

IWMS PROJECT

INTEGRATED WATER MANAGEMENT SCHEME

Village Ghal Kalan, Rattian, Dhalle Ke, Khosa Pando & Khosa Randhir, District: - Moga, Punjab.
Annual Progress Report 2023 -2024



PROJECT COMPLETION REPORT



Report Submitted by



Report Submitted to

Executive Summary

Moga district, located in the state of Punjab, India, has been grappling with several water-related issues. The district faces numerous challenges in terms of water scarcity, quality, and inadequate infrastructure. This note aims to highlight the key water problems faced by the residents of Moga district.

The region relies heavily on groundwater, which has been depleting rapidly due to excessive extraction and inadequate recharge. As a result, many areas in the district suffer from acute water shortage, causing considerable inconvenience to the local population. The district faces significant challenges in terms of water supply infrastructure. Many areas lack proper piped water connections, and the existing infrastructure is often outdated and inadequate to meet the growing demands of the population. As a result, residents have to depend on alternative sources such as hand pumps or tankers, which are often insufficient and unreliable. The importance of water conservation and sustainable usage practices has not received adequate attention in Moga district. There is a need for comprehensive awareness campaigns and initiatives to promote responsible water usage, rainwater harvesting, and efficient irrigation techniques. Without such efforts, the water problems in the district are likely to persist and worsen over time.

To address the water problems in selected villages of Moga district under the 'Integrated Water Management Scheme', was initiated with the following objectives:

- Rejuvenation of ponds to increase the capacity to accumulate rainwater for longer periods having potential for irrigation.
- To demonstrate water conservation technology and facilitate recharge of ground water.
- To demonstrate agriculture practices like crop diversification and mix cropping practices having the potential to improve land quality and productivity.
- To enhance community capacity for effective management and conservation of resources for a sustainable environment.

The Abhivyakti Foundation, with sponsorship from NABARD, has initiated the Integrated Water Management Scheme in Moga, Punjab. Five village of Moga, Punjab wastewater pond was identified in Punjab (Ghal Kalan, Rattian, Dhalle Ke, Khosa Pando & Khosa Randhir) villages for renovation.

Shaileendra Singh

The General Secretary,
Abhivyakti Foundation



PROJECT COMPLETION REPORT

Name of the Agency: -Abhivyakti Foundation

Date: 29-08-2022

1. Name of the Project: - Off Farm Producer Organisation (OFPO)

2. Sanction Letter No: - Ref.No. NB.PB./FSDD/074/IWMS-2/2019-20 dated 29th January 2020, NB.PB./FSDD/1125/IWMS-Moga/2021-22 dated 28th February 2022 & NB.PB./FSDD/1438/IWMS-Moga/2022-23 dated 9th March 2023

3. Cost of the Project: - 3069000/-

4. Project Start Date: -29-01-2020

6. Project Schedule Completion Date: -30.05.2024

7. Project Completion Date: - 30-05-2024

8. Reason for delay, if any: - Due to Covid -19 Project activities are delayed

9. Project Brief

Name of Scheme	Integrated Water Management Scheme (IWMS)
Area of Implementation	District: Moga, State: Punjab No of Villages – 05 (of Dhalle Ke, Khosa Randhir, Khosa Pando and Ghal Kalan)
Project Commencement (Date of Release)	28-02-2019
Project compilation Date	14-08-2022
Date of Extension of project (if any)	09-03-2023
Implimenting Agency	Abhivyakti Foundation
Contact Details	Mr. Shailendra Kumar Singh 9868035848

10. Financial Particulars

Promotional Grant Sanctioned	6,550,600/-
Promotional Grant Released	6,103,132/-
Contribtion from villages	2,847,488/-

Background

National Bank for Agriculture and Rural Development (NABARD) launched a nation-wide Water Conservation Campaign in 2017 covering 101569 villages in 50 districts of 21 states. The main objective of the campaign was, 'To create mass awareness about the need for conservation/ preservation and efficient use of water through locally available technologies and activate rural communities for voluntary action. These initiatives were expected to attract investment for creation of farm level irrigation infrastructure, which would lead to productivity enhancement and increase farmer's income, besides addressing the social issues.

Important outcomes of the campaign are:-

- Villagers voluntarily contributed in water conservation activities.
- Participatory water resource mapping was done.
- A village wise action plan was proposed for water conservation and management.
- A pool of 200 master trainers and 800 Krishi Jaldoot(KJDS) trained on water management(MTS)

To carry forward the water agenda more aggressively for mitigation of the water scarcity situation and improving agricultural productivity in selected vulnerable villages, Integrated Water Management Scheme (IWMS) through watershed approach, has been prepared for implementation across 50 districts including 40 aspirational districts of Govt. of India, covering 250 villages across 20 states.

In Punjab state district Moga and Firozpur are the two aspirational districts and five villages from each district are identified for implementation of the proposed project. NABARD has selected Abhivyakti Foundation, Moga, Punjab as an Anchor Agency (AA) facilitation of water management project in Moga.

1. Introduction:-

A cluster of five villages identified for project implementation. Name of villages are Dhalle Ke, Ghall Kalan, Khosa Pando, Khosa Randhir and Rattian.

Cluster of IWMS at a glance:-

- **Name of villages:- Dhalle Ke, Ghall Kalan, Khosa Pando, Khosa Randhir and Rattian.**
- **Locations:- N latitude 30°28'30" and 31°06'15", E longitude 74°54'40" and 75°24'57"**
- **Blocks:- Dharmkot, Moga 2.**
- **Population:- (Cluster of five villages)**
- **Male:- 13704 Female:- 12141 Total:- 25845**
- **Geographical area:- (Cluster of five villages) 6995 ha.**
- **Area proposed under IWMS:- 502 ha.**

- **Rainfall and climate:-**
- **I.M.D. normal annual rainfall:- 498 mm**
- **Normal monsoon rainfall (78%):- 391 mm**
- **Rainy days:- 24 days**
- **Temperatures:- Mean Maximum:- 46°C**
- **Mean Minimum:- 06°C**
- **Total animal Population:- 6150**
- **Total Crop Land:-6642.6 ha**
- **Rain fed:- 1025 ha**
- **Seasonally irrigated:- 4995 ha**

- **Perennial irrigated:- 130 ha**
- **Fallow area:- 492.6 ha**
- **Source of irrigation:- Cannel and tube wells**
- **Major Crops:- Paddy, Wheat Vegetables.**

Hydrometeorology:-

The climate of the cluster can be classified as tropical and dry sub unit the normal annual rainfall is 498 mm out of which monsoon rainfall is 78% yearly rain days are 24.

Geomorphology:-

The cluster area forms a part of indo-Gangetic plain and sub basin of Indus basin. The area as a whole is almost flat with slope ranging from 0 to 1% toward western and North westerly directions. The physiography of the cluster is broadly classified from South to North into four distinct features i.e. upland plain, sand dune track, younger flood plain and active flood plain. Of satluj is major river of district Moga which is flowing along northern border of district.

Geology:-

Geological formation are of quaternary age compressing of resent alluvial deposits. This alluvial formations are over lane by Aeolian sands except in the area falling in proximity of Satluj river.

Soils and Erosion status:-

There are two types of soils viz Sierozem and Desert soil in Moga district. The sierozem soils are found in major parts of the cluster and desert soils are found in smaller patches. Agronomically we can call the soils sandy loam. Due to plain land surface and low rainfall intensity soil erosion is limited, but before 1980 the lands were cultivated by animal power and each acre(Qila) of land was bunded by large and medium sized soil bunds which were useful for infiteration of rain water into ground. But due to increased use of machinery in cultivation all those bunds removed from lands and large plots created.

Agricultural and present Land use:-

Almost **94.96 %** land of total cluster land means **6642.6 ha.** area is cultivated out of which **1025 ha.** area is rain fed, **4995 ha.,** seasonal irrigation and **130 ha.** is perennial irrigation.

The crops grown in the cluster are divided into three categories i.e., Kharif season, Rabi season and Summer (Jayad) season. The major Kharif crops are Paddy, Potatoes, and few pulse like green gram (Moong) and black gram(Urd). Major Rabi crops are Wheat, oil seeds(mustard and sunflower) barley, maize and gram.

Kharif crops are sown in June-August and reaped from September to December. In June or July at the time of sowing of Kharif crops irrigation is essential and needed more quantity of water. Rain occurs in late June or mid July and daily draft of ground water increases because of most all the farmers try to maintain the schedule of sowing.

Rabi crops are sown in Oct-Nov and harvested in March to mid May. Canal irrigation contributes below 10% of total irrigation and remaining 90% is totally depends upon tube wells (i.e., ground water) Though the district is traversed by network of canals and get water from Sir hind feeder, Sidhwan branch and Abohar canal, but all the minors, sub minors and field channels do not get timely water.

Water Resources:-

Natural water courses like streams and rivers are not observed in the cluster and almost all the land is flat. Only one or two common surface water ponds are seen; but in each and every village untreated domestic sewage water i.e., drained into these ponds. So the surface rain water (run-off) get mixed with sewage water and create health problems.

In past few decades there was in house system of sewage water disposal and most of households had sewage water pits. But due to RCC construction, tiles and paving or concreting in lanes within the village habitation, there is no scope of surface water to infiltrate into ground. This has become major problem of the cluster at present.

As per reported by villagers there are 100 wells, 6000 tube wells out of which 99% are used for irrigation and ground water level is depleting day by day. As per report of Central Ground Water Board (CGWB) the district is categorized in dark zone.

Livestock Resource:-

Almost 80% of total households are having livestock mainly for milk production. Total 3310 buffaloes, 980 CB cows, 210 indigenous cows and 1650 poultry ducks birds are available, Animal drinking water is coming from tube wells.

Fodder & Biomass:-

Abhivyakti Foundation and NABARD are campaigning for 'Crop Residue Management' since 2018 and preventing the burning of dry bio-mass produced in agricultural lands.

Biomass produced in farms is used as a fodder or burnt in the farms. People grow fodder crops like Lursan grass, maize as per their convenience. But a major portion of fodder is either purchased from outside the district procured from cattle feed companies.

Fuel wood and Energy:-

Almost all households use LPG, electricity for cooking, lighting and heating or cooling. Diesel is consumed in irrigation and transportation. Punjab Govt. is giving free electricity to farmers for irrigation of the crops. Cow dung cakes are burnt in either Gurudwaras or in community function cooking.

Income and Livelihoods:-

Out of total **4874** households **1742** are landless laborers dependent upon either agricultural labor, MNREGA or other unskilled/ semi skilled jobs. Almost 60% people of cluster are engaged in farming and allied activities.

Drinking Water and Sanitation:-

Drinking water is supplied to each and every household by Govt. water supply system. Almost all people get R.O. water for drinking.

Sewage water system is inadequate and poorly planned and due to this disposal of sewage water has become a main problem now. Almost all houses have latrines and bathrooms. Still few people go for open defecation.

GEOMORPHOLOGY

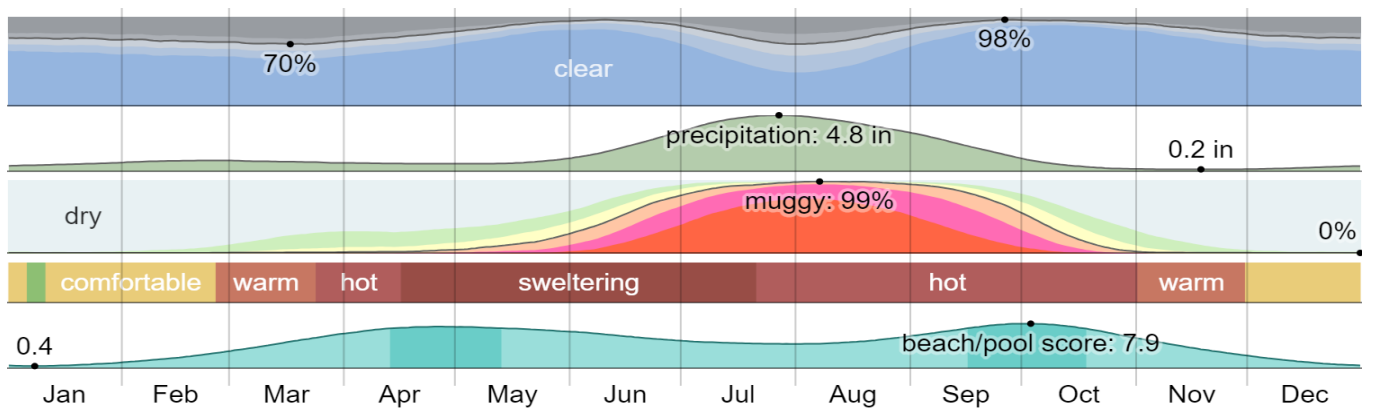
The district area forms a part of Indo-Gangetic plain and Sutlej sub-basin of Indus basin. The area as a whole is almost flat with a gentle slope towards the Western and Northwesterly direction. The physiography of the district is broadly classified from south to north into four distinct features i.e. Upland plain , Sand dune tract , younger flood plain and active flood plain of Sutlej. The Sutlej is an important perennial river, which forms major drainage of the area and runs parallel to the Northern border of the district. There are two types of soils viz Sierozem and Desert soils in Moga District. The sierozem soils are found in major parts of the district and desert soils are comparatively found in a relatively smaller area towards western part of the district.

GROUND WATER IRRIGATION SCENARIO

As per the data available from minor irrigation census 2006-07 the detailed number of shallow, deep, tubewells, lined, unlined water distribution system, land holdings of wells are given below for reference

n Moga, the summers are short, sweltering, humid, and clear and the winters are short, cool, dry, and mostly clear. Over the course of the year, the temperature typically varies from 41°F to 104°F and is rarely below 36°F or above 111°F.

Based on the beach/pool score, the best times of year to visit Moga for hot-weather activities are from mid April to mid May and from mid September to mid October.

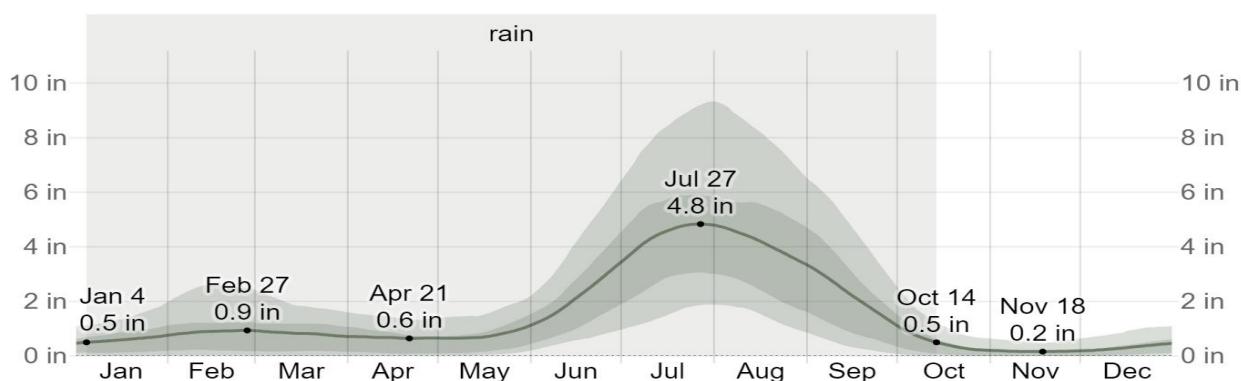


Rainfall

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Moga experiences extreme seasonal variation in monthly rainfall.

The rainy period of the year lasts for 9.3 months, from January 4 to October 14, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Moga is July, with an average rainfall of 4.6 inches.

The rainless period of the year lasts for 2.7 months, from October 14 to January 4. The month with the least rain in Moga is November, with an average rainfall of 0.2 inches.



Moga came into existence as 17th district of Punjab on 24th November, 1995. Before this Moga was the subdivision of Faridkot district. The district falls under the jurisdiction of Ferozepur division. It share boundaries with Jalandhar district in North Ludhiana district in East, Sangrur in South and Faridkot and Ferozepur in West, spread over in area of 2230 sq. km contributing 4.42% area of Punjab State. District has male and female literacy rate of 68.4% and 58.96% respectively. The district falls in agro climatic Zone VI (according to National classification) and Zone IV (according to State classification) characterized with alluvial soils. Average annual rainfall in the district is 461mm. Rice, wheat, cotton; summer moong, potato are the major crops in the district. Apart from this cultivation of vegetables and some fruits, like guava and ber is becoming popular among the farmers of the district. The district comprises of four Sub-divisions and five blocks (Moga-I, Moga-II, Kot-Ise-Khan, Bagha Purana, and Nihal Singh Wala)

Major farming systems/enterprises in Moga

S. No	Farming system/enterprise
1.	Rice-wheat +Dairy farming
2.	Cotton-wheat +Dairy farming
3.	Vegetable cultivation +Dairy farming
4.	Rice-Potato-Summer Moong

Description of Agro-climatic Zone & major agro ecological situations (based on soil and topography)

S. No	Agro-climatic Zone	Characteristics
1.	6 (National Level), IV (State level)	Alluvial soils.

Area, Production and Productivity of major crops cultivated in the district Moga

S. No	Crop	Area (ha)	Production (Qtl)	Productivity (Qtl /ha)
1.	Rice	174 thousand	746 thousand	42.90
2.	Wheat	176 thousand	885 thousand	50.30
3.	Cotton	3.3 thousand	14 thousands bales	7.21
4.	Oilseed	1.5 thousand	2.0 thousand	12.90
5.	Potato	5.3 thousand	122.5 thousand	231.2

Land Holdings in the district Moga:-

Sr. no.	Category of Farmers	No of families
1.	Marginal (<1 hac)	4899
2.	Small (1-2 hac)	7526
3.	Semi Medium (2-4 hac)	18187
4.	Medium (4-10 hac)	18210
5.	Large (>10 hac)	2407
	Total	51229

GROUND WATER QUALITY IN PUNJAB Evaluation of ground water quality through concentration of its physical, chemical and biological parameters is essential to determine its suitability for the intended use. It helps not only in finding its suitability; it also helps in taking effective remedial measures for its improvement on scientific lines. In most of rural and semi-urban areas of Punjab State, ground water is a major resource for drinking and irrigation uses especially in areas where surface water is inadequate or unavailable. Acknowledging the importance of this aspect of ground water, C.G.W.B., N.W.R., Chandigarh annually monitors the ground water quality through dedicated Ground Water Monitoring Stations consisting of dug wells and/or hand pumps of shallow depth.

Sampling & Analysis During June 2021, 330 nos. ground water samples were collected from GWMS spread uniformly over 22 districts of Punjab and no specific treatment such as acidification or filtration was given at the time of sampling. The water samples were analyzed for major cations (Ca, Mg, Na, K) and anions (CO₃, HCO₃, Cl, NO₃, SO₄) in addition to pH, EC, F, SiO₂, PO₄ and TH as CaCO₃ in Regional Chemical Laboratory by following 'Standard analytical procedures' as given in APHA 2017. Results of chemical analysis of water samples are placed in Annexure-I. Fig-1 depicts the Sampling location points of Punjab state.

Composition of Water Chemical analysis shows that the ground water is slightly to moderately alkaline in nature. The district-wise concentration range of various chemical components in ground water is depicted in Table 1

Sr. No	District	No. of Samples	EC in 25 ⁰ C in μ S/cm			Cl in mg/L			NO ₃ in mg/L		F in mg/L		
			<750	750-3000	>3000	<250	250-1000	>1000	<45	>45	<1.00	1.00-1.50	>1.50
1	Moga	8	1	7	0	8	0		7	1	6	1	1

Proposed Interventions/Activities:-

Based on continuous dialogue with community during water conservation campaign-2017 and after, Abhivyakti Foundation(the Anchor Agency) have identified and prioritized the repair and renovation to existing ponds with sewage water treatments as main activity to be proposed under IWMS. But for understanding the NABARD-WDF watershed approach, a team of watershed consultants from Maharashtra was involved in 'Khasra number wise participatory field net planning' and they had continuous interaction with villagers. Carried out technical survey, contour survey, measurements. Shared experience of benefits of watershed approach. The DDM NABARD, Moga district, team of Abhivyakti Foundation and villagers from all cluster villages were actively participated in the process of planning and based on the planning following major interventions/ activities are proposed for IWMS-NABARD.

Village Resource Mapping

Name of Village: Ghal Kalan

Block: Moga-2

District: Moga

Distance from the District Head quarter: Situated about 8 KM from the district head quarter.

Name / Phone no. of Sarpanch: Sri Sukhjeet Kaur (9815098569)



Demograohic Details

Particular	Age Group					Total
	0 to 5	5 to 15	15 to 40	40 to 60	60 and Above	
Population						
Male	295	1873	1478	788	495	4929
Female	218	1575	1267	742	568	4370
Total	513	3448	2745	1530	1063	9299

Education	Male	Female
Illiterate		
Read and Write only	170	123
Primary	160	175
Secondary		190
Matriculate	810	605
Gradute and Above	106	116
Total	1246	1209

Particulars	SC	ST	Other
Number of Housholds	811	0	1019
% to total	44.32	0	55.68

No of House hold: 1830

Total percentage of land under cultivation: 88%

Sr.	Land Holding Class	Households numbers	Land held (Ha)
A.	EXISTING GROSS HOLDING (Ha).		
1	Landless	760	0
2	0-<1	425	402
3	1-<2	319	427
4	2-<4	161	624
5	4-<8	114	806
6	More than 8 ha	51	475
	Total	1830	2734
Average Gross land holding per household =1.49			

Types of agricultural practices:

Estimate of existing and post development Agriculture Production														
CROP UNDER EXISTING LAND USE														
Sr.No	Crops	Season	Area	Grain		Fodder		avg. Market Rate		Assessed Value of Production		Total	Cost of Production	Net Income
				Av.Yield (Q/Ac)	Production (ton)	Av.Yield (Q/Ac)	Production (ton)	MAIN Product	Fodder	MAIN Product	Fodder			
1	Potato	Kharif	201	75	1507.5	30	603	20000	500	30150000	15000	30165000	15082500	15082500
2	Paddy		1717	30	5151	15	2575.5	20000	500	103020000	7500	103027500	51513750	51513750
3	Moong		50	6	30	2	10	25000	500	750000	1000	751000	375500	375500
4	Potato	Rabbi	75	70	525	30	225	25000	500	13125000	15000	13140000	6570000	6570000
5	Wheat		1705	20	3410	6	1023	20000	300	68200000	1800	68201800	34100900	34100900
6	peas (Matar)		30	6	18	0	0	10000	0	180000	0	180000	90000	90000
10	Vegetable	Summer	50	65	325	0	0	20000	0	6500000	0	6500000	3250000	3250000
	Total		3828											
TOTAL PRODUCTION					10966.5		4436.5					221965300	110982650	110982650

Means of Irrigation

Farmer uses different mode of irrigation as per the availability and climatic situations. As per the data collected about 90 % of the farmers are using tube wells for irrigation purposes and about 10% of the farm land are irrigated by the canal water. The modern means of irrigation like sprinkler and drip are almost absent in the villages. The main reasons for not adopting the scientific methods of irrigation are mainly because the farmers are not aware of the modern means of irrigation system and the second main reason revealed by the villagers was that the use of electricity is free for the farming that is why the farmers never bother for the judicious use of water. The use of ponds, wells and other means of irrigation are almost absent and negligible in the village setting. The use of canal water can be maximize by extending the cemented drains to more eligible farm area and by maintaining the drains as most of the laid cemented drains joining the main source of canals are in depleting stage.

Livestock resources and feed requirement (Present and planned)

Sr.No	Category of live-stock	Existing no.	Feed requirement per unit/year-dry feed	Total requirement of feed
1	Work animals	0	109.5	0
2	Buffaloes	1100	110.6	121660
3	CB cows	300	109.5	32850
4	Indige. Cows	60	90.5	5430
5	Sheep	0	14.6	0
6	Other	500	14.6	7300
Total		1960	449.3	167240

Status of Water level

The present water level of the area is alarming and with the passage of time the level is depleting. The current water level ranges from 150 foot to 350 foot. At 150 foot the quality of water is not good and in summer season it goes dry, so people prefer to bore more than 300 foot to get regular water from the bore.

Types of water bodies present

There are different sources of water bodies present at village level. Village ponds of different size are present. In the village Ghal Kalan there are total 03 ponds are present, out of three 02 ponds are of big size measuring about more than 2 acre and 01 small ponds measuring about 0.5 acre. It was observed that villagers discharge domestic drain water to both the ponds. It was also observed that both the big ponds receive the domestic drain water directly to the ponds. One big pond is situated in the middle of village which gets over flooded during the rainy season and create locomotive problem for the villagers. Some people also complained that during the rainy season the over flooded water get into their houses and create problem for them. The rain water in the season stands for long and helps in creating water borne diseases. Another big pond measuring about more than 2 acre situated outside the village and remains dry except the rainy season.



Water bodies visited with Sarpanch of the Village Gal Kalan, Moga, Punjab

Site Clearance : The site of the pond and its surrounding were cleared using JCB excavator and skilled labour. The proposed site clearance for Ghal Kalan was 8575 sqm was completed.



Dewatering & Marking: About 8575 cubic metre of wastewater was pumped out from the Ghal Kalan village pond. Some of it was used by the adjacent farms for irrigation.

Desilting

During the desilting process in Ghal Kalan ponds, a thick layer of silt ranging from 0.8 m to 1.2 m from the bottom of the pond was efficiently removed using JCB excavator.

Design of water treatment system

Based on the findings of water quality analysis and the assessment of wastewater disposal pattern of the village community, a wastewater treatment system was designed using the 3 Well technology principle. It comprised of the three main components:



- First stage of Filtration:- Sewage water will enter into sewage water collection and settlement pond through simple plastic/steel screening/filtration chamber . Same will be the process for rain water . These SW and RW ponds are depend up to 1.00m below their existing depth of either 1.50 m to 2.00m; and four walls of soils would be constructed around these ponds for impounding, settlement of water in first stage.
- Second stage of filltration:- A well named sedimentation & filltration well would be constructed outside of RW & SW ponds but within the submergence area itself. Diameter of this well is 6m (inner) and depth is proposed up to 10m. Out let pipes from SW & RW ponds will feed this well. Then the water will get settled again. Heavy solids matter will be settled down at the bottom of the well and light, fine materials , oils etc. will be on topmost level after second filltration (simple) this well will drain into filtered water pond. Filter water pond is for storage of partly clean water (with few chemicals) and will be used as irrigation water. Calsium or Gypsum will be added as per requirement in filtered water pond for chemical cleaning of water.

- Biological treatment:- Few plants like Banana, Papaya, Bamboo grass will be planted along all earthen embankments of ponds. All these plants will work as natural water cleaning agents and would contribute economically to the villagers. If Properly planted and protected these plants will recover the treatment cost within first three to five years and continue will provide fruits, flowers, fodder, fuel wood and clean environment.

Pond Earthwork

Noteworthy progress was made during the excavation of pond, removing the planned quantity of 17150 cubic metres of silt.

Pond Embankment

A 3-meter-wide embankment was built on the periphery of the Ghal Kalan pond, raising its height by 1 metres. The top level of the bund was leveled with adding and spreading extra soil in some places. The embankment's top surface was compacted and levelled. The slope of the embankment was adjusted by earth filling and compacting. The pond's edges were cut vertically, and the pond was excavated to the designed depth within its boundary.

Plantation and grasses in Ghal Kalan

A comprehensive plantation initiative has been undertaken in Ghal Kalan, with trees and grasses having been diligently planted and regularly watered.



Village Resource Mapping

Name of Village: Khosa Pando

Block: Moga -2

District: Moga, Punjab

Distance from the District Head quarter: 10 KM from the district head quarter.

Name / Phone no. of Sarpanch: Sri Major Singh (9915867011/9876572913)



Demograohic Details

Particular	Age Group					Total
	0 to 5	5 to 15	15 to 40	40 to 60	60 and Above	
Population						
Male	152	967	764	407	257	2547
Female	110	794	640	375	288	2207
Total	262	1761	1404	782	545	4754

Education	Male	Female
Illiterate		
Read and Write only	170	123
Primary	160	175
Secondary		190
Matriculate	810	605
Gradute and Above	106	116
Total	1246	1209

Particulars	SC	ST	Other
Number of Housholds	498	0	519
% to total	48.97	0	51.03

Population of village: Approx. 4754

No of House hold: 885

Total percentage of land under cultivation: 87%

Sr.	Land Holding Class	Households numbers	Land held (Ha)
A.	EXISTING GROSS HOLDING (Ha).		
1	Landless	230	0
2	0-<1	270	256
3	1-<2	242	425
4	2-<4	92	289
5	4-<8	40	288
6	More than 8 ha	11	119
	Total	885	1377
Average Gross land holding per household =1.15			

Types of Agricultural practices:

The main crops raised by the villagers are Wheat and Rice, vegetables (Organic), potato,

CROP UNDER EXISTING LAND USE														
Sr.No	Crops	Season	Area	Grain		Fodder		avg. Market Rate		Assessed Value of Production		Total	Cost of Poduction	Net Income
				Av.Yield (Q/Ac)	Producation (ton)	Av.Yield (Q/Ac)	Producation (ton)	MAIN Product	Fodder	MAIN Product	Fodder			
1	Potato	Kharif	101	75	757.5	30	303	20000	500	15150000	15000	15165000	7582500	7582500
2	Paddy		998	30	2994	15	1497	20000	500	59880000	7500	59887500	29943750	29943750
3	Moong		17	6	10.2	2	3.4	25000	500	255000	1000	256000	128000	128000
4	Potato	Rabbi	60	70	420	30	180	25000	500	10500000	15000	10515000	5257500	5257500
5	Wheat		1017	20	2034	6	610.2	20000	300	40680000	1800	40681800	20340900	20340900
6	peas (Matar)		30	6	18	0	0	10000	0	180000	0	180000	90000	90000
10	Vegetable	Summer	40	65	260	0	0	20000	0	5200000	0	5200000	2600000	2600000
	Total		2263											
TOTAL PRODUCTION					6493.7		2593.6					131885300	65942650	65942650

Organic farming is done in about 20 acre of land facilitated by the Gurudwara Prabandhak Committee. (Local Gurudwara)

Means of Irrigation

Farmer uses different mode of irrigation as per the availability and climatic situations. As per the information collected the villagers uses both mean of irrigation that is tube well and canal water. The use of tube well is higher as compare to the canal. They have contacted Punjab Agriculture University (PAU) for the sprinkler and drip irrigation and they are willing to adopt the same for the farm water management. The main reasons for not adopting the scientific methods of irrigation are mainly because the farmers are not aware of the modern means of irrigation system and the second main reason revealed by the villagers was that the use of electricity is free for the farming that is why the farmers never bother for the proper use of water for cropping. The use of canal water can be maximize by extending the cemented drains to more eligible farm area and by maintaining the drains as most of the laid cemented drains joining the main source of canals are in depleting stage. The Gurudwara committee head also assured for the adoption of new and scientific means of irrigational methods like sprinkler and drip by the farmer.

Status of Water level

The present water level of the area is alarming and with the passage of time the level is depleting. The current water level ranges from 250 foot to 450 foot. At 250 foot the quality of water is not good and in summer season the it goes dry, so people prefer to bore more than 500foot to get regular water from the bore.

Types of Water bodies present

There are different sources of water bodies present at village level. Village ponds of different size are present. In the village Khosa Pando total 02 ponds are present, and are of big size measuring about more than 1 acre. It was observed that villagers discharge domestic drain water to both the ponds. It was also observed that both the big ponds receive the domestic drain water directly to the ponds. The Gurudwara committee has taken several initiative in the present like waste water treatment through three water filtration tank. The Gurudwara committee also maintained the village drain and plantation in school and villages.



Ponds of Village Khosa Pando work started by Village Gurdwara Sahib after Water Campaign

Site Clearance : The site of the pond and its surrounding were cleared using JCB excavator and skilled labour. The proposed site clearance for Khosa Pando was 11374 sqm was completed.



Dewatering & Marking: About 11374 cubic metre of wastewater was pumped out from the Khosa Pando village pond. Some of it was used by the adjacent farms for irrigation.

Desilting

During the desilting process in Khosa Pando ponds, a thick layer of silt ranging from 0.6 m to 1.1 m from the bottom of the pond was efficiently removed using JCB excavator.

Design of water treatment system

Based on the findings of water quality analysis and the assessment of wastewater disposal pattern of the village community, a wastewater treatment system was designed using the 3 Well technology principle. It comprised of the three main components:



- First stage of Filtration:- Sewage water will enter into sewage water collection and settlement pond through simple plastic/steel screening/filtration chamber . Same will be the process for rain water . These SW and RW ponds are depend up to 1.00m below their existing depth of either 1.50 m to 2.00m; and four walls of soils would be constructed around these ponds for impounding, settlement of water in first stage.
- Second stage of filltration:- A well named sedimentation & filltration well would be constructed outside of RW & SW ponds but within the submergence area itself. Diameter of this well is 6m (inner) and depth is proposed up to 10m. Out let pipes from SW & RW ponds will feed this well. Then the water will get settled again. Heavy solids matter will be settled down at the bottom of the well and light, fine materials , oils etc. will be on topmost level after second filltration (simple) this well will drain into filtered water pond. Filter

water pond is for storage of partly clean water (with few chemicals) and will be used as irrigation water. Calcium or Gypsum will be added as per requirement in filtered water pond for chemical cleaning of water.

- Biological treatment:- Few plants like Banana, Papaya, Bamboo grass will be planted along all earthen embankments of ponds. All these plants will work as natural water cleaning agents and would contribute economically to the villagers. If Properly planted and protected these plants will recover the treatment cost within first three to five years and continue will provide fruits, flowers, fodder, fuel wood and clean environment.

Pond Earthwork

Noteworthy progress was made during the excavation of pond, removing the planned quantity of 22748 cubic metres of silt.



Pond Embankment

A 3-meter-wide embankment was built on the periphery of the Khosa Pando pond, raising its height by 1 metres. The top level of the bund was leveled with adding and spreading extra soil in some places. The embankment's top surface was compacted and levelled. The slope of the embankment was adjusted by earth filling and compacting. The pond's edges were cut vertically, and the pond was excavated to the designed depth within its boundary.

Plantation and grasses in Khosa Pando

A comprehensive plantation initiative has been undertaken in Khosa Pando, with trees and grasses having been diligently planted and regularly watered.

Name of Village: Khosa Randhir

Block: Moga -2

District: Moga, Punjab

Distance from the District Head quarter: 10 KM from the district head quarter.

Name / Phone no. of Sarpanch/contact person: Gurpreet (9815738096)

Particular	Age Group					Total
	0 to 5	5 to 15	15 to 40	40 to 60	60 and Above	
Population						
Male	138	874	690	368	230	2300
Female	102	737	593	348	268	2048
Total	240	1611	1283	716	498	4348

Education	Male	Female
Illiterate	593	623
Read and Write only	139	107
Primary	171	129
Secondary	208	118
Matriculate	214	154
Graduate and Above	101	72
Total	1426	1203

Particulars	SC	ST	Other
Number of Households	295	0	546
% to total	35.08	0	64.92

Population of village: Approx. 4348

No of House hold: 841

Sr.	Land Holding Class	Households numbers	Land held (Ha)
	EXISTING GROSS HOLDING (Ha).		
1	Landless	252	0
2	0-<1	260	241
3	1-<2	201	389
4	2-<4	80	427
5	4-<8	38	228
6	More than 8 ha	10	112
	Total	841	1397
Average Gross land holding per household =1.66			

Total percentage of land under cultivation: 87%

CROP UNDER EXISTING LAND USE															
Sr.No	Crops	Season	Area	Grain		Fodder		avg. Market Rate		Assessed Value of Production			Total	Cost of Poduction	Net Income
				Av.Yield (Q/Ac)	Producation (ton)	Av.Yield (Q/Ac)	Producation (ton)	MAIN Product	Fodder	MAIN Product	Fodder				
1	Potato	Kharif	40	75	300	30	120	20000	500	6000000	15000	6015000	3007500	3007500	
2	Paddy		1010	30	3030	15	1515	20000	500	60600000	7500	60607500	30303750	30303750	
3	Moong		20	6	12	2	4	25000	500	300000	1000	301000	150500	150500	
4	Potato	Rabbi	40	70	280	30	120	25000	500	7000000	15000	7015000	3507500	3507500	
5	Wheat		1032	20	2064	6	619.2	20000	300	41280000	1800	41281800	20640900	20640900	
6	peas (Matar)		30	6	18	0	0	10000	0	180000	0	180000	90000	90000	
10	Vegetable	Summer	20	65	130	0	0	20000	0	2600000	0	2600000	1300000	1300000	
	Total		2192												
TOTAL PRODUCTION					5834		2378.2					118000300	59000150	59000150	

Types of Agricultural practices:

The main crops raised by the villagers are Wheat and Rice, vegetables, potato etc.

Means of Irrigation

Farmer uses different mode of irrigation as per the availability and climatic situations. As per the information collected the villagers uses both mean of irrigation that is tube well and canal water. The use of tube well is higher as compare to the canal. They have contacted Punjab Agriculture University (PAU) for the sprinkler and drip irrigation and they are willing to adopt the same for the farm water management.

The main reasons for not adopting the scientific methods of irrigation are mainly because the farmers are not aware of the modern means of irrigation system and the second main reason revealed by the villagers was that the use of electricity is free for the farming that is why the farmers never bother for the proper use of water for cropping. The use of canal water can be maximize by extending the cemented drains to more eligible farm area and by maintaining the drains as most of the laid cemented drains joining the main source of canals are in depleting stage.

Status of Water level

The present water level of the area is alarming and with the passage of time the level is depleting. The current water level ranges from 250 foot to 450 foot. At 250 foot the quality of water is not good and in summer season the it goes dry, so people prefer to bore more than 500 foot to get regular water from the bore.

Types of Water bodies present

There are different sources of water bodies present at village level. Village ponds of different size are present. In the village Khossa Randhir there are total 02 ponds are present, and are of big size measuring about more than 8 acre. It was observed that villagers discharge domestic drain water to both the ponds. It was also observed that both the big ponds receive the domestic drain water directly to the ponds. The Gurudwara committee has taken several initiative in the present like waste water treatment through three water filtration tank. The Gurudwara committee also maintained the village drain and plantation in school and villages.

Parali Burning (Straw Burning)

With the increase in the cultivation of rice the problem of straw burning has increased in the region resulted into air pollution and depleting the health of soil as the high degree of heat destroy the useful microbes present in the



upper layer of soil resulting in low yield. The paddy crop has been practiced by the entire land holder and in absence of proper management and available equipment the practice of straw burning is common. This year by the intervention of Gurudwara Prabandhak Committee the villagers were motivated not to burn straw and make use by composting and other means. About 80% people in this village reported that they are not practicing stable burning.

Site Clearance : The site of the pond and its surrounding were cleared using JCB excavator and skilled labour. The proposed site clearance for Khosa Randhir was 16800 sqm was completed.



Dewatering & Marking: About 16800 cubic metre of wastewater was pumped out from the Khosa Randhir village pond. Some of it was used by the adjacent farms for irrigation.

Desilting

During the desilting process in Khosa Randhir ponds, a thick layer of silt ranging from 0.6 m to 1.2 m from the bottom of the pond was efficiently removed using JCB excavator.

Design of water treatment system

Based on the findings of water quality analysis and the assessment of wastewater disposal pattern of the village community, a wastewater treatment system was designed using the 3 Well technology principle. It comprised of the three main components:





- First stage of Filtration:- Sewage water will enter into sewage water collection and settlement pond through simple plastic/steel screening/filtration chamber . Same will be the process for rain water . These SW and RW ponds are depend up to 1.00m below their existing depth of either 1.50 m to 2.00m; and four walls of soils would be constructed around these ponds for impounding, settlement of water in first stage.

- Second stage of fillteration:- A well named sedimentation & fillteration well would be constructed outside of RW & SW ponds but within the submergence area itself. Diameter of this well is 6m (inner) and depth is proposed up to 10m. Out let pipes from SW & RW ponds will feed this well. Then the water will get settled again. Heavy solids matter will be settled down at the bottom of the well and light, fine materials , oils etc. will be on topmost level after second fillteration (simple) this well will drain into filtered water pond. Filter water pond is for storage of partly clean water (with few chemicals) and will be used as irrigation water. Calsium or Gypsum will be added as per requirement in filtered water pond for chemical cleaning of water.
- Biological treatment:- Few plants like Banana, Papaya, Bamboo grass will be planted along all earthen embankments of ponds. All these plants will work as natural water cleaning agents and would contribute economically to the villagers. If Properly planted and protected these plants will recover the treatment cost within first three to five years and continue will provide fruits, flowers, fodder, fuel wood and clean environment.

Pond Earthwork

Noteworthy progress was made during the excavation of pond, removing the planned quantity of 33600 cubic metres of silt.



Pond Embankment

A 3-meter-wide embankment was built on the periphery of the Khosa Randhir pond, raising its height by 1 metres. The top level of the bund was leveled with adding and spreading extra soil in some places. The embankment's top surface was compacted and levelled. The slope of the embankment was adjusted by earth filling and compacting. The pond's edges were cut vertically, and the pond was excavated to the designed depth within its boundary.

Plantation and grasses in Khosa Randhir

A comprehensive plantation initiative has been undertaken in Khosa Randhir, with trees and grasses having been diligently planted and regularly watered.

Village Resource Mapping

Name of Village: Rattian

Block: Moga -2

District: Moga, Punjab

Distance from the District Head quarter: 8 KM from the district head quarter.

Name / Phone no. of Sarpanch: Sunita Rani (9781326786)

Particular	Age Group					Total
	0 to 5	5 to 15	15 to 40	40 to 60	60 and Above	
Population						
Male	47	302	238	127	81	795
Female	36	262	211	123	96	728
Total	83	564	449	250	177	1523

Education	Male	Female
Illiterate		
Read and Write only	170	123
Primary	160	175
Secondary		190
Matriculate	810	605
Graduate and Above	106	116
Total	1246	1209

Particulars	SC	ST	Other
Number of Households	498	0	519
% to total	48.97	0	51.03

Population of village: Approx. 1523

No of House hold: 301

Sr.	Land Holding Class	Households numbers	Land held (Ha)
A.	EXISTING GROSS HOLDING (Ha).		
1	Landless	98	0
2	0-<1	124	93
3	1-<2	46	81
4	2-<4	21	64
5	4-<8	8	41
6	More than 8 ha	4	33
	Total	301	312
Average Gross land holding per household =1.03			

CROP UNDER EXISTING LAND USE														
Sr.No	Crops	Season	Area	Grain		Fodder		avg. Market Rate		Assessed Value of Production		Total	Cost of Poduction	Net Income
				Av.Yield (Q/Ac)	Producation (ton)	Av.Yield (Q/Ac)	Producation (ton)	MAIN Product	Fodder	MAIN Product	Fodder			
1	Potato	Kharif	28	75	210	30	84	20000	500	4200000	15000	4215000	2107500	2107500
2	Paddy		240	30	720	15	360	20000	500	14400000	7500	14407500	7203750	7203750
3	Moong		7	6	4.2	2	1.4	25000	500	1050000	1000	1060000	53000	53000
4	Potato	Rabbi	22	70	154	30	66	25000	500	3850000	15000	3865000	1932500	1932500
5	Wheat		225	20	450	6	135	20000	300	9000000	1800	9001800	4500900	4500900
6	peas (Matar)		5	6	3	0	0	10000	0	30000	0	30000	15000	15000
10	Vegetable	Summer	12	65	78	0	0	20000	0	1560000	0	1560000	780000	780000
	Total		539											
TOTAL PRODUCTION					1619.2		646.4					33185300	16592650	16592650

Total percentage of land under cultivation: 83%

Types of Agricultural practices:

The main crops raised by the villagers are Wheat and Rice,

Means of Irrigation

Farmer uses different mode of irrigation as per the availability and geographical situations. As per the information collected the villagers' uses tube well as the main source of irrigation. Almost all the farmer have their own bore well/ tube well.

The main reasons for not adopting the scientific methods of irrigation are mainly because the farmers are not aware of the modern means of irrigation system and the second main reason revealed by the villagers was that the use of electricity is free for the farming that is why the farmers never bother for the proper use of water for cropping.

Status of Water level

The present water level of the area is alarming and with the passage of time the level is depleting. The current water level ranges from 90 foot to 150 foot. At 90 foot the quality of water is not good and in summer season the it goes dry, so people prefer to bore more than 250 foot to get regular water from the bore.

Types of Water bodies present

There are different sources of water bodies present at village level. Village ponds of different size are present. In the village Sada Singh Wala there are total 01 pond is present,. It was observed that villagers discharge domestic drain water to both the ponds. It was also observed that pond receive the domestic drain water directly to the pond. During the rainy season the pond get over flooded and create problem for villagers.

Source of Drinking water

The villages have got two water works for the supply of domestic pipe water installed by the government. One was reported to be functional and another was out of order. The villagers' uses pipe supplied water for other than drinking purposes. It was also observed that the taps are always open and water keeps flowing till the supply disconnected from the water works.

The villagers uses RO drinking water supplied by a private water supplier on the monthly basis charging Rs 90 for 20 liters of water on daily basis at door step. The water sources like wells and Hand pump for drinking purposes are almost absent in the villages.

Involvement of local government and CSR (Corporate Social Responsibility)

As per the information collected shows that no government intervention has been taken up for the existing water bodies like renovation of Ponds and drains. At school level mainly in the government primary school Nestle has installed RO water plant and taking other plantation work on regular basis.



Site Clearance : The site of the pond and its surrounding were cleared using JCB excavator and skilled labour. The proposed site clearance for Rattian was 4000 sqm was completed.



Dewatering & Marking: About 4000 cubic metre of wastewater was pumped out from the Rattian village pond. Some of it was used by the adjacent farms for irrigation.

Desilting

During the desilting process in Rattian ponds, a thick layer of silt ranging from 0.6 m to 1.2 m from the bottom of the pond was efficiently removed using JCB excavator.

Design of water treatment system

Based on the findings of water quality analysis and the assessment of wastewater disposal pattern of the village community, a wastewater treatment system was designed using the 3 Well technology principle. It comprised of the three main components:



- First stage of Filtration:- Sewage water will enter into sewage water collection and settlement pond through simple plastic/steel screening/filtration chamber . Same will be the process for rain water . These SW and RW ponds are depend up to 1.00m below their existing depth of either 1.50 m to 2.00m; and four walls of soils would be constructed around these ponds for impounding, settlement of water in first stage.
- Second stage of filtration:- A well named sedimentation & filtration well would be constructed outside of RW & SW ponds but within the submergence area itself. Diameter of this well is 6m (inner) and depth is proposed up to 10m. Out let pipes from SW & RW ponds will feed this well. Then the water will get settled again. Heavy solids matter will be settled down at the bottom of the well and light, fine materials , oils etc. will be on topmost level after second filtration (simple) this well will drain into filtered water pond. Filter water pond is for storage of partly clean water (with few chemicals) and will be used as irrigation water. Calcium or Gypsum will be added as per requirement in filtered water pond for chemical cleaning of water.
- Biological treatment:- Few plants like Banana, Papaya, Bamboo grass will be planted along all earthen embankments of ponds. All these plants will work as natural water cleaning agents and would contribute economically to the villagers. If Properly planted and protected these plants will recover the treatment cost within first three to five years and continue will provide fruits, flowers, fodder, fuel wood and clean environment.

Pond Earthwork

Noteworthy progress was made during the excavation of pond, removing the planned quantity of 8000 cubic metres of silt.



Pond Embankment

A 3-meter-wide embankment was built on the periphery of the Rattian pond, raising its height by 1 metres. The top level of the bund was leveled with adding and spreading extra soil in some places. The embankment's top surface was compacted and levelled. The slope of the embankment was adjusted by earth filling and compacting. The pond's edges were cut vertically, and the pond was excavated to the designed depth within its boundary.

Plantation and grasses in Rattian

A comprehensive plantation initiative has been undertaken in Rattian, with trees and grasses having been diligently planted and regularly watered.

Village Resource Mapping

Name of Village : Dhalle Ke

Block : Moga-2

District: Moga, Punjab

Distance from the District Head quarter: 4 KM from the district head quarter.

Name / Phone no. of Sarpanch : Sri Daljeet Singh (9855774628)

Particular	Age Group					Total
	0 to 5	5 to 15	15 to 40	40 to 60	60 and Above	
Population						
Male	187	1190	939	501	316	3133
Female	139	1003	808	473	365	2788
Total	326	2193	1747	974	681	5921

Education	Male	Female
Illiterate	764	780
Read and Write only	227	112
Primary	309	230
Secondary	246	213
Matriculate	280	144
Gradute and Above	86	71
Total	1912	1550

Particulars	SC	ST	Other
Number of Housholds	498	0	519
% to total	48.97	0	51.03

Population of village: Approx. 5921

No of House hold: 1017

Sr.	Land Holding Class	Households numbers	Land held (Ha)
A.	EXISTING GROSS HOLDING (Ha).		
1	Landless	402	0
2	0-<1	290	250
3	1-<2	182	320
4	2-<4	111	381
5	4-<8	26	151
6	More than 8 ha	6	73
	Total	1017	1175
	Average Gross land holding per household =1.15		

Total percentage of land under cultivation: 80%

CROP UNDER EXISTING LAND USE														
Sr.No	Crops	Season	Area	Grain		Fodder		avg. Market Rate		Assessed Value of Production		Total	Cost of Production	Net Income
				Av.Yield (Q/Ac)	Production (ton)	Av.Yield (Q/Ac)	Production (ton)	MAIN Product	Fodder	MAIN Product	Fodder			
1	Potato	Kharif	70	75	525	30	210	20000	500	10500000	15000	10515000	5257500	5257500
2	Paddy		740	30	2220	15	1110	20000	500	44400000	7500	44407500	22203750	22203750
3	Moong		15	6	9	2	3	25000	500	225000	1000	226000	113000	113000
4	Potato	Rabbi	60	70	420	30	180	25000	500	10500000	15000	10515000	5257500	5257500
5	Wheat		800	20	1600	6	480	20000	300	32000000	1800	32001800	16000900	16000900
6	peas (Matar)		25	6	15	0	0	10000	0	150000	0	150000	75000	75000
10	Vegetable	Summer	40	65	260	0	0	20000	0	5200000	0	5200000	2600000	2600000
	Total		1750											
TOTAL PRODUCTION					5049		1983					103015300	51507650	51507650

Types of Agricultural practices:

The main crops raised by the villagers are Wheat, Maize, vegetables & Potato

Means of Irrigation

Farmer uses different mode of irrigation as per the availability and climatic situations. As per the information collected the villager's meets 90% of irrigation means by using tube well. The use of tube well is higher as compare to other parts of the region. They have contacted Punjab Agriculture University (PAU) for organic farming, the sprinkler and drip irrigation and they are willing to adopt the same for the farm water management. They have also formed a farmers group for organic farming at state level to motivate and adopt scientific practice of farming in the region and its marketing.

The main reasons for not adopting the scientific methods of irrigation are mainly because the farmers are not aware of the modern means of irrigation system and the second main reason revealed by the villagers was that the use of electricity is free for the farming that is why the farmers never bother for the proper use of water for cropping.

The use of canal water can be maximize by extending the cemented drains to more eligible farm area and by maintaining the drains as most of the laid cemented drains joining the main source of canals are in depleting stage.

Status of Water level

The present water level of the area is alarming and with the passage of time the level is depleting. The current water level ranges from 150 foot to 250 foot. At 150 foot the quality of water is not good and in summer season the it goes dry, so people prefer to bore more than 250 foot to get regular water from the bore.

Types of Water bodies present

There are different sources of water bodies present at village level. Village ponds of different size are present. In the village Dhalle Ke there are total 02 ponds are present, and are of big size measuring about more than 1 acre. It was observed that villagers discharge domestic drain water to both the ponds. It was also observed that both the big ponds receive the domestic drain water directly to the ponds.

Site Clearance : The site of the pond and its surrounding were cleared using JCB excavator and skilled labour. The proposed site clearance for Dhalle Ke was 10500 sqm was completed.



Dewatering & Marking: About 10500 cubic metre of wastewater was pumped out from the Dhalle Ke village pond. Some of it was used by the adjacent farms for irrigation.

Desilting

During the desilting process in Dhalle Ke ponds, a thick layer of silt ranging from 0.5 m to 1.1 m from the bottom of the pond was efficiently removed using JCB excavator.

Design of water treatment system

Based on the findings of water quality analysis and the assessment of wastewater disposal pattern of the village community, a wastewater treatment system was designed using the 3 Well technology principle. It comprised of the three main components:



- First stage of Filtration:- Sewage water will enter into sewage water collection and settlement pond through simple plastic/steel screening/filltreatment chamber . Same will be the process for rain water . These

SW and RW ponds are depend up to 1.00m below their existing depth of either 1.50 m to 2.00m; and four walls of soils would be constructed around these ponds for impounding, settlement of water in first stage.

- Second stage of fillteration:- A well named sedimentation & fillteration well would be constructed outside of RW & SW ponds but within the submergence area itself. Diameter of this well is 6m (inner) and depth is proposed up to 10m. Out let pipes from SW & RW ponds will feed this well. Then the water will get settled again. Heavy solids matter will be settled down at the bottom of the well and light, fine materials , oils etc. will be on topmost level after second fillteration (simple) this well will drain into filtered water pond. Filter water pond is for storage of partly clean water (with few chemicals) and will be used as irrigation water. Calsium or Gypsum will be added as per requirement in filtered water pond for chemical cleaning of water.
- Biological treatment:- Few plants like Banana, Papaya, Bamboo grass will be planted along all earthen embankments of ponds. All these plants will work as natural water cleaning agents and would contribute economically to the villagers. If Properly planted and protected these plants will recover the treatment cost within first three to five years and continue will provide fruits, flowers, fodder, fuel wood and clean environment.

Pond Earthwork

Noteworthy progress was made during the excavation of pond, removing the planned quantity of 21000 cubic metres of silt.



Pond Embankment

A 3-meter-wide embankment was built on the periphery of the Dhalle Ke pond, raising its height by 1 metres. The top level of the bund was leveled with adding and spreading extra soil in some places. The embankment's top surface was compacted and levelled. The slope of the embankment was adjusted by earth filling and compacting. The pond's edges were cut vertically, and the pond was excavated to the designed depth within its boundary.

Plantation and grasses in Dhalle Ke

A comprehensive plantation initiative has been undertaken in Dhalle Ke, with trees and grasses having been diligently planted and regularly watered.

Wall Writing, Flex, and Iron Board Displayed in all 5 villages

To raise awareness about wastewater and pond management, five hardbound flex boards—a total of 25 flex boards—have been put up in each of the five villages. Five iron boards with the project scheme name, village name, sponsoring agency (NABARD), and implementing agency (Abhivyakti Foundation) names have been fixed up in the project regions. Wall writing has been done at 5 villages. Total 20 wall writing has been done at 5 villages.



IEC Material Display at villages

Advocacy cum Coordination meetings

As part of the project's advocacy and coordination efforts, a meeting was convened with the Sarpanch and Gram Panchayat members of Ghal Kalan, Rattian, Dhalle Ke, Khosa Pando & Khosa Randhir to make them aware of the benefits of the project. As the panchayat was defunct, permission was taken from the Block Development Officer.



Advocacy cum Coordination meetings

Training and Capacity Building in 4 villages

To raise awareness and promote knowledge concerning pond water management, wastewater management, organic farming, and the significance of JLG in rural regions, the Abhivyakti Foundation, Moga, in collaboration with NABARD, has arranged a Training and Capacity Building Programme in the villages mentioned above. The training was facilitated by the staff from Abhivyakti Foundation, DDM NABARD Mr. Rasheed Lekhi, Simranjeet Singh, and Gurwinder Singh from Water and Soil Conservation Department, Gurpreet Singh trainer for Organic Farming. A brief report on the training and capacity building programme has been attached to this report.



Training and Capacity Building Programme at Villages

Nabard Management Authority Supervision

The N Authority conducted many visits to the Ghal Kalan, Rattian, Dhalle Ke, Khosa Pando & Khosa Randhir village in Moga to oversee the ongoing renovation and rejuvenation work of the pond. During the visits, the authority provided valuable supervisions and guidance to ensure the smooth implementation of the project. They actively engaged with the project team, stakeholders, and community members to address any concerns or issues that arose during the course of the work.

Booklet Distribution

To generate the need for maintenance of the treated wells and ponds in the villages, the Abhivyakti Foundation has already printed 200 booklets and distributed them within the village to promote awareness among the villagers about wastewater management and pond water management.



Booklet distribution during the training programme

Meeting with the VWMC at each village

AF is in regular coordination with the Sarpanch of the 5 villages for conducting VWMC meetings. The objective of the meeting is proper coordination with the committee and the commoners of the villages so that they jointly maintain the functioning of the treated ponds further. The meetings will ensure that the village people come together with the VWMC and AF to maintain the wells, ponds, and plants in the villages. The committee has taken oath for proper maintenance of the pond, survival of the plants, and regular cleaning of the filtration wells. Plantation work also started by the Sarpanch and AF staff besides the pond bunding.



CAT Visit at Kartarpur

On 31st January 2023 Abhivyakti Foundation with the financial assistance of the National Bank for Agriculture and Rural Development (NABARD) Punjab Regional office organized a CAT visit for farmers of villages covered under the IWMS scheme Moga at the Centre for Excellence (CEV) in Kartarpur. The visit was aimed at providing farmers with an opportunity to learn about the latest practices and technologies in the field of agriculture and horticulture.



Farmers visit at Kartarpur

Expected Outcomes:-

Village	Present Water storage	Proposed water storage	Area to be irrigated (ha)
Khosa Randhir (1)	10400	20800	45
Khosa Randhir (2)	16800	33600	68
Khosa Pando	11374	22748	45
Rattian	4000	8000	17
Ghall Kalan	8575	17150	38
Dhalle Ke (1)	10500	21000	50
Dhalle Ke (2)	24800	49600	125

- Present water storage capacity is 86,450 cu.m this capacity will be doubled after renovation and will be 1,72,900 cu.m.
- Present single (only once) irrigation by ponds is 188 ha. it will be increases up to 400 ha. after renovation.
- Newly planted Bamboo is 1509 plants. It will spread about 20 bamboos per plant and becomes 30,180 bamboos within 3 years and if sold @ Rs. 50 each it will give Rs. 15.09 lakhs, And this income will continue after 3 years cycle.
- 750 plants of Banana and 750 plants of Papaya will be yield about 100 qtis of fruits which will give income about 1.5 to 2.00 lakhs every year.
- Plantation of timber and other cover crops will be provide fuel wood, fodder and biomass of about 100 tonnes per year.
- Wheat and Paddy crop yield per ha. increase will be about 20%.
- Improved water availability: By efficiently linking surface water and groundwater sources, the scheme can provide more reliable water supply for a variety of uses, including agriculture.
- Sustainable groundwater management: Integrated management will help regulate groundwater withdrawal, prevent depletion and ensure long-term availability.
- Reduction in waterlogging and salinity: Through proper drainage and irrigation practices, the scheme can aim to address issues such as waterlogging and salinization of agricultural lands.
- Increase in water productivity: The treated sewage water is being used for agricultural purposes in the villages of Dhalle Ke, Khosa Randhir, Khosa Pando and Ghal Kalan. This water is being used on 300 acres of land in all the four villages. Due to lack of pipelines, many farmers are unable to use this water. This water supplies essential nutrients like nitrogen, phosphorus and potassium to the soil. This water is being used in these four villages. This water is being used on 125 acres of land in Dhalle Ke, 110 acres of land in Khosa Pando, 45 acres of land in Khosa Randhir and 20 acres of land in Ghal Kalan. Soil Water Department Issue If more pipes are installed in this village then the amount of water can increase and more farmers will be interested in it. There may be more crop production.