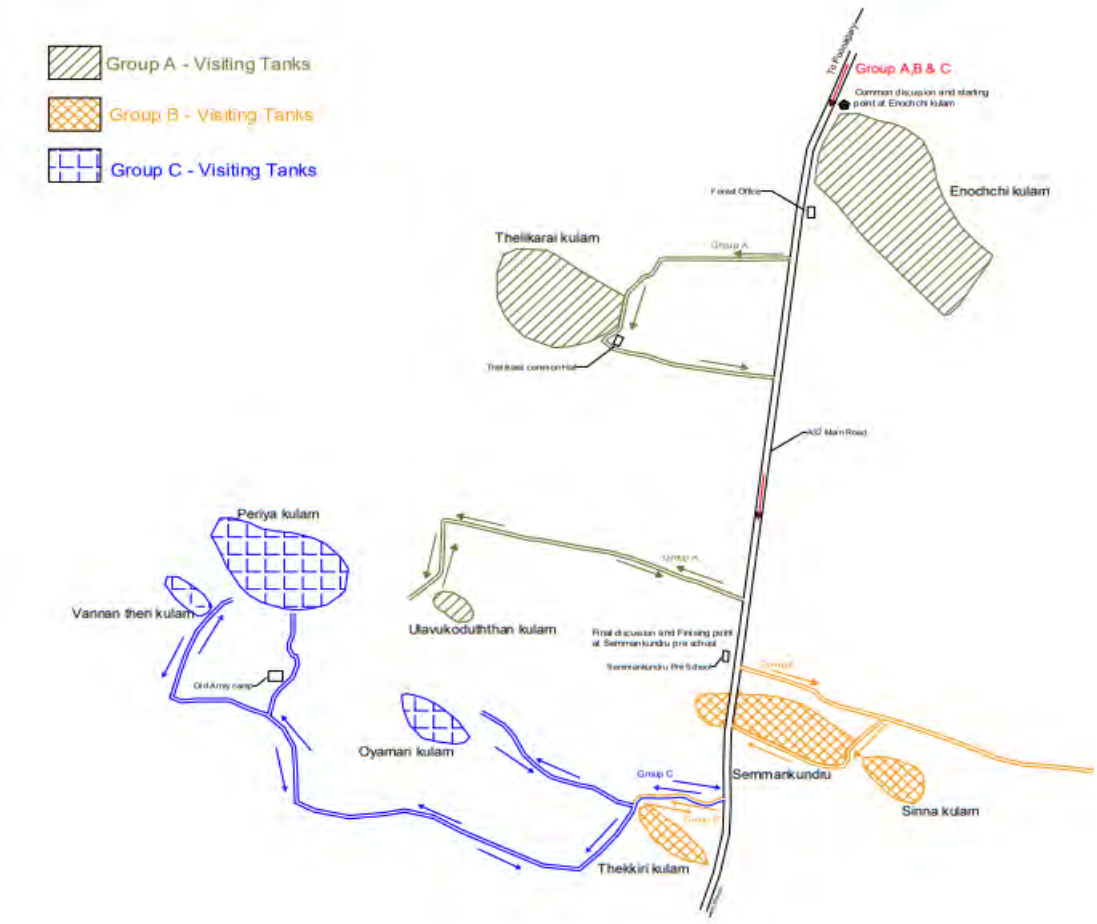
Preparing a profile for Siththan Odai Middle & lower tank cascade system is essential as it provides a comprehensive overview of the system's design, components, and operational parameters. This profile serves as a valuable reference for engineers, operators, stakeholders and layman farmers involved in the system's installation, maintenance, and management. By detailing factors such as tank specifications, interconnections, control mechanisms, safety features, critical issues and fluid transfer dynamics, the profile enables a clear understanding of how the cascade system functions and how it fits within the entire command and catchment areas. Ultimately, this profile facilitates effective decision-making, troubleshooting, and optimization, ensuring the tank cascade system operates reliably and efficiently to meet its intended purpose.

4.2.7 Preparation of Siththan Odai Middle & Lower cascade profile

Preliminary arrangement for preparation of Siththan Odai Middle & Lower cascade profile led the IEC & awareness program in the hotspot area (HSA). Participants living in the hotspot area and members of Cascade Management Committees (CMCs), members of farmer organizations, and representatives of Government Organizations have participated in this assessment process.

Participants were grouped into three groups based on the knowledge of the area and subject matter, and Safeguard Officers took the leading role in each group as group coordinators with the support of DPD and Specialist of CSIAP-NP. Each group conducted the transect walk to cover three tanks and the adjoining settlement area.

After completion of the transect walk, all participants met together at the Pre-school, Semmankunru and validated the collected information. This validated information was compiled as a report and shared among the CSIAP officers who participated in the transect walk of Sithathan Odai Middle and Lower CMC. Finally, the report was developed and submitted to PMU for further improvement.



Source: Climate Smart Irrigated Agriculture Project

Figure 2: Route map of Transect Walk – Siththan Odai Middle & Lower Cascade

4.2.8 Objectives of cascade profile and cascade basic development plan

The main objective of the cascade profile is facilitating to learn the cascade status and issues that affect negatively to it, which enables to develop a pragmatic cascade basic development plan to ensure the sustainability of the cascade and the water productivity of the tank system in the area.

The specific objectives are:

- To identify the water-sharing mechanism of the cascade
- To reduce vulnerability to climate change
- To enhance the restoration of the watershed of the system to enhance biodiversity (flora & fauna, wild animals, etc.) through integrated management
- To address the water scarcity faced by rural communities living in the cascade (addressing the farming, drinking and environmental water requirements of the area)
- To manage water and associated natural resources in a sustainable manner.
- To promote crop zoning programmes and facilitate marketing.

- To enhance the living standards of rural communities on a sustainable basis.

4.2.9 Importance of cascade profile and basic development plan

The Siththan Odai Middle & Lower cascade refers to a system of interconnected irrigation channels and downstream water flows that are strategically designed to provide water to agricultural fields and ensure efficient water distribution. This system is often employed in areas where water scarcity is a challenge and where there is a need to optimize water usage for agricultural purposes.

The need for a well-designed cascade profile arises due to several reasons. Firstly, it enables equitable water distribution, ensuring that all agricultural fields within the system receive their required share. By following the natural contours of the land, the cascade profile helps in minimizing water wastage and reduces the risk of waterlogging or erosion.

Secondly, the Siththan Odai Middle & Lower cascade profile helps manage the gravity-driven flow of water. By constructing the channels and structures at appropriate elevations, the system can take advantage of the natural force of gravity to move water from higher to lower elevations, reducing the need for pumping and energy consumption.

Additionally, the cascade profile allows for the regulation of water flow and storage. By incorporating storage reservoirs at different levels, excess water can be stored during periods of high rainfall or low irrigation demand, ensuring a steady water supply during dry spells.

Overall, the Siththan Odai Middle & Lower cascade profile plays a vital role in maximizing water conveyance efficiency, minimizing losses, and promoting Climate Smart Agricultural practices in water-scarce area. It allows for the optimal utilization of available water resources and helps farmers to meet their irrigation needs while minimizing environmental impact.

2. Methodology applied for the cascade profile and basic development plan

The participatory assessment process is the basic methodology for developing the Cascade basic development Plan, and appropriate mechanisms were used to identify the bio-physical condition of the cascade area. The primary & secondary data collection techniques applied to fulfil the cascade profile & basic development plan. The main tools were focused group discussion, key informant interview, matrix ranking, and transect walk.

Cascade basic development plan was developed after a workshop conducted on another day, where the objectives of the cascade basic development plan and how needful data is to be collected and generated during the interactive and iterative process were demonstrated.

Cascade basic development plan was developed by using the data collected from the cascade profile and technical information was gathered from Technical Officers. Further, the critical issues were identified and ranked during the workshop then interventions were proposed for each critical issues and assessed by outcome and Key Performance Indicators (KPI), which measure the performance of the interventions. Finally, the draft cascade basic development plan was developed.

3. Details of the current profile of the Siththan Odai Middle & Lower cascade

4.2.10 Details of geological aspect

The dominant soil group of the cascade is Soladized solonistz & solo check in flat terrain. The soil group of Red yellow latosols is also found in some areas of the cascade.

Most of the land area in the cascade is slightly affected by salinity and insufficient plant nutrition for better crop growth. Hence, the proper variety selection, Integrated Plant Nutrition Management (IPNS) and special agronomic practices are required to optimize the yield.

The topography of the cascade is almost flat with a slight slope. The elevation varies from 0-10 m MSL. However, the elevation of the majority of the cascade area is less than 4 m MSL.

Based on a combination of the characteristics of climate, soil and relief, most of the cascade area lies under the agro-ecological region of Low Country Dry Zone Flat to Slightly Undulating (DL3) and Low Country Dry Zone Flat (DL4) is also found in some areas.

Deep confined aquifer occurs within the sedimentary lime stones and stand stones formation in this cascade. Groundwater quality of this area mainly depend height of the water table (Availability of water in the tanks). Total Dissolved Salts (TDS) level of the groundwater is higher than permissible level of drinking water quality of WHO.

4.2.11 Details of geographical features

There is some information about the geographical elements, including flora, fauna, and natural aspects, associated with the Siththan Odai Middle & Lower cascade system in Poonakary.

a. Flora

The forest cover in Kilinochchi district is 31042 ha (23% of total area), and the type of forest cover find in this area is tropical thorn forest, which is primarily influenced by monsoon rains. The vegetation around the Siththanodai cascade system in Poonakary is diverse and includes both terrestrial and aquatic plant species. Common plant species found in the area include mangroves, grasses, reeds, water lilies, and various types of aquatic vegetation. These plants provide habitats for a wide range of wildlife.

b. Fauna

The tank cascade system supports a diverse array of fauna, including both terrestrial and aquatic species. The tanks and their surrounding areas attract numerous animals like elephants, monkey, deer, sambur, rabbits, and wild boar, as well as birds, such as herons, egrets, wood pecker, jungle fowl, peacock, and waterfowl making it an excellent spot for bird watching. Other common fauna in the region includes reptiles like crocodiles, snakes, and lizards, as well as fish, amphibians, and small mammals.

c. Aquatic Life

The tanks within the cascade system are home to various fish species. These fish serve as a food source for local communities and contribute to the overall ecological balance of the tanks. Some of the common fish species found in these tanks include Tilapia, Catfish, and Gourami.

d. Natural Features

Siththan Odai Middle & Lower cascade system is characterized by its unique hydrological features. The interconnected tanks create a natural water flow system, where water from one tank flows into the next, allowing for effective water management and irrigation. This system is designed to capture and store rainfall during the wet season and release water gradually during the dry season, ensuring a steady water supply for agriculture. Additionally, the tanks and their surrounding areas often attract migratory birds, especially during the winter months when bird populations from colder regions seek warmer climates. This seasonal influx of birds adds to the biodiversity of the area

4.2.12 Details of hydrological aspect

The cascade of Siththan Odai at Poonagary DSD in Kilinochchi faces several hydrological concerns and issues. The following hydrological issues were observed during the Focus group discussion and transect walk.

a. Water scarcity

The proposed cascade experiences significant water scarcity due to limited water resources and irregular rainfall patterns. The region relies heavily on monsoon rains, and any deviation from normal precipitation levels can lead to water shortages, especially during the dry season.

b. Groundwater depletion

The excessive extraction of groundwater for agriculture, domestic and industrial purposes has resulted in the depletion of the groundwater level in the area. Overexploitation of groundwater can lead to saltwater intrusion, making the water unfit for consumption and irrigation.

c. Flooding

Despite water scarcity issues, the cascade area is also prone to periodic flooding, particularly during the North-East monsoonal period. The region's flat topography and inadequate drainage systems contribute to flash floods, causing damage to infrastructure and agriculture and eventually displacing local communities.

The Enochchi tank was built to prevent the flooding issues in 1990. It is reported that, in 2012, i.e., one year later from resettlement, 80 families were affected from flood. After construction of spill tail cannel from Enochchi to Thelikari the effect of disaster can be reduced.

d. Water pollution

Pollution from agricultural runoff and inadequate wastewater treatment poses a significant threat to the water quality in the cascade area. Contamination of surface water and groundwater sources negatively affects human health and the ecosystem.

The Sinnakkulam and Semmankunru area have been observed the water contamination in the wells during the transect walk. The residents of this areas getting yellow colour in their teeth when they are usually using this water. Also, they don’t have the proper waste water management plan in this area when they involve in the agricultural practices.

e. Inefficient water management

Limited infrastructure for water storage and distribution hampers effective water management in the area. Insufficient river paths, irrigation systems, and canals lead to inefficient water management, hindering agricultural productivity, and economic development.

f. Climate change impact

The effects of climate change, such as rising temperatures and variation in precipitation patterns, further exacerbate hydrological concerns in the cascade system. Erratic rainfall, increased frequency of droughts and intense storms. Since this village is located in a coastal area, sea-level rise and intrusion pose additional challenges for water resource management and planning.

Addressing these concerns and issues requires a comprehensive approach that includes improved water governance, sustainable water management practices, investment in infrastructure development, and initiatives to promote water conservation and pollution control. It is crucial to prioritize long-term solutions that ensure water availability, quality, and resilience in the Siththan Odai Middle & Lower cascade.

Table 04: Details of the command area & capacity of the cascade system.

No	Name of Tank	Existing Capacity (Ac.ft)	After Rehabilitation Capacity (Ac.ft)	Command Area (ac.)	No of farmer families
1	Ennochchi kulam	18.77	18.77	20	17
2	Thelikarai kulam	212.51	212.51	50	40
3	Periyakulam	99.95	121.71	25	30
4	Vannanthiri kulam	20.71	39.64	0	-
5	Oyamari kulam	18.99	48.15	10	12
6	Ulavukoduthan kulam	6.99	21.42	0	-
7	Semmankunru kulam	111.01	111.01	75	45
8	Sinna Kulam	5.2	14.18	30	10
9	Thikkiri kulam	19.56	48.31	0	20
		513.69	**635.7**	**210**	**174**

Source: Climate Smart Irrigated Agriculture Project

The existing surface water storage capacity of the cascade can be increased by 34% after the renovation under CSIAP (Table 4).

Table 05: Hydrological Characteristics of the Cascade

Hydrological Character	Current Status
Mahawewa or Pahala wewa, which is situated in the village for using water for agriculture activities.	Observed the hydrological characters of Mahawewa in Thelikaraikulam, Sinnakulam and Semmankunrukulam. Rehabilitation of these tanks is being implemented under CSIAP.
Kuluwewa (forest tank) constructed in the upper catchment to capture rain water, provide water for animals and filter debris and silt.	Ulavukoduthan and Vannantherikulam abandoned tanks in shrub jungle. However, these tanks does not the purpose of Kuluwewa.
Kayan wewa built in degraded or cleared upper catchment to trap sediments and control salinity.	Enochchikulam is situated in the upper cascade area, collect water from upper catchment area. Rehabilitation works are being carried out by CSIAP.
Olagam wewa situated closed to village and provide water for seasonal cultivation	Periyakulam and Oyamarikulam were used for seasonal agriculture purposes up to 2006. After that it came under forest control.
Goda wala (Water hole): constructed for the trapping and deposition of silt, to avoid siltation and sedimentation of the main village tank.	
Ihala Wewa (Storage tank): constructed for the storage of water, and is associated with paddy cultivation and other community activities.	Thikkirikulam was constructed for storage of water and rehabilitation is being carried out under CSIAP

Table 06: Current status of cascade elements

Elements	Current Status
Tank bed	Observed in all tanks under this cascade
Tank bund	Observed in all tanks under cascade except Ulavukoduththan & Thikiri Kulam
Soil ridge	Not observed in Cascade
Up-stream waterhole	Not observed in Cascade
Up-stream tree belt	Observed in most of the tanks under cascade
Rain fed farm	Observed in Semmankunru, Sinakulam and Thelikaraikulam
Down-stream interceptor	Not observed in Cascade
Hamlet buffer	Not observed in Cascade
Paddy field	There is no tank for gravity irrigation
Drainage	Natural drainage paths were observed in the cascade
Shrub land	Observed in all tanks under cascade

4.2.13 Details of environmental aspect

Climate (Rainfall & Temperature)

The mean annual rainfall in Siththan Odai Middle & Lower cascade is 1,286 mm, and 75% of the rainfall received during the period of September to December by North–East monsoon period (Figure 03). The annual temperature varies from 25 ℃ to 35 ℃.

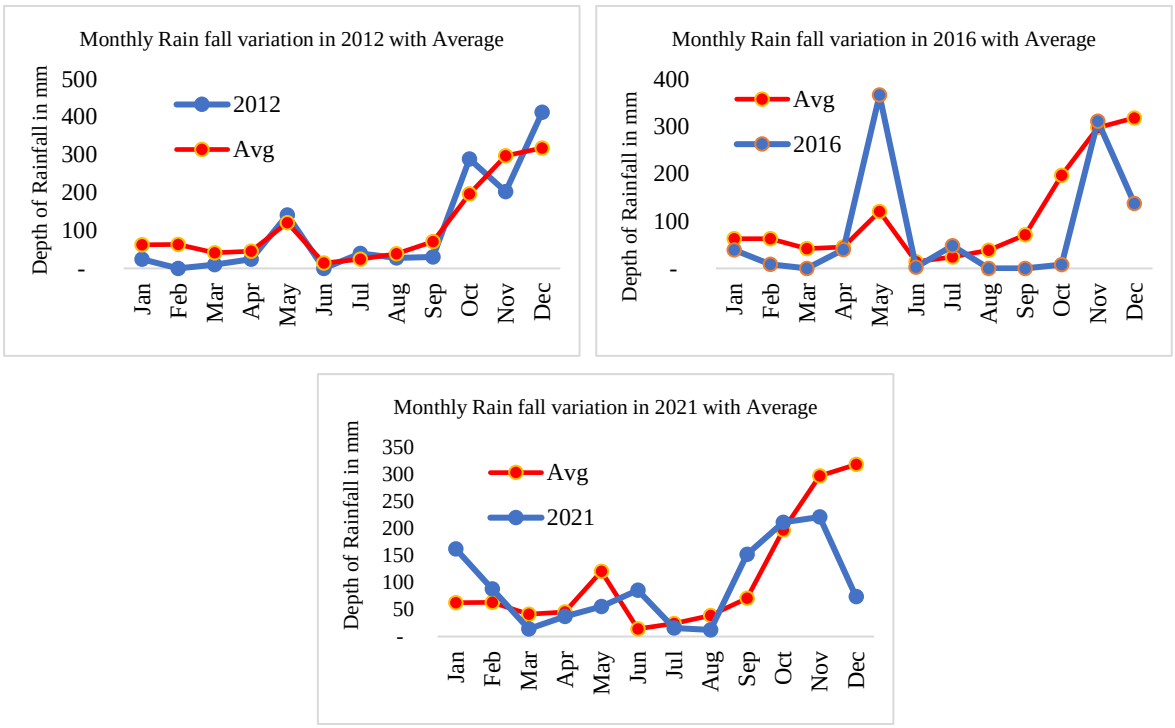


Figure 3: Temporal rainfall variation in Siththan Odai Middle & Lower cascade

(The data were gathered from the Annual Resource Profile and Statistics of Poonakary DSD from 2012 to 2021. The sources were the Department of Metrology).

High temporal rainfall variation was observed in recent years than in past years. A huge variation was observed in the monthly rainfall pattern compared with the last ten years (from 2012 to 2021). After 2016, unexpected rainfall patterns were observed in Poonakary DSD due to global warming and the disturbance of atmospheric circulation.

Most of the rainfed cultivations (Paddy, Black gram, and other OFC) were severely affected due to high number of dry days, unexpected drought, heavy rainfall, and flood.

Extent of environmental issues

- **Effect on domestic water supply:** Water is not distributed from this cascade system for domestic drinking purposes, and there is no domestic water supply identified within the 300 m radius of the cascade. During the transect walk, Thelikarai, Semmankunru, and Enochchi, Thelikarai tanks are used for bathing, washing clothes, bathing domestic pet and farm animals, and drinking purposes of livestock.
- **Health hazard:** Increased hardness of groundwater, fertilizer run-off from agricultural activities and extensive agricultural practices are associated with incidence of Chronic Kidney Diseases in this area. Studies on groundwater quality indicated the necessity of

prior treatment before consumption, as most ground water sources exceeded drinking water standard of WHO and contaminated with coliforms, and *Salmonella*.

- **Effect on flora and fauna:** This cascade exhibits a remarkable biodiversity. There were several species of flora & fauna observed in and around the cascade during the transect walk. Forest area of this cascade is enriched with different herbal plants which are used in traditional medicine. A plant called "*Semmanathi*" is unique to this cascade found among the woods and it is used for making incense sticks. *Paalai* or *Pallu*, a high timber value tree is common in the cascade. It bears edible, sweet fruit during May - August. Area residents pluck this fruit, sell it for passing by passengers and earn a substantial amount. The forest area is the habitat of a wide range of animals and birds. Elephants, deer, shambur, rabbit, monitor lizard, and wild boar can be seen commonly in this area. Though leopard also live in this forest, it is rarely seen. Garganey (*Vennpuruwa Vaathu*), Eurasian Wigeon (*Naamaththalai Vaathu*), Asian Open Bill (*Nathaikuththi Naarai*), Cattle Egret (*Unnik Kokku*) and common Myna are some of the birds commonly seen in this area.
- **Soil erosion:** There is a high chance of inducing soil erosion due to the rehabilitation of this cascade system by clearing vegetation, excavation activities, and developing bunds, barrow pits, and soil piles. However, rehabilitation works are proposed to be carried out in the dry season with the aim of controlling soil erosion.

  Being a flat terrain, there is less chances of getting soil eroded due to cultural practices. However, if the land preparation is done and exposed to intensive rains occurring during September and October there is more chance for soil erosion as these soils are not much stable. On the other hand, the soils get compacted due to absence of organic matter and tend to generate more runoff leaving soils with low water holding capacity. As a result, the soil soon becomes dry and crops are affected with soil moisture deficit even during a short dry spell. Since no one has done any study on this aspect in this area, it is appropriate to initiate studies on soil erosion and soil regeneration.
- **Siltation:** There is significant siltation was observed in this cascade area. This would have been due to mass scale land clearing for cultivation soon after the war and resettlement of large number of families. The rehabilitation of the cascade system will mitigate these impacts. Anyway, farmers have an opinion that all the tanks in a cascade should be renovated to reap the full benefit of the rehabilitation. However, this is not happening in this cascade only and out of nine tanks, only six are rehabilitated.
- **Encroachment:** There is no encroachment due to rehabilitation.

4.2.14 Details of human livelihood activities occurring within the cascade

Several practical issues affect human livelihoods in the Siththan Oddai Middle & Lower cascade area. These issues arise from the area's history of conflict and its impact on the local economy and infrastructure.

- **Economic challenges:** The cascade area faced significant economic challenges due to the effects of the civil war that ended in 2009. Many people lost their livelihoods, and the local economy suffered. Rebuilding of infrastructure, creating employment opportunities, and fostering economic development remain crucial concerns.
- **Agriculture and land issues:** Cascade area is primarily an agricultural area, with paddy cultivation and other crops being major sources of income for the local population. Landmines and unexploded ordnance from the war have posed serious threats to

agricultural activities. Clearance of these hazards and land rehabilitation efforts are necessary for safe and sustainable farming practices. Farmers are not allowed to return to certain area where they were cultivating before the displacement. When they return to their lands for cultivation especially in Periyakulam, Oyamari kulam area they were not allowed to clear shrub jungles in their land and these lands were declared as forest land. So, farmers had lost their livelihood and became daily wage earners.

- **Access to basic services:** The war conflict has also disrupted access to basic services, such as healthcare, education, and clean water supply. Rebuilding and improving infrastructure in these areas is crucial to ensure the local population access essential services and improve their overall well-being.

  There is a small school is called Semmankunru G.T.M.S which consist until grade one to five. The children who get eligible to secondary school from Six to over, they have to find the other school facility whether Poonagary or Mulankavil far away from this area.

  The health facility of this area is another crucial issue to get basic services, the residents of this cascade area doesn't have even primary health care services. They have to go to Poonagary divisional hospital or Mulankavil hospital far away from this area.

- **Displacement and resettlement:** The war resulted in the displacement of many people from the Cascade area. Resettlement and the process of returning people to their original homes faces challenges of its own. For example, Enochchikulam was renovated for cultivation purposes and to prevent the flood affecting 50 residents who were settled around this area. But the people are still struggling to get ownership of the land holdings. Also, rebuilding homes and providing necessary support to those who had been displaced are essential for ensuring their livelihoods. Farmers around the Periyakulam area gave up their struggle to return to their land for cultivation.

- **Post-war trauma and psychosocial support:** The farmers stated that the conflict had a significant psychological impact on the residents of the Cascade area. Many individuals have experienced trauma and require psychosocial support services to cope with the aftermath of war. Ensuring access to mental health facilities is vital for the well-being and resilience of the community.

- **Infrastructure development:** The cascade requires significant infrastructure development to support economic growth and improve living standards. This includes roads, bridges, electricity supply, and telecommunications. Developing and upgrading infrastructure will enhance connectivity and provide opportunities for agricultural marketing. For example, a drinking water purification plant (RO plant system) was installed by National water supply & Drainage Board (NWSDB) in 2014, which is yet to be handed over to the people even though eight years passed.

- **Access to markets and employment opportunities:** Due to the remote nature of the Cascade area, limited access to markets and employment opportunities is a challenge. Encouraging entrepreneurship, promoting local industries, and improving transport links to connect the area with larger markets can help to boost economic activities and create jobs. For example, there are grinding mills and coir fibre cottage industries run by the community in the cascade area successfully.

- **Climate change and natural disasters:** Cascade area is vulnerable to climate change and natural disasters such as floods and droughts, which negatively affects agriculture and livelihoods. Implementing adaptation strategies, promoting climate-smart agriculture techniques, and enhancing disaster preparedness is essential to mitigate these risks. Local

government, community organizations, NGOs, and INGOs play crucial roles in addressing these issues and improving the livelihoods of Siththan Odai Middle & Lower cascade.

4.2.15 Details of the Socio-Economic aspect

a. Demographic Details

The proposed cascade profile demographic details are given below. The conflict resulted in significant increase in disabled and women-headed families.

Table 07: Demographic detail of Siththan Odai Middle & Lower cascade

Tank Name	Total Population	Total Families	Vulnerable Family			
			Women Headed	Disable	Elders	Samurdhi
Enochchi	62	17	2	2	4	5
Thelikarai	143	40	4	2	11	29
Uzhavukoduththan	-	-	-	-	-	-
Periyakulam	92	30				
Vannanthiri		-	-	-	-	-
Oyamari	39	12	3	1	4	11
Theekkiri	73	20	1	-	9	5
Sinnakkulam	33	10	-	-	3	5
Semmankunru	154	45	10	2	5	35
Total in Cacade	**596**	**174**	**20**	**7**	**36**	**90**
Total in Palikuda GND	3,054	890				
Total in Poonakary ASC	9,632	2,948				

b. Farm families and farm practices

The 174 number of farm families are engaged in agricultural activities under the Siththan Odai Middle & Lower cascade. Farm families in the cascade system typically reside in rural areas, and their livelihood primarily revolves around the high land agriculture. These families have inherited their farming knowledge and practices from their ancestors and work collectively to manage and maintain the irrigation system during planting, harvesting, post harvesting, protecting from wild animal at night, etc. Farming is often a family affair, even today, different members contributing to various tasks throughout the cropping period.

In the cascade system, agricultural land is modified as different terrain, with each terrain at a slightly higher elevation than the previous one. The water flow is regulated by a series of bunds (earthen embankments) that redirect water from one terrain to the next. Farm families collectively manage these bunds and ensure the proper distribution of water to all fields.

The cascade system requires close collaboration and collective effort among farm families. They work together to ensure the proper maintenance and functioning of the irrigation infrastructure. Regular meetings and discussions are held to resolve any issues, plan agricultural activities, and share knowledge and experiences. Farmer organizations & Community-based organizations often play a vital role in coordinating and facilitating these collaborative efforts.

c. Crop Yield & Price

The income is calculated based on the yield of the crops, which is influenced by factors such as weather index, water availability, soil quality, market demand at the time of harvesting, and farming practices. The average cost of production for groundnut cultivation is Rs 125,000.00 per ac, and the net income is Rs 100,000.00 per ac per season in Thelikaraikulam in 2022. The price of the crops in the market is another crucial factor in the income calculation. The income generated will depend on the market demand and prevailing prices for the harvested crops.

d. Income Sources

Siththan Odai Middle & Lower cascade is a region known for its diverse income-generating activities like Paddy, other field crops like groundnuts, pulses and millets, vegetable farming like tomatoes, beans, pumpkin and cassava, and highland crops like coconuts, bananas and cashew. Also, small shops play a significant role in income generation. These shops, typically run by local entrepreneurs, offer a range of products such as groceries, household items, snacks, and fruit juice. It's important to note that the specific income generation patterns may vary depending on individual farmers, land availability, market demand, and other local factors.

The extent of land under cultivation determines the overall income potential. The larger the cultivated area, the higher the potential income, assuming favourable crop yield and market conditions.

In addition to crop production, farmers in the cascade system may have other income sources, such as livestock farming or other agricultural activities. These additional sources of income should be considered when calculating total income.

It's important to note that the cascade system in the Siththan Odai faces several issues that can impact income and overall agricultural productivity. Some of these issues are given below.

- **Water Availability**: Water scarcity or irregular water supply can significantly affect crop production and income. Drought conditions or improper water management can lead to reduced yields and lower incomes for farmers.
- **Infrastructure Maintenance**: The maintenance and upkeep of the cascade system infrastructure including tanks, canals, and bunds, is crucial for efficient water distribution. If these structures are not properly maintained, it can lead to water leakage, wastage, or inadequate water supply to the fields, affecting productivity and income.
- **Climate Change**: Climate change can result in unpredictable weather patterns, including erratic rainfall and increased incidence of extreme weather events. Such changes can disrupt crop cycles and make it challenging for farmers to plan and manage their agricultural activities effectively.
- **Land Use Issues**: Land ownership disputes or issues related to land distribution can hinder the proper utilization of land for agricultural purposes. Insecure land tenure can discourage investments in farming and lead to reduced income opportunities.
- **Market Access and Price Fluctuations**: Limited market access and price volatility can impact farmers' income. Lack of proper market infrastructure, transportation facilities, and fair market practices can result in low prices for crops and inadequate returns for farmers.

Addressing these issues requires coordinated efforts from relevant authorities, including improved water management practices, investment in infrastructure maintenance, providing support for climate resilience, addressing land tenure issues, and promoting market linkages and fair pricing mechanisms for agricultural produce.

4.2.16 Details of construction activities within the cascade system

In the Siththan Odai Middle & Lower cascade area of Poonagary DSD in Kilinochchi, various construction activities have been completed over the years. The Road Development Authority and Government have undertaken road and infrastructure development projects to improve connectivity and accessibility within the Cascade area. These projects involve the construction of main roads (Mannar - Jaffna), by-roads, bridges and other infrastructure facilities in the cascade area.

Also, the housing projects supported rebuilding the homes and sanitation facilities in the proposed cascade area. The central electricity board also facilitated the electricity facilities to the community who live within the Siththan Odai Middle & Lower cascade over the years after 2009.

Construction activities are planned to be implemented

Renovation of 6 tanks out of 9 tanks in the cascade are being carried out under CSIAP. The proposed rehabilitation works for Ulvukoduththan kulam, Vannantherikulam, and Periyakulam were curtailed due to fund reduction.

Table 08: Construction activities are planned to be implemented under CSIAP

No.	Enochchi kulam	Thelikarai kulam	Semmankunru kulam	Thekkri kulam	Sinna kulam	Oyamari kulam
1	Improvement of tank bund (Existing) – 2125 m	Improvement of tank bund (Existing) – 1265 m	Improvements of tank bund (SWB) – 1025 m	Construction of tank bund (Propose) – 600 m	Improvements of tank bund – 700 m	Improvement of tank bund – 1525 m
2	Improvement of spill structure -8m	Construction of spill structure - 20 m	Construction of Natural spill structure (SWB) – 10 m	Construction of spill structure 1 – 15 m	Construction of spill structure – 15 m	Construction of spill structure - 52 m
3	Construction of spill tail canal (Enochchi to Thelikarai) - 967 m	Construction of Spill Tail canal (Thelikarai to Periyakulam) - 1200 m	Construction of C.O spill structure (SWB) – 170 m	Construction of spill structure 1 - 17.5 m	Construction of inlet structure - 04 Nos.	
4	Construction of 600mm Dia Double row H/P inlet 4.8 m Long.- 1 Nos	Construction of 600 mm Dia, 9.6m long Double row H/P inlet structure 4.8 m Long -1 Nos	Improvement of Road work	Construction of Rubble packing work (Road-side)		

5	Construction of 600 mm Dia Double row Culvert 4.8 m Long - 1 Nos	Construction of 600 mm Dia 9.60 m Single row H/P inlet structure 4.8 m Long -10 Nos	Construction of Causeway			
6	Construction of Depth gauge -1 nos.	Construction of Depth gauge -1 nos.	Construction of Outlet structure			

Tanks in this cascade will be benefited when Mandakallaru Barrage construction is done. However, barrage construction have not yet started due to delays in the Environmental, Social Impact assessment.

Sub Project Proposal for constructing the Elephant fence was submitted.

4.2.17 Details of crop pattern within the cascade system

OFC and Paddy cultivation is the primary agricultural activity in the Siththan Odai cascade system. Groundnut is a prominent crop in this cascade, and it can be cultivated throughout the year in 3 seasons.

Based on the water availability in each tank in the cascade extent of cultivation is decided and water level in the tanks are carefully managed. Fields are prepared using appropriate machineries and cultivated with OFCs and suitable vegetables.

To maintain soil fertility and minimize pest and disease problems, farmers often practice crop rotation and crop diversification. After the Ground nut harvest, crops like vegetables (Brinjal or pumpkin), legumes, or fruits may be grown in rotation. This practice helps maximize land productivity and provides farmers with a diverse range of produce for consumption and sale.

The total cultivable extent in Siththan Odai Middle & Lower cascade is around 198 ha and 64 ha in the Maha and Yala season, respectively. The detail is shown in Table 09.

Table 09: Details of crop pattern under the small tanks within the cascade

No	Name of Tank	Cultivable Extent (ac)			
		Yala		Maha	
		Paddy	OFC	Paddy	OFC
1	Ennochchi kulam	-	8.0	-	8.0
2	Thelikarai kulam	-	25.0	-	50.0
3	Periyakulam	-	6.0	-	25.0
4	Vannanthiri kulam	-	-	-	-
5	Oyamari kulam	-	-	-	10.0
6	Ulavukoduthan kulam	-	-	-	-
7	Semmankunru kulam	-	20.0	55.0	20.0
8	Sinna Kulam	-	5.0	-	30.0
9	Thikkiri kulam	-	-	-	-
	Total	**-**	**64.0**	**55.0**	**143.0**

3.9 Details of irrigation management within the cascade system

Irrigation management in the Siththan Odai Middle & Lower cascade area of Poonagary is crucial for ensuring sustainable agriculture and water resource utilization. The identified key issues and potential solutions related to irrigation management in this area are given below.

- **Improper feeder & drainage network:** One of the primary issues in irrigation management is improper feeder & drainage network. Due to outdated or poorly maintained infrastructure in the, Periyakulam, Vannathiri, and Ulavukoduththan tanks water may not reach all areas evenly, leading to water scarcity for some farmers in down-stream tanks while others face waterlogging. To address this issue, modernizing and upgrading the irrigation infrastructure with proper water sharing plans.
- **Lack of Water Storage Facilities:** Another issue in the cascade area is the limited availability of water storage facilities. During the monsoon season, a significant amount of water is lost due to inadequate storage capacity. Constructing or rehabilitating tanks and small-scale surface water harvesting structures can help to capture and store water for dry periods, ensuring a more consistent water supply throughout the year.
- **Inaccurate Irrigation Scheduling:** Improper irrigation scheduling can lead to over- or under-irrigation, negatively impacting crop productivity and water conservation efforts. Implementing modern irrigation management techniques like precision agriculture, which utilizes sensors and data analytics, can provide real-time information on soil moisture levels, weather patterns, and crop water requirements. This data-driven approach enables farmers to optimize irrigation schedules and apply water precisely when and where it is needed, minimizing water wastage.
- **Poor irrigation Efficiency:** Most of the farmers adopt surface irrigation methods during their cultivation of OFC, fruit crops and perennial crops. Considering the soil and weather conditions of the cascade, the introduction of micro irrigation can help to optimize water usage and reduce wastage of water by 25 to 35 %.
- **Lack of Farmer Training and Awareness:** Most of the layman farmers in the cascade area may lack of knowledge about efficient irrigation practices and water management techniques. At present, The CSIAP is conducting training programs for SAC and workshops to educate farmers about the benefits of sustainable irrigation practices, including water-saving methods, which can enhance their awareness and understanding under the Enochchi, Thelikarai, Oyamari, Theekkiri, Semmankunru, and Sinnakkulam tank rehabilitation.
- **Climate Change Impacts:** Climate change poses additional challenges to irrigation management in the cascade area. Erratic rainfall patterns, increased temperatures, and prolonged dry spells can affect water availability and crop water requirements. Developing climate-resilient irrigation strategies, such as implementing micro-irrigation systems, using drought-tolerant crop varieties, and practising conservation agriculture, can help mitigate the adverse impacts of climate change and ensure the sustainability of agriculture in the area.
- **Stakeholder Collaboration and Governance:** Effective irrigation management requires strong collaboration among various stakeholders, including farmers, government agencies, water authorities, and community organizations. Establishing participatory irrigation management systems that involve all relevant parties in decision-making processes can lead to more inclusive and sustainable water resource management. Additionally, improving governance structures, promoting transparency, and enforcing regulations

related to water use and irrigation practices are essential for efficient and equitable water allocation.

By addressing these key issues and implementing sustainable irrigation management practices, the Siththan Odai Middle & Lower cascade area, can enhance water efficiency, increase agricultural productivity, and ensure the long-term sustainability of water resources.

4.2.18 Details of the current situation of the command area.

Issues in the command area

- **Land Fragmentation:** The Siththan Odai Middle & Lower cascade command area is often divided into smaller plots to accommodate the flow of water. This fragmentation can make it challenging for farmers to manage their crops efficiently, especially when it comes to mechanized farming practices. It may also lead to difficulties in accessing and maintaining the land.
- **Uneven Water Distribution:** In some command areas like Thelikarai and Semmankunru the distribution of water in this cascade system may be uneven. This can result in certain plots receiving more water than others, leading to uneven growth and yield variations among the cultivated crops. It requires careful planning and monitoring to ensure equitable water distribution throughout the cascade system.
- **Soil Erosion:** Water flowing through the cascade system can cause soil erosion, particularly in areas where the sandy type soil. This erosion can lead to the loss of fertile topsoil, affecting the long-term productivity of the land.
- **Sedimentation:** As water moves through the cascade system, it can carry sediment, which may accumulate in lower-lying areas or reservoirs. Sedimentation can reduce the water storage capacity and hinder the effective functioning of the irrigation infrastructure. Regular maintenance and sediment removal are essential to ensure the efficient operation of the cascade system.
- **Drainage Issues:** In some command areas like Vannathiri, Ulavukoduththan and Periyakulam inadequate drainage systems can lead to waterlogging, especially during heavy rainfall or when excessive irrigation occurs. Waterlogged soil can negatively impact crop growth, causing root suffocation and increased susceptibility to diseases. Proper drainage infrastructure is crucial to prevent waterlogging and ensure optimal growing conditions.
- **Land Subsidence:** Intensive irrigation practices, especially if not managed properly, can lead to land subsidence. Over-extraction of groundwater in the dry season can cause the soil to compact and sink, resulting in a permanent loss of land elevation at proposed command areas. Land subsidence can affect the overall stability of the irrigation cascade system and may require remedial measures such as groundwater management and land-use planning.

4.2.19 Government’s developments project

There are various government projects have been undertaken under the Siththan Odai cascade for infrastructure development, housing projects, Agricultural development, Education and skill development and health facilities.

- **Infrastructure Development:** The government has invested in the development of infrastructure at Poonagary in Kilinochchi, including roads, bridges, and transportation networks, to improve connectivity within the district and with other parts of the country. The constructed *'Mandakallaru* 'bridge and A-32 road are very helpful to the public for the farmers of this cascade area to reach Mulankavil, Kilinochchi, Chavakachcheri and Jaffna markets.
- **Housing Projects:** After the end of the civil war in Sri Lanka, the government-initiated housing projects to provide shelter for those affected by the conflict. These projects aimed to rebuild homes and resettlement areas for the displaced population of Siththan Odai cascade. The proposed Siththanodai cascade area residents have permanent houses with the personal sanitation (Toilets) facilities through the GOSL, Indian Govt.and UN habitat assistance.
- **Agricultural Development:** The community of Siththanodai cascade involve climate smart agriculture practices through the CSIAP at present. They have the existing local knowledge on the agricultural practices. After the, Climate Smart Irrigated Agriculture project activities for the Agricultural production, irrigation and marketing, they able to uplift their livelihood and family development.
- **Education and Skill Development:** Efforts have been made to improve the education sector in the cascade area, including the construction of schools and the provision of educational resources. Skill development programs have also been implemented to enhance the employability of the local population.
- **Health Facilities:** The government has focused on improving healthcare services in the proposed cascade area by establishing new divisional hospitals, clinics, and medical facilities. These initiatives aim to provide better access to healthcare services for the local population.

4.2.20 Community's responsibilities in the cascade

Community responsibilities in a proposed cascade area encompass a wide range of essential actions that individuals undertake to contribute to the well-being and progress of their local community.

Recognizing the ecological importance of the cascade area, community members actively engage in practices that promote environmental conservation and sustainability. This can involve initiatives such as organizing local clean-up events, promoting recycling and waste reduction, and supporting the preservation of natural habitats.

Being an active participant in community affairs is crucial for the development and growth of the Siththan Odai cascade area. This observed responsibility entails attending meetings, Sramadana activities & voicing opinions on important issues, and actively participating in farmers' organizations and initiatives. By engaging in civic affairs, individuals can help shape local policies and promote positive change.

Embracing the spirit of giving back, community members actively seek opportunities to volunteer their time, skills, and resources. This could involve mentoring local youth, assisting with community events, providing support to vulnerable populations, or participating in local service organizations. Volunteering fosters social cohesion and empowers individuals to make a tangible difference in the lives of others.

Recognizing the value of education as a catalyst for progress, community members prioritize supporting educational initiatives within the cascade area. This can involve advocating for quality schools, promoting adult education programs, or participating in mentoring programs. By investing in education, individuals help equip community members with the knowledge and skills needed to thrive in a rapidly changing farming practices and community as well.

Fostering economic growth and stability is a critical responsibility within a cascade area. Community members contribute by supporting local businesses, encouraging entrepreneurship, and attracting investments that align with sustainable development goals. This responsibility also includes advocating for job creation, providing training opportunities, and supporting initiatives that enhance the economic viability of the community.

Celebrating and preserving the unique cultural heritage of the cascade area is an important responsibility. Community members engage in activities that promote local art, music, traditions, and historical preservation. By valuing and promoting cultural diversity, individuals contribute to a vibrant and inclusive community that fosters pride and unity among its members.

4.2.21 Cultural diversity

The Siththan Odai cascade is predominantly inhabited by the Tamil community, and their cultivation culture is deeply rooted in traditional beliefs, norms, and spiritual activities. Here are some aspects of their cultural practices that were read during the transect walk.

- **Traditional Beliefs**: The people in the Siththan Odai Cascade hold strong beliefs in Hinduism, and their cultivation practices are often influenced by religious customs and rituals. They believe in the presence of deities and ancestral spirits who protect their crops and bring them prosperity.
- **Traditional Farming Practice**s: Farmers follow traditional methods of cultivation. They rely on the knowledge passed down through generations and often employ organic farming techniques.
- **Sacred Rituals**: Before commencing any agricultural activity, farmers in cascade perform religious ceremonies to seek the blessings of deities. They may conduct prayers, and offer flowers, fruits, and other items to their chosen gods, seeking their protection and guidance throughout the farming season.
- **Harvesting Festivals**: Harvesting festivals hold significant cultural importance in the cascade area. The most prominent festival is *Thai Pongal*, followed by *Patti Pongal*, a Tamil harvesting festival celebrated in January. During this festival, farmers express their gratitude to the sun and cattle for a bountiful harvest. They prepare a special dish called "*Pongal*" using freshly harvested rice and offer to the deities before consuming it as a community. *"Puthir eduthal"* is another cultural festival celebrated at the first day of harvesting.

4. Major challenges face by the cascade system

The major challenges faces in Sithan Odai Middle and Lower cascade are (1) Salinity, (2) Knowledge regarding water Management, (3) Stakeholder collaboration, (4) Rural to urban migration, (5) Land issues, (6) Operation & maintenance, (7) Unexpected weather, (8) Access road, (9) Infrastructures, (10) Medicinal herbs, (11) Grazing land and (12) Illegal activities.

4 Cascade Management Plan (CMP)

The participatory assessment process is the basic methodology for developing the Cascade Management Plan (CMP), and appropriate tools were used to identify the bio-physical condition of the cascade area. CMP leads to more appropriate actions to protect the landscape of the cascade. All stakeholders have been re-intervened and identified the acute cases.

4.1 Major elements of Cascade Management Plan (CMP)

4.1.1 Goal

The goal of the CMP, Sithan Odai Middle & Lower cascade is improved access to water & efficient water management

4.1.2 Objectives

The objectives of the CMP, Sithan Odai Middle & Lower cascade are as follows

- To address the water scarcity faced by rural communities living in the cascade & provide improved and reliable water accessibility
- To manage water & associated natural resources in a sustainable manner.
- To enhance the restoration of the watershed of the system to enhance biodiversity (flora & fauna, wild animals, etc.) through integrated management
- To give awareness & knowledge in water management techniques, irrigation scheduling, and operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.

4.1.3 Targets/ Specific objectives

1. To manage water & associated natural resources in a sustainable manner.
2. To enhance the restoration of the watershed of the system to enhance biodiversity (flora & fauna, wild animals, etc.) through integrated management
3. To address the water scarcity faced by rural communities living in the cascade & provide improved and reliable water accessibility
4. To facilitate transportation and marketing.
5. To give awareness & knowledge in water management techniques, irrigation scheduling, and operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.
6. To solve Land related issues.
7. To facilitate cattle raring during the cropping time
8. To prevent the Legal activities
9. To establish a legally empowered entity to safeguard the cascade

4.2.1 Critical issues of the cascade system

CMP was developed by using the data collected from the cascade profile and technical information was gathered from Technical Officers. Further, the critical issues were identified and ranked during the workshop then interventions were proposed for each critical issues.

Table 11: Critical Issues of the cascade system

No	Critical Issues	Intervention
1.	Increasing salinity level in soil, fresh surface water, and groundwater in cascade area affect the soil physicochemical properties, plant growth, and ecological balance which leads to low agricultural productivity – Observed in whole cascade area	Salinity
2.	Lack of knowledge in water management techniques and irrigation scheduling leads to poor irrigation efficiency (Water Conveyance Efficiency and Water Use Efficiency)	Lack of awareness
3.	Lack of stakeholder collaboration and governance - prominent hindrance in implementing cascade management plan for creating resilient environments for communities against climate-induced risks.	Participatory approach
4.	Young peoples' rural-to-urban migration and lack of interest in farming among the young generation.	Migration
5.	Issues related to land - Restriction of the forest department, land ownership and Land fragmentation.	Land issue
6.	Improper operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.	Operation & maintenance
7.	Effect of unexpected weather conditions - Unexpected drought, flooding, changing of weather conditions and high temporal rainfall variation.	Weather change
8.	Limited access path/road to tank and farm fields.	Land issue
9.	Limited infrastructure development (Roads, Electricity, water supply, bridges, communication and etc.) which is essential to facilitate market linkages and employment opportunities.	Infrastructure
10.	Extinction of Medicinal herbs.	Bio diversity
11.	Limitation of grazing land during cultivation time.	Cattle rearing

4.2.2 Proposed strategic interventions to resolve/mitigate critical issues

1. Construction of Saltwater-exclusive Barrage.
2. Establishment of saltwater exclusive bunds.
3. Construction/reforming of soil erosion bunds
4. Reforestation & establishment of agro forestry
5. Promote the traditional eco systems in cascade area

6. Rehabilitation of individual tanks and structures (de-silting, spill construction, and bund construction)
7. Reconstruction of Agro-Roads
8. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
9. Introduce CSA practices in the tank commanding area.
10. Review the legal land ownership for the command area
11. Attempt to get the land release from the relevant department
12. Establish the pasture land for free grazing

Table 12: Ranking for Proposed intervention of the critical issue

Critical Issues	**Rank**	**Proposed Interventions**
Increasing salinity level in soil, fresh surface water, and groundwater in cascade area affect the soil physicochemical properties, plant growth, and ecological balance which leads to low agricultural productivity – Observed in whole cascade area	1	1, 2 & 9
Lack of knowledge in water management techniques and irrigation scheduling leads to poor irrigation efficiency (Water Conveyance Efficiency and Water Use Efficiency)	2	8
Lack of stakeholder collaboration and governance - prominent hindrance in implementing cascade management plan for creating resilient environments for communities against climate-induced risks.	3	4, 5, & 8
Young peoples' rural-to-urban migration and lack of interest in farming among the young generation.	4	8
Issues related to land - Restriction of the forest department, land ownership and Land fragmentation.	5	10 & 11
Improper operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.	6	3, 6 & 8
Effect of unexpected weather conditions - Unexpected drought, flooding, changing of weather conditions and high temporal rainfall variation.	7	9
Limited access path/road to tank and farm fields.	8	7
Limited infrastructure development (Roads, Electricity, water supply, bridges, communication and etc.) which is essential to facilitate market linkages and employment opportunities.	9	7
Extinction of Medicinal herbs.	10	4
Limitation of grazing land during cultivation time.	11	12

Table 13: Proposed Intervention to overcome the identified issues

Critical Issues	Proposed Intervention
Increasing salinity level in soil, fresh surface water, and groundwater in cascade area affect the soil physicochemical properties, plant growth, and ecological balance which leads to low agricultural productivity – Observed in whole cascade area	1. Construction of Saltwater-exclusive Barrage. 2. Establishment of saltwater exclusive bunds. 3. Introduce CSA practices in the tank commanding area.
Lack of knowledge in water management techniques and irrigation scheduling leads to poor irrigation efficiency (Water Conveyance Efficiency and Water Use Efficiency)	1. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
Lack of stakeholder collaboration and governance - prominent hindrance in implementing cascade management plan for creating resilient environments for communities against climate-induced risks.	1. Reforestation & establishment of agro forestry 2. Promote the traditional eco systems in cascade area 3. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
Young peoples' rural-to-urban migration and lack of interest in farming among the young generation.	1. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
Issues related to land - Restriction of the forest department, land ownership and Land fragmentation.	1. Review the legal land ownership for the command area 2. Attempt to get the land release from the relevant department
Improper operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.	1. Construction/reforming of soil erosion bunds 2. Rehabilitation of individual tanks and structures (de-silting, spill construction, and bund construction) 3. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
Effect of unexpected weather conditions - Unexpected drought, flooding, changing of weather conditions and high temporal rainfall variation.	1. Introduce CSA practices in the tank commanding area
Limited access path/road to tank and farm fields.	1. Reconstruction of Agro-Roads
Limited infrastructure development (Roads, Electricity, water supply, bridges, communication and etc.) which is essential to facilitate market linkages and employment opportunities.	1. Reconstruction of Agro-Roads

Extinction of Medicinal herbs.	1. Reforestation & establishment of agro forestry
Limitation of grazing land during cultivation time.	1. Establish the pasture land for free grazing

4.2.3 Proposed activities to overcome the identified issues

Table 14: Proposed activities to achieve the targets / specific objectives

#	Critical Issues	Proposed Intervention	Proposed Activities
1	Increasing salinity level in soil, fresh surface water, and groundwater in cascade area affect the soil physicochemical properties, plant growth, and ecological balance which leads to low agricultural productivity – Observed in whole cascade area	1. Construction of Saltwater-exclusive Barrage. 2. Establishment of saltwater exclusive bunds. 3. Introduce CSA practices in the tank commanding area.	1. Construction of Saltwater exclusive Barrage at the river mouth of Mandakkal Aru (Length - 187 m & No.of gates 40) 2. Establishment of saltwater exclusive bunds - 200 m length 3. Promote the soil erosion bunds
2	Lack of knowledge in water management techniques and irrigation scheduling leads to poor irrigation efficiency (Water Conveyance Efficiency and Water Use Efficiency)	1. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.	4. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
3	Lack of stakeholder collaboration and governance - prominent hindrance in implementing cascade management plan for creating resilient environments for communities against climate-induced risks.	1. Reforestation & establishment of agro forestry 2. Promote the traditional eco systems in cascade area 3. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.	5. Reforestation & establishment of agro forestry 6. Promote the traditional eco systems in cascade area
4	Young peoples' rural-to-urban migration and lack of interest in farming among the young generation.	1. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.	Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.
5	Issues related to land - Restriction of the forest department, land ownership and Land fragmentation.	1. Review the legal land ownership for the command area	7. Facilitate the farmers through FOs to get legal clearance for their lands.

		2. Attempt to get the land release from the relevant department	(Review the legal land ownership for the command area, attempt to get the land release from the relevant department)
6	Improper operation and maintenance of tank cascade area, tank bed, feeder canals, and drainage networks.	1. Construction/reforming of soil erosion bunds 2. Rehabilitation of individual tanks and structures (de-silting, spill construction, and bund construction) 3. Conduct awareness, training and capacity building programs (CBPs) to officers, members of CBOs and farmers.	8. Rehabilitation of abandoned tanks and structures (Ulavukoduthan & Periyakulam) situated within the poonakary forest range
7	Effect of unexpected weather conditions - Unexpected drought, flooding, changing of weather conditions and high temporal rainfall variation.	1. Introduce CSA practices in the tank commanding area	9. Introduce CSA Practices
8	Limited access path/road to tank and farm fields.	1. Reconstruction of Agro-Roads	
9	Limited infrastructure development (Roads, Electricity, water supply, bridges, communication and etc.) which is essential to facilitate market linkages and employment opportunities.	1. Reconstruction of Agro-Roads	10. Renovation of Agro-roads (Concrete road- 3.5 km & Gravel road - 15.15 km)
10	Extinction of Medicinal herbs.	1. Reforestation & establishment of agro forestry	Reforestation & establishment of agro forestry
11	Limitation of grazing land during cultivation time.	1. Establish the pasture land for free grazing	11. Establish the pasture land for free grazing

4.2.4 Total estimated cost for implementing interventions and contribution expected from the stakeholder agencies

Table 15: Gannt Chart for proposed activities and responsible entities for implementing

No.	Proposed Activities	Budget (Rs. Mn.)	Time Frame														Responsibility of Implementation	
			Short Term (May - Jun 2024)						Mid Term (Jun - Dec 2024)				Long Term (Jan - Dec 2025)					
			Jan	Feb	Mar	Apr	May	Jun	QI	Q2	Q3	Q4	QI	Q2	Q3	Q4	Major	Others
1	Construction of Saltwater exclusive Barrage at the river mouth of Mandakkal Aru (Length - 187 m & No.of gates 40)	500.0															DS	FO
2	Establishment of saltwater exclusive bunds (Vannantheri tank)	11.0															DAD / CSIAP	FO
3	Promote the soil erosion bunds	5.0															DAD / CSIAP	FO
4	Reforestation & establishment of agro forestry	1.0															CSIAP	FO
5	Promote the traditional eco systems in cascade area	1.0															CSIAP	FO
6	Rehabilitation of abandoned tanks and structures (Ulavukoduthan & Periyakulam) situated within the poonakary forest range	30.0															DAD / CSIAP	FO
7	Renovation of Agro-roads (Concrete road- 3.5 km & Gravel road - 15.15 km)	175.0															DAD / CSIAP	FO

8	Conduct awareness, training and CBPs to officers, members of CBOs and farmers	1.0																CSIAP	FO
9	Introduce CSA Practices	1.5																DOA	FO
10	Facilitate the farmers through FOs to get legal clearance for their lands. (Review the legal land ownership for the command area, attempt to get the land release from the relevant department)	0.1																DS	FO
11	Establish the pasture land for free grazing	10.0																AP&H	FO
12	Form and legalize a Cascade Management Committee (CMC) with all relevant stakeholders	0.2																CSIAP	FO

Table 16: Proposed activities with expected contribution from stakeholder agencies

No.	Proposed Activities	Total Budget (Rs. Mn.)	Amendment Budget (Rs. Mn)	Responsible Agencies	Remarks
1	Construction of Saltwater exclusive Barrage at the river mouth of Mandakkal Aru by end of Jun 2024	500		DS	This particular activity has been requested by few other CMC too. It is planned to be implemented through another funding source. This particular project is being discussed at DCCs and there is no final decision yet. Therefore, CSIAP will not intervene with this activity. However, the CMC will have to monitor the activity with relevant agencies. CSIAP will help CMCs to organized a common meeting to make members aware of the new development.
2	Establishment of saltwater exclusive bunds (Vannantheri tank)	8	11	DAD / CSIAP	The original estimate was revised and both technical & financial estimate was done by the DAD. The estimate was sent to PMU on 11th January 2024 at NIPM. And waiting for the PMU & WB clearance for implementation. IDCBS of PMU agreed to expedite the clearance matter. The DAD will submit a solution paper to the CMC to discuss the matter and get their clearance. The CSIAP will help the DAD to prepare the solution paper. The CMC needs to organize a special meeting for discussing these matters on 10th April 2024. SAC also will be formed.
3	Promote the soil erosion bunds	2	5	DAD / CSIAP	The amended amount is approved by PMU representative at the meeting held on 26.03.2024 at CSIAP – NP. The estimate has to be prepared by DAD with the support of DPD office and send it to PMU on 18th April 2024 for clearance. This is direct contract and the contract will be awarded to FOs.
4	Reforestation & establishment of agro forestry	1		CSIAP	This particular activity is being implemented by the CSIAP with the help of FOs using funds allocated for CMP. Already 0.2 mn out of 1.0 mn has been spent. CSIAP plans to implement activity from the balance allocation. It has been discussed with water suppliers to water the plants during the drought season.
5	Promote the traditional eco	1		CSIAP	This activity will be implemented by CSAS in clobration with ESO. DPD office needs to make the CMC aware of the progress of this activity.

	systems in cascade area				
6	Rehabilitation of abandoned tanks and structures (Ulavukoduthan & Periyakulam) situated within the poonakary forest range	30		DAD / CSIAP	This activity will be implemented with the funds coming from USD 25 Mn. There are 2 tanks (Ulavukoduthan & Periyakulam) within this cascade which were included into the original list of the tank. However, even by that time these 2 tanks had been abundant due to displacement of people during the war. The tanks had been used for OFC cultivation. Yet, the forest department doesn't allow farmers to engage in OFC cultivation or entering the forest area. Farmers request is to get the permission from forest department to rehabilitate the 3 tanks allowing them to restart their cultivation. It is suggested that DAD to submit the issue paper to the CMC. The DPD office has to facilitate the DAD to prepare the issue paper. The ESS Section of the PMU need to guide the DPD office in this regard.
7	Renovation of Agro-roads (Concrete road- 3.5 km & Gravel road - 15.15 km)	175		DAD / CSIAP	The estimates for the activity have to be prepared by DAD with the support of DPD office. 10 Mn has been allocated from the AB & ML development budget July to December 2025. Possibility will be found to raise balance funds from the CMP budget. However, this activity need to be revisited to identified the correctness. TO & SSO will complete this activity by 5th of April 2024 and submit the report to DPD. DAD has to submit the solution paper to CMC
8	Conduct awareness, training and CBPs to officers, members of CBOs and farmers	1		CSIAP	
9	Introduce CSA Practices	1.5		DOA	
10	Facilitate the farmers through FOs to get legal clearance for their lands. (Review the legal land ownership for the command area,	0.3		DS	Divisional Secretary to submit an issue paper to the CMC to discuss to get support from the relevant agencies to resolve this issue. DPD office will facilitate to prepare the issue paper

	attempt to get the land release from the relevant department)				
11	Establish the pasture land for free grazing	10		AP&H	Department of Animal Production need to submit a solution paper to the CMC to discuss the matter to get clearance. The CSAS will coordinate with the respective department and help to prepare the solution paper with the help of ESO, SSO, M&E.
12	Form and legalize a Cascade Management Committee (CMC) with all relevant stakeholders	0.2		CSIAP	The CMC legalized though the **Circular No. 6 of 2023**

4.2.3 Implementation methodology of the cascade management plan

CMBDP should be submitted to the Divisional Agriculture Committee and the District Agriculture Committee for approval. After getting the approval, it will be implemented.

The sub project proposals (Attachment No. 04) will be prepared by CMC with the support of the relevant implementing agencies for obtaining capital assistance

Major partner institutions are committed to implementing the proposed activities, preparing and supporting existing investment plans, budget reports and implementation plans, and assisting CMC in submitting grant funding proposals to be provided.

Social Audit Committees of sub-project implementation effectiveness. CMC appoints Social Audit Committees and gives active contributions to the beneficiaries to enhance the quality of work performed by the CMC

Annexures

Annexure 1: Circular No 6 of 2023 issued by the Department of Agrarian Development on 3 rd August 2023 to establish cascade management committees

சுற்றறிக்கை இலக்கம் – 06/2023
அனைத்து மாவட்ட செயலாளர்களுக்கும் பிரதேச செயலாளர்களுக்கும்,

குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழு உருவாக்கம் மற்றும் நடாத்திச்செல்லல் ஒழுங்கு முறைகள்

நாட்டின் உள்ளகத்திலிருந்து கடலுக்கு வழிந்தோடும் பிரதான ஆறுகள் மூன்றாம் நிலை நீர்வழிகள் எனவும், அப்பிரதான ஆறுகளை சேரும் கிளை ஆறுகள் இரண்டாம் நிலை நீர்வழிகள் எனவும் அக்கிளை ஆறுகளுக்கு நீர் வழங்கும் சிறிய நீர்வழிகள் ஆரம்ப நிலை நீர்வழிகள் எனவும் அழைக்கப்படும். கிராமிய மட்டத்திலான குளங்களும் நீர்த்தேக்கங்களும் பெரும்பாலும் ஆரம்ப நிலை நீர்வழிகளினூடு அமைக்கப்பட்டுள்ளதோடு பூமியின் மேற்பரப்பில் நீரைத்தேக்கி கீழே வழிந்தோடச் செய்ய அமைக்கப்பட்டிருக்கும் வாவிகளும் இதனுள் அடங்கும்.

02. நாட்டின் உள்ளகத்தில் காணப்படும் ஆரம்ப நிலை நீர்வழியொன்று அல்லது நீர்வழி வலையமைப்பிலுள்ள நீரியல் ரீதியாக ஒன்றிணைந்த சிறு மற்றும் நடுத்தர அளவிலான வாவி அமைப்புக்கள் அல்லது குளங்கள் மற்றும் நீர்த்தேக்க அமைப்புக்கள் அல்லது நீர்த்தேக்க அமைப்புக்களினாலான நடுத்தர அளவிலான நீரேந்து பகுதி குளஅடுக்குத் தொடர் அமைப்பு என கூறப்படும்.

03. இலங்கையில் 1166 குளஅடுக்குத் தொடர் அமைப்புக்கள் கண்டுபிடிக்கப்பட்டுள்ளன. இக் குளஅடுக்குத் தொடர் அமைப்புக்களை மையமாகக்கொண்டு புவியியல், நீரியல், சூழலியல் மற்றும் சமூக பொருளாதார மேம்பாடு குறித்து வளப்பயன்பாட்டினை வினைத்திறனாகவும் நிலையானதாகவும் கொண்டு செல்வதனை இலக்காகக் கொண்டு 1968 இலக்கம் 48 நீர்ப்பாசன (திருத்தங்கள்) கட்டளைச் சட்டத்தின் திருத்தியமைக்கப்பட்ட 1946 இலக்கம் 32 நீர்ப்பாசன கட்டளைச்சட்டத்தின் 1(அ) 1,2,3,4 உறுப்புரைகளின் பிரகாரம் கமநல அபிவிருத்தி ஆணையாளர் நாயகத்திற்கு வழங்கப்பட்டிருக்கும் அதிகாரங்களுக்கமைய மேற்குறிப்பிட்ட சட்டத்திற்கமைய நடாத்தப்படும் மாவட்ட வேளாண்மை குழுவின் போது, நீர்ப்பாசனக் கைத்தொழிலை மையமாகக் கொண்ட நெல் உற்பத்தி உள்ளிட்ட வேளாண்மையில் தாக்கம் செலுத்தும் அல்லது அனைத்து துணைக்காரணிகள் குறித்து நடவடிக்கைகளை மேற்கொள்ள குறித்த சட்டத்தினால் உங்களுக்கு வழங்கப்பட்டுள்ள அதிகாரங்களின் பிரகாரம் குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குதல் மற்றும் நடாத்திச்செல்லுதல் ஒழுங்கு முறைகள் தொடர்பாக வேளாண்மைக் குழுவில் கலந்துரையாடுமாறும் அதற்கு கீழ் குறிப்பிட்டுள்ள விடயங்களை வழிகாட்டிகளாக பயன்படுத்துமாறு கனிவுடன் தெரிவிக்கிறேன்.

3.1 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குவதற்கான குறிக்கோள்கள்

i) குளஅடுக்குத் தொடரில் அமைந்துள்ள அனைத்து இயற்கை வளங்கள், அதாவது மண், நீர், வன வளம்,உயிரியல் அமைப்புக்கள், காணி மற்றும் நீர்ப்பாசன கட்டமைப்புக்களை முகாமைத்துவம் செய்வதற்காக நலன்விரும்பிகள் மற்றும் குறித்த அரச அதிகாரிகள் ஒருமித்த அணுகுமுறையுடன் செயல்படுவதற்கான நிறுவன கட்டமைப்பொன்றினை அமைத்தல்.
ii) நீர்ப்பாசன வேளாண்மை, கால்நடை தொடர்பான நடவடிக்கைகள் மற்றும் நன்னீர் மீன்பிடிக் கைத்தொழிலிற்கு நீர் வழங்கல், வன வளம் மற்றும் வன விலங்குகளின் தேவைப்பாடுகளை சமாந்தரமாக நடாத்திச் செல்லல், நிலத்தடி நீரினை உகந்தவாறு பேணுதல் வீட்டுத்தோட்ட பராமரிப்பு உள்ளிட்ட வீட்டு நீர் பாவனையினை முறையாக முகாமைத்துவம் செய்தல்.
iii) வேளாண்மை நடவடிக்கைகளுக்கு நீர்ப்பாவனை செய்பவர்கள் உள்ளிட்ட படிநிலை அமைப்பினை பராமரிப்பு செய்வதற்காக வேறு பயனாளிகள் மற்றும் பங்குதாரர்களின் ஒத்துழைப்பினை பெற்றுக் கொள்ளல்.

3.2 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்களை உருவாக்குவதற்கான நோக்கங்கள்

i) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவம் மற்றும் நிலையான பேணுகைக்காக சட்டபூர்வ அங்கீகாரத்துடனான நிறுவன கட்டமைப்பொன்றினை உருவாக்குதல்.
ii) ஒவ்வொரு குளஅடுக்குத் தொடர் அமைப்புக்களுக்கு ஏற்ப அதன் செயல்பாட்டிற்கும் நிலையான பாவனைக்கும் தொடர்புடைய பிரச்சினைகள் மற்றும் முன்மொழிந்த தீர்வுகளை ஒருங்கிணைந்த அணுகுமுறையுடன் கலந்தாலோசித்து சட்டபூர்வ அங்கீகாரத்துடனான முறைமை ஒன்றினை உருவாக்குதல்.
iii) குளஅடுக்குத் தொடரிற்குள் உள்ள வேளாண்மை, நீர் முகாமைத்துவ, சூழலியல்,சமூக பொருளாதார மற்றும் புவியியல் காரணி அமைப்பின் செயல்திறனுக்காக தொடர்ச்சியாகவும் வினைத்திறனாகவும் நடாத்திச் செல்வதற்கான முறைமையொன்றை ஏற்படுத்தல்.
iv) குளஅடுக்குத் தொடர் அமைப்பின் அபிவிருத்தி நடவடிக்கைகளில் முழு அமைப்பிற்கும் இடம்பெறும் சேதங்களைத் தடுத்து தேவைகளை உறுதிப்படுத்தல், நீர்வளத்தினை வினைத்திறனான முறையில் பாவனை செய்வதற்காக சாகுபடி உற்பத்தியினை அடித்தளமாகக் கொண்டு திட்டங்களை நிர்மாணித்தல்.
v) குளஅடுக்குத் தொடர் அமைப்பிற்கு ஒருங்கிணைந்த வேளாண்மை உற்பத்தி திட்டமொன்றினை நிர்மாணித்தல் மற்றும் அத்திட்டத்தின் செயல்திறன் நிலைமையை கண்காணித்தல்.
vi) குளஅடுக்குத் தொடர் அமைப்பொன்றில் காணப்பட வேண்டிய கூறுகளை மாற்றுவதற்கு தேவையான நடவடிக்கைகளை மேற்கொள்ளல்.
vii) குளஅடுக்குத் தொடர் அமைப்புடன் தொடர்புடைய சமூக பொருளாதார தொடர்புகளை பேணுதல் மற்றும் அது தொடர்பிலான பங்குதாரர்களை விழிப்புணர்த்துதல்.

3.3 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவின் பணிகள்

i) குளஅடுக்குத் தொடர் அமைப்பிற்கான திட்டங்களை தயாரித்தல், நடைமுறைப்படுத்தல் மற்றும் கண்காணித்தல்.
ii) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழு அங்கத்தவர்களால் முன்வைக்கப்படும் பிரச்சினைகள், முன்மொழிவுகள் மற்றும் திட்டங்களுக்காக தீர்வுகளை முன்வைத்தாலும் தீர்வு காண முடியாத பிரச்சனைகளை பொருத்தமான பிரதேச/ மாவட்ட வேளாண்மை குழுவிடம் முன்வைத்து தீர்த்துக் கொள்ளல்.
iii) குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவத்துடன் தொடர்புடைய அறிக்கையினை சந்தர்ப்பத்திற்கேற்றவாறு பிரதேச/மாவட்ட வேளாண்மை குழுவிடம் முன்வைத்தல்.
iv) கிராமிய குளஅடுக்குத் தொடர் களில் அமையப்பெற்றிருக்கும் அனைத்து நீர் மூலங்கள் மற்றும் நீர் நுகர்வோர்கள் ஒன்றிணைத்து குளஅடுக்குத் தொடர் சேர்ந்த மத்திய நீர்பிடிப்புப் பகுதிக்காக ஒருங்கிணைந்த வேளாண்மை திட்டமொன்றினை உருவாக்கி நடைமுறைப்படுத்தல்.
v) குளஅடுக்குத் தொடர் அமைப்பொன்றினுள் நடவடிக்கைகளில் ஈடுபடும் அனைத்து நீர் நுகர்வோர்களினதும் தேவைப்பாடுகளுக்கேற்ப நீர்பிடிப்பு பிரதேசத்திலுள்ள இயற்கை வள முகாமைத்துவம் தொடர்பிலான தீர்மானங்களை மேற்கொள்ளுதல் மற்றும் நடைமுறைப்படுத்துதல்.
vi) இயற்கை அனர்த்தங்கள், அழிவுகள், தீங்கு விளைவிக்கும் மனித நடவடிக்கைகளை குறைக்கக்கூடிய வகையில் அனைத்து நீர்மூலங்களையும் முகாமை செய்தல்.
vii) குளஅடுக்குத் தொடரிலுள்ள அனைத்து நீர் மூலங்களையும் மையமாகக் கொண்ட நீர் வாடிக்கையாளர்களுக்கிடையே வினைத்திறனான தகவல் தொடர்பாடல் முறையொன்றினை உருவாக்குதல்.

viii) படிநிலையிலுள்ள சுற்றுச்சூழல் அமைப்புக்களுடன் தொடர்புடைய உள்ளீடுகள் மற்றும் வெளியீடுகள் திறனான முறையில் முகாமைத்துவம் செய்ய முறையான வழிமுறை ஒன்றினை உருவாக்குதல்.

ix) தற்போதைய மற்றும் எதிர்காலத்தில் நிகழும் என கணிக்கப்படும் காலநிலை மாற்றங்களுக்கு தகுந்த காலநிலை நட்பு உபாயமுறை திட்டங்களை நடைமுறைப்படுத்தலும் நீர் நுகர்வோர்களை அவ்வாறான காலநிலை மாற்றங்களுக்கு பழக்கப்படுத்துதல்.

x) குளஅடுக்குத் தொடர் அமைப்பு முறைமைக்குள் நீர் வாடிக்கையாயாளர்களிடையே அறிவு, திறன், மனப்பாங்கு மற்றும் வளங்களை வினைத்திறனான முறையில் பரிமாற்றம் செய்து கொள்ளல்.

xi) நீர் நுகர்வோர்களின் காணி, நீர் மற்றும் சுற்றுச்சூழல் அமைப்புக்களின் வினைத்திறனை மேம்படுத்துவதற்கான நடவடிக்கைகளை மேற்கொள்ளல்.

xii) வேளாண்மைக்கு மற்றும் நீர் நுகர்விற்கேற்ற சுற்றுச்சூழல் அமைப்புக்களுடன் தொடர்புடைய பாரம்பரிய சட்டங்கள் மற்றும் இயற்றப்பட்ட சட்டங்களை அமுலுக்கு கொண்டு வருவதற்குத் தேவையான ஆதரவினை வழங்குதல்.

xiii) காணி உரித்துடைய விவசாயிகள் மற்றும் உரிமையாளர்களின் கூட்டத்தினை(சாகுபடி உற்பத்திக் கூட்டம்) நடாத்த தேவையான அடிப்படை தீர்மானங்களை மேற்கொள்ள விவசாயிகளுக்கு உதவி புரிதல்,அதனோடு தொடர்புடைய ஒருங்கிணைப்பு நடவடிக்கைகளை மேற்கொள்ளுதல் மற்றும் கண்காணித்தல்.

xiv) குளஅடுக்குத் தொடர் அமைப்பு அதிகாரப்பிரதேசக்குள்ளான அனைத்து நீர் மூலங்கள் மற்றும் அதனோடு தொடர்புடைய ஏனைய சுற்றுச்சூழல் அமைப்புக்களின் நிலையான தன்மையினை பேணுவதற்காக குறித்த குறித்த அரச நிறுவனங்களின் வழிகாட்டல்கள் மற்றும் அறிவுறுத்தல்களை பின்பற்றி பாதுகாப்பதற்கு உரிய நடவடிக்கைகளை மேற்கொள்ளல்.

xv) குளஅடுக்குத் தொடர் அமைப்பிற்கு பாதிப்பினை உண்டுபண்ணும் பங்குதாரர்களுக்கு எதிராக சட்ட செயற்பாடுகளை மேற்கொள்வதற்கு தேவையான நடவடிக்கைகளை மேற்கொள்ளல்.

xvi) குளஅடுக்குத் தொடர் அமைப்பின் அனைத்து அபிவிருத்தி நடவடிக்கைகளிலும் செயன்முறை ரீதியாக பங்களிப்பினை வழங்கலும் முன்னேற்றத்தை கலந்தாலோசித்தலும்

xvii) குளஅடுக்குத் தொடர் அமைப்பில் நீர்ப்பாசன கைத்தொழிலில் கூட்ட தீர்மானங்களை நடைமுறைபடுத்தும் நிலைமையினை கண்காணித்தல்.

xviii) குளஅடுக்குத் தொடர் அமைப்பின் நீர்ப்பாசன கைத்தொழில்களின் செயல்பாடுகள் மற்றும் பராமரிப்பு நிகழ்வுகளை கண்காணித்தல்.

3.4 குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவின் கலவை

3.4.1 பிரதேச மட்டம்

இக்குழு குறித்த பிரதேச செயலக அதிகாரப் பிரதேசத்தின் கீழுள்ள அதிகாரிகளினால் உள்ளடக்கியதாகும்.

i. பிரதேச செயலாளர்
ii. கமநல அபிவிருத்தி பிரதேச அதிகாரி
iii. வேளாண்மை ஆலோசகர்
iv. மாகாண நீர்ப்பாசன திணைக்களத்தினை பிரதிநிதித்துவப்படுத்துமாறு பொறியியலாளர் / தொழிநுட்ப அதிகாரி
v. கமநல அபிவிருத்தி திணைக்களத்தினை பிரதிநிதித்துவப்படுத்தும் பிரதேச பொருளியலாளர் / தொழிநுட்ப அதிகாரி
vi. வேளாண்மை ஆராய்ச்சி மற்றும் உற்பத்தி உதவியாளர்
vii. கிராம அலுவலர்
viii. சமுர்தி அபிவிருத்தி உத்தியோகத்தர்
ix. பொருளாதார அபிவிருத்தி உத்தியோகத்தர்
x. காணி பயன்பாடு மற்றும் கொள்கை உருவாக்க திணைக்களத்தின் பிரதிநிதி ஒருவர்
xi. மாகாண மீன்பிடித் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xii. நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபையின் பிரதிநிதி ஒருவர்
xiii. சுற்றாடல் அதிகாரசபையின் பிரதிநிதி ஒருவர்
xiv. பொலிஸ் சுற்றாடல் பிரிவின் பிரதிநிதி ஒருவர்
xv. விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களத்தின் பிரதிநிதி ஒருவர்
xvi. வேளாண்மை மற்றும் கமநல காப்புறுதி சபையின் பிரதிநிதி ஒருவர்
xvii. நீர்ப்பாசன பொறியியலாளர் / தொழிநுட்ப அதிகாரி
xviii. வனசீவராசிகள் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xix. வனப் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xx. புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகத்தின் பிரதிநிதி ஒருவர்
xxi. தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபையின் பிரதிநிதி ஒருவர்
xxii. தொல்பொருளியல் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiii. சிவில் பாதுகாப்புத் திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiv. உள்ளூராட்சி நிறுவனங்களை பிரதிநிதித்துவப்படுத்தும் அதிகாரமுடைய அலுவலர் ஒருவர்
xxv. விவசாய அமைப்புக்கள், மாதர் விவசாய அமைப்புக்கள், உற்பத்தி விவசாய குழுக்களை பிரதிநிதித்துவப்படுத்தி ஒவ்வோர் அமைப்புக்களினதும் தலைவர் அல்லது செயலாளர்
xxvi. சமுதாய நீர் வழங்கல் அமைப்பொன்றின் பிரதிநிதி ஒருவர்
xxvii. வேறு சமூக அமைப்புக்கள் மற்றும் சுற்றாடல் அமைப்புக்களை பிரதிநிதித்துவப்படுத்தி அமைப்பொன்றின் பிரதிநிதி ஒருவர்

3.4.2 மாவட்ட மட்டம்

இக்குழு குறித்த மாவட்டத்தின் கீழுள்ள அதிகாரிகளை உள்ளடக்கியது.

i. மாவட்ட தலைவர் அல்லது மாவட்ட செயலாளர்
ii. பிரதேச செயலாளர்
iii. கமநல அபிவிருத்தி பிரதி / உதவி ஆணையாளர்
iv. உள்ளூராட்சி நிறுவனங்களை பிரதிநிதித்துவப்படுத்தி உள்ளூராட்சி உதவி ஆணையாளர் அல்லது பிரதிநிதி ஒருவர்
v. மாவட்ட வேளாண்மை பணிப்பாளர்
vi. மாகாண மற்றும் மாகாணங்களுக்கிடையேயான பிரதி வேளாண்மை பணிப்பாளர்கள்
vii. நீர்ப்பாசனத்துறை பணிப்பாளர் அல்லது பிரதான பொறியியலாளர்
viii. மாகாண நீர்ப்பாசனத் திணைக்களத்தினை பிரதிநிதித்துவப்படுத்தி பிரதி பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
ix. காணி உபயோகம் மற்றும் கொள்கை உருவாக்க திணைக்களத்தின் உதவிப் பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
x. மாகாண மீன்பிடி திணைக்களத்தின் பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xi. நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபையின் உதவிப் பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xii. சுற்றாடல் அதிகார சபையின் மாவட்ட உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xiii. விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களத்தின் பிரதிப்பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xiv. வேளாண்மை மற்றும் கமநல காப்புறுதி சபையின் உதவிப்பணிப்பாளர் அல்லது பிரதிநிதி ஒருவர்
xv. வனசீவராசிகள் பாதுகாப்புத் திணைக்களத்தின் உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xvi. வனப் பாதுகாப்புத் திணைக்களத்தின் மாவட்ட வனபாதுகாப்பு அதிகாரி அல்லது பிரதிநிதி ஒருவர்

xvii. தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபையின் மாவட்ட அதிகாரி அல்லது பொறியியலாளர்
xviii. தொல்பொருளியல் திணைக்களத்தின் உதவிப்பணிப்பாளர் அல்லது மாவட்ட அதிகாரி
xix. புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகத்தின் பிரதிநிதி ஒருவர்
xx. கமநல அபிவிருத்தி பிரதேச அதிகாரி
xxi. பொலிஸ் சுற்றாடல் பிரிவின் நிலைய அதிகாரி
xxii. சிவில் பாதுகாப்பு திணைக்களத்தின் பிரதிநிதி ஒருவர்
xxiii. மாவட்ட விவசாய அமைப்புக்களின் கூட்டமைப்பினை பிரதிநிதித்துவப்படுத்தி தலைவர் / செயலாளர் அல்லது பிரதிநிதி ஒருவர்
xxiv. சமூக நீர் வழங்கல் அமைப்பின் பொறுப்பதிகாரி அல்லது மாவட்ட பிரதிநிதி ஒருவர்
xxv. வேறு சமூக அமைப்புக்கள் மற்றும் சுற்றாடல் அமைப்புக்களின் மாவட்ட மட்டத்தினை பிரதிநிதித்துவப்படுத்தி ஒரு அமைப்பிலிருந்து ஒரு பிரதிநிதி

க:வே :- குளஅடுக்குத் தொடர் அமைப்பு கட்டுப்பாட்டு பிரதேச எல்லைக்குள் குறித்த நிறுவனத்தில் கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக் கூடுதலாகக் காணப்படும் சந்தர்ப்பத்தில் அவ்வவ் கட்டுப்பாட்டு பிரதேசங்களை பிரதிநிதித்துவப்படுத்தி மேலுள்ளவாறு பொறுப்பதிகாரிகள் கலந்து கொள்ள வேண்டும்.

3.5 <u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவொன்றின் அதிகாரிகள் குழாம் – பிரதேச மட்டம்</u>

i. படிநிலை அமைப்பிற்கு பிரதேச செயலாளர் பிரிவுகள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பத்தில் கலந்து கொள்ளும் அனைத்து பிரதேச செயலாளர்களும் குழுவின் இணைத்தலைவராக உத்தியோகபூர்வமாக செயல்பட வேண்டும்.

ii. படிநிலை அமைப்பிற்கான கமநல சேவை கட்டுப்பாட்டு பிரதேசத்தில் கமநல அபிவிருத்தி பிரதேச அதிகாரி குழுவின் செயலாளராக உத்தியோகபூர்வமாக செயல்பட வேண்டும். படிநிலை அமைப்பிற்கு கமநல சேவை கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பங்களில் கூடிய நீரேந்து ஏக்கர் எண்ணிக்கையினை கொண்ட கட்டுப்பாட்டு பிரதேசத்தின் கமநல அபிவிருத்தி பிரதேச அதிகாரி செயலாளராக செயல்பட வேண்டும்.

iii. குழு தலைவரின் அறிவுரைகளுக்கேற்ப செயலாளரால் கூட்டம் ஏற்பாடு செய்யப்பட வேண்டும்.

3.6 <u>குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுவொன்றின் அதிகாரிகள் குழாம் – மாவட்ட மட்டம்</u>

i. குளஅடுக்குத் தொடர் அமைப்பிற்கு மாவட்டங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பத்தில் கலந்து கொள்ளும் அனைத்து மாவட்ட செயலாளர்களும் குழுவின் இணைத்தலைவராக உத்தியோகபூர்வமாக செயல்பட வேண்டும்.

ii. குளஅடுக்குத் தொடர் அமைப்பின் மாவட்ட பிரதி / உதவி ஆணையாளர்கள் குழுவின் செயலாளராக உத்தியோகபூர்வமாக செயல்பட வேண்டும். குளஅடுக்குத் தொடர் அமைப்பிற்கு கமநல சேவை கட்டுப்பாட்டு பிரதேசங்கள் ஒன்றை விடக்கூடுதல் காணப்படும் சந்தர்ப்பங்களில் கூடிய நீரேந்து ஏக்கர் எண்ணிக்கையினை கொண்ட மாவட்ட பிரதி / உதவி ஆணையாளர்கள் செயலாளராக செயல்பட வேண்டும்.

iii. குழு தலைவரின் அறிவுரைகளுக்கேற்ப செயலாளரால் கூட்டம் ஏற்பாடு செய்யப்பட வேண்டும்.

04. இலங்கையின் வேளாண்மைத்துறையின் நிலையான தன்மை தங்கி நிற்கும் பிரதான காரணியான உயிரியல் அமைப்புக்களின் முகாமைத்துவத்திற்காக குளஅடுக்குத் தொடர் நீர்ப்பாசன முகாமைத்துவத்தினை முறைமையாக்குமுகமாக உருவாக்கப்படும் குளஅடுக்குத் தொடர் அமைப்பு முகாமைத்துவ குழுக்கள் மூலம் எதிர்பார்க்கப்படும் பணிகளை நிறைவேற்ற ஒருங்கிணைந்து செயற்படுவீர்கள் என எதிர்பார்க்கின்றேன்.

ஏ.எச்.எம்.எல்.அபேரத்ன
கமநல அபிவிருத்தி ஆணையாளர் நாயகம்

பிரதி :-
i. செயலாளர், பொது நிர்வாக, உள்நாட்டலுவல்கள், மாகாண சபைகள் மற்றும் உள்ளூராட்சி அமைச்சு
ii. செயலாளர், விவசாயத் திணைக்களம்
iii. அனைத்து மாகாண பிரதான செயலாளர்கள்
iv. கணக்காய்வாளர், தேசிய கணக்காய்வு அலுவலகம்
v. பொலிஸ் மா அதிபர், இலங்கை பொலிஸ் திணைக்களம்
vi. பணிப்பாளர் நாயகம், விவசாய திணைக்களம்
vii. பணிப்பாளர் நாயகம், நீர்ப்பாசன திணைக்களம்
viii. பணிப்பாளர் நாயகம், சமூர்தி அபிவிருத்தித் திணைக்களம்
ix. பணிப்பாளர் நாயகம், வனசீவராசிகள் பாதுகாப்புத் திணைக்களம்
x. வனப்பாதுகாப்பு நாயகம், வனப்பதுகாப்புத் திணைக்களம்
xi. பணிப்பாளர் நாயகம், விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களம்
xii. பணிப்பாளர் நாயகம், காணி உபயோக கொள்கை திட்டமிடல் திணைக்களம்
xiii. பணிப்பாளர் நாயகம், தொல்பொருளியல் திணைக்களம்
xiv. பணிப்பாளர் நாயகம், இலங்கை சிவில் பாதுகாப்பு திணைக்களம்
xv. பணிப்பாளர் நாயகம், நீர் உயிரினவளர்ப்பு அபிவிருத்தி அதிகார சபை
xvi. பணிப்பாளர் நாயகம், மத்திய சுற்றாடல் அதிகார சபை
xvii. பணிப்பாளர் நாயகம், புவிச்சரிதவியல் மற்றும் சுரங்கப் பணியகம்
xviii. தலைவர், வேளாண்மை மற்றும் கமநல காப்புறுதி சபை
xix. தலைவர், தேசிய நீர்வழங்கல் மற்றும் வடிகாலமைப்பு சபை
xx. அனைத்து மாகாண செயலாளர்கள், மாகாண வேளாண்மை திணைக்களம்
xxi. செயலாளர், மாகாண நீர்ப்பாசன அமைச்சு
xxii. அனைத்து மாகாண வேளாண்மை பணிப்பாளர்கள், மாகாண வேளாண்மை திணைக்களம்
xxiii. அனைத்து மாகாண விலங்குற்பத்தி மற்றும் சுகாதார பணிப்பாளர்கள், மாகாண விலங்குற்பத்தி மற்றும் சுகாதார திணைக்களம்
xxiv. கருத்திட்ட பிரதானிகள் – *CSIAP / CRIWMP / SARP*
xxv. அனைத்து கமநல அபிவிருத்தி பிரதி / உதவி ஆணையாளர்கள்

(தகவலறிவதற்காகவும் தேவையான விவகாரங்களுக்காக)

Annexures 2: List of stakeholder agencies participated in transact walk to learn the participated in transact walk to learn the Siththan Odai Middle & Lower cascade system.

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

Attendance of Participations

Province : Northern | DS Division : | Venue : Ennaheli Thalikanni

District : | ASC Division : Poonakary | Date : 24/05/2023

Objectives of the Programme / Awareness : Transect walk – CMC

No	Name of the Participant பங்குபற்றுனரின் பெயர்	Name of the Organization அமைப்பு	ID NO அடையாள இல	Contact No தொலைபேசி இல.	Male / Female ஆண்/பெண்	Signature கையொப்பம்
1	H.G.C. Babu	CSIAP – DPD			M	[illegible]
2	S. Arudchelvan	DS office – ADP			M	[illegible]
3	S.M Wijayasekara	Forest Department – RFO		071-5704215	Male	[illegible]
4	I.G.C Aruna Kumara	Forest Department/RFO		077 4199933	Male	[illegible]
5	K. Kunaseelan	Agrarian Services – ADO		0774311972	male	[illegible]
6	K. Harikaran	Irrigation – TO		0774088609[illegible]	M	[illegible]
7	T. Piruthan	Irrigation		0765356[illegible]	M	[illegible]
8	M. Janarthan	Irrigation		0775517235	M	M. Janarthan
9	R. Malini	Agriculture		0723640331	F	[illegible]
10	[illegible]	[illegible]		0775297123	M	[illegible]
11	[illegible]	[illegible]	[illegible]V	0771267265	M	[illegible]
12	K. Pathmavasa	SDO	842414342V	0770818789	Male	[illegible]
13	V. Jeyananthan	GN, KN/65		[illegible]	M	[illegible]
14	[illegible]	[illegible]	7880[illegible]56V	0776670469	F	[illegible]
15						

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

Attendance of Participations

Province : Northern	DS Division :	Venue :
District :	ASC Division :	Date :

Objectives of the Programme / Awareness :

	No	Name of the Participant பங்குபற்றுனரின் பெயர்	Name of the Organization அமைப்பு	ID NO தே.அ.அ.இல	Contact No தொலைபேசி இல.	Male / Female ஆண்/பெண்	Signature கையொப்பம்
B	1	S. Pirabawathy	EDO KN/65	~~196625802417~~	0770309004	Female	[illegible]
A	2	[illegible]	[illegible]	196625802417	0771810626	[illegible]	[illegible]
A	3	[illegible]			0774950614	[illegible]	[illegible]
B	4	[illegible]	[illegible]	[illegible]	[illegible]	"	[illegible]
C	5	[illegible]	[illegible]	912420242 8	0772710649	"	[illegible]
B	6	[illegible]	[illegible]	677531690 V	0772365586	[illegible]	A. [illegible]
A	7	B. Banushan	TA [pallikudah]	951001650 V	0770459434	male	[illegible]
	8	M. N. Shan	MKH	910697998 V	076 287[illegible]	Male	[illegible]
	9	B.M.I. Bandara	M.RD	7492127 35 V	0716847692	male	[illegible]
B	10	Y. Sriranjan	DHO	0373920 89	071 845 72[illegible]	[illegible]	[illegible]
B	11	R. M. [illegible]	S00	0760767826			[illegible]
A	12	A. Yogeswaran	S00			"	[illegible]
	13	[illegible]	CSIAP				[illegible]
A	14	T. Tisiyandhan	CSIAP/ID	903472288V	[illegible]	M	[illegible]
	15						

Climate Smart Irrigated Agriculture Project (CSIAP), Northern Province.

Attendance of Participations

Province : Northern | DS Division : | Venue :

District : | ASC Division : | Date :

Objectives of the Programme / Awareness :

No	Name of the Participant பங்குபற்றுனரின் பெயர்	Name of the Organization அமைப்பு	ID NO அடையாள இல.	Contact No தொலைபேசி இல.	Male / Female ஆண்/பெண்	Signature கையொப்பம்
1	Eng. M. T. Pratheepan	Dept. of Agrarian Development	877501430V	0770364136	M	
2	S. Kobiga	CSIAP - DSO	—	—	F	S. Kobiga
3	N. Mohanraj	CSIAP- NP	—		M	N. Mohanraj
4	P. Kajenthiran	CSIAP - ONF	950040130V	0776969786	M	
5	[illegible]	[illegible]			M	
6	S. Jiby Alex Vas	CSIAP - TO			M	
7	C. J. Peries	CSIAP - TO			M	
8	M. [illegible]	DAP			M	
9	K. Vasanthan	AS, CSIAP.			M	V. K. Vasanthan
10	A. Sankeetha	AF CSIAP	9746		F	A. Sankeetha
11	S. Nitharsan	CSIAP			M	
12	R. Sabajeepan					
13						
14						
15						

Annexure 3: List of Stakeholder agencies to prepare and validate the cascade management plan

No.	Position	Name	Contact No.	Address
1	Chairman	S. Arudchelvam	077-6478729	ADP, DS Office, Poonakary
2	Co-Chairman	N. Balachandiran	0772710649	Farmer, Oyamarikulam
3	Secretary	K. Kunaseelan	077-4811472	ADO, Poonakary
4	Members	B. Banushan	077-0439434	AI, Pallikuda
5	Members	T. Tisiyanthan	074-2928217	IE, DOI, Kilinochchi
6	Members	Y. Srirangan	077-3692649	TO, DAD, Kilinochchi
7	Members	P. Thevasajeevan	076-9856494	RO, DWL, Kilinochchi
8	Members	I. G. C. Anura Kumara	077-4199983	Range Forest Office, Poonakary
9	Members	T. Kirusnasamy	077-1010626	Farmer, Semmankunru
10	Members	I. Koneshwaran	077-1267265	Farmer, Sinnakulam
11	Members	K. Rajeswaran	077-0382969	Farmer, Thikkirikulam
12	Members	S. vinayakamoorthy	077-5297113	Farmer, Thelikaraikulam
13	Members	S. Yasotharan	077-1020436	Farmer, Enochchikulam
14	Members	S. Ragulan	077-5277841	Farmer, Vannantherikulam
15	Members	V. Vijayakamalan	076-5693784	Farmer, Periyakulam
16	Members	C. Shanthakumary	077-0670469	Farmer, Ulavukoduththaankulam
17	Members	N. Sakthvel	077-1978788	President, RDS, Pallikuda
18	Members	A. Jeyanthy	077-8365586	President, WFO, Pallikuda

Annexure 4: Guidance format for preparation of subproject proposals to raise funds to implement interventions and major activities

Format for preparing a Subproject Proposal (SPPs) to obtain funds for implementation of interventions.

1. Administrative Details:

No	Matters	Details
1	Contact details of proposal submitting agency: (postal, e-mail, telephone etc	
2	Contact Details of the implementing agency: (postal, e-mail, telephone etc.)	
3	Contact details with the position of the person responsible for providing information of the proposal (e-mail, telephone – land/mobile:	
4	Sector of the proposal (rehabilitation of tanks/catchment treatment/agriculture practices/ marketing/ institutional development/technology transferring/training/other (specify etc.).	
5	Ref. no of the concurrence of the Divisional Agriculture Committee (DAC).	

2. Sub-Project Details:

2.1. Title of the Sub-Project (Please note that the name may be very similar to that of the project development objective, but not in all time):

……

2.2. Summary of the sub-project (please give a very brief paragraph answering the questions of what it is, why it is, who it is, where it is and when it is implemented? The estimated total cost is also needed).

……

2.3. Project Location (details such as cascade, Agrarian Service Centre, Local Government Ward, GN Division etc. If the project location is considered as a highly vulnerable area to flood or drought, please indicate that too).

……

2.4. Project issue/rational/justification (This is very important and is considered as the main part of the proposal. Therefore, please highlight what the issue, how it is impacted on the farmers, how it was identified and what bad effects would happen, if it is not resolved).

……

2.5. How the critical issue was identified? (through community consultations, requests from farmer organisations, cascade management plan etc.).

……

2.6. Objective of the sub-project (please formulate this in very rational manner since it is important for the monitoring purpose).

……

2.7. Specific Objectives (Specific objectives need to be developed according to SMART form and this is also very important for the monitoring purpose.

1.

2.

2.8. Proposed sub- project activities (This part needs to be described very rationally and what actions the implementing agency proposed to address the critical issue and how it contributes to achieve the project objective?

……

2.9. Expected results (these may be economic, political, social, environment, cultural, nutritional etc.).

1.

2.

2.10. Beneficiaries (The nature of the beneficiaries – In addition to number of male and female, please indicate other characteristics also such as belonging to low-income or indigenous groups, affected by war etc.).

……

2.11. Who of the beneficiaries will participate in implementation?

2.12. How do women get benefited?

……

2.13. Who will be responsible for operation and maintenance (O&M) including estimated cost for O&M?

……

2.14. Potential Risks and strategies propose to minimize the risks

2.15. Does the project fall either under the negative list or prescribed list?

(a) If, Yes, please explain whether IEE or EIA is required.

……

(b) If No, IEER/EIS format will be required.

2.16. Name/names of the proposed farmer organizations or producer organizations that could be got involved in implementing the sub-project (if applicable, details need to be annexed).

……

3. Implementation methodology

3.1. How the project is planned to be implemented and with what stakeholders etc? (describe with adequate details).

……

3.1. Tendering process (explain how it is planned to procure required materials).

3.2. Activity plan (describe the activity plan with the time frame and the responsible agencies/persons in implementation. This need to be describe using a Gantt chart).

4. Subproject Monitoring Mechanism: (This is very important. Therefore, please describe how the monitoring activities are taken place providing adequate details).

.....

5. Subproject Evaluation Mechanism: (please indicate how the implementing agency plans to evaluate the project and at what intervals).

……

6. Reporting arrangement (please describe who will take the responsibility of making both financial and progress reporting and also the expected time period).

7. Estimated Cost:

No	Major Activity	Total estimated cost in LKR	Community Contribution (LKR)	Other sources(specify) (LKR)	Amount expected from donor agency (LKR)
1					
2					

8. Submission

8.1. Authorized person to submit the sub-project proposal on behalf of the Cascade Management Committee (CMC).

8.2. Position, contact details, frank, date of submission

09. Annexes:

(please annex all relevant additional details to provide adequate information to justify the subproject proposal and thereby to expedite the approval process.

Annexure 5: Plates



Focus Group Discussion at Enochchikulam



Group Formation to conduct Tansect Walk

Site Visits

Lift Irrigation from Thelikaraikulam

Existing tank and inlet cannrl

Livestock Rearing

Replanting

Cultural Places

Salinity affected area

Validation meeting at Pre-school at Semmankunru