

Village Survey Study in Rajasthan
(Naurangdesar village, Hanumangarh District)

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All India Study Coordinated by
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Report submitted to the

Directorate of Economics & Statistics
Department of Agriculture, Cooperation & Farmers Welfare
Ministry of Agriculture & Farmers Welfare,
Government of India, New Delhi



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(Ministry of Agriculture & Farmers Welfare, Govt. of India)
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AERC VILLAGE RE-SURVEY REPORT 05/2021

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Report submitted in March 2021

Final Report submitted in May 2021

Citation: Kalamkar, S.S.; H. Sharma and M. Ojha (2021), "Village Survey Study in Rajasthan- Naurangdesar village, Hanumangarh District", AERC Report Village Resurvey Report No. 5, Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, March.

Foreword

One of the important areas of research for the Agro-Economic Research Centres has been a systematic study of the content and direction of change taking place in the rural economy of India. The village surveys and then resurvey were conducted by the AERC network during the first two decades after independence to create a longitudinal panel data set, to capture the socio-economics of the village, conditions and structure of rural India as well as management and economics of farming. Subsequently, other government and non-government agencies at national as well as international level also started collecting the village data with interval time period. AERC network focus of research effort in the initial stage which was on comprehensive village surveys and resurveys was subsequently shifted to problem oriented studies and evaluation of schemes implemented by the Government of India from time to time. However, village data generated by the various government departments or the data generated through population censuses or through large scale nation-wide surveys done by the National Sample Surveys could not serve the essential purposes of understanding the broad general purpose of larger contexts. This realization led to change in focus back to undertake the comprehensive village surveys and resurveys by the Directorate of Economic and Statistics, Ministry of Agriculture and Farmers Welfare, Government of India through its AERC network. As our AERC is mandated to cover the states of Gujarat and Rajasthan, Ministry of Agriculture and Farmers Welfare, Government of India entrusted us to undertake 'Village Survey Study in Rajasthan covering the Naurangdesar village, Sriganganagar/Hanumangarh District of Rajasthan.

The construction of Rajasthan Canal, a major irrigation project undertaken for the vast arid tract of Rajasthan, was expected to emerge as one of the most important forces of change in that region. In order to have a glimpse of the content and direction of the phenomenal changes likely to take place in the economy of this region, this research institute had undertaken a bench mark socio-economic survey of one village located within the command area of this irrigation project. Naurangdesar village of the Sriganganagar district was undertaken for the year 1961-62. A mimeographed project report of this survey was released in the year 1964-65. This village was again resurveyed in the year 1968-69. However, the work of preparing the project report was delayed because of certain other pressing assignments with the Centre. Therefore, the work of preparing the draft report could be taken up only in the year 1976-74. This delay finalizing the report, it was thought to make the 1968-69 resurvey picture a little outdated. In order to have some idea about the latest conditions prevailing in the village, it was decided to prepare an observation note based on a quick third point survey of the village. The first note on "Naurangdesar Revisited: 1972-73", was prepared by Shri D. M. Brahmabhatt, a member of the analytical staff, by paying a brief visit to this village in the month of April 1973. Same village is resurveyed again in 2019-20.

This project report is unique in the sense that it attempts to provide a view of the changing village scene at three points of time. It is true that some of the data collected for these surveys are not strictly comparable partly due to some differences in the methodology adopted and partly due to some variations in the responses of the human factor involved in such survey work. It is also true that certain comparisons made in this study can be regarded as only approximate based as they are mainly on the observations of the research worker (especially 1972-73 note) with whatever supporting evidence that was available. In view of the above limitations, the available comparative data will have to be interpreted and used with caution. The project leader has indicated the limitations of the available data at relevant places in order to facilitate such a comparative study over a period of time.

Given the availability of resources, research institutes such as ours can and should go for comprehensive resurveys of selected villages. Such resurveys, if well planned and carefully conducted, can provide valuable insight into the process of change. Our experience of this as well as other projects shows that even in the absence of full scale village survey on which we usually depend for such a comparative study, an experienced research worker can provide useful and interesting information on the basis of careful on the spot observations made by paying a brief visit to the village.

I am thankful to authors and their research team for putting in a lot of efforts to complete this excellent piece of work. I also thank the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India for the unstinted cooperation and support. I hope this report will be useful for those who are interested in understanding the seed minikit programme in Rajasthan.

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Acknowledgements

The study on “Village Survey Study in Rajasthan covering the Naurangdesar village, Sriganganagar/Hanumangarh District of Rajasthan” has been carried out at the Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, as entrusted by the Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.

We have benefited immensely from various scholars and officials from different government departments while carrying out this study. At the outset, we would like to thank **Prof. Shirish Kulkarni**, Vice Chancellor of our University and Chairman, AERC Governing Body for his constant encouragement and support for undertaking such research activity at the Centre. We also thank **Dr. Jyoti Tiwari**, Registrar (In-charge) and **Dr. Bhautik A. Patel** (Deputy Accountant) of our University for their administrative support for this project.

We are grateful to the coordinator of the study, **Prof. Bidhan Chandra Roy**, Honorary Director, Agro-Economic Research Centre, Visva-Bharati, Santiniketan, Birbhum Santiniketan, West Bengal for providing required support, study framework and necessary inputs in completing the study.

We thank the **Commissioner, Agriculture Department, Government of Rajasthan, Pant Krishi Bhavan, Janpath, Jaipur, Rajasthan**; and the Deputy Director, Agriculture and Hanumangarh District, Government of Rajasthan, Hanumangarh, Rajasthan for providing the necessary support in field survey work in the Rajasthan. We also thank the office bearers of the Gram Panchayat Naurangdesar village for providing the necessary data and their support and help in field survey work. Specifically, thanks to Shri Mahavirji (Sarpach), Shri Rameshji Kaushik (Deputy Sarpanch), Shri Navenji (Gram sevak) and Shri Gurmail Sungh (wardpanch) for their support in village survey work.

The study would not have reached to this stage without the active co-operation of the respondent from selected Naurangdesar village in Rajasthan who provided all the required data for the study without any hesitation and expectation. We thank each one of them for their invaluable support.

We also thank the constructive comments/suggestions given by the Prof. Bidhan Chandra Roy, Hony. Director, Agro-Economic Research Centre, Visva-Bharati, Santiniketan, Birbhum Santiniketan, West Bengal on the draft report.

We have also received support and encouragements from our colleagues in the Centre while carrying out the study. We would specifically thank Dr. Kinjal Ahir, Deputy Director (Hon) of AERC & Associate Professor, PG Department of Economics of our University; and Dr. S. R. Bhaiya, Field Officer, CCS for Gujarat of our University for their support during field work of the study.

Thank to Shri Deep Patel (Research and Reference Assistant-Lib) for designing the cover page of report and making necessary arrangements for printing and circulation of the report.

Lastly but not least, we thank the all other AERC staff for their direct and indirect support.

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List of Abbreviations

\$	- Dollar
AAV	Antodaya Anna Yojana
ACZ	- Agriculture Climatic zones
APL	Above Poverty Line
APMC	- Agricultural Produce Market Committee
ASER	Annual Status of Education Report
ATM	Automated Teller Machine
Av.	- Average
BCG	Bacille Calmette-Guerin
BJP	Bhartiy Janta Party
BMI	Body Mass Index
BPL	Below Poverty Line
BQ	Black quarter
BSP	Bahujan Swajwadi Party
CB	- Cross Breed
CCS	- Cost of Cultivation Scheme
CGR	- Compound Growth Rate
COC/CoC	- Cost of Cultivation
DCS	- Dairy Cooperative Society households
EI	Entropy Index
EIA	- End Implementing Agency
FGD	- Focus Group Discussion
GCA	- Gross Cropped Area
GDP	- Gross Domestic Product
GOI	- Government of India
ha	- Hectare
hh/HH	- Household
HI	- Herfindahl Index
HYV	High Yielding Varieties
ICDS	Integrated Child Development Services

IGNP	Indira Gandhi Canal Project
INL	Indian National Lokdal
IPD	In-Patient Department
KCC	Kisan Credit Card
LF	Large Farmer
LTPD	- Litres per day
M.T./mt	- Metric Tone
MDF	Medium Farmer
MEI	Modified Entropy Index
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act"
MSP	- Minimum Support Price
NABARD	- National Bank for Agriculture and Rural Development
NCF	- National Commission on Farmers
NDR	Naurangdesar Distributary
NPA	Non-Performing Asset
NSA	- Net Sown Area
NSSO	- National Sample Survey Organization
NUDRA	Micro Units Development and Refinance Agency
OBC	Other Backward Class
OPD	Outpatient Department treatment
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
PPS	- Probability Proportional to Size
RajSWAN	Rajasthan State Wide Area Network
Rs.	- Rupees
RSCIT	Rajasthan State Certificate of Information Technology.
RSRTC	Rajasthan State Road Transport Corporation
SAS	- Situation Assessment Survey
SAUs	- State Agricultural University
SC	- Scheduled Caste
SF/MF/AL	- Small Farmer, Marginal Farmer, Agricultural Laborer
SHG	Self Help Group

SI	Simpson Index
ST	- Scheduled Tribe
ST	- Scheduled Tribe
WHO	World Health Organization
Y	- Yield

Executive Summary

Village Survey Study in Rajasthan Naurangdesar village, Hanumangarh District

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1. Introduction:

India has a long record of village surveys and resurveys, since pre-independence period to the post-independence period, which witnessed a sharp increase in the interest among social scientists, economists and policy formulators in village surveys across India. This was partly in response to the need felt by the state and union governments to have a reliable and accurate information on socio-economic and political configurations in the rural context to facilitate the process of economic growth and change that it planned for, but the interest was also sustained by the fact that the critics of state and union government policies provided a central place to the rural context in the scheme of village survey studies. During the span of 10 years since independence, the union government and other institutions have been sponsoring researches on the conditions and structure of rural India and on the management and economics of farming etc. wherein, these data appeared to be an useful source of basic information about villages. Thus, it is this realization that led to a spate (series) of village surveys by various Agro-Economic Research Centres of the Ministry located at different States of India, one among them is our Centre.

The village society is characterized as a highly static society and village people excessively immobile. However, this kind of common understanding has undergone a tremendous change with the introduction of Five-Year Plans and the revolution in mass media. The earlier village life, which did not have any political and economic power, has now acquired adult franchise, democracy and accelerating transformation. During the last five decades, rural societies have witnessed massive changes. The village life today has reached a stage, where the glamour of urban life has made inroads in villages. It is in this context; it is important to have resurvey of villages surveyed earlier. The present village resurvey work was undertaken in the village of Naurangdesar of Hanumangarh tehsil of Hanumangarh district (earlier Sriganganagar district) of Rajasthan which was first surveyed in 1964 and then re-surveyed in 1974. This is the third report and second re-survey report of same village. This village is located in canal zone of Rajasthan located in Hanumangarh taluka of Hanumangarh district of Rajasthan.

2. Data and Methodology:

This study is based on both primary and secondary level data. The secondary data were collected from the government publications (Primary Census Abstracts, Agricultural Census, Livestock Census, etc.), online databases and published reports and research papers and related websites. The required secondary data were also collected from the offices of State, district, tehsil, development block, village and village level institutions. The primary data were collected from the village households of selected village by survey method through five types of survey schedules.

As per the study designed suggested by the Coordinator of the study, one village from the list of villages already surveyed before and was moderately developed was selected. Accordingly, Naurangdesar village was selected as same village was surveyed in the year 1964 and further resurveyed in 1974. Before undertaking the field survey work, visit was made to define the study area in view of development occurred during last five decades or so. As per the study designed suggested by the Coordinator of the study, village census method was adopted to cover minimum 300 households. As selected village Naurangdesar has developed a leaps and bound and spread over chaks, the study area covered under earlier village survey was also considered under this survey, i.e. Naurangdesar Distributary Area 14 and 15, of which NDA 15 area is land under cultivation, thus residential area of NDA 14 was covered which was total number of households of 775 (as per Census). As per the methodology, village census was conducted and proportionate sampling was attempted to restrict the total sample households to 300 households. Though the village data indicate that 775 households are there but most of the households found to be having divided into two-three households within single household for ration card and other benefit use purpose. Thus, village census noted 300 households which covers almost 90 per cent of total households in the village.

3. Profile of the Selected Village

Naurangdesar is a village in Hanumangarh tehsil in Hanumangarh district of Rajasthan State, India. It belongs to Bikaner division. It is located on Hanumangarh Jaipur Highway and 30 km towards East from district headquarters Hanumangarh and 388 km from State capital Jaipur. Hanumangarh town which is not only the tehsil as well as district headquarter of this village but also an important marketing centre and a railway junction on Delhi Ganganagar meter gauge line is at a distance of 22 kilometres in the north of this village. Naurangdesar is surrounded by Tibbi tehsil towards East, Pilibanga tehsil towards west, Sangaria tehsil towards North, Sadulshahar tehsil towards North. Hanumangarh, Pilibanga, Sangaria, Sadulshahar are the nearby Cities to Naurangdesar. This village was without irrigation facilities before getting water through Indira Gandhi Canal sometime in 1960s before which Centre has conducted village survey in 1964. Prior to the introduction of irrigation, the region was part of under-developed arid zone with no tank or well irrigation facility. This area was having sand dunes which were levelled to make land suitable for cultivation after getting assure canal water. The region which receives scanty and precarious rainfall (of average 260 mm per year), is inhabited by hardy Jat people. The passing river Ghaggar river is another option available to fetch water for agriculture purpose mainly during rainy season which brings water level up in nearby wells and tube wells. After getting the canal water, farmers from Punjab have migrated in to this village area which makes half each of Punjabi and Rajasthan population and mix language. The whole village is divided under NDR14 and NDR 15. The village is in group Gram Panchayat having nine revenue villages, viz. 11NDR, 13NDR, 14 NDR (CAD), 14NDR (CAD RAHIT), 16NDR, 17 NDR, 20 NDR(A), 1MWM, 3MWM. Naurangdesar distributary is the first among the distribution channels forming part of the Rajasthan Canal system which is 26.4 miles long. Masitawadi from where the Rajasthan canal feeder ends and the canal starts is 16 kilometres away from this village. The ancient 'Bhatner fort' is situated on the bank of river Ghaggar which was built in 253 CE by Bhupat, son of king Bhati of Jaisalmer is located about 30 km from the selected village.

The climate of this region is largely arid, that turns extremely hot during the summer and extremely cold during winter. The mean daily maximum temperature varies from 20.5°C during January to 42.2°C during June while mean daily minimum temperature in the district varies from 4.7°C during January to 28.1°C during July. The normal annual rainfall during the period 1968-1971 has been reported between 100mm to 371 mm. In recent years, the average annual rainfall per annum is reported to be 227 mm and varied from 195 mm to 325 mm. The district experiences either mild or normal drought once in two years. Severe drought has also been recorded frequently. Such a low rainfall during different years explains the decisive role the canal irrigation to play in the economic life of the people in the command area. The district is endowed with rich sandy loam soil and is well drained with moisture retaining characteristics which is very much helpful for the production of food and cash crops. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. It was observed at the time of resurvey that all farmers are in command area and this enable the farmers to grow crops like cotton and wheat.

3.1 Demographic Profile of the Village

- As per Census 2011, total population in village was 3846, of which 53.09 per cent was male population and 46.91 was female population (14 NDR CAD and 14NDR CAD Rahit). Total geographical area of Naurangdesar village is 434.35 hectares. Population density of Naurangdesar village was 9 persons per sq. kms. Total number of households in village has been increased by 125 percent during 1973 to 2019, i.e. from 342 in 1971 (during last survey) to 775 in 2019 as per 2011 census.
- As per the Census Data 2011, there were 890 females per 1000 males which was lower than sex ratio reported all State level (928 females) in 2011. Total working population of in village was 1952 which were either main or marginal workers. Out total workers, 59 per cent were male and 41 were female workers. Total main workers were 1597 out of which female main workers were 31.68 per cent and male main workers were 68.32 per cent. Total marginal workers of village were 18.2 per cent of total workers in the village.
- In the Naurangdesar village, Jat Hindus and Jat Sikhs are two important communities while Scheduled Caste families are found in good number in both Hindu and Sikh communities and only few households were found from Scheduled Tribes. Muslim and Christians households were not found in village. The majority of the households were from Hindu religion followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines and Sikh shrine Gurudwara. Most of the Hindus belongs to Jat community and some other are like Suthar, Arora, and others. In Sikhs household, most of households are from Jat Sikh community and good number of houses were found from SC Sikhs families which were migrated from Punjab and Haryana state when IGNP canal system was started operating in Rajasthan. Naurangdesar distributary is first canal system which was launched in early 70's in Rajasthan.
- Out of total population, 55.9 percent population was reported literate, while across the gender, rate of literacy was higher for male (63.96 per cent) than female in the village (46.78 per cent).

3.2 Livelihood/Employment and Migration Status

- The livelihood of the village is mainly based on agriculture and animal husbandry activities along with support of rural artesian trade especially leather crafts, wood, and caste based profession, and wool established in the village. The rearing of livestock is being done at large scale i.e. each household has two to three milch animals. In general, each household has its own transport facilities and some of farmers are also rearing of camel.
- In the panchayat village Naurangdesar, about 80 per cent of total households were reported their livelihoods from agriculture and agricultural labourers (as their primary occupation) while 7 per cent get their livelihoods from trade and business as secondary occupation and 4.5 per cent had got their livelihood from Government jobs. Out of the total peoples of village only 9 percent were reported migrated to nearby town and other states for outside jobs during the year 2018-19.

3.3 Agriculture and Livestock status of the Village

- As per Census 1971 records, the total geographical area of village was reported to be 484.5 ha and net sown area was 267.84 ha. As per 2019 Land records as well as Census 2011 records, the total geographical area was 434.35 ha. This may be due to reallocation of area among Chaks. Near about 90 percent area was irrigated by canal while in earlier survey this was just 30 percent of NSA which was possible only due to availability of irrigation facilities through Naurangdesar Distributary (NDR) of IGNP canal. In selected village current fallow land has reduced very significantly to 1.04 percent while was higher in earlier survey, i.e. 23.58 percent.
- Irrigation facility on which the whole process of agricultural transformation hinges has enlarged during last five decades or so. The irrigated area by the Naurangdesar Distributary has increased and 97 per cent of total net sown area is irrigated in 2019. The Naurangdesar village area is irrigated by main Indira Gandhi Canal 0639 RD and sub distribution by NDR minor (Naurangdesar minor) with 460 qusec/sec water discharge from Masitawali head which far from village near about 17-20 km. The flow of water is very good so that most of the farmers irrigated area with flood irrigation method whereas negligible area was irrigated with micro irrigation system like drip/sprinkler.
- The proportion of the area under food crops to gross cropped area has declined from 77 per cent in 1968-69 to 52 per cent in 2019-20. The same trend has been also observed at State as well as at National level, which has a tendency to decrease with the increase in the farm size. The area under cash crops has increased both in absolutely and relatively in comparison to 2019-10 over 1968-69. The orchards like kinnu has been introduced in recent years. The area under guar/cluster bean (*Cyamopsis tetragonoloba*) has grown which is predominantly grown during kharif season. Area under mixed cropping has been declined.
- The availability of irrigation facility improved the green and dry fodder situation, consequently not only the number of livestock has gone up but also they have also become more productive. Total livestock population in village in 2019 was 2859 of which 48.84 percent were cattle, 26.7 per cent were buffalo, and 13.67 per cent were goat and sheep together.

3.4 Developmental Institutions & Infrastructure

- There was a major change in the jurisdiction of the panchayat during current survey periods. Naurangdesar formed a part of the group panchayat for nine villages. Naurangdesar was the headquarter of the panchayat and nine other villages 11 NDR, 13 NDR, 14 NDR (CAD), 14 NDR (Rahit), 16 NDR, 17 NDR, 20 NDR-A, 1MWM and 3 MWM while in earlier survey only three villages were adjoined with Naurangdesar Panchayat which were Ranjutpura, Mohan Magaria and Bhompura villages. The Panchayat was housed in its own building. The Panchayat elections are held at the end of every five years. The first election was held in 1961 and recent last election was held in 2020. With the growth of the villages in the jurisdiction of the Panchayat during post bench-mark period, the number of Panchayat members have increased from 8 in 1961-62 to 11 in 1968-69 and same remain in current survey.
- Gram Seva Sahkari Sammittee was established on 14 November, 1969. It means it was working in past survey period also. At that time, there were 141 members in the society and share capital was of Rs. 11480. On an average share capital per member in society was Rs. 81.42. In the recent survey, the total member has increased to 824 members. The Gram Seva Sahkari Sammittee disburses short term crop loan up to 1.50 Lakh in 2018-19. At the time of survey, total 523 farmer's loan was waived in 2018 and total amount waived was Rs. 1.18 Crore. In second time, 223 farmers were included in 2019 for cooperative loan up to Rs 50,000 and total Rs. 93 Lakh was disbursed. The Gram Seva Sahkari Sammittee also works for distribution seed and fertilizers in village with subsidized rate.
- In the recent survey, four schools were found functioning in village, of which two schools were government school and two schools were private schools. One of the government schools provide education to children from 1 to 12th standard and this school has co-education facility. The Senior Higher Secondary school provides Commerce and Arts education stream. The Middle school is girls school education but some boys are also educated there with flexibility in rules as brothers of elder sisters are studying in same school to develop habit of going school regularly.
- The State Bank of India is operating in Naurangdesar village since 1980. Total 1400 Kisan Credit Card are distributed in recent survey. As per bank officer statement, 125 accounts of KCC are NPA (Non-Performing Asset). Total 150 accounts were opened under MUDRA (Micro Units Development and Refinance Agency) loan. Only 5 percent of total accounts holders of Naurangdesar village save their money in Fixed Deposit because they usually deposit their saving money with traders of APMCs for gaining more interest amount. Total four Self Help Group (SHG) are associated with bank and out of four, three SHGs are NPA. Two robbery incidences were happened in bank and in 2016-17, near about 2.5 Lakh amount was robbed from ATM. Therefore, at present survey, ATM facility was not provided.

3.5 Village Infrastructure

- The market potential for any product depends on money aspects viz. population of the area living standard of the people, their income, social customs and habits geographical conditions. etc. Total 15 to 16 Glossary shops are reported in Naurangdesar Village.

- One post office is in operation in Naurangdesar village having one post master working in post office.
- The network of medical and health services in the village are satisfactory. The health services are provided by government as well as private sector. At the time of benchmark survey, there was no government primary health centre but near about year 1970 or 1975 government has opened primary health centre in village. At the time of present survey, Primary Health Centre is found working in village and 07 posts are filled-up including one MBBS doctor, one ayurvedik doctor and other supporting staff. Only outdoor patient facility was available and one day IPD (when patient is treated one day or some hours in hospital) facility is also available but hospitalization facility is not available in PHC. The public health services are provided by 2 private clinics and there are four medical shops in village.
- The Government of Rajasthan has opened an Ayurvedic Dispensary in this village in July 1967. At present, three posts are fill up, one doctor, one Nurse/Compounder and one Peon. Total 16369 patents were treated in 2017-18 from April to March. The Government of Rajasthan has also opened a Veterinary Hospital in this village sometime in the year 1979-80 where total 06 posts are sanctioned but only 03 posts are filled up (veterinary doctor, veterinary assistant and sweeper).
- The electricity department in Naurangdesar is working under Jodhpur DISCOM. The major electricity consumption in the village is found in domestic and agriculture uses. The electricity department provides 6/7 hours electricity for agricultural purpose. In Naurangdesar village, near about 93 percent houses are electrified and only 60 connections were cut in Nov, 2019 for non-payment of electricity bills for long time.
- The drinking water availability is provided by Public Health Irrigation Department in village. Total water connection in village are more than 500 and department provide drinking water on the basis of 3 or 4 days in week on rotation basis. The irrigation water department receives water from Naurangdesar distributary.
- The public distribution system as a social safety net can be understood by the fact that aggregate availability of food grains per se is not enough to ensure the ability to acquire food grains. In Naurangdesar village, there are 2 PDS shops where wheat, rice, pulses, sugar and kerosene is provided to ration card holder.
- Apart from necessary facilities generally available in every village, selected village has small scale industry, bike garage, etc.

3.6 Cultural Profile of the Village

- The entertainment sources are folk dances, organization of dramas and arrangements of various types of in-door games. Among the popular dances, mention may be made of Ghumer, Bhangra and Giddha. The main festivals of Hindus are Deewali, Holi, Dashera, Gangaur, Sheetla Ashtami, Akshaya Tritya, Raksha Bandhan, Makar Sankranti etc. The birth days of all the ten Gurus are celebrated by the Sikhs but the birth days of first Guru Nanak and the tenth Guru Govind Singh are celebrated on a larger scale.

- The majority religion here is Hinduism followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines. Sikh shrine Gurudwara is located here.
- Most of people of village spoke hindi, punjabi, and bagri language. Hindi is the official language. Bagri, a dialect of Rajasthani language, a dialect of Punjabi language, are spoken by majority of population.
- Bajre ki roti made with bajra (millet) is very popular and healthy flat bread that is relished across Rajasthan. Though it can be taken with any vegetable dish or kadhi, it is generally savoured with onions and Lasun ki chutney that is a saucy preparation made with garlic. This combination has remained a staple food for the locals. Khichdi, a wholesome and healthy meal made out of rice and different pulses. Originated from the Bikaner region of the state, this crispy snack made of besan (gram flour), moth beans and a mix of spices has become a household snack in India
- In Naurangdesar village, a large number of immigrants especially from Punjab have had a marked influence on the behaviour and social thinking of the native villagers and were instrumental in the changes in various traditional customs of village. This, however, does not mean that caste as a force had lost its importance totally. It was still playing its role, thorough to a lesser degree, and had its ramifications on socio-economic structure of the village. In Naurangdesar village Jat, Sikhs and Schedules castes were dominant groups.
- The dowry system was quiet in vogue. In fact, this practice expresses its dislike and disapproval for this system in almost all the families in the villages. Whereas, the amount of dowry was increasing day by day even among Hindus and Scheduled Castes of other castes in the village.
- Political Parties such as BJP, Congress, BSP, INL and Jamidara are popular in the Village. But political establishments by the parties was not at all reported in the village.
- Not a single library of any type was reopened in Naurangdesar village. But in School, library is reported.
- Integrated Child Development Services scheme is world's largest community based programme. The scheme is targeted at children up to the age of 6 years, pregnant and lactating mothers and women 16–44 years of age. The village as a whole only one Integrated Child Development Service Centres was established and it was found working regularly.
- About 15 hand pumps / nalkoop and one village tank was in Naurangdesar village. Due to the convenience of the canal in the village, the canal water is used for drinking. The canal water is collected in the village tank and through pipes that supply water to every household in the village.
- As regard to the agro processing units ,6 floor mill/ aata chakki in which 2 mobile Atta Chakki are reported in the service of villagers in Naurangdesar.
- The playground facility was available in higher secondary school of Naurangdesar village.
- No illegal activities are reported in this village. During the survey, it was observed that peoples of this village are very polite and helping nature. The most of youngsters are well educated and participated in every social work.

- Many government schemes are being implemented in the village, which includes job-related MNREGA, and agriculture-related mainly crop insurance (PMFBY), seed minority, soil health card, PM- farmer, KCC, PMKVY etc.

3.7 Occurrence and frequency of natural calamities

- The sand cyclones are very frequent reported in summer season and drought occurs every three years reported in village or region.
- Sand Cyclone occur often but damages were never measured by government. But in drought year, 35 to 50 per cent agriculture production was affected in the village. The State Departments of Irrigation, Ground Water, Revenue, Agriculture, Animal Husbandry etc., need to evolve a robust method for drought intensity assessment.
- Government is well aware about the fact that farmers must adopt crop insurance scheme to avoid natural disaster. Many farmers of the village of Naurangdesar have benefitted from crop insurance schemes.

4 Social Dynamics

4.1 Profile of Selected Households:

- The number of households in the village has increased by 127 per cent in 2011 over 1971, i.e. from 342 in 1971 to 775 in 2011 census. In recent survey, total population was reported doubled. Total working population was also increased by almost 35 per cent points, which was 31 per cent of total population in earlier population increased to 65.3 per cent in recent survey. Also the share of main workers in total workers population has declined by almost 9 percent indicates the increase in marginal workers population. The rate of literacy has also increased from just 20 per cent in earlier survey to almost 88 per cent in current survey. Particularly significant increase in female literacy was achieved which has increased from 4.27 per cent in earlier survey to 77.8 per cent in recent survey.
- Out of the total households in villages, 72 per cent houses were pucca in nature which indicated the drastic change in the socioeconomic status of villagers after receipt of assure canal water as during the last two surveys, share of pucca houses in total was 1.3 and 4.6 per cent respectively. Also the nature of families has diverted towards nuclear families. Around 83 per cent of families are reported nuclear in current census as compared to 57 per cent in 1961-62.
- The distribution of population in age group 36-55 years has significantly increased in recent survey over base period (from 6.34 per cent in 1973-74 to 28.18 per cent in 2019-20) means working population has increased by 21 per cent points and thus rural economy has also improved in recent survey. Children population has declined significantly showing demographic structure change in village means generally people want to have 1 or 2 child only which was observed during the current survey.
- In earlier survey period, about two third of children aged between 16-20 years were married while in current survey, it was noticed that hardly 1.55 per cent of this age group children were married which is a very important change observed over the period. Early marriage is not socially, economically and physically better for children before attending age of 21 years. Around 96.8 percent persons were married in age 26-30 group in earlier but same

was just 16.54 persons were married in recent survey. It may be because of the fact that most of male and female are giving priority to get better education and employment before getting married. In recent survey, total 37 cases were reported under widow/er category (75.68 per cent persons) which belongs to age category of 56 and above age.

- Out of the total households reported, the highest number of households (about 29 percent) had four family members and they accounted for about 25.11 population of village whereas in earlier survey, corresponding figure in same category (4 family members/hh) was 28 families with share of 9.60 percent in village households and 6.29 percent in village population. In earlier survey, the highest share was of families having five members (15.46 per cent) followed by six-member family (14.45 per cent). The share of maximum number of about 11 per cent of total households had family members 10 and above, while in current survey, hardly 0.67 per cent of total households had the same. It indicates that over the period, mostly joint families are distributed in nuclear families.

4.2 Caste/religion wise Distribution:

- The share of all religion groups in total population has increased except OBC Hindu which has declined from 46.26 per cent in last survey to 27.74 percent in recent survey. The sex ratio in village has declined from 910 in last survey to 849 in current survey, which is a matter of concern. The average size of households has declined over the period from 6.21 person to 4.57 person which implies two aspects, viz. joint families are fragmented to nuclear family rapidly and every couple prefer to have two children as observed in demographic feature of the village.

4.3 Literacy Pattern by Sex:

- There is significantly declined in number of illiterate population in over the period of time, i.e. from 68.71 per cent in last survey to 26.05 percent in recent survey in case of male while corresponding figures for female are 94.77 per cent to 38.00 percent. The primary level education has significantly increased in recent survey that to very impressive growth was achieved in female literacy in village in current survey.

4.4 APL/BPL wise Distribution:

- Out of total households, 21.67 per cent household belongs to BPL category of which the highest share was of Hindu SC (40 percent) category followed by Hindu OBC (24.62 per cent). Total 80 percent Sikh SC families belong to MAPL (Antodaya Anna Yojana) category in village. Total 76.67 percent of total families in village were classified above poverty line category which was lower than district average of 84.62 per cent. This data was not reported in earlier two surveys.

4.5 Birth and Deaths:

- The highest rate of birth of 14.9 per 1000 live birth was reported in APL families whereas 10.1 per 1000 population was average of BPL families in 2014-19 in village. The highest death rate was found in BPL families (3.6 per 1000 population) of the village.

4.6 Enrollment and drop outs in different educational level (gender-wise)

- Near about 74.75 percent of total children enrolled in hindi or vernacular medium language schools and 19.60 percent children were enrolled in English medium private school. Around 60 percent children of Hindu general caste families have enrolled in private school where as 68.18 percent of OBC Sikh family's children were enrolled in private school. Most of the ST Hindu, SC Hindu and Sikh and OBC Hindu children were enrolled in government school with vernacular language. The drop out of children was mostly reported in case of children of SC Hindu, OBC Hindu, SC Sikh and OBC Sikh, whereas no children drop out was reported in General caste Hindu and ST Hindu families of the village. The drop out children shares just 5.65 percent in total enrolled children in government as well as private school. Total 19.60 percent children were enrolled in private English medium school in village in current survey suggest that if parents afford economic liability of English medium school than they enrolled their ward in same.
- The village did not have kindergarten facility either in 1968-69 or 1972-73. It had two schools, one being a middle school and the other a primary school. The number of rooms in the middle school increased from 7 in 1968-69 to 11 in 1972-73 and in the primary school form 1 in 1968-69 to 2 in 1972-73. In 1968-69, only the headmaster of the middle school was provided with rent free residential quarters. In 1972-73, the headmaster of the middle school and the teacher of the primary school also secured this facility. During both points of study there were 9 teachers and all of them were trained. The village school had been extended and the number of male students had increased considerably in 1968-69 over 1961- 62. However, the number of female students during both the surveys was discouraging. The number of students enrolled in the village schools as per Naurangdesar school records) increased from 1987 in 1968-69 to 220 or by 18 per cent in 1972-73. Though the proportion of girl students to the total students increased from 4.8 per cent in 1968-69 to 8.2 per cent in 1972-73, it was very low as compared to that for the boy students. In 1968-69, no native person of the village had crossed the high school education. The village had one arts graduate and five matriculates in 1972-73. Moreover, two students of the village were attending the college.

4.7 Food Security & Child nutrition (BMI)

- As per BMI index values, female child found to be healthier than male child. Out of total female child, 81.08 percent of female child were found healthy, 8.11 percent are obsessed and 10.81 per cent female child were underweight. While in case of male children, 64.63 per cent were found healthy, 3.66 per cent were with obesity and 31.71 per cent were present are underweight. If we see class wise nutrition level, we found that up to class III, male child were all healthy while in case of female child its differ. A very surprising picture was observed when we see up to IV standard to X class, it can be seen that most of female child were healthier than male child in Naurangdesar village in current survey. This survey was performed in government Sr. Sec. School in village and it was found that mid-day meal and Milk Yojana of state government was helpful in increasing child nutrition level of weaker section in the village.

4.8 Access to basic amenities and changes therein

- Out of the total households, only three households have reported non-availability of legal electricity connection, 14.67 per cent of total households have no toilet facility in their houses and 5.33 per cent households have no government drinking water connection for which they have to travel just 10-100-meter distance in village. This picture is self-explanatory about the basic amenities expansion in village has reached to satisfactory level in current survey and villagers are aware about self-hygiene and cleanliness which is must for betterment of life, particularly after COVID19 pandemic.

4.9 Participation, Inclusiveness and Empowerment

- Out of total households, about 39 percent of member of households had participated in Gram Sabha and Gram Sansad meeting whereas remaining household members who could not participate were either busy, uneducated and due to old age they did not participate. About 6.33 per cent household members have approached to elected representatives like Panchayat/MLA/MP for village and panchayat development related issue while 73.68 per cent household's persons were satisfied that elected representatives had addressed their issues and tried to solve them willingly, which shows empowerment of Naurangdesar villagers in recent survey.

4.10 Perception about different changes in the village

- There was no caste biasness and no caste rigidity was reported. Economic gap was observed in Sikh OBC and Sikh SC families due to economic condition. Mostly SC Sikh families are working in on the land of OBC Sikh for several years. This was not a case in case of OBC Hindu and Hindu SC families because education level of these groups was much better than SC Sikh families.
- In recent survey, no gender biasness was seen in village. In current Gram Panchayat election, Naurangdesar Sarpanch seat was reserved for women category. The newly elected Sarpanch and processor Sarpanch both are active in village activities and they have taken interest in development work in village with full enthusiasm.
- No political bias or deprivation was seen in village and village is properly connected with district headquarter. The MLA/Pradhan (originally from Naurangdesar village) and other political leader are well connected with villagers.

5 Economic Status

5.1 Livelihood and Employment

- Out of total household, about 79.67 per cent households were dependent on agriculture and allied activities, 7 per cent households were working in service sector job and 7 per cent households were doing business and trade in village. One of the important observations was that 5 per cent households were working as casual and marginal laborer and just one per cent households were dependent on pension/old age pension/widow pension etc. in the recent survey. The total 62.61 per cent of total cultivators belongs to OBC Sikh families and 26.09 per cent cultivators were from OBC Hindu category while other caste categories share was negligible in farming activity. Out of total agriculture labour, about 74.19 per cent agricultural labour

- belongs to SC Hindu and SC Sikh families and not a single family of OBC Sikh was involved in agricultural labor in village. Most of the SC Hindu households were working as casual and marginal labour in or outside the village.
- Out of total sample household, about 62.53 per cent adults were working in agriculture sector as a cultivator or agricultural labour or both. Out of total cultivators, about 53.05 per cent cultivators belong to OBC Sikh family whereas 45.60 per cent adults working as agricultural labours are from SC Hindu families. Out of total households in general category, about 38.46 per cent adult of General Caste Hindu were in government service and 50 per cent adult of same category were under pension scheme of government. All caste based profession especially furniture work, gold smith work is being performed by OBC Hindu families in village.
 - Out of total sample households, about 15.34 per cent adult especially women were working in house in which 42.71 per cent belongs to OBC Sikh category. About 40 per cent of SC Hindu adult were getting social security pension like old age pension, disabled pension, widow pension and other government scholarship scheme in village. The total population of selected sample was 1370 of which 94.67 per cent adult persons were involved in economic activity. This shows that mostly adult persons of village were working and their major contribution was in village development as well as rural development.
 - Out of total sample household, about 58.71 per cent male and 41.25 per cent female were working in different livelihood in village. Male adults dominantly working agricultural and agricultural labour work than female. Most of the adult female were working (81.30 %) as casual labour and no female worker were working as a marginal labour in village. Out of total trade and business oriented activity doing by male in village.
 - In case of about 96 per cent of households, home work was being done by adult female members while in case of around 4 per cent households, male members were completing the household work (most of old age persons). Out of total security pensioner, about 64 per cent females were getting social security pension like old age pension, disabled pension, widow pension from government which was equal share with men.
 - Though the village economy has remained predominantly agrarian, the relative importance of cultivation in terms of number of households primarily dependent on it in the occupational structure of the village has gone down. In 1961-62, 76 per cent of the village households followed cultivation as primary occupation which dropped down to 65 per cent in 1968-69 and further down to 38 per cent in 2019-20. While share agricultural labours have increased from 5.7 per cent in 1961-62 to 21.6 per cent in 1968-69 and 41 per cent in 2019-20. Thus, as like at national level, share of cultivators has declined and agricultural labours has increased. The total number of households dependent on agriculture (cultivation, dairying and agricultural labour taken together) has increased-from 81 per cent in 1961-62 to 87 per cent in 1968-69 which again declined to 80 per cent in 2019-20. In other words, only one-fifth of the total households during bench-mark and a little more than one-tenth of the total households during resurvey and two fifth of the total households during last survey depended on non-agricultural sector. The economic development, resulting from irrigation facility, instead of diversifying the occupational

pattern, has created converging, forces in favour of strengthening the primary sector. The traditional occupation of Jat Hindus and Jat Sikhs is cultivation and naturally around ninety per cent of their households were cultivating households during all surveys. The overwhelming importance of cultivation in these two caste groups has virtually remained unchanged.

- The change in the occupational pattern of scheduled caste Hindu group which is next in importance to Jat Hindus in terms of number of households is quite significant, 72 per cent of these households pursued cultivation and 19 Per cent agricultural labour as primary occupation during the bench-mark survey. However, during the resurvey period, 1968-69 and 2019-20, the corresponding percentages were 33 and 61; 14 and 73 per cent respectively suggesting a marked change. The process of proletarianisation of this down trodden section of the community appears to be of a continuous nature. The scheduled caste Hindu households were reduced to the rank of agricultural labour class who were having cultivation as their main occupation in the near past. This suggests that income from cultivation of scheduled caste Hindu households might have either declined or had not risen as much as in the case of Jat Hindu and Jat sikh cultivating households. their (scheduled caste households) poor resource endowment and relatively lower availability or irrigation facility seem to have been responsible for aggravating their economic condition. For the first time during resurvey one household each from this caste group had taken up non-agricultural labour and trade occupations. Like scheduled caste Hindu households more of low caste Hindu households had taken up agricultural labour occupation. All scheduled caste Sikh households during both surveys were primarily dependent on agricultural labour.

5.2 Pattern of Migration and Changes therein:

- Out of total, 27 cases were reported migrated to other city or town in recent survey. Out of total migrated households, about 24.36 per cent households belongs to OBC Hindu family members which have migrated to other cities in search of jobs. Out of total sample household, about 10.43 per cent household belongs to APL family.
- At the time of benchmark survey in 1961-62, out of 192 households of the bench-mark survey, 35 had left the village, one was merged with the other household and 5 could not be accounted for out the time of survey. Thus 21 per cent of the total households of the had left the village.

5.3 Agrarian System

- Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties and at time of first survey the total irrigated area was only 6.1 per cent, which has increased to 55 per cent during resurvey period 1973-74 and reached to 90.5 percent in current survey. This indicates that almost 91 per cent area was brought under irrigation of Naurangdesar village. The main source of irrigation was canal in village.
- During both surveys the small land owners had leased-out large proportion of their owned land as compared to that by medium and large land owners. While none of the marginal farmer had taken land on leased-in during 2019-

- 20, while 7.5 per cent of total operational holdings of small farmers group was land leased-in category.
- Under land tenure system in village, leasing-in and leasing-out tenancy with share cropping basis of the output was found prevalent among the cultivators. The prevailing rate of leasing-in and leasing-out was about Rs. 60000 per hectare of irrigated land and Rs. 16000 per hectare for rainfed land in Naurangdesar Village.
 - The comparative analysis of distribution of land holdings during last resurvey (1968-69) and current survey indicate that the average size of land holding size has declined significantly. The average size of land holdings has declined from 10.5 ha in 1968-69 to 3.51 ha in 2019. The main reason behind this significant land holding size declining was that population is increasing very rapidly and land holding is distributed in small fraction which is noticed also at all India level. Also, one more reason was noticed that in previous survey Naurangdesar village was distributed in many villages according to Chak system so that total number of households were also declining in current survey.

5.4 Land Utilization and Changes Therein

- The average family size in selected households of Naurangdesar village was 4.77 and they operated land area of average 3.51 hectare. The land man ratio was found higher or near about one in medium and above categories farmers and the lowest was noticed in marginal and small farmers' categories. The average cropping intensity was almost same in all categories and net irrigated area was estimated to be 94.3 percent of net sown area in village. The average education of head of the family was 5th class which was almost same in all classes and on an average three crops were grown in village every year.
- The crops were grown in both seasons during current survey period which was possible only due to canal irrigation facility. After IGNP canal and Naurangdesar Distributary, the area under irrigation has been increased by more than 90 per cent and farmer are growing high values crops. During 1960s only rainfed crops were grown in which mostly Guar, Barley and rainfed pulses crops were cultivated.

5.5 Cropping Pattern and Changes therein

- The main crops grown during the kharif season were cotton and guar which contributed about 58.49 and 26.62 percent area respectively. Cotton crop is grown in irrigated condition. The main crops grown during rabi season were wheat and rapeseed & mustard which accounted for about 60.76 and 36.36 percent area respectively in Rabi season. Very few farmers are growing crops in summer season while only one sample farmer has grown fruit and vegetables in village. The kharif and rabi season accounts for 51.80 and 48.09 percent of gross cropped area of the village which was near about to same due canal irrigation facility in both seasons.
- Crops like rice, wheat, cotton, rapeseed and mustard, fodder and Kinnu are grown under irrigated conditions while gram and guar are grown under both irrigated and rainfed condition and bajra is grown under rainfed condition only.

- Though the crop pattern during both the surveys was food crop oriented irrigation has contributed towards a gradual shift in area from food to non-food commercial crops. The area under food crops which accounted for as much as 90 per cent of the gross cropped area in 1961-62 was reduced to 77 per cent in 1968-69. The analysis of crop pattern in different farm size groups clearly shows the tendency for the area under food crops to go down progressively with the increase in the farm size. The same trend was continued in latest survey in 2019-20. The drastic decline in area under food grain crop has been reported (from 76.8 per cent of GCA in 1968-69 to 32.4 per cent in 2019-20).
- The second important change was observed in the crop pattern was with regard to increase in the area under fodder crops from 9 per cent of gross cropped area in 1961-62 to 15 per cent in 1968-69. While same declined to 0.06 per cent in 2019-20. In 1961-62, guar alone was grown as fodder crop but in 1968-69, 76 percent of the area under fodder crops was accounted for by guar. The increased importance of fodder crops in terms of land utilization in 1968-69 was due to two factors: firstly, the guar had a ready market at remunerative prices. The demand for guar had gone up due to the starting of a factory for making gum from guar in the post bench-mark period in the region. The second reason for the popularity of fodder crops was the increase in the number of livestock in general and of stall-fed animals like draught animals and buffaloes in particular which created a necessity for the farmers to allocate large area under fodder crops. The area under guar crop was separately from fodder crops in 2019-20 and it account significant share in GCA which accounts for almost 18 per cent of GCA in 2019-20 and therefore area under fodder may be came down.
- At the time of bench-mark the relative area under fodder crops was positively related with the farm size but during resurvey the middle sized farms were found to have more of the fodder area (16.0 per cent) than that of small farms (13.4 per cent) and of the large sized farm (14.9 per cent). It is worth noting that at the time of bench-mark there was a wide variation in the proportions of gross cropped area devoted to fodder crops among farms of different size groups but during resurvey the variations had considerably narrowed down. During 2019-20, only medium and large land holders had devoted land for fodder cultivation other groups may have used bunds and common grazing land to feed their animals.
- Last but not the least important change in the crop pattern was with regard to the introduction of altogether new crops like oil seeds cotton and sugarcane; also, rajko and mixture of jowar and maize were taken as fodder crops for the first time in the post bench mark period. Sugarcane and cotton are not only long duration crops but are also costly crops in the sense that besides the requirement of more of water at regular intervals they are labour and fertilizer intensive crops. In term of percentage of area cotton was the more important crop (7.3) cent of the gross cropped area) than sugarcane (0.4 per cent of area) and oilseeds (0.2 per cent of area). The proportions of area under these crops had a tendency to go up with the size of the farm. While during 2019-20, the cotton crop emerged as major crop having 30 per cent of GCA and no area under sugarcane crop was reported. Kinnu crop was reported by the small farmers.

- Considerable reshuffling in the relative importance of different crops among cereals has taken place during the resurvey period. Data indicates complete change in allocation of area under cereals, at the cost of losing the area under jowar and barley crops and drastic decline in area under bajra crops, more than 90 per cent of cereals crop area shifted under superior cereal crop i.e. wheat. In fact, small farmers grow only wheat crop under cereal category.
- All size group of farms had accorded first priority to gram and second to guar in terms of area to be irrigated in 1968-69 and roughly speaking irrigated area under these two crops accounted for about half of the total area under irrigated crops for all size group of farms. in 2019-20 wherein cotton crop accorded first choice followed by wheat crop and then rapeseed mustard and gaur crop.
- Due to availability of canal water for irrigation, the crop area is diverted from pulses crops to other crops like paddy, oilseed crops and cotton. During current survey, it was reported by the villagers that area under wheat and guar has increased at the cost of decline under pulses crops which was grown as rainfed crops.
- The Herfindahl index value is 0.37 being relatively low implies a significant level of diversification in the Study area.
- The trend of cropping pattern in Naurangdesar village during 1968-69 to 2019 indicate that the area under cereals has increased by 18.96 per cent points over base year, i.e. which has increased from 26.1 per cent in 1968-69 to 31.05 per cent in 2019 whereas the area under pulses has significantly declined by 46.6 per cent points during corresponding period. The area under oilseed crops has increased by 19.14 per cent points because most of farmers preferred to grow cereals and oilseeds (high value) crops due easy availability of irrigation facility. The area under cotton crop has also increased by about 23 per cent points. The area under fodder crop has declined by 15.24 per cent points may be due to the fact that farmers are more interested in growing cash crops rather than fodder crops, which is not good for livestock rearing. The expansion of irrigation facility through IGNP canal system to farmers has changed the cropping pattern and now farmers are more intended to grow cash crops or more profitable crops like, wheat, cotton, rapeseed & mustard and guar.

5.6 Irrigated area by sources and changes therein

- Most of farmers used to grow rainfed crops during last survey but in current survey, it was observed that more than 90 per cent area was irrigated by canal water.

5.7 Average yield of different crops and changes therein:

- There is a tremendous improvement in crops yield except guar crop in recent survey over base survey. The yield of wheat crop has increased by 481.45 per cent while yield of bajra crop has increased by about 204 percent, gram crop yield by 80.93 percent, and cotton crop yield by 202.36 percent. Only guar crop yield was marginally declined from 8.35 to 7.26 Qtl/ha in village and mostly farmers were growing guar crop in unirrigated condition in village that's why yield was observed less in earlier period.

5.8 Distribution of livestock resources and changes therein

- Fortunately, Naurangdesar had superior breed of cattle. Prominent breed of cows “sindhi” and that of buffaloes “Hathi”, both famous for their high yield of milk. Despite this, dairying as a commercial pursuit or even as a subsidiary source of income had not developed at all. Very few of the households in the village were reported to have sold within or outside the village. The reasons given for not selling milk were firstly, larger quantitatively of milk was being consumed to supplement the shortage of drinking water and secondly, sale of milk was treated as violating the religious principles. Viewed from this angle, the economic utility of the cattle in the village apart from providing milk for self-consumption was confined to the provision of traction power during 1970s survey situation. But in current survey, it was observed that there is a milk cooperative society in the village which purchases milk on the basis of fat percentage from the member. Milk also being collected by private dairy and bike vendor and sold in near city. According to our survey, there were milch animal resources increased by 49 per cent as compared to last survey. Young stock also increased but sheep and goat has declined in Naurangdesar Village. It was also observed that some poultry farms especially hen rearing were managed by Sikh community in the village.

5.9 Tools, implements and machinery use in agriculture

- The main implements owned by the villagers were ploughs, harrow, handhoes, kassi, danti, kassia and crushers. Recently improved grass cutting machiner and iron ploughs were also purchased by a few families. Only two families owned tractors. But a large majority of the cultivators owned primitive type of tools and implements in last survey reported but in current survey more than 23 per cent farmers had tractor and most of farmers had farm implements and machinery for used in agriculture.

5.10 Production and disposal of farm outputs:

- All crops are found profitable except Guar crop. Guar crop has incurred loss in irrigated as well as under rainfed condition of 1.64 and 3.85 percent respectively in village which means only one selected farmer have incurred loss in cultivating guar crop in village.

5.11 Prevalent marketing channels and procurement arrangements

- Cotton and Kinnoo crops were 100 percent sold through market/businessman/government agency in village. More than 90 percent farm produce like Paddy, Gram, Rapeseed & Mustard, Groundnut and Guar were sold through market/businessman/government agency etc different marketing channels. About 78.87 per cent of wheat and 54 percent of Bajra produce was sold by selected farmers through market.

5.12 Poverty, Income and Consumption:

- The annual average income from all sources is estimated to be Rs 327003 in all occupational groups in village. The average income of cultivator is estimated to be Rs 484494 and farm income contributes 81.06 percent while non-farm income contributes near about 19 percent. The highest income earned was by government salaried persons in village and the lowest income

earned by casual labours groups having estimated Rs. 759700 and Rs. 124333 per annum respectively. Off farm income generated through labour earnings, other off farm and asset hiring income like tractor and other agricultural equipments rented out and agricultural labour getting highest income in village. Private salaried persons are earning Rs. 296125 per year which is lesser than 38 percent of government salaried persons earned annually. The average income of village is very economical viable and this suggest economic activities in village is better.

5.13 Distribution of households by income and poverty level:

- The highest income per annum gained by Sikh OBC caste and the lowest income gained by ST Hindu caste in village and they got income Rs. 574035 and Rs. 101750 per annum respectively. General caste Hindu and General caste OBC have reported more or less same annual income though income structures were quite different in all manner. The very important observation is that income level of SC Hindu families was higher than SC Sikh families, having Rs 198297 and 153935 per annum respectively and the main reason behind this seen at the time of survey was that SC Sikh families receive less employment opportunity in other sectors in outside village area and generally they have been working like permanent agricultural labourer under capitalist rich Sikh OBC families since several decades.

5.14 Asset profile of the rural households

- All the households owned their own house in village which has an average value about Rs. 3.54 lakh, while during last survey, around 83 per cent households owned house. Out of total households, 23 percent households possessed tractor in current survey while during last survey recorded only two tractors were in the village. The number of vehicles, livestock, farm implements have been increased as compared to last survey.

5.15 Food security

- As village has developed over the time period due to availability of assure canal water which has given face lift to village, all the respondents have reported that they never went a whole day and night without eating or went sleep hungry. More than 97 per cent households had no worry about food while remaining had sometime thought about same. Almost one third of the total respondents went for outside eating while about one fifth of total households are eating too much of packed food. This as such there is no issue of food security at village level.

5.16 Financial Transactions

- Out of total borrowings, about 81.63 per cent of loan was borrowed by cultivators and they generated income Rs 5.57 crore through farm and nonfarm sources. The outstanding loan was also highest in cultivator group. The cultivators had taken average loan of Rs. 3.7 lakh through banks and cooperative society in village. The Government of Rajasthan had waived loan of cooperative society up to Rs 50000/- in 2018-19. The loan taken by government servant was the highest in village which was Rs. 6.9 lakh for housing purpose. The Income–Loan borrowing ratio was the highest in

cultivators, pensioners, government servants, trade & business man and private salaried class because of surety of payback and its influence to take more loan from institutional sources. Whereas agricultural labourers means unorganized sector workers has taken loan taken from institutional sources and the reason behind this was that they have less income security.

5.17 Perception about economic changes in the village

- About 93.33 percent selected households were satisfied about economic condition of villagers. In current survey, it was observed that the standard of living and income of selected household has been increased since last survey period. About half of the respondents were agreed that village infrastructure has improved in current survey than earlier survey whereas about 45 percent respondents reported no change in village infrastructure while 5.33 percent respondents reported that village infrastructure is deteriorated.

6 Ecology, Vulnerability and Sustainability

6.1. Natural Resource Profile of the Village

- The Naurangdesar village faces severe water scarcity mostly in summer season, has poor rainfall, and is classified as arid/semiarid region. Any change in climatic determinants could not only adversely impact food security and nutrition but also affect the well-being of the population that derives its income from the sector. Shifting cropping patterns to more heat adapted and less water consuming varieties is a strategy already practiced by farmers. Reports indicate a shift in cropping patterns to local varieties of pulses, green gram, millets and mustard, which need less water. Dairying of goats and other small ruminants was promoted; indigenous varieties with heat resistance capacities are identified and promoted to minimize related losses in milk production.
- The village has sandy loam and sandy soil broken at short intervals by sandy ridges. Owing to its porous character, the soil does not retain moisture for long. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. Wherever irrigation is available, the soil is getting hard and this enables the farmers to grow crops like cotton and wheat. Similarly, those pieces of cultivated land which were intensively cultivated in 1961 and which were brought under the command area of the canal later on were levelled by the farmers either with the help of bullocks or by tractors and currently they using land leveler and level their land easily in current survey.

6.2 Livestock resources:

- The milch animal population has increased very significantly in village in recent survey. The growth of milch animals in 2019-20 over 1968-69 was around 307.22 percent, in which number of sheep and goat has declined marginally in village. The number of work stock like Camels have declined significantly in village and main reason behind this was that agricultural work is being completed with machinery like tractors and other implements whereas in previous survey camels were helping in agriculture land sowing and drinking water facility in village.

6.3 Ground water level, pollution and changes therein

- The ground water level in village did not decline and due to canal water; the ground water level is very high in village especially in Naurangdesar CAD area. The industrial development is almost zero in village so that pollution issue was almost observed and air quality was very healthy.

6.4 Natural and Manmade Disasters

- The occurrences of floods during the last 5 years were reported to be negligible whereas droughts were not occurred in last five years. Farmers as well as labourers were found to be most vulnerable groups among the villagers of Naurangdeshar. On the other hand, villagers reported that cotton and wheat crops are the most vulnerable crops and barley is the least vulnerable crops. Sand Cyclones, erratic rainfall and heat and cold waves are also reported to occur often and farmers as well as labourers are the vulnerable groups. Landslides and epidemics are not at all reported during the last 5 years in Naurangdesar Village. Few cases of Suicides and accidents were reported among SC and OBC groups of Household in Naurangdesar. No case of Violence and loss of job were reported while 2 cases of robbery are reported during the last 5 years in selected village. Price hikes crashes for vegetables crops occurred more often in Naurangdeshar Village.
- Due to drought and heat wave damages to crops as well as hardship to cattle were reported to be nil, while low level hardship of reported being reported for poor, and women. Few accidents and suicide due to drug addicted were reported by hardship to poor.

6.5 Major coping Strategies at Household Levels

- To combat with drought, the crop raising farmers had used their savings as coping strategy. Labour class as well as poorest people farmers had migrated outside for jobs and also adopt borrowing as coping strategy. Thus, in the whole village the poorest peoples were the hardest hit from drought/ heat wave, suicide and accidents during the last 5 years. Robbery in ATM machine had been occurred in last 5 years and to stop robbery closed the ATM facility as coping strategy.

6.6 Major Adaptation Strategies to Combat Extreme Events.

- During survey and group discussion, it was observed that there has been no extreme climate or other event so happened in the village during the last five years period. While, state and central government scheme like PMFBY, Soil Health Card/PMFSY/ MGNREGA were adopted by farmers to combat with drought/Flood/ Cyclone and loss of job in this village. For erratic rainfall as well as for heat and cold waves, crop diversification and livelihood diversification were adopted at individual level in the village.

6.7 Perception about ecological changes in the village

- The majority of the households have reported that there is change in rainfall pattern as well as heat and cold waves and air over the period of time. While majority of them denied the increase in incidence of diseases and expenditure on medical.

7 Policy and Governance

7.1 Nature and Coverage under Different Government Sponsored Schemes

- Under the BPL card scheme, total 65 households were found entitled in the village during 2014-2019 and all had availed this facility. Thus, 100 per cent village coverage was under this scheme. Under KCC Card Scheme, total 118 households were entitled and all of them have availed the facility. Under public health insurance card scheme, 100 per cent coverage was reported as all 286 entitled households were benefited. About 212 households were entitled under MGNAREGA job Card Scheme, but the coverage was 96.7 per cent. Almost all the entitled households for Crop Insurance; PMFBY, LPG Scheme (PM Ujjala) have availed the facility. Under ICDS/Mid-day Meal scheme, all the 91 households had availed this facility and were satisfied with same. Under Government Scholarship scheme, only 22 households were entitled but all have availed the same facility. All the households those were entitled under Seed Minikit scheme, Farm loan waiver, Old age pension scheme, and Widow Pension Scheme have availed the facility. Under Cattle Shed scheme, 22 households were entitled but only 2 households had availed this facility.

7.2 Perception about Government schemes

- All the beneficiaries have reported 100 per cent satisfaction about these scheme. None of the beneficiary household have reported any dissatisfactions over implementation of these schemes. While during discussion, the villagers have suggested for complete coverage of village under these schemes those who are eligible as per prescribed norms.

7.3 Participation in Local Governance

- Out of total households, 39 per cent of member of households had participated in the meetings of Gram Sabha and Gram Sansad whereas remaining household members could not participate in Gram Sabha meeting may be due to their busy schedule of field work, uneducated and due to old age. Around 6.33 per cent household persons had approached to elected representatives like Panchayat/MLA/MP for village and panchayat development related issue. About 74 per cent household persons were satisfied with that elected representatives have addressed their issues and tried to solve their problems willingly.
- The relative status in the village power structure across the caste category group was mostly dominated by General Hindu followed by OBCs while SC and STs are having poor status in village power structure. Thus, despite of drastic changes in village, the power formula has not changed so far.
- The reasons for the one sided power structure and status in the society were poor economic conditions of SC and ST population along with no political affiliation as such as well as qualification. While during the field survey, all the respondents have denied any incidence of deprivation on the accounts of caste, gender or any association with political party.
- All the respondents have reported that they approach their friend in case any advice is require on livelihood specific issue, contact relatives in case of social related issues, consult friend and relative in case of educational matter and visit advocate and friends to seek advice on legal issues.

7.4 Socio Economic Problems in Village

- The major problems narrated by the villagers are no sewage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, GYM facility, no employment opportunity available, Non availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers.

7.5 Major suggestion for improvement /development in Village

- The suggestions for improvement of village were given by the respondents which are as: need to assure availability of work under MGNREGA with high wage rate, construction of sewage line, proper bus stand facility with barricades, expansion of village roads and fixing of lights on roads, college education and library facility APMC market in village, four lane highway with over bridge facility, public library, sport complex and gym facility, more coverage under PMAY scheme and purchase of crop produce by Govt at MSP.

8. Conclusions

Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties. After getting the canal water, farmers from Punjab have migrated in to this village area which makes half each of Punjabi and Rajasthan population and mix language. A large number of immigrants especially from Punjab have had a marked influence on the behaviour and social thinking of the native villagers and were instrumental in the changes in various traditional customs of village. Though the crop pattern during both the surveys was food crop oriented irrigation has contributed towards a gradual shift in area from food to non-food commercial crops. Last but not the least important change in the crop pattern was with regard to the introduction of altogether new crops like oil seeds cotton and sugarcane; also, rajko and mixture of jowar and maize were taken as fodder crops for the first time in the post bench mark period. The Herfindahl index value is being relatively low implies a significant level of diversification in the Study area. Though the village economy has remained predominantly agrarian, the relative importance of cultivation in terms of number of households primarily dependent on it in the occupational structure of the village has gone down. In 1961-62, 76 per cent of the village households followed cultivation as primary occupation which dropped down to 65 per cent in 1968-69 and further down to 38 per cent in 2019-20. The basic amenities expansion in village has reached to satisfactory level in current survey and villagers are aware about self-hygiene and cleanliness. The major problems narrated by the villagers are no swage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, GYM facility, no employment opportunity available, Non availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers. There is urgent need to address these issues for further development of village.

Introduction

1.1 Introduction

“India lives in its villages” – Mahatma Gandhi. This famous observation was made by the ‘Father of the Nation’ many years ago, still holds true. As per Census 2011, 68.9 per cent population of country (i.e. 833.7 million) was residing in villages and same is estimated to be 65.53 per cent in 2019 (i.e. 891.2 million¹). India is the second most populous country in the world behind China with total population of 1.385 billion (on December 6, 2020) and it is projected that by 2031, India will most likely overtake China to become the most populous country in the world with 1.47 billion people². Though the share of population residing in rural area has declined from 82.7 per cent in 1951 to 68.9 per cent in 2011, absolute number of rural population may cross 900 million figure in near future. With two-thirds of India’s billion-plus people living in villages, jump-starting the economic engine of rural India will have a multiplier effect on investment, consumption, government expenditure and exports. Thus, it is quite undisputed fact that socio-economic development of a country still lies in the multidimensional development of its villages.

The villagers comprise the core of Indian society and also represent the real India. In order to ensure that the fruits of India’s progress are shared by all sections of the society and India’s economy to be strong, the rural economy needs to grow. The government has identified several elements of social and economic infrastructure, critical to the quality of life in rural areas and is working towards it. Over the years, the Indian government has introduced several schemes that have not only helped the Indian citizens improve their economic situations, but have also addressed their physical needs. However, rural areas are still plagued by problems of malnourishment, illiteracy, unemployment and lack of basic

¹ <https://www.worldometers.info/world-population/india-population/>

² <https://thewire.in/government/india-population-growth-government-report-2036-projections-urban-migration>

infrastructure like schools, colleges, hospitals, sanitation, etc. This has led to youth moving out of villages to work in cities. This could be compared to the brain drain from India to United States and other developed countries. Our villages need to grow in tandem with cities and their standard of life has to improve for inclusive growth to happen. If rural India remain poor, India remains poor. The state and union governments as well as its critics recognized that India lives in its villages and the growth and transformation of the economy needed an accurate knowledge of the rural context. Therefore, village studies are important as it provides the working of various existing agrarian and other associated socio-economic institutions governing the village life and drivers of changes. It also provides with insight into the pace with which villages transform and adapt to changing environment and developments and integrate with urban areas.

India has a long record of village surveys and resurveys, since pre-independence period to the post-independence period, which witnessed a sharp increase in the interest among social scientists, economists and policy formulators in village surveys across India. This was partly in response to the need felt by the state and union governments to have a reliable and accurate information on socio-economic and political configurations in the rural context to facilitate the process of economic growth and change that it planned for, but the interest was also sustained by the fact that the critics of state and union government policies provided a central place to the rural context in the scheme of village survey studies. During the span of 10 years since independence, the union government and other institutions have been sponsoring researches on the conditions and structure of rural India and on the management and economics of farming etc. wherein, these data appeared to be and useful source of basic information about villages. Thus, it is this realization that led to a spate (series) of village surveys by various Agro-Economic Research Centres of the Ministry located at different States of India, one among them is our Centre.

1.2 Brief Review of the Literature

Village Surveys are the usual and common method of collecting data from the rural areas in India. Basically, village survey and the socio-economic survey

tools are designed to collect information as a means of improving understanding of local resource management systems, resource use and the relative importance of resources for households and villages. It also provides information on interaction with the government decision-making systems and community perceptions of trends and priority issues. Besides, knowledge about community-based institutions, which is also obtained through survey, and their roles in the sustainable use and conservation of natural resources, which helps to facilitate or reinforce a consensus on land tenure and rights for the region, now and in the future.

In order to undertake intensive studies for various topics covered in the first publication of society viz., "The Indian Rural Problem", Indian Society of Agricultural Economics undertook the first village study in 1946 entitled 'Bhuvel: Socio-Economic Survey of a Village, in the Charotar area of Baroda district of the erstwhile Baroda State (ISAE, 1959). Two trained research workers were sent to the village for field investigations and they remained there for nearly a year. The object of the survey was to study the village life in entirety—with its social, economic and other aspects which make up the complex texture of village life and administration. This study was carried out with the co-operation of the various departments of the erstwhile Baroda Government. The inquiry covered all the 208 families in Bhuvel. All the seventeen castes in the village were fully represented in the inquiry. The study made an intensive inquiry of the economic conditions of 96 families. An important feature of the enquiry was a special medical survey of 803 persons forming nearly 80 per cent of the total population of 1,070, classified according to their caste and sex. The survey also examined the social life of the villagers and their social customs. Full data were collected about the customs of all the castes and the expenses incurred by them at various times on social and religious occasions. The Gujarat Vidhya Sabha of Ahmedabad published the original Gujarati version of the report. An abridged English edition of this study was published by the Society in 1949.

Another study conforming to this group is Bhadkad—Social and Economic Survey of a Village: A Comparative Study, 1915-55. The Indian Society of Agricultural Economics undertook the re-survey of the village Bhadkad in Petlad

Taluka of the Kaira District in 1955. The original survey was conducted about 40 years ago, personally by Shri Manilal B. Nanavati, President of the Society, under the direction of the late His Highness the Maharaja Sayajirao Gaekwad of erstwhile Baroda State. It was a very comprehensive one and the papers of the survey were available with the President. The object of re-survey is to find out and analyse the changes in the socio-economic conditions of the people during the period of 40 years since 1915. The re-survey of Bhadkad was originally prepared in Gujarati by Shri N. S. Parikh, specially appointed for the purpose. As this main study was rather comprehensive and bulky, it was thought desirable to publish a brief report in English, summarizing the main results. This summary outlines the major findings of the two surveys and presents a fairly comparative view of the conditions of the village during two points of time, viz., 1915 and 1955. The English edition of the re-survey was published in October, 1957.

Bhatt (1964) conducted the bench-mark surveys of Naurangdesar village of Hanumangarh tehsil of Sri Ganganagar district in the year 1962 (covering data year 1961-62) (Bhatt, 1964). After a lapse of about seven years the village was resurveyed by for the year 1968-69 and then sort visit was conducted in April 1973 and resurvey report was summited in 1974 (Brahmbhatt, 1974). Brahmbhatt (1974) noted that in a predominantly agricultural economy (with more than 70 per cent of the population, depending on agricultural pursuits) the importance of irrigation as a catalytic agent of agricultural development is obvious. Its importance is further enhanced in an underdeveloped arid economy where rain fall is scanty, uneven and undependable both as a protective and productive measure. In this part of Rajasthan, known as Thar Desert, the water table was low and the water was brackish which makes it unsuitable either for domestic use or for irrigation purpose. This has created a necessity for canal irrigation. In ameliorating the economic conditions of the people of this famine stricken area, the Rajasthan canal has a major part to play. The canal seeks to transform a vast tract of the great Indian desert into a prosperous, fully developed region humming with agriculture, industry and commerce. The starting point of the Rajasthan canal is in Hanumangarh tehsil. When completed in 1978-79 the canal benefits the areas of Sri Ganganagar, Bikaner and Jaisalmer

districts. In these areas, the land man ratio was favourable. This area is inhabited by Jats, Sikhs and Bagdis who are known for their strong physique and vigour. The Rajasthan canal irrigated about 3570 acres of land in 1961-62. By 1968-69, the area irrigated by the canal was about 245900 acres, representing nearly a seventyfold increase. By 1975-76, it was expected to irrigate about 987880 acres. During resurvey, the canal encompasses in its command area a population of nearly 1.05 lakh persons. It was projected that in 1978-79, it will cover about 20 lakh persons, when completed. It is clear, therefore, that lakhs of people have vitally affected by the likely changes in the wake of canal construction. An intensive study of a village economy from this point of view help us in understanding the content and direction of change that is likely to take place.

Brahmbhatt (1974) further mentioned in report that Naurangdesar distributary, from where Naurangdesar village receives water, is the first distributary to get water from the Rajasthan canal. From head to tail, the total length of this distributary is 26 miles. It discharges water from its 20 minor and sub-minor outlets. The distributary was designed with an ultimate capacity of 405 cusecs but since the Rajasthan canal was only in its first stage it could draw 440 cusecs of water and could provide irrigation to 18,626 acres of land in 1968, as against only 3482 acres of land in 1961-62. The distributors are expected to irrigate 64,590 acres of land in 1975-76. However, till the year of our resurvey the canal was seasonal. The full impact of the canal has yet to be felt due to the following reasons: (1) at this stage the canal is only seasonal, (2) the initial investment for irrigated farming being more, only the better off cultivators have taken full advantage of irrigation, and (3) the close relationship between the canal authorities and the beneficiary farmers has not yet been established. The major force of change studied in this village was irrigation available, from the Rajasthan canal. The object of selecting the village was to study the overall change, in particular the change in agriculture, dairying and in the labour market. The resurvey results revealed certain interesting changes which have taken place in the economy during the interval between the first and the follow up survey. The canal has given both direct as well as indirect benefits. Direct benefits were in terms of additional farm production as a result of irrigation. Whereas indirect

benefits were in the form of higher rate of investment in agriculture and ancillary activities, more employment opportunity and the improvement in the standard of living of the people as a result of their higher income levels. A much more significant, though intangible, benefit that it provides was a sense of security among the farmers. It was also stabilized agriculture. The problem of drinking water has also been solved since the canal authorities supplied water to the village pond whenever it was depleted.

Sen and Ghoshal (1976) presented a case study on village situation in India and reorganisation of its agricultural resources. Authors noted that one-time community organisation and self-generating economy of the village, based on social consciousness and full employment through division of labour, have broken down. This has resulted in unemployment and under-utilisation of resources, leading to poverty, loss of self-reliance and stagnation. The pilot experiments have clearly brought to light the possibility of restoring the generating character of the village by reorganising its own resources of men and materials with the aim of improving the personality (skill) and social attitude of its people through productive action programmes.

Tshjita and Oda (2014) examined the labour out migration based on the results of village surveys and found that not every poor household engages in migration activities. Migration opportunities are unevenly distributed and some households have no access to such opportunities. This is a critical issue as these households are then restricted to their villages where employment opportunities are scarce and they might not have enough agriculturally viable land to enable them feed the members of their household, instead being forced to survive utilising only whatever means are available in the village economy. Thus, it is important to examine the factors that keep poor villagers from leaving their villages.

Tripathi (2020) conducted village resurvey study in Uttar Pradesh covering Khatangiya Village (situated in the Trans-Yamuna tract of Bara Tehsil under Jurisdiction of Jasra development block in Allahabad district, which was surveyed in the year 1964-65) with an aim to create a longitudinal panel data set, to capture the socio-economics of the village. This study revealed that there was a

change in the population of the village by 382.59 per cent during current resurvey over last survey. The literacy has increased from 38.62 per cent in last survey to 68.98 per cent in the current resurvey. The family size in the survey was 9 and in the current survey it was 5. The educational status among the males and females both has been improved considerably. Reading competency was comparatively higher among boys than that among girls. The arithmetic competency was superior among boys of private schools. The majority of children both boys and girls were in severely underweight category of BMI in Khatangiya village. Vulnerability experienced due to climate extremes was sometime high, moderate and low in the village. To combat with price-crash, reliefs were adopted by Government, NGOs and individuals. The change in composition was 70 per cent from others to yamunapari breed of goat during 2014-19 in Khatangiya village. OBCs and general castes were cultivators and dominating. Land-use pattern has changed significantly over the period. Cropping intensity was estimated to be 200 per cent and irrigation intensity was 100 per cent. The farm household income was the lowest in livelihood groups.

Kajale and Suryawanshi (2021) has conducted village survey study in Maharashtra covering Gulumb village (situated in Wai taluka of Satara district) which was surveyed in the year 1976. The study results observed the considerable progress in terms of civic amenities and infrastructure available, number of households with access to basic civic amenities, technology used in the village for communication and construction, and definitely points at improvement in living conditions of the village households of Gulumb as compared to earlier period as captured in 1976 survey. Increasing level of education and school enrolment in case of females, increasing share of household members as well as household income in nonfarm activities, occupational diversification and increasing integration with the urban areas are some of the important changes that have taken place at the household level over the years. The analysis however also reveals economically vulnerable position of marginal, landless, scheduled caste as well as Muslim households as compared to other household categories. The policy implications arising from the study reveal need to focus on provision of adequate and clean drinking water and irrigation facilities, proper garbage

collection and disposal system and closed drainage system. It is felt that provision of quality education, vocational guidance, uses of environmental friendly technologies, digital technologies and local area development strategies for creation of job opportunities would enhance overall standard of living of the village households.

The review of literature indicates the changes in institutional and infrastructure facilities, land ownership and land use patterns, population size and migratory patterns, gender equations, income levels, etc. The village life reported during the 1960s and 1973s have changed a lot wherein importance of agriculture in livelihood has come down along with changes in cropping pattern, crop diversification as well as high rate of literacy and unemployment. Besides, drastic decline in average size of land holdings due to fragmentation of land is worrisome fact. Thus, national policies need to be framed keeping in view the future course of phenomena that would be observed in the villages.

1.3 Need and Scope of the Present Study:

The village society is characterized as a highly static society and village people excessively immobile. However, this kind of common understanding has undergone a tremendous change with the introduction of Five-Year Plans and the revolution in mass media. The earlier village life, which did not have any political and economic power, has now acquired adult franchise, democracy and accelerating transformation. During the last five decades, rural societies have witnessed massive changes. The village life today has reached a stage, where the glamour of urban life has made inroads in villages. It is in this context; it is important to have resurvey of villages surveyed earlier.

Villages were obviously witnessing a great deal of social, economic and political transformation, but these villages were also remained as a good deal of the old baggage. Moreover, one also witnessed a tremendous amount of diversity with each displaying its own specificities. It was obviously clear that such a complex reality with its dimensions of the continuity and changes, the general and the specific openness and territoriality could not be captured adequately by the secondary data generated by the various government departments or by the data

generated through population censuses or through large scale nation-wide surveys done by the surveys of National Sample Survey Organizations, although these data could serve the essential purpose of understanding the broad general purpose of larger contexts.

There are various initiatives are taken by the Government over the last seven decades or so for the development of various aspects of rural life. The latest one initiative is 'Shyama Prasad Mukherji Rurban Mission' in 2016 aimed at developing rural area by provisioning of economic, social and physical infrastructure facilities.

Since the primary unit of the rural economy is the village, it was felt that periodic surveys and resurveys of selected villages exposed to the various forces of change might be of some help in understanding this process of change. In order to fulfil this objective, this Centre, in the earlier phase of its development, initiated a number of village studies both in Gujarat and Rajasthan state. Total 21 village surveys and 4 village resurveys are conducted by the Centre in the past which were used in policy formulations.

In view of above, the present study entitled "Village Survey Study in Rajasthan- Naurangdesar village, Sriganganagar/Hanumangarh District", was conducted with the following main objectives:

1.4 Objectives of the present study

- a) To create a longitudinal panel dataset, to capture the socio-economic dynamics of the village. The purpose was to assess the pace, process and pattern of rural change by means of repeated surveys in the selected village followed by the re-survey of the same villages at an intervals of 5 years and.
- b) The focus was on agricultural changes and changing pattern of rural livelihoods and its implication for future development. The study also evaluated the efficacy of government interventions in rural areas and key drivers of changes in village economy.

1.5 Background Information about the Survey

The present village resurvey work was undertaken in the village of Naurangdesar of Hanumangarh tehsil of Hanumangarh³ district (earlier Sriganganagar district) of Rajasthan which was first surveyed in 1964 and then re-surveyed in 1974. This is third report and second re-survey report of same village. This village is located in canal zone of Rajasthan located in Hanumangarh taluka of Hanumangarh district of Rajasthan.

The construction of Rajasthan Canal, a major irrigation project undertaken for the vast arid tract of Rajasthan, was expected to emerge as one of the most important forces of change in that region. In order to have a glimpse of the content and direction of the phenomenal changes likely to take place in the economy of this region, a bench mark socio-economic survey of village located within the command area of this irrigation project, i.e. Naurangdesar village of the Sriganganagar district was purposively selected for the bench mark survey which was undertaken for the year 1961-62 (Bhatt, 1964). A mimeographed project report of this survey was released in the year 1964-65. This village was again resurveyed in the year 1968-69. However, the work of preparing the project report was delayed because of certain other pressing assignments with the centre. Therefore, the work of preparing the draft report could be taken up only in the year 1976-74. The delay in finalizing the report gave thought that 1968-69 resurvey picture would a little outdated and therefore in order to have some idea about the latest conditions prevailing in the village, it was decided to prepare an observation note based on a quick third point survey of the village. The first note appearing in this report, "Naurangdesar Revisited: 1972-73", was prepared after a brief visit to this village in the month of April 1973 (Brahmbhatt, 1974). The note has been prepared on the basis of the secondary data available as well as one the spot observations made in the village.

This project report is unique in the sense that it attempts to provide a view of the changing village scene at four points of time. It is true that some of the data collected for these surveys are not strictly comparable partly due to some

³ It was made as district on 12 July 1994 from Sri Ganganagar district. Earlier it was one of the tehsils of Sri Ganganagar district.

differences in the methodology adopted and partly due to some variations in the responses of the human factor involved in such survey work. It is also true that certain comparisons made in this study can be regarded as only approximate based as they are mainly on the observations of the research worker with whatever supporting evidence that was available. In view of the above limitations, the available comparative data will have to be interpreted and used with caution. The project leader has indicated the limitations of the available data at relevant places in order to facilitate such a comparative study over a period of time.

1.6 Historical Profile of the Village

Naurangdesar⁴ is a village in Hanumangarh tehsil in Hanumangarh district of Rajasthan State, India. It belongs to Bikaner division. It is located on Hanumangarh Jaipur Highway and 30 km towards East from district headquarters Hanumangarh and 388 km from State capital Jaipur. Hanumangarh town which is not only the tehsil as well as district headquarter of this village but also an important marketing centre and a railway junction on Delhi Ganganagar meter gauge line is at a distance of 22 kilometres in the north of this village. Naurangdesar is surrounded by Tibbi tehsil towards East, Pilibanga tehsil towards west, Sangaria tehsil towards North, Sadulshahar tehsil towards North. Hanumangarh, Pilibanga, Sangaria, Sadulshahar are the nearby Cities to Naurangdesar. This village was without irrigation facilities before getting water through Indira Gandhi Canal sometime in 1960s before which Centre has conducted village survey in 1964. Prior to the introduction of irrigation, the region was part of under-developed arid zone with no tank or well irrigation facility. This area was having sand dunes⁵ which were levelled to make land suitable for cultivation after getting assured canal water. The region which receives scanty and precarious rainfall (of average 260 mm per year), is inhabited by hardy Jat people. The passing river Ghaggar river is another option available to fetch water for agriculture purpose mainly during rainy season which brings water level up in nearby wells and tube wells. After getting the canal water,

⁴ Naurangdesar Pin code is 335524 and postal head office is Rawatsar (Hanumangarh).

⁵ which can be now seen in Tibbi tehsil of Hanumangarh.

farmers from Punjab have migrated in to this village area which makes half each of Punjabi and Rajasthan population and mix language. The whole village is divided under NDR14 and NDR 15. The village is in group Gram Panchayat having nine revenue villages, viz. 11NDR, 13NDR, 14 NDR (CAD), 14NDR (CAD RAHIT), 16NDR, 17 NDR, 20 NDR(A), 1MWM, 3MWM. Naurangdesar distributary is the first among the distribution channels forming part of the Rajasthan Canal system which is 26.4 miles long. Masitawadi from where the Rajasthan canal feeder ends and the canal starts is 16 kilometres away from this village. The ancient 'Bhatner fort' is situated on the bank of river Ghaggar which was built in 253 CE by Bhupat, son of king Bhati of Jaisalmer is located about 30 km from the selected village.

1.7 Scheme of Chapters:

The present report is organized in eight chapters. The first chapter discusses the background, rationale, review of literature and objectives of the study. The coverage, sampling design and conceptual framework of the study have been discussed in Chapter II. The third chapter presents the overview of study village which covers village profile, livelihood and migration status, agriculture status of village, developmental institutions and infrastructure, cultural profile of the village as well as uniqueness of the village. The social dynamics of village are presented in Chapter IV which includes demographic profile of village, distribution of population and households in village, educational status as well as food security issues in village. Chapter V presents economic status of village having focus on occupation and employment pattern, agrarian status and income composition of village. The issues related ecology, vulnerability and sustainability are presented in Chapter VI. The details on various Government schemes, input use, crop varieties and composition of livestock is presented Chapter VII. The last chapter presents the summary, concluding observations and policy implications of the study.

The next chapter presents the details on data and methodology adopted in the study.

2.1 Introduction:

This chapter presents the details on the data sets used and methodology adopted for the selection of sample households and statistical tools used for the data analysis.

2.2 Definitions and Concepts:

The definition of variables used and concepts noted in the report are adopted as per definitions of concerned recognized government agency and commonly been used in literature is presented below:

2.2.1 Village, House, Household and Family (Terms Used in Indian Censuses¹)

2.2.1.1 Census House:

The term 'house' in India covers the greatest diversity of dwellings. In 1961 census 'House' was defined as a structure or part of a structure inhabited or vacant, or a dwelling, a shop, a shop-cum-dwelling or a place of business, workshop, school, etc. with a separate main entrance. In 1971 census, 'House' was defined 'as a building or part of a building having a separate main entrance from the road or common courtyard or stair case etc. used or recognised as a separate unit. It may be inhabited or vacant. It may be used for a residential or non-residential purpose or both.

2.2.1.2 Family or Household:

The household or family was first defined in 1872 as comprising of those who lived together and ordinarily cooked at the same hearth including their servants and visitors. In 1881 Census, it was defined as comprising of all those persons who actually slept in the house or compound on the night of 17th February, 1881. From 1891 till 1941 the term 'family' was used in place of Household. From 1951 Census onward again the concept of household was used

¹ https://censusindia.gov.in/data_products/library/indian_perceptive_link/census_terms_link/censusterms.html

in Indian Censuses. In 1971 Census, a household was defined as 'a group of persons who commonly live together and would take their meals from a common kitchen unless the exigencies of work prevented any of them from doing so.

2.2.1.3 Village Area:

Village or Town is recognised as the basic area of habitation. In all censuses throughout the world this dichotomy of Rural and Urban areas is recognised and the data are generally presented for the rural and urban areas separately. In the rural areas the smallest area of habitation, viz., the village generally follows the limits of a revenue village that is recognised by the normal district administration. The revenue village need not necessarily be a single agglomeration of the habitations. But the revenue village has a definite surveyed boundary and each village is a separate administrative unit with separate village accounts. It may have one or more hamlets. The entire revenue village is one unit. There may be un-surveyed villages within forests etc., where the locally recognised boundaries of each habitation area is followed within the larger unit of say the forest range officer's jurisdiction.

It is in defining the Urbans areas that problems generally arise. However, for the 1971 Census the definition adopted for an urban area which follows the pattern of 1961 was as follows:

- (a) all places with a municipality, corporation or cantonment or notified town area
- (b) all other places which satisfied the following criteria:
 - (i) a minimum population of 5,000.
 - (ii) at least 75% of the male working population was non-agricultural.
 - (iii) a density of population of at least 400 sq. Km. (i.e. 1000 per sq. Mile)

The Director of Census of each State/Union Territory was, however, given some discretion in respect of some marginal cases, in consultation with the State Govt., to include some places that had other distinct urban characteristics and to exclude undeserving cases. All area other than urban are rural². The basic unit for rural is the revenue areas is the revenue village.

² https://censusindia.gov.in/2011-prov-results/paper2/data_files/kerala/13-concept-34.pdf

The National Sample Survey Organisation (NSSO) defines 'rural' as follows:

- An area with a population density of up to 400 per square kilometre,
- Villages with clear surveyed boundaries but no municipal board,
- A minimum of 75% of male working population involved in agriculture and allied activities.

2.2.2 Land Holdings, Holder and Size (terms used in Agriculture Censuses³)

2.2.2.1 Operational Holding:

All land which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others without regard to the title, legal form, size or location.

2.2.2.2 Operated area:

Operated area includes both cultivated and uncultivated area, provided part of it is put to agricultural production during the reference period. If, for instance, an operational holding consists of four survey numbers out of which one survey number is put to non-agricultural uses, the total area of the operational holding will be equal to the total geographical area of all the four survey numbers.

2.2.2.3 Operational holder:

A person who has the responsibility for the operation of the agricultural holding and who exercises the technical initiative and is responsible for its operation. He may have full economic responsibility or may share it with others. The operational holder may be Individual/Joint/ Institutional.

- i) Individual: If the holding is being operated either by one person or by a group of persons who are the members of the same household, such holding will be considered as an individual holding.
- ii) Joint: If two or more persons belonging to different households, share jointly as partners in the economic and technical responsibility for the operation of an agricultural holding, such holding will be considered as joint holding.
- iii) Institutional: Holdings such as government farms, farms of sugarcane factories, cooperative farms, lands managed by trusts would be treated as institutional holdings.

³ <http://agcensus.nic.in/document/definition.htm>

2.2.2.4 Size classes and broad Size groups of Holdings:

The data are presented at all India level and for all states and union territories in the following size classes and size groups of operational holdings

Sr. No.	Group	Sr. No.	Classes (in ha.)
I.	Marginal	1.	Below 0.5 ha.
		2.	0.5 – 1.0 ha.
II.	Small	3.	1.0 – 2.0 ha.
III.	Semi-medium	4.	2.0 – 3.0 ha.
		5.	3.0 – 4.0 ha.
IV.	Medium	6.	4.0 – 5.0 ha.
		7.	5.0 – 7.5 ha.
		8.	7.5 – 10.0 ha.
V.	Large	9.	10.0 – 20.0 ha.
		10.	20.0 and above.

2.2.2.5 Land unit used in Study Area

- Land block equals to 25 bighas is called as one Murrabas
- 4 bighas= 1 hectare

2.2.3 Workers, Cultivators, Agricultural labour (Terms used by labour Bureau⁴):

2.2.3.1 Workers:

Workers were mainly classified as main and marginal workers on the basis of their work. Those workers who had worked for the major part of the year were termed as main workers. Major part of the year means six months (183 days) or more. Those who had not worked for the major part of the year (i.e. those who had worked for less than 6 months or less than 183 days in a year) were termed as marginal workers.

2.2.3.2 Cultivator:

A person was considered working as cultivator if he or she was engaged either as employer, single worker or family worker in the cultivation of land owned or held from Government or from private person or institution for payment in money, or in kind or on the basis of sharing of crops. Cultivation also included supervision or direction of cultivation. A person who had given out his/her land to another person or persons for cultivation for money, kind or share of crop and who did not even supervise or direct the cultivation of land, was not

⁴ <http://labourbureau.gov.in/WL%20K5-6%20Chap%201.htm>

treated as cultivator. Similarly, a person working on another person's land for wages, either in cash or in kind or a combination of both, (agricultural labourers) was not treated as cultivator.

2.2.3.3. Agricultural Labour

A person who worked on another person's land for wages in money, kind or share of crop was regarded as an 'agricultural labourer'.

2.2.3.4 Household Industry:

Household Industry was defined as an industry conducted by the head of the household himself or herself and/or by the members of the household at home or within the village in rural areas and only within the precincts of the house where the householder lives in urban areas. The larger proportion of workers in household industry consists of members of the household including the head. Household industry relates to production, processing, servicing, repairing or making and selling of goods.

2.3 Data Base:

This study is based on both primary and secondary level data. The secondary data were collected from the government publications (Primary Census Abstracts, Agricultural Census, Livestock Census, etc.), online databases and published reports and research papers and related websites. The required secondary data were also collected from the offices of State, district, tehsil, development block, village and village level institutions. The primary data were collected from the village households of selected village by survey method through five types of survey schedules.

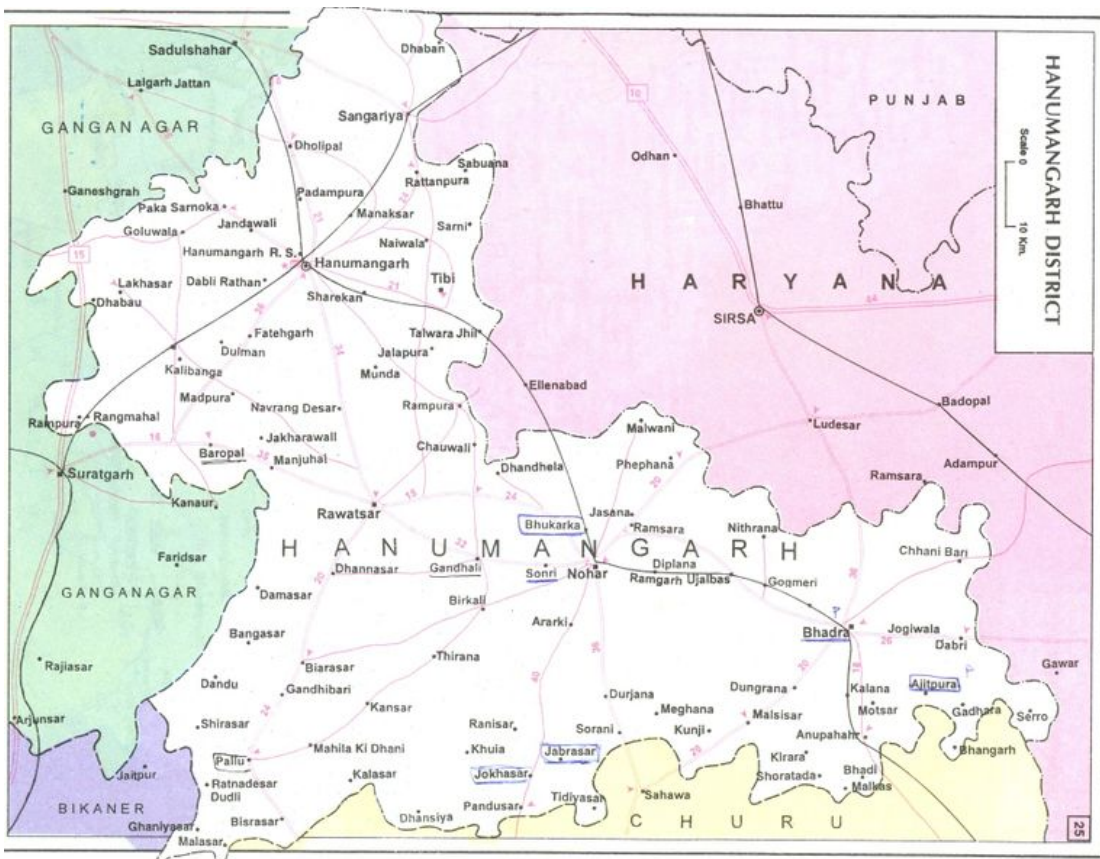
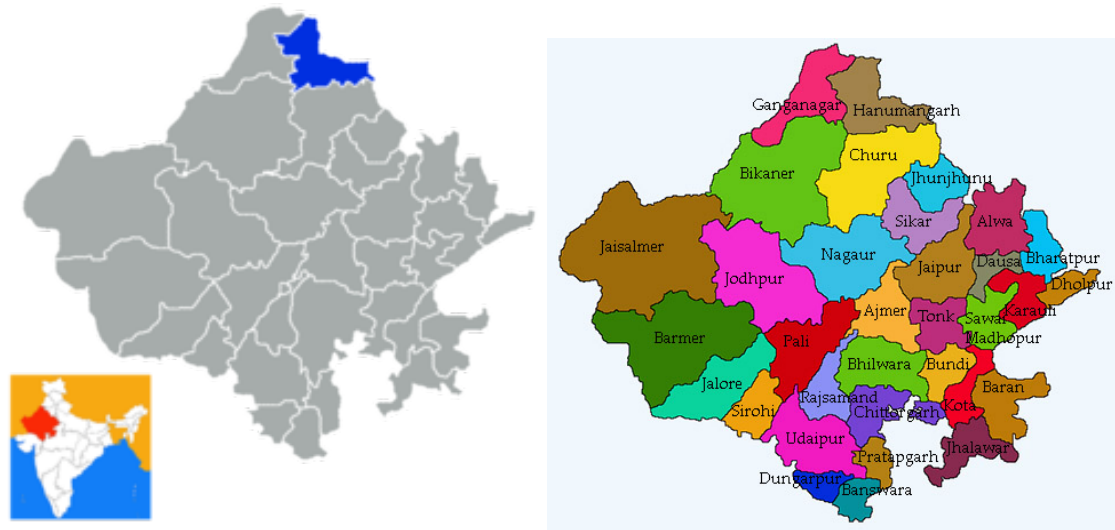
2.4 Sampling Design

2.4.1 Criteria for Selection of the Village:

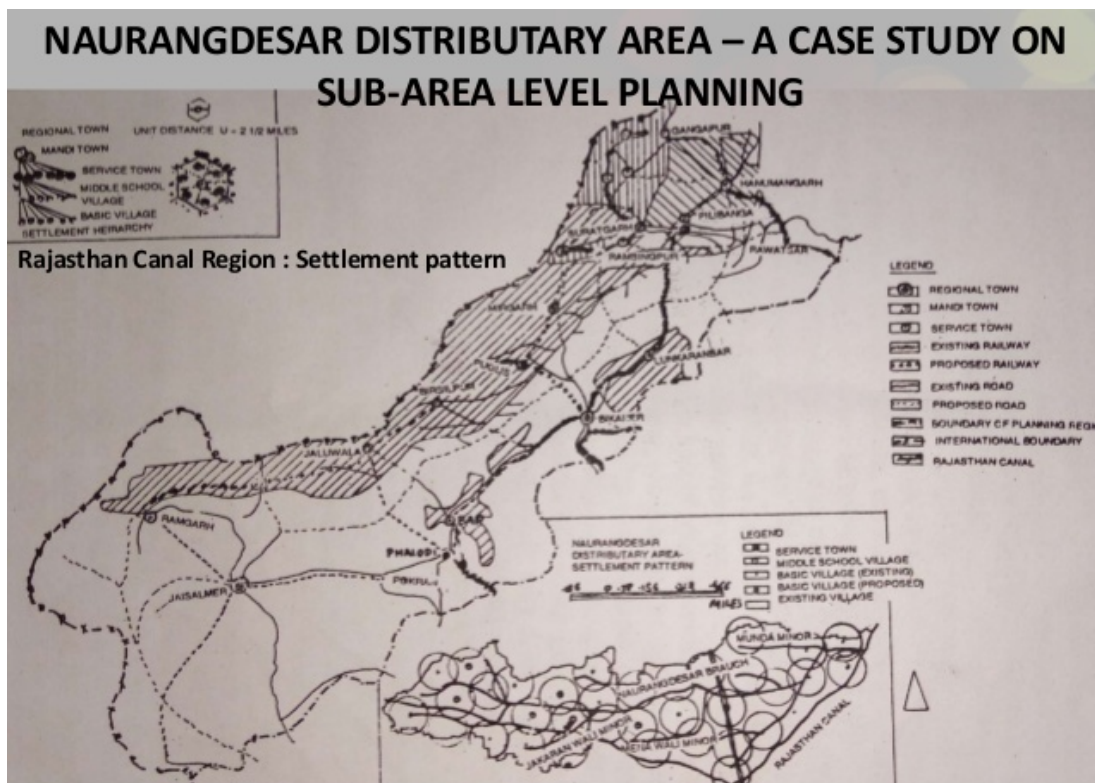
As per the study designed suggested by the Coordinator of the study, one village from the list of villages already surveyed before and was moderately developed was selected. Accordingly, Naurangdesar village was selected as same village was surveyed in the year 1964 and further resurveyed in 1974 (Map 2.1 &

2.2). Before undertaking the field survey work, visit was made to define the study area in view of development occurred during last five decades or so.

Map 2.1: Location of Study Area in Rajasthan State



Map 2.2: Naurangdesar Distributary Area in Rajasthan State



2.4.2 Criteria for Selection of households:

As per the study designed suggested by the Coordinator of the study, village census method was adopted to cover minimum 300 households⁵. As selected village Naurangdesar has developed a leaps and bound and spread overs 'chaks⁶', the study area covered under earlier village survey was also considered under this survey, i.e. Naurangdesar Distributary Area 14 and 15, of which NDA 15 area is land under cultivation, thus residential area of NDA 14 was covered which was total number of households of 775 (as per Census). As per the methodology, village census was conducted and proportionate sampling was attempted to restrict the total sample households to 300 households. Though the village data indicate that 775 households are there but most of the households found to be having divided into two-three households within single household for ration card and other benefit use purpose. Thus, village census noted 300 households which covers almost 90 per cent of total households in the village.

⁵ During the first visit to village, list of the households was prepared wherein it was observed that same household have more than one household, thus actual number of owner of households found much lower than number of households reported.

⁶ Chak, a Punjabi word, is the land revenue settlement/assessment circle marking a contiguous block of land

2.5 Survey Approach

2.5.1 For Village Level Information:

During the course of resurvey work during the year 2019-20, all the village functionaries of Village Panchayat such as Sarpanch, Gram Secretary, Village Revenue Officer (Patwari), Gram Sevak, Aagan Wadi workers, School teachers, Officers of Primary Health Hospital, and Rozgar Sevak were consulted and data were collected from them. Also personal observations of the hamlets of village Naurangdesar was keenly done by the survey-team. The village information covers historical profile of village, village profile, demographic profile, livelihood/employment and migration status, agriculture status of village, developmental institutions & infrastructure, village infrastructure, cultural profile of the village and Others facilities such as library, ICDS centre, tube wells/piped water supply, agro-processing (mills/forms/factories), play grounds, illegal activities, government schemes (name & coverage), occurrence and frequency of natural calamities (flood/drought/cyclone/other), severity of damage due to natural calamities & coping measures and adaptation strategies by the government, non-government & other stakeholders as well as uniqueness of the village.

2.5.2 For Group Level Information:

The information was collected through Group discussion on frequency and exposures to shocks, degree of hardship faced, main coping strategies at household level, adaptation strategies by different stakeholders, natural disaster management and relief operations during last five years, Besides, information was also collected on depth of ground water table in the village; number of ponds, dug wells, tube-wells & deep tube wells; pollution in the ground water and/or surface water; list of varieties of major crops cultivated in the village and changes in crop varieties cultivated; proportion of indigenous & improved cattle and changes in the composition; marketing channel & procurement system in the village (crops, milk, fish, other village produces); land tenure systems and changes; major farming systems (contract, co-operative, peasant, family, ranching, organic, etc.); mass/group perception about any caste/gender/political

deprivation in the village, in rainfall pattern, heat/cold waves, air pollutions in the village during last 5 years, incidence of disease and medical expenditure in the village during last 5 years year and opinion about the driving forces of such changes.

2.5.3 For Household Level Information:

A structured schedule was prepared with the objective of collecting information relating to socio-economic status of the households and their perception about rural change. Household level information includes general information about family members in household, socio-economic status of the households, ownership of assets, income and expenditure details, savings and borrowing, governance and policy issues, changes in cropping pattern and changes in village.

2.6 Dimensions Covered:

The village survey data covers various dimensions such as social, economic, agrarian, farming, ecological and policies. If resurvey then also include social change; demographic change, agrarian change; livelihood changes; economic changes; and ecological changes. In all the areas the driving forces of changes are identified.

2.7 Analytical Tools:

2.7.1 Tabular analysis

Simple tabular analysis was used for data analysis. SPSS 20 data analysis package was used for data analysis. The statistical tools like mean, standard deviation, standard error and 't' test were used for data analysis.

- **Percentage change:**

Simply comparison was made on the basis of percentage

In the present study the percentage change has been worked out with the help of following formula:

$$\text{Percentage change} = \frac{\text{New value} - \text{Old value}}{\text{Old value}} \times 100$$

In case if the result is positive, it is an increase and if the result is negative, it is decrease. The value during 2018-19 is new value and the value during 1964-65 is old value.

- **Arithmetic Mean** or Mean of the group:

The formula for mean is as stated below:

$$\bar{x} = \frac{\sum x}{N}$$

Here, \sum , represents the summation/total

X , represents scores/Values/Observations

N , represents number of scores/observations.

2.7.2 Diversification indices

The nature of crop diversification examined through changes in allocation of land for the cultivation of various crops grown over a year to measure the degree of diversification different diversification indices have been used. There are several Indices which can be used to measure of the extent of crop diversification at a given point of time. Herfindahl Index was used in present study to measure the crop diversification.

Herfindahl Index: Herfindahl index is commonly use index as which was computed by taking sum of square of area proportion of each crop in the total cropped area.

$$\text{Herfindahl Index} = \sum_{i=1}^N P_i^2$$

Where N is the total number of crops and P_i represents acreage proportion of the i^{th} crop in total cropped area. With the increase in diversification, the Herfindahl Index would decrease. This index takes value one when there is a complete specialization and approaches zero as 'N' gets large i.e. if the diversification is perfect. Thus the Herfindahl index is bounded by zero and one. It is a measure of concentration; it is transferred by subtracting from one i.e. $1 - H.I$ which also knows a Simpson Index ($1 - HI$). The transferred value of H.I. will avoid confusion to compare it with other indices.

Entropy Index: Entropy index is regarded as an inverse measure of concentration having logarithmic character. The index would increase with the increase in

diversification and it approaches zero when there is perfect concentrate i.e. when P_i equals one. The upper bound of the index is $\log N$. However, the base chosen for taking logarithms and the number of crops determines the upper limit of Entropy Index. The upper value of the index can exceed one, when the number of crops is higher than the value of the logarithms base, and it can be less than one when the number of crops is lower than the base of logarithms.

$$E.I. = \sum_{i=1}^N P_i \text{Log} (1/p_i)$$

Modified Entropy Index (M.E.I.): MEI is used to overcome the limitation of Entropy Index by using variable base of logarithm instead of fixed base of logarithm. The M.E.I., however, is equal to $E.I./\log N$. It is worth mentioning that the base of logarithm is shifted to N number of crops. This index has a lower limit equal to zero when there is complete concentration, and it assumes upper limit of one in case of perfect dispersion, i.e. it is bounded by zero and one.

$$M.E.I. = - \sum_{i=1}^N (P_i * \text{Log}_N P_i)$$

2.7.3 Gini Co-efficient & Lorenz Curve

The Gini index, or Gini coefficient, is a measure of the distribution of income across a population. A higher Gini index indicates greater inequality, with high income individuals receiving much larger percentages of the total income of the population. The coefficient ranges from 0 (or 0%) to 1 (or 100%), with 0 representing perfect equality and 1 representing perfect inequality. Values over 1 are theoretically possible due to negative income or wealth. The Gini index is often represented graphically through the Lorenz curve, which shows income (or wealth) distribution by plotting the population percentile by income on the horizontal axis and cumulative income on the vertical axis. The Gini coefficient is equal to the area below the line of perfect equality (0.5 by definition) minus the area below the Lorenz curve, divided by the area below the line of perfect equality. In other words, it is double the area between the Lorenz curve and the line of perfect equality.

2.7.4 Body Mass Index⁷ (BMI) of Children

Health and nutrition for kids is an important and complicated issue⁸. As kids grow it becomes difficult for parents to find out whether their children are maintaining the right weight and height proportion and fall in healthy weight range or not. BMI or body mass index help to know whether child maintain a healthy life. It will also help to learn whether child is on the risk of developing any health problem in near future or not. Although it does not measure the body fat directly, it helps you calculate the fat in the body.

BMI is a measurement of a person's leanness or corpulence based on their height and weight, and is intended to quantify tissue mass. It is widely used as a general indicator of whether a person has a healthy body weight (kgs)for their height (meter). Specifically, the value obtained from the calculation of BMI is used to categorize whether a person is underweight, normal weight, overweight, or obese depending on what range the value falls between.

$$\text{Body Mass Index (BMI)} = \frac{\text{Body weight (kgs)}}{\text{Height (meter)}^2}$$

BMI categories for adults in Kg:

1. Severely underweight = less than 16.5 kg/m²
2. Underweight = 16.5 kg/m²to less than 18.5 kg/m²
3. Normal weight = 18.5 kg/m²to less than 25 kg/m²
4. Overweight = 25 kg/m²to less than 30 kg/m²
5. Obesity = 30 kg/m²and above.

As child's body develops and changes rapidly, this is why a standard adult BMI chart will not work⁹. Instead to keep track of whether child is the correct weight for their height, doctors use another chart. They start with a standard BMI calculation based on your child's height and weight. The BMI value is then used to determine how your child compares to other children of the same age and gender. This is done with the help of percentages and percentiles. BMI-for-age percentile shows how your child's weight compares to that of other children of

⁷ <https://www.calculator.net/bmi-calculator.html?ctype=metric&cage=5&csex=m&cheightfeet=5&cheightinch=10&cpound=160&cheightmeter=100&ckg=14&printit=0>

⁸ <https://www.indiaparenting.com/what-parents-should-know-about-bmi-for-kids.html>

⁹ <https://www.hdfclife.com/financial-tools-calculators/bmi-calculator>

the same age and sex. For example, a BMI-for-age percentile of 65 means that the child's weight is greater than that of 65% of other children of the same age and sex. BMI was estimated online using website <https://www.calculator.net> for percentile level of each student BMI.

BMI Category for children	Percentile Range
Underweight	<5%
Healthy weight	5% - 85%
At risk of overweight	85% - 95%
Overweight	>95%

2.7.5 ASER toolkit for reading and arithmetic competency

ASER stands for Annual Status of Education Report. This is an annual survey that aims to provide reliable annual estimated of children's schooling status and basic learning levels for each state and rural districts in India. In the present study the levels of reading competency and arithmetic competency of the children (age group of 6-12 years) by sex, caste and schools, were studied with the help of ASER toolkit test provided by the coordinating center as give below.

Fig. 2.1: ASER toolkit test used in selected village of Rajasthan

नगमा समझदार लड़की थी। मगर उसका छोटा भाई अमन बहुत नटखट था। एक दिन दोनों बाज़ार में घूम रहे थे। अमन ने रास्ते में पकौड़े देखे। उसे पकौड़े बहुत पसंद थे। माँ उसके लिए पकौड़े बनाती थी। नगमा ने कहा यह पकौड़े तीखे होंगे। मगर अमन नहीं माना। अमन ने पकौड़े खाए और उसकी आँखों से आँसू निकलने लगे।

रात हो गई है।
चौंद दिख रहा है।
तारे भी चमक रहे हैं।
सब लोग सो गए हैं।

न प म
च स
थ ग द
र ल

आग सोच
ताला
गिर पानी
मौका धुन
देश
पैसा बूढ़ा

अंक पहचान 1-9		संख्या पहचान 10-99		घटाव		भाग
5	7	74	23	63 - 44	51 - 35	7) 898
8	4	91	86	92 - 48	71 - 35	4) 659
2	9	24	79	45 - 27	34 - 19	8) 946
3	1	37	61	43 - 29	46 - 17	6) 757
		58	14			

2.8 Limitations of the Study

As mentioned in introductory chapter, first survey was conducted in the year 1964 and resurvey was conducted in 1974 and the main focus was only on socio-economic and agrarian aspects particularly. In the present village resurvey study, apart from the major aspects, all other issues pertaining to climatic, ecological, surface and ground water, malnutrition, educational, demographical, sex- ratio, literacy, rehabilitation and relief measures, governance schemes, public distribution system, health and hygiene, etc. have been included in detail which have made this study more comprehensive. But its comparison with earlier survey data sets was not possible. Due to Corona Pandemic 2019 and subsequent Lockdown situation, village survey work was delayed as well as was conducted in fearful situation wherein villagers support was not at required level. Also the school were not in operation in fully and thus ASER toolkit test was not conducted. Thus, some data were collected from the Headmaster of the School. Thus, some of the data collected for these surveys are not strictly comparable partly due to some differences in the methodology adopted and partly due to some variations in the responses of the human factor involved in such survey work. It is also true that certain comparisons made in this study can be regarded as only approximate based as they are mainly on the observations of the research worker with whatever supporting evidence that was available. In view of the above limitations, the available comparative data with have to be interpreted and used with caution. The project leader has indicated the limitations of the available data at relevant places in order to facilitate such a comparative study over a period of time.

2.9 Chapter Summary:

The chapter presented the various concepts used in this study, data base, sampling design, survey approach, different analytical tools and limitations of the study.

The next chapter presents overview of the selected village.

An Overview of Study Village

3.1 Introduction

In order to know the changes in various parameters of the village, it is important first to have an overview of said village. This chapter presents the village profile, livelihood/employment and migration status, agriculture status, status of developmental institutions and infrastructure, cultural profile of village and other related aspects.

3.2 Village Profile:

3.2.1 Geographical and Administrative Location of the Village

As mentioned in introductory chapter, the village Naurangdesar is situated in Hanumangarh tehsil of Hanumangarh district in Rajasthan which is located 30 km towards East from Hanumangarh district headquarter and about 388 km from State capital Jaipur. This village is well connected with highway from Hanumangarh to Jaipur. Naurangdesher village is located between Latitude 29°23'40" North and Longitude is 74°22'6" East in Rajasthan. The Naurangdesar Gram Panchayat is located in Hanumangarh tehsil and this panchayat is group of 9 villages as, thus group gram panchayat which are named on the basis of Canal distribution point includes 11 NDR, 13 NDR, 14 NDR (CAD), 14 NDR (RAHIT), 16 NDR, 17 NDR, 20 NDR-A, 1MWM and 3 MWM.

The earlier survey and resurvey was conducted in Naurangdesar¹ village covering the year 1961-62 (survey period 12.08.1962 to 20.12.1962- published in 1964), 1968-69 and short visit in April 1973 (published in 1974) from 14 NDR village which was not developed and popularised in that time. The second resurvey work was conducted in same 14 NDR (CAD), 14 NDR (RAHIT) locations to capture new developmental aspects which would reflect the changes happened during the last 52 years long time period. Masitawadi from where the Rajasthan

¹ 14 NDR-CAD Village with Census of India Village-code 067884 is located in Hanumangarh Tehsil of Hanumangarh district in Rajasthan, India.

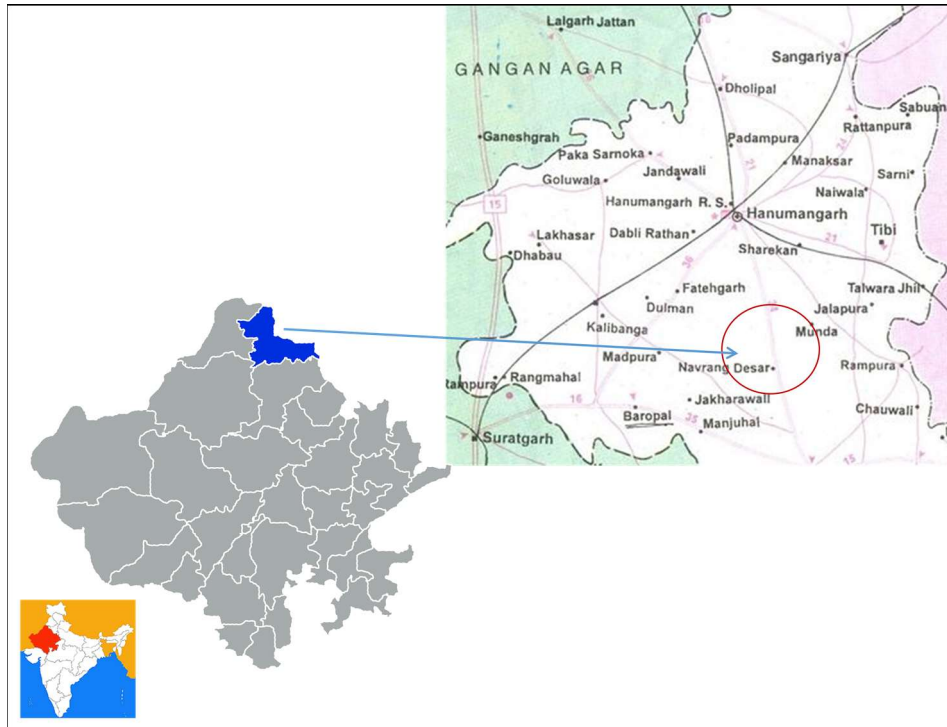
canal feeder ends and the canal starts is 16 kilometres away from this village. The details on the geographical and administrative location of selected village is presented in Table 3.1 and location of selected village is presented in Map 3.1.

Table 3.1. Geographical & Administrative Location of the Village

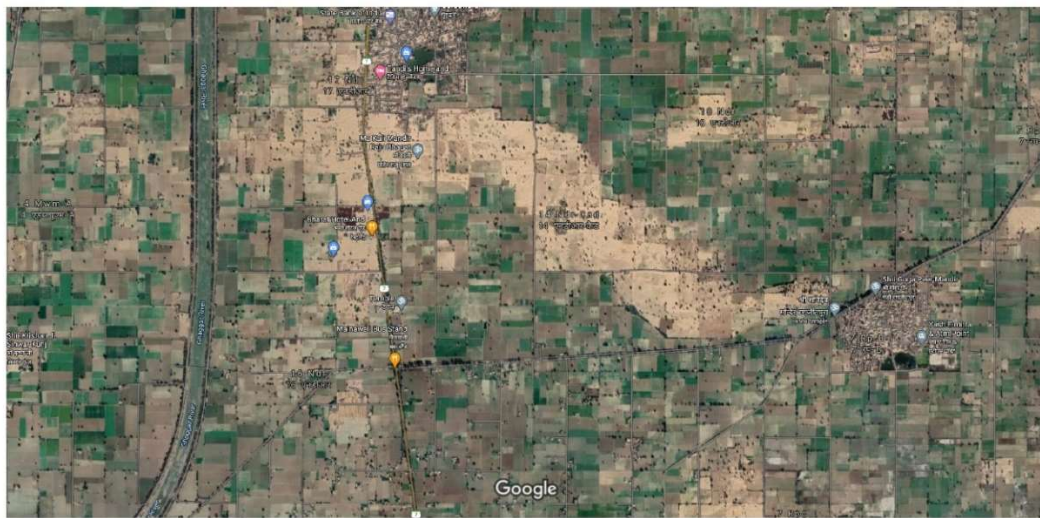
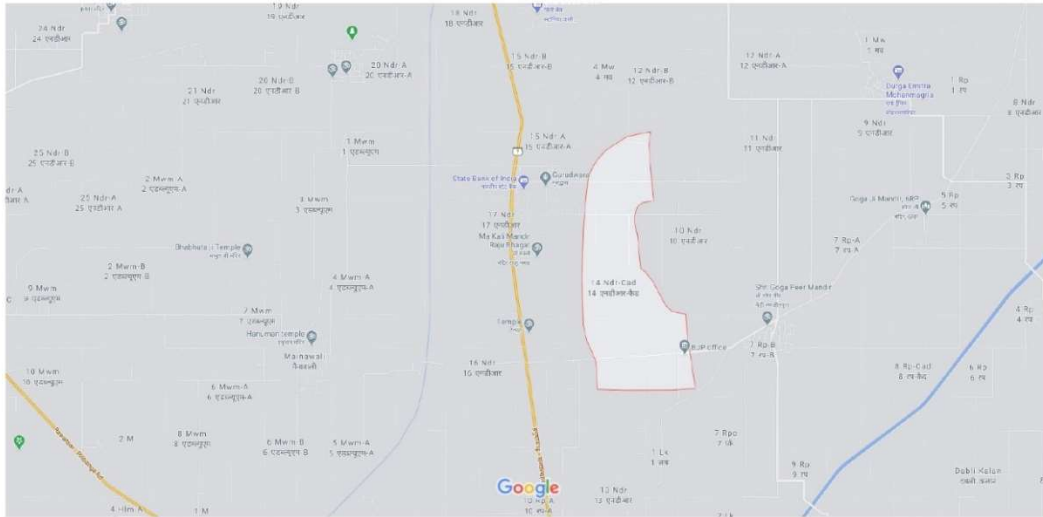
Sr. No.	Particulars	In 2019-20	
1	Location Code (as per 2011 Census)	067884	
2	Geographical area of the village*	434.35 ha	
3	Total Households	775	
4	Total Population ²	3846	
5	Post Office and Pin Code	Naurangdesar, 335524	
7	Gram-Panchayat	Naurangdesar	
8	Assembly Constituency	Hanumangarh	
9	Parliament Constituency	Ganganagar	
10	Block/Tehsil	Hanumangarh	
11	District	Hanumangarh	
12	State	Rajasthan	
13	Location	Latitude 29°23'40"N	Longitude 74°23'6"E
14	Nearest Primary School (with distance)	Naurangdesar	
15	Nearest Secondary/Higher Secondary School (with distance)	Naurangdesar	
16	Nearest College (with distance)	Rawatsar, 18 Km	
17	Nearest Health Centre/Hospital (with distance)	Naurangdesar	
18	Nearest City or Town (with distance)	Rawatsar, 18 Km	
19	Nearest Railway Station (with distance)	Hanumangarh, 30 Km	
20	Nearest Airport (with distance)	Jaipur, 318 Km.	

Note: *NDR Cad + NDR CAD RAHIT

Map 3.1: Location Map of Selected Village



² See Appendix I.



3.2.2 Climate and Rainfall

The climate of this region is largely arid, that turns extremely hot during the summer and extremely cold during winter. The climate of the district is semi-arid to arid except south-west monsoon season during the period June to mid of September, which is followed by post-monsoon period till the end of November. The winter season is from the months of December to February and is followed by summer from March to June. The mean daily maximum temperature varies from 20.5°C during January to 42.2°C during June while mean daily minimum temperature in the district varies from 4.7°C during January to 28.1°C during July. The normal annual rainfall during the period 1968-1971 has been reported between 100mm to 371 mm. In recent years, the average annual rainfall per annum is reported to be 227 mm and varied from 195 mm to 325 mm. The details

on av. rainfall, temperature, wind speed, sun hours and pressure is presented in Tables 3.2 & 3.3, Fig. 3.1. The district experiences either mild or normal drought once in two years. Severe drought has also been recorded frequently. Such a low rainfall during different years explains the decisive role the canal irrigation to play in the economic life of the people in the command area.

Table 3.2 Rainfall in Hanumangarh Tehsil (In Millimeters)

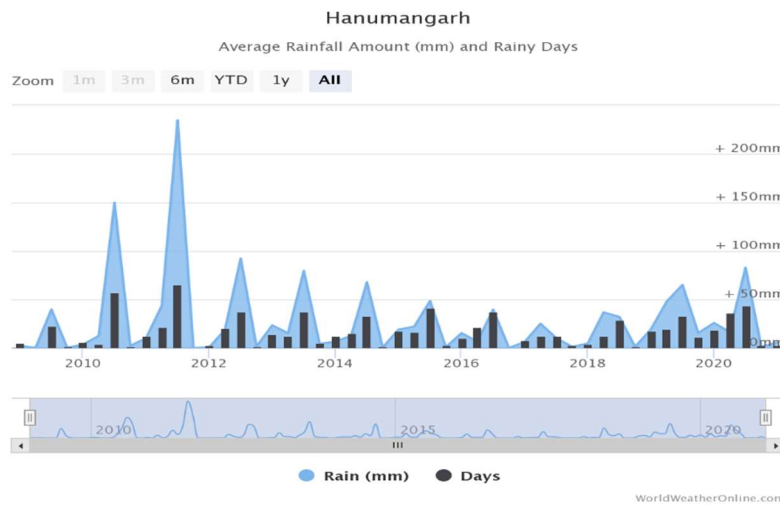
Year	Rainfall
1968	252
1969	100
1970	371
1971	117
1972	239
2014	233
2015	325
2016	195
2017	208
Average rainfall per annum	227

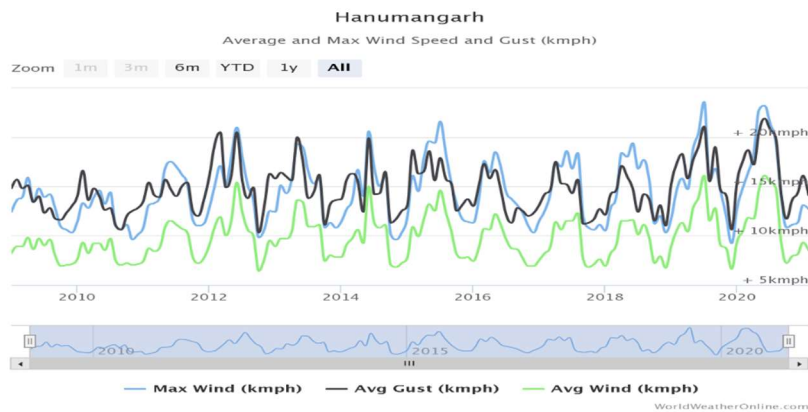
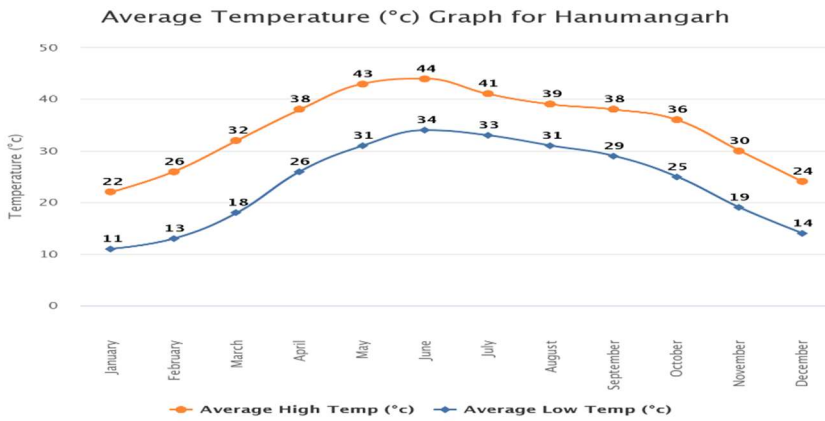
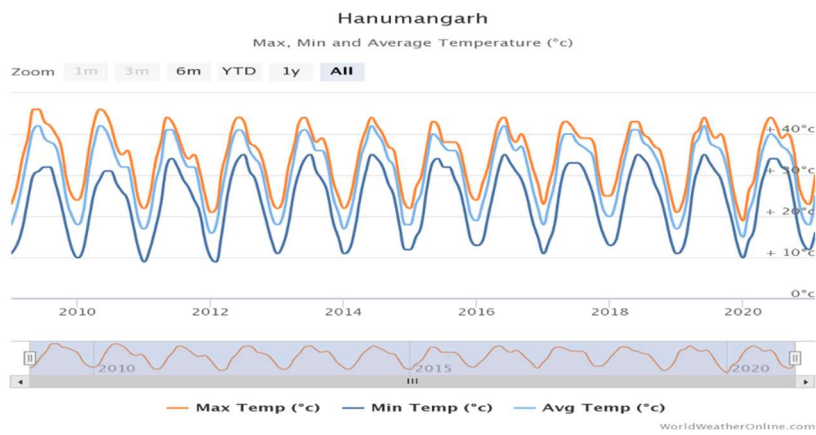
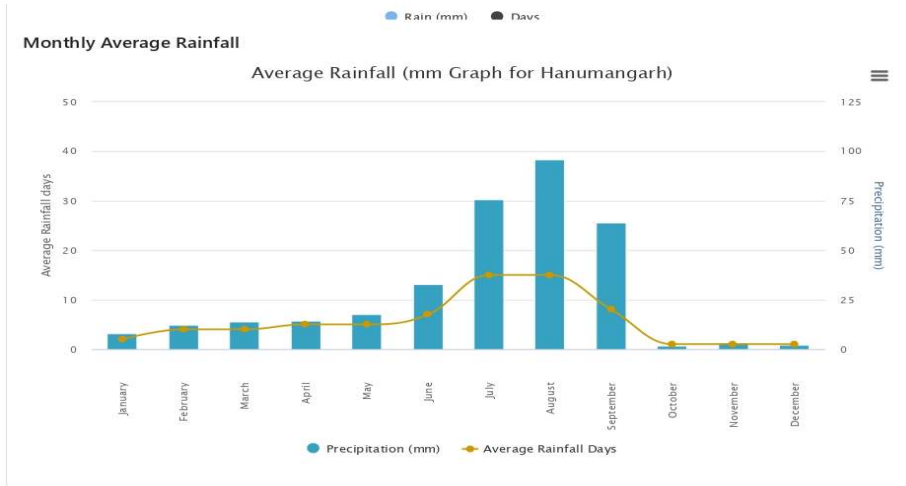
Source: Office of the Tehsildar office, Hanumangarh

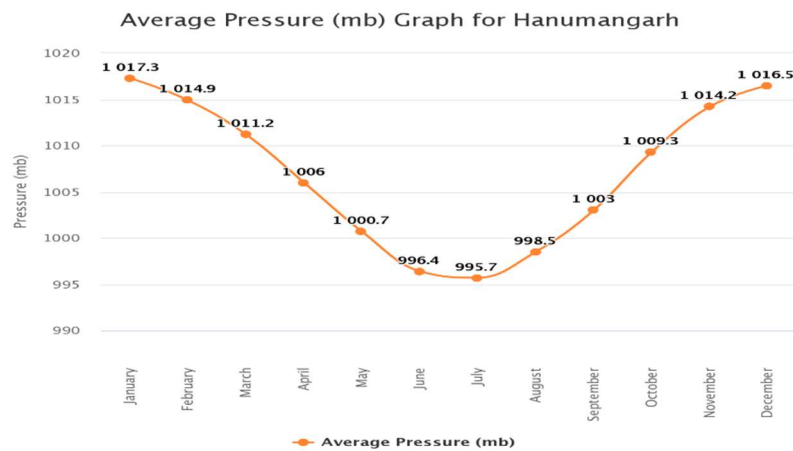
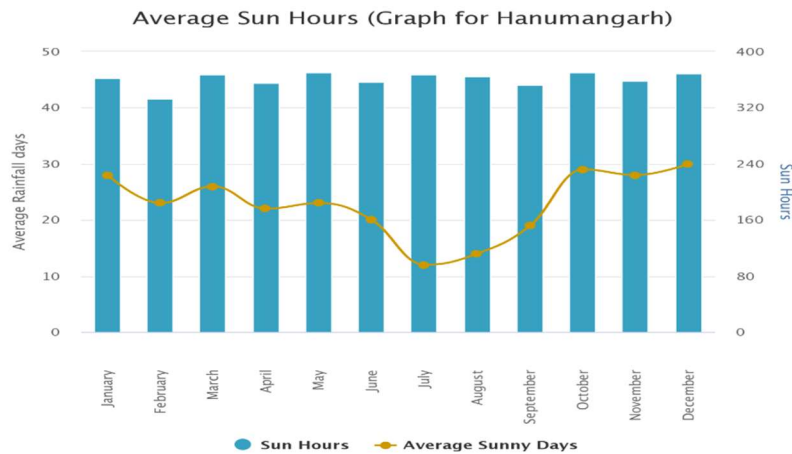
Table 3.3: Temperature at Sri Ganganagar during 1961 to 1968 (in centigrade)

Year	Maximum	Minimum
1961	45	+ 1.0
1962	NA	NA
1963	45	+ 2.0
1964	46	-1.0
1965	46	-1.0
1966	46	+1.0
1967	46	-1.0
1968	47	+2.0

Fig. 3.1: Av. Rainfall, Temperature, Wind Speed, Sun hours and Pressure at Hanumangarh







Source: <https://www.worldweatheronline.com/hanumangarh-weather-averages/rajasthan/in.aspx>

3.2.3 Soil

The district is endowed with rich sandy loam soil and is well drained with moisture retaining characteristics which is very much helpful for the production of food and cash crops. The Nahari type of soil is available in canal command areas while the soil of unirrigated land is termed as Nali, Rohi and Dhora, Rabi crops are sown in Nali type of soil on which rain water during monsoon leaves moisture while Rohi is less fertile and Dhora is the uncultivated barren land with sand dunes. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. It was observed at the time of resurvey that all farmers are in command area and this enable the farmers to grow crops like cotton and wheat.

3.2.4 Communication: Telecommunications

In any economy, telecommunications networks play a crucial role in widening the market and reduction of transaction costs by enabling the

ubiquitous and speedy spread of information, and thereby helps in the development process. The government of Rajasthan is actively working on developing the telecommunication networks in the state by providing vertical and horizontal communication corridors to strengthen the administration system. For this it has initiated setting up a Rajasthan State Wide Area Network (RajSWAN) to establish the communication infrastructure in the state. There was the highest marked improvement in the postal and telecommunication facilities in the village. Today, selected villages have more than one mobile in every household and also have television facilities. Newspapers and magazines are playing an important role in giving and taking information to people. Daily newspaper arrives in more than 30 per cent of households. Naurangdesar village have one telecommunication centre and one post office branch.

3.2.5 Transportation facilities: Road/Rail/Others

Naurangdesar village is well connected with road transport and it is situated on Hanumangarh- Jaipur state highway. Rajasthan State Road Transport Corporation (RSRTC), Rajasthan Lok Pariwahan Bus Seva and Private bus facility available for transportation. On the whole, the well-developed and convenient mode of transport available near the very doors had exposed the village to all exogenous changes taking place around it. It has made the mobility of villagers, as well as the marketing of goods, easy and cheap.

Rail facility is available in Hanumangarh district headquarters and Hanumangarh city is connected all-important cities of state as well as country with broad-gauge rail facility. It is well connected with other cities like Jalore, Jaipur and Agra. Few trains such as Delhi-Jaisalmer Express, Guwahati-Bikaner Express, Rishikesh to Barmer Link Express and Kalka- Barmer Express are available from Delhi, Kalka, Haridwar and Guwahati for Hanumangarh District.

Airport: The nearest Airport from Hanumangarh is at Chandigarh Airport, roughly five and half hour drive from the city.

3.2.6 Natural resources: Forest/Rivers/Pond/Wells/Flora & Fauna

As per village paper and population census records, Naurangdesar village has no area under forest coverage. Most of the area of the village is sandy and thus scarcity of water has resulted in a little vegetation. After assure availability

of water through Indira Gandhi Canal, a portion of the district has been planted. The flora in the village has been positively undergoing transformation with completion of the canal and increased irrigation facilities. However, vegetation available on sand dunes where shrubs is like "Aak", "Bawali", "Gekhru", grow sparsely over some of the undulating sand dunes. The Alluvium soil in the famous Ghaggar bed is also sparsely strawn with vegetation which generally grows species like Methi, Bathua, Loni and Farash. Trees like Kikar, Babool, Moouj, weed are also been grown in the irrigated area. The representative Flora of the district is Beri-Beri, Kair, Khejri, Rohira, Lona, Sajji and Thor, etc. This vegetation has multiple uses such as fodder for animals and raw material for medicines. Pigeons, Crows, Sparrows, Peacocks and Parrots are the birds commonly found in the Village. Among poultry birds, hens and cocks are found reared in village. Among the game birds are Batbar (*Pteroeles exustus* and *Pterocles Orienta lies*) and Titar (*Francolinus Pondicerianus*). Imperial and Desi sand grouses, quauls, Kunj and gilor are also found. In the canals and distributaries, the species of fish viz. labeo, rohit, mastacembelus armatus, and barbus tor are found while toads (*Bufo*) and frogs (*Rana*) are common especially after rainy season.

The Ghaggar River locally known as Nali is an ephemeral one (Fig. 3.2). It sometimes gets flooded during the monsoon. The canals irrigation is done mainly through Indira Gandhi Canal Project (IGNP) and Mashitawali Head Project. In some of the area of the district the irrigation from Ghaggar canals are also available after the renovation Bhakra canals project which has become helpful for increasing the irrigational facilities to a greater extent.

At the time of bench-mark survey and resurvey, the villager's had experienced acute shortage of drinking water. They had to store rainy water in big ditches dug out in land and the water had to be rationed out most carefully. As against this dismal picture prevailing during survey and resurvey period, the post bench-mark period brought about relief from water scarcity. The drinking water availability was provided by Public Health Irrigation Department in village. Total water connection in village was approx more than 500 and department provided drinking water on the basis of 3 or 4 days in week on rotation basis. The irrigation water department received water from Naurangdesar distributary and total

storage capacity of three tanks is 21500 KL and two pump house was involved in distribution of water.

Figure 3.2: Ghaggar River dry bed in February month near Naurangdesar village, Hanumangarh tehsil



3.2.7 Demographic Profile of the Village

3.2.7.1 People:

Naurangdesar village is situated in tehsil Hanumangarh, Hanumangarh district of Rajasthan. As per Census 2011, total population in village was 3846, of which 53.09 per cent was male population and 46.91 was female population (14 NDR CAD and 14NDR CAD Rahit). Total geographical area of Naurangdesar village is 434.35 hectares. Population density of Naurangdesar village was 9 persons per sq. kms. Total number of households in village has been increased by 125 percent during 1973 to 2019, i.e. from 342 in 1971 (during last survey) to 775 in 2019 as per 2011 census.

As per the Census Data 2011, there were 890 females per 1000 males which was lower than sex ratio reported all State level (928 females) in 2011. Total working population of in village was 1952 which were either main or marginal workers. Out total workers, 59 per cent were male and 41 were female workers. Total main workers were 1597 out of which female main workers were 31.68 per cent and male main workers were 68.32 per cent. Total marginal workers of village were 18.2 per cent of total workers in the village (Table 3.4).

Table 3.4: Demographic Profile of the Village

Sr. No.	Particulars	In 1971 Census		In 2019 (as per Census 2011)		Changes	
		(during last survey)		(during current survey)		Male	Female
		Male	Female	Male	Female		
1	Number of households	342		775		126.61	
2	Total Population	1093	954	2042	1804	86.83	89.10
	Adult	635	539	1750	1580	175.59	193.14
	Child (0-6)	458	415	292	224	-36.24	-46.02
3	Scheduled Caste	377	338	841	724	123.08	114.20
4	Scheduled Tribe	0	0	43	43	100.00	100.00
5	Total Workers	632	0	1152	800	82.28	100.00
	Main Worker	594	0	1091	506	83.67	100.00
	Marginal Worker	38	0	61	294	60.53	100.00
	Cultivator	470	0	489	115	4.04	100.00
	Agricultural Labourer	48	0	331	165	589.58	100.00
	Workers in household industries	0	0	16	8	100.00	100.00
	Other workers	76	0	255	218	235.53	
6	Non worker	461	954	890	1004	93.06	5.24
7	Literate population	207	23	1306	844	530.92	3569.57
8	Illiterates population	886	931	736	960	-16.93	3.11
9	Literacy (%)	18.94	2.41	63.96	46.78	45.02	44.37
10	Sex ratio	-	872	-	890	-	2.06

Source: Census data.

3.2.7.2 Religion

In the Naurangdesar village, Jat Hindus and Jat Sikhs are two important communities while Scheduled Caste families are found in good number in both Hindu and Sikh communities and only few households were found from Scheduled Tribes. Muslim and Christians households were not found in village. The majority of the households were from Hindu religion followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines and Sikh shrine Gurudwara. Most of the Hindus belongs to Jat community and some other are like Suthar, Arora, and others. In Sikhs household, most of households are from Jat Sikh community and good number of houses were found from SC Sikhs families which were migrated from Punjab and Haryana state when IGNP canal system was started operating in Rajasthan. Naurangdesar distributary is first canal system which was launched in early 70's in Rajasthan.

3.2.7.3 Village Settlement Pattern

The elderly villagers maintained that a man by the name of Naurangram, who came from Jat community, was the first settler and that the village had taken his name. As per census 2011, about 241 per cent increase in number of household has been estimated over 1961 census figures, i.e. from 217 in 1961 to 775 in 2011. Also the population has increased by 264 per cent, i.e from 1057 in 1961 to 3846 in 2011. Village population has variety of different communities, but the Jats, Sikhs and Scheduled Castes accounted for the bulk of the households and agriculture was their main occupation. At the time of Survey work in 1964, due to shortage of irrigation facility, only rainfed crops were grown. Now, after availability of canal water, the crop diversification has been reported which has resulted in increase in income from crop cultivation. Most of houses are Pukka in nature having cemented houses. It was found even during the resurvey that houses were built in straight lines and different caste group households clustered in their own localities.

3.2.7.4 Literacy

Out of total population, 55.9 percent population was reported literate, while across the gender, rate of literacy was higher for male (63.96 per cent) than female in the village (46.78 per cent).

3.2.7.5 Poverty

Poverty was the important reason reported during both surveys conducted in 1964 and 1974 for not sending children to school. This factor was suggested for 26 per cent of the children in 1961-62 and for 36 per cent in 1968-69. Sixty-five per cent of the children belonging to the school going age group were from scheduled caste Hindu and 89 per cent from scheduled caste Sikh households did not attend school due to poverty of their families. The data on poverty estimates for 2011 was not available.

3.3 Livelihood/Employment and Migration Status

3.3.1 Livelihood /Employment

The livelihood of the village is mainly based on agriculture and animal husbandry activities along with support of rural artesian trade especially leather crafts, wood, and caste based profession, and wool established in the village. The rearing of livestock is being done at large scale i.e. each household has two to three milch animals. In general, each household has its own transport facilities and some of farmers are also rearing of camel. The details on new recruitments of village youth reported in Government undertakings are presented in Table 3.5

Table 3.5: New recruitment in government jobs (in last 5 years) in village

New recruitment in government jobs (in last 5 years) in village	No.
PTI (Physical Teacher)	14
IIIrd/PRT Grade Teacher	06
II /TGT Teacher	05
I/PGT Teacher	04
Patwari	02
Gram Sevak	01
Agriculture Supervisor	02
Constable in Police	03
RAS officer in Allied services	01
Army (Soldier GD)	01
LDC	01
Bank PO/Clerk	01+01

3.3.2 Primary/Secondary/Tertiary livelihoods

In the panchayat village Naurangdesar, about 80 per cent of total households were reported their livelihoods from agriculture and agricultural labourers (as their primary occupation) while 7 per cent get their livelihoods from trade and business as secondary occupation and 4.5 per cent had got their livelihood from Government jobs.

3.3.3 Pattern of Migration:

Out of the total peoples of village only 9 percent were reported migrated to nearby town and other states for outside jobs during the year 2018-19.

3.4 Agriculture Status of the Village

3.4.1 Land Utilization Pattern

Land use is the manner and extent to which land is put to use. It may also be referred to as the human use of land. Land use is the modification of the natural environment into, settlements, road, rail networks, other infrastructure, agriculture, forests, wetlands, wastelands, etc. The reporting area of Naurangdesar village for land utilization is 96.6 percent of the total geographical area (434.35 ha) of the village. The net sown area accounted for the highest share of 83.68 percent with an area of which 90 per cent area is irrigated. Table 3.6 presents the details on land use classifications.

Table 3.6: Land Use Pattern in the Village (Unit: ha)

Particulars	Last survey (as per Census 1971)		2019 (as per Census 2011)	
	Area in ha	% to GA	Area in ha	% to GA
Geographical Area	485.80	100.00	434.35	100.00
Agricultural/ Cultivable Land				
Net Sown Area (NSA)	367.84	75.72	363.46	83.68
Uncultivated area	0.00	0.00	0.00	0.00
Barren Land	0.00	0.00	0.00	0.00
Forest Area	0.00	0.00	0.00	0.00
Pasture and Grazing Land	0.00	0.00	0.00	0.00
Cultivable Waste	1.21	0.25	0.00	0.00
Misc. Trees & Crops	2.00	0.41	0.00	0.00
Current Fallow	114.56	23.58	4.53	1.04
Area under Non-Agricultural Uses	0.00	0.00	66.36	15.28
Others	0.00	0.00	0.00	0.00
Net Irrigated Area	111.33	22.92	327.59	75.42
% area under irrigation (to NSA)	30.27	30.27	90.13	90.13
Main sources of irrigation	Canal		Canal	

As per Census 1971 records, the total geographical area of village was reported to be 484.5 ha and net sown area was 267.84 ha. As per 2019 Land records as well as Census 2011 records, the total geographical area was 434.35 ha. This may be due to reallocation of area among Chaks. The main important picture was depicted in table 3.6 that near about 90 percent area was irrigated by canal while in earlier survey this was just 30 percent of NSA which was possible only due to availability of irrigation facilities through Naurangdesar Distributary (NDR) of IGNP canal. In selected village current fallow land has reduced very significantly to 1.04 percent while was higher in earlier survey, i.e. 23.58 percent.

3.4.2 Irrigation

Irrigation facility on which the whole process of agricultural transformation hinges has enlarged during last five decades or so. The irrigated area by the Naurangdesar Distributary has increased and 97 per cent of total net sown area is irrigated in 2019. The Naurangdesar village area is irrigated by main Indira Gandhi Canal 0639 RD and sub distribution by NDR minor (Naurangdesar minor) with 460 qusec/sec water discharge from Masitawali head which far from village near about 17-20 km. The flow of water is very good so that most of the farmers irrigated area with flood irrigation method whereas negligible area was irrigated with micro irrigation system like drip/sprinkler.

Water rates of different irrigated crops in 1968-69 and in 1972-73 are given in the Table 3.7. The new water rates have come in force from 1971-72 and they have increased for most of the crops though at varying rates. The farmers of the village in 1972-73 felt that the revised water rates were very high. For rabi crops the water rates per acre of crop for only one watering has increased from Rs. 4.70 in 1968-69 to Rs. 7.00 in 1972-73. As due to inflation, as was expected, the water rates are higher than earlier survey rates.

Table 3.7: Water rates per acre of Irrigated crops

Crop	Water rates per acre of Irrigated crops (Rs.)				
	Village survey	Village resurvey	Change during resurvey over survey	Current resurvey 2019-20	
	1968-69	1972-73	+/-	Rs./bigha	Rs./ha
Sugarcane	21.50	20.00	8.50	72.50	290.00
Cotton, Cumin	12.75	20.00	7.25	45.00	180.00
Garden	13.24	20.00	6.76		
Vegetables	13.24	14.00	0.76	32.50	130.00
Guar, Moong, moth pulses and Barley	4.00	12.00	8.00	20.00	80.00
Gram with irrigation	11.37	12.00	0.63	18.75	75.00
Jowar/Sorghum	4.00	7.00	3.00	16.88	67.52
Maize, Bajra, Sorghum	6.38	7.00	0.62	16.88	67.52
Fodder Crop (Berseem & other)	4.00	4.00	-	22.50	90.00
Paddy	-	-	-	50.00	200.00
Wheat	-	-	-	37.50	150.00
Rapeseed & Mustard, Linseed	-	-	-	28.75	115.00
Mixed Gram Crop	-	-	-	27.50	110.00
Approved Orchard	-	-	-	182.50	730.00
Not approved Orchard	-	-	-	45.63	182.52
Pre-sowing Irrigation	-	-	-	10.25	41.00

3.4.3 Cropping pattern

The proportion of the area under food crops to gross cropped area has declined from 77 per cent in 1968-69 to 52 per cent in 2019-20. The same trend has been also observed at State as well as at National level, which has a tendency to decrease with the increase in the farm size. The area under cash crops has increased both in absolutely and relatively in comparison to 2019-10 over 1968-69. The orchards like kinnu has been introduced in recent years. The area under guar/cluster bean (*Cyamopsis tetragonoloba*) has grown which is predominantly grown during kharif season. Area under mixed cropping has been declined.

3.4.4 Livestock resources (Cattles/Birds/Others)

Livestock occupies a pride of place in the farm enterprise as a supplies of dairy products, manure and draught animals. Cows, buffaloes, goats and sheep are the milch animals, whereas camels and bullocks were the work-stock animals in order of their importance in the village. The availability of irrigation facility improved the green and dry fodder situation, consequently not only the number of livestock has gone up but also they have also become more productive. Total livestock population in village in 2019 was 2859 of which 48.84 per cent were cattle, 26.7 per cent were buffalo, and 13.67 per cent were goat and sheep together (table 3.8).

Table 3.8: Details on Livestock population in Village (2019)

Village Name	Cattle	Buffaloes	Sheep	Camel	Dogs	Goat	Total
14 NDR-CAD	1394	762	207	8	306	182	2859
14 NDR-CAD (RAHIT)	522	911	34	7	97	105	1676
Total	1916	1673	241	15	403	287	4535

Source: <https://farmer.gov.in/livestockcensus.aspx>

The village-wise information about animals owned was not available from the Quinquennial Livestock Census 1971. However, tentative comparison was made on the basis of the information provided by the village veterinary doctor for the year 1972-73. The number of cows increased from 263 in 1969 (as per our resurvey) to 346 by the end of 1972, and number of buffaloes increased from 181

in 1969 to 197 by the end of 1972. Due to shrinkage in the area under open grazing land. The number of sheep and goat had gone down from 567 in 1969 to only 257 by the end of 1972.

Thus, comparison of old survey and current survey indicate the drastic improvement in the number of livestock in selected villages, particularly in case of cattle and buffaloes.

3.4.5 Land tenure system and land reform measures

Under land tenure system, leasing-in and leasing-out tenancy with share cropping basis of the output is prevalent among the land holders of Naurangdesher village. Under land reform measures, consolidation of holdings was done many year ago in the village.

3.5 Developmental Institutions & Infrastructure

3.5.1 Panchayat

There was a major change in the jurisdiction of the panchayat during current survey periods. Naurangdesar formed a part of the group panchayat for nine villages. Naurangdesar was the headquarter of the panchayat and nine other villages 11 NDR, 13 NDR, 14 NDR (CAD), 14 NDR (Rahit), 16 NDR, 17 NDR, 20 NDR-A, 1MWM and 3 MWM while in earlier survey only three villages were adjoined with Naurangdesar Panchayat which were Ranjutpura, Mohan Magaria and Bhompura villages. The Panchayat was housed in its own building.

The Panchayat elections are held at the end of every five years. The first election was held in 1961 and recent last election was held in 2020. The Naurangdesar gram Panchayat was reserved under women category. For election purpose, the votes were divided into eleven wards and each ward consists of about 500 voters. Every voter had a right to cast two votes, one for the post of a Sarpanch and the other for post Panchayat. With the growth of the villages in the jurisdiction of the Panchayat during post bench-mark period, the number of Panchayat members have increased from 8 in 1961-62 to 11 in 1968-69 and same remain in current survey.

3.5.2 Co-operative Society:

Gram Seva Sahkari Sammittee was established on 14 November, 1969. It means it was working in past survey period also. At that time, there were 141 members in the society and share capital was of Rs. 11480. On an average share capital per member in society was Rs. 81.42. In the recent survey, the total member has increased to 824 members.

The Gram Seva Sahkari Sammittee disburses short term crop loan up to 1.50 Lakh in 2018-19. At the time of survey, total 523 farmer's loan was waived in 2018 and total amount waived was Rs. 1.18 Crore. In second time, 223 farmers were included in 2019 for cooperative loan up to Rs 50,000 and total Rs. 93 Lakh was disbursed. The Gram Seva Sahkari Sammittee also works for distribution seed and fertilizers in village with subsidized rate.

3.5.3 Schools

In the recent survey, four schools were found functioning in village, of which two schools were government school and two schools were private schools (Table 3.9).

Table 3.9: Details on Schools in Naurangdesar Village

Govt./Private School	Year	Boys	Girls	Total
Govt. Sr. Sec. School	2019-20	269	187	456
	2018-19	291	200	491
	2017-18	266	215	481
Oshan Children Sr. Sec. School	2019-20	123	80	203
	2018-19	123	80	203
	2017-18	112	87	199
	2016-17	148	98	246
Sarswati Sr. School	2018-19	211	148	359
	2017-18	191	135	326
	2016-17	191	135	326
Govt .Middle Girls School	2019-20	24	100	124
	2018-19	24	131	145
	2017-18	9	130	139
	2016-17	0	123	123
Total	2019-20	269	187	456
	2018-19	649	559	1208
	2017-18	578	567	1145
	2016-17	339	356	695

One of the government schools provide education to children from 1 to 12th standard and this school has co-education facility. The Senior Higher

Secondary school provides Commerce and Arts education stream. The Middle school is girls school education but some boys are also educated there with flexibility in rules as brothers of elder sisters are studying in same school to develop habit of going school regularly.

3.5.4 Financial Institutions

The State Bank of India is operating in Naurangdesar village since 1980. Total 6-person staff is working having 2 officers, 3 Clerks and 1 peon. Total 9000 saving accounts are opened in branch and accounts holders are from near about 10-15 villages located closed to Naurangdesar. Total 1400 Kisan Credit Card are distributed in recent survey. As per bank officer statement, 125 accounts of KCC are NPA (Non-Performing Asset). Total 150 accounts were opened under MUDRA (Micro Units Development and Refinance Agency) loan. Only 5 percent of total accounts holders of Naurangdesar village save their money in Fixed Deposit because they usually deposit their saving money with traders of APMCs for gaining more interest amount. Total four Self Help Group (SHG) are associated with bank and out of four, three SHGs are NPA. Two robbery incidences were happened in bank and in 2016-17, near about 2.5 Lakh amount was robbed from ATM. Therefore, at present survey, ATM facility was not provided by bank.

3.5.5 Social organizations (Clubs/Society/SHG/etc.)

Four SHGs are working in village but villagers are not much aware about theses SHGs and its work.

3.6. Village Infrastructure

3.6.1 Market/Hat

The market potential for any product depends on money aspects viz. population of the area living standard of the people, their income, social customs and habits geographical conditions. etc. Total 15 to 16 Glossary shops are reported in Naurangdesar Village.

3.6.2 Post Office

One post office is in operation in Naurangdesar village having one post master working in post office. Post office working time is as per any other post

offices working time. Generally, villagers contact post master for official purpose and no official building is there for post office.

3.6.3 Health facilities

The network of medical and health services in the village are satisfactory. The health services are provided by government as well as private sector. At the time of benchmark survey, there was no government primary health centre but near about year 1970 or 1975 government has opened primary health centre in village. At the time of present survey, Primary Health Centre is found working in village and 07 posts are filled-up including one MBBS doctor, one ayurvedik doctor and other supporting staff (Table 3.10). Only outdoor patient facility was available and one day IPD (when patient is treated one day or some hours in hospital) facility is also available but hospitalization facility is not available in PHC. The public health services are provided by 2 private clinics and there are four medical shops in village.

The Government of Rajasthan has opened an Ayurvedic Dispensary in this village in July 1967. At present, three posts are fill up, one doctor, one Nurse/Compounder and one Peon. Total 16369 patents were treated in 2017-18 from April to March (Table 3.11).

Table 3.10: Details on Health facilities in Naurangdesar Village

Sr. No.	Name	2016-17	2017-18	2018-19
1	OPD	17656	15817	14938
2	IPD	74	116	143
3	DELIVERY	15	2	5
4	Staff	10	9	7
5	Dog Bite	696	668	510
6	LS/NSV (Female Nasbandi/ Male Nasbandi)	36	16	63
7	BCG	287	282	260
8	DPT	235	-	-
9	OPV	321	307	333
10	PANTA	0	307	333
11	MEASLES	342	289	335

Table 3.11: Details about Patient treated at Aurvedic Dispensary

Year	Male	Female	Total
2017-18	9241	7222	16463
New Patents	2360	1314	3674
Old Patents	6881	5908	12789
2018-19	9917	7462	17379
New Patents	2529	1260	3789
Old Patents	7388	6202	13590

The Government of Rajasthan has also opened a Veterinary Hospital in this village sometime in the year 1979-80 where total 06 posts are sanctioned but only 03 posts are filled up (veterinary doctor, veterinary assistant and sweeper). The details about animals treated are presented in Table 3.12.

Table 3.12: Details about Animals treated at Veterinary Hospital

Year	Annual Treatment	AI	FMD	HS/BQ/ETV/PPR
2016-17	9300	980	3000	
2017-18	8300	1200	2500	
2018-19	9800	1400	2100	1900/660/1080/2100
2019-20	2300	600	2000	

3.6.4 Electricity

The electricity department in Naurangdesar is working under Jodhpur DISCOM. The major electricity consumption in the village is found in domestic and agriculture uses. The electricity department provides 6/7 hours electricity for agricultural purpose and charged first three year 2.50 Rs/unit and after that charges were Rs.1.10 /unit. For domestic purpose, rate per unit is Rs.3.85 and near about 22 hours electricity is available. In Naurangdesar village, near about 93 percent houses are electrified and only 60 connections were cut in Nov, 2019 for non-payment of electricity bills for long time.

3.6.5 Drinking water supply

The drinking water availability is provided by Public Health Irrigation Department in village. Total water connection in village are more than 500 and department provide drinking water on the basis of 3 or 4 days in week on rotation basis. The irrigation water department receives water from Naurangdesar distributary and total storage capacity of three tanks is 21500 KL and two pump house are fixed for distribution of water.

3.6.6 PDS

The public distribution system as a social safety net can be understood by the fact that aggregate availability of food grains per se is not enough to ensure the ability to acquire food grains. In Naurangdesher village, there are 2 PDS shops where wheat, rice, pulses, sugar and kerosene is provided to ration card holder.

3.6.7 Other Features in Village:

Apart from necessary facilities generally available in every village, selected village has small scale industry, bike garage, etc. (table 3.13)

Table 3.13: Other Features of Village

Name	Number
Glossary shop/Provision Store	16
Medical Shop	04
Private Clinic	02
Building material Shops	05
Sanitary/Electrical shops	02
Saloon	07 or 08
Soni Shops	05
Tractor repair & Bike repairs shops	04
Mandir/Devalaya	06
Gurudawara	01
Village Pond	01
Hand pump/Nalkoop	15
Floor Mill /Aata Chakki	04 + 02 Mobile Aata Chakki
Tailor Shop	05
Bike/Tractor/Truck washing Shop/Garage	02
Hotel in near Highway adjoin village	06
Small Scale Industry – Brisk, Cement Blocks	04 (02+02)
RSCIT (Computer Education)	01
LIC agent	01
Cloth and Textile shop	01
Manihari Shops	03

3.7 Cultural Profile of the Village

3.7.1 Fairs and festivals

The entertainment sources are folk dances, organization of dramas and arrangements of various types of in-door games. Among the popular dances, mention may be made of Ghumer, Bhangra and Giddha. The main festivals of Hindus are Deewali, Holi, Dashera, Gangaur, Sheetla Ashtami, Akshaya Tritiya, Raksha Bandhan, Makar Sankranti etc. The birth days of all the ten Gurus are celebrated by the Sikhs but the birth days of first Guru Nanak and the tenth Guru Govind Singh are celebrated on a larger scale.

3.7.2 Temples/Mosques/Churches etc

The majority religion here is Hinduism followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines. Sikh shrine Gurudwara is located here.

3.7.3 Dress and ornaments

The embroidered Odhni (mostly red in colour) is a symbol of Bagri women. A long shirt and ghaghro (long frock type clothes) and borlo (a head ornament) is the traditional dress of Bagri women. Punjabi women wear a suit and salwar with chunni (cloth on head). The Purdah (or veil) is mainly in vogue among Bagri women. Men mainly wear a pant-shirt, kurta-payjama and dhoti (Punjabis call it the chadara-kurta). Punjabi music is very popular and are listened to with the same enthusiasm as in other northern Indian regions.

3.7.4 Languages

Most of people of village spoke hindi, punjabi, and bagri language. Hindi is the official language. Bagri, a dialect of Rajasthani language, a dialect of Punjabi language, are spoken by majority of population.

3.7.5 Food habits

The arid nature of the region, the extreme climatic conditions, scarcity of water and vegetation has witnessed evolvement of unique cooking styles and food habits of the natives that is noticeably different from other region of country. Bajre ki roti made with bajra (millet) is very popular and healthy flat bread that is relished across Rajasthan. Though it can be taken with any vegetable dish or kadhi, it is generally savoured with onions and Lasun ki chutney that is a saucy preparation made with garlic. This combination has remained a staple food for the locals. Khichdi, a wholesome and healthy meal made out of rice and different pulses. Originated from the Bikaner region of the state, this crispy snack made of besan (gram flour), moth beans and a mix of spices has become a household snack in India

3.7.6 Caste systems & rituals/untouchability

In Naurangdesher village, a large number of immigrants especially from Punjab have had a marked influence on the behaviour and social thinking of the native villagers and were instrumental in the changes in various traditional customs of village. This, however, does not mean that caste as a force had lost its

importance totally. It was still playing its role, thorough to a lesser degree, and had its ramifications on socio-economic structure of the village. In Naurangdesar village Jat, Sikhs and Schedules castes were dominant groups.

3.7.7 Dowry system

The dowry system was quiet in vogue. In fact, this practice expresses its dislike and disapproval for this system in almost all the families in the villages. Whereas, the amount of dowry was increasing day by day even among Hindus and Scheduled Castes of other castes in the village.

3.7.8 Political establishments & openness

Political Parties such as BJP, Congress, BSP, INL and Jamidara are popular in the Village. But political establishments by the parties was not at all reported in the village.

3.8 Others

The other facilities available in the village are discussed below.

3.8.1 Library

Not a single library of any type was reopened in Naurangdesher village. But in School, library is reported.

3.8.2 ICDS centre

Integrated Child Development Services (ICDS) scheme is world's largest community based programme. The scheme is targeted at children up to the age of 6 years, pregnant and lactating mothers and women 16–44 years of age. The scheme is aimed to improve the health, nutrition and education (KAP) of the target community. The village as a whole only one Integrated Child Development Service Centres was established and it was found working regularly.

3.8.3 Tube wells/Piped water supply

About 15 hand pumps / nalkoop and one village tank was in Naurangdesar village. Due to the convenience of the canal in the village, the canal water is used for drinking. The canal water is collected in the village tank and through pipes that supply water to every household in the village.

3.8.4 Agro-processing (Mills/forms/factories)

As regard to the agro processing units ,6 floor mill/ aata chakki in which 2 mobile Atta Chakki are reported in the service of villagers in Naurangdeshar Village.

3.8.5 Play grounds

The playground facility was available in higher secondary school of Naurangdesar village.

3.8.6 Illegal activities

No illegal activities are reported in this village. During the survey, it was observed that peoples of this village are very polite and helping nature. The most of youngsters are well educated and participated in every social work.

3.8.7 Government schemes (Name & coverage)

Many government schemes are being implemented in the village, which includes job-related MNREGA and agriculture-related mainly crop insurance (PMFBY), seed minority, soil health card, PM-Kisan, KCC, etc. The Coverage under different Government sponsored schemes were given below table 3.14.

Table 3.14: Coverage under different government sponsored schemes

Sr. No.	Name of the scheme	Number of entitled households	No of households/ beneficiaries	% coverage	% of beneficiaries satisfied with the scheme
			availed the facility		
1	BPL Card	65	65	100	100
2	KCC Card	118	118	100	100
3	Public Health Insurance Card	286	286	100	100
4	Soil Health Card	16	16	100	100
5	MGNAREGA Job Card	212	205	96.7	100
6	ICDS/Mid Day Meal	91	91	100	100
7	Govt. Scholarship Schemes	22	22	100	100
8	Govt. Housing Scheme (IAY/PMAY)	39	39	100	100
9	Crop Insurance: PMFBY/Others	109	108	99.08	100
10	Irrigation: PMKSY/Others	-	-	-	-
11	Seed Minikit scheme	15	15	100	100
12	Farm machinery or implements	0	0	0	0
13	Life Insurance (Govt sponsored)	6	6	100	100
14	CG Farm Income Support (PM-KISAN)	7	7	100	100
15	SG Farm Income Support Schemes	-	-	-	-
16	Old Age Pension Schemes	35	35	100	100
17	Farm Pension Scheme (PM-KMY)	-	-	-	-
18	Widow Pension Scheme	13	13	100	100
19	Farm Loan Waiver Scheme	85	85	100	100
20	LPG scheme (PM UJJALA)	119	119	100	100
21	PMKVY/Organic Farming	-	-	-	-
22	MSP/PM-AASHA Scheme	-	-	-	-
	Any Other (Specify)				
a	Disabled pension	6	6	100	100
b	Cattle Shed scheme	22	2	100	100

3.8.8 Occurrence and frequency of natural calamities

(Flood/Drought/Cyclone/other)

The sand cyclones are very frequents reported in summer season and drought occurs every three years reported in village or region.

3.8.9 Severity of damage due to natural calamities & coping measures

Sand Cyclone occur often but damages were never measured by government. But in drought year, 35 to 50 per cent agriculture production was affected in the village. The State Departments of Irrigation, Ground Water, Revenue, Agriculture, Animal Husbandry etc., need to evolve a robust method for drought intensity assessment.

3.8.10 Adaptation strategies by the government, non-government & other stakeholders

Government is well aware about the fact that farmers must adopt crop insurance scheme to avoid natural disaster. Many farmers of the village of Naurangdesar have benefitted from crop insurance schemes.

3.9 Uniqueness of the Village

The village population is divided mainly in 2 major religions Hindu and Sikh. The agriculture land of village irrigated by Canal irrigation Indira Gandhi Canal area at NDR- CAD Rahit in North and NDR- Rahit land area was irrigated by tube wells. The average tube well depth is very low means water availability is approx 40 feet only. The both religion have categories in OBC category (Sikh Sardar and Jat/Choudhary families). Total near about 100 percent agriculture land area was distributed in two communities like 48 percent each and only 4 percent land was occupied by SC and general category farmers.

3.10 Chapter Summary

This chapter presented the profile of the selected village using secondary data sets. Naurangdesar village is well connected with rail and road transport. The selected village is of small size having population fall in semi-arid zone where climate turns hot during the summer and extremely cold during winter. The mean daily maximum temperature varies from 20.5°C during January to 42.2°C during June while mean daily minimum temperature in the district varies from 4.7°C during January to 28.1°C during July. The average annual rainfall per annum is reported to be 227 mm and varied from 195 mm to 325 mm. The rich sandy loam

soil which is well drained with moisture retaining characteristics is very much helpful for the production of food and cash crops. The canals irrigation is done mainly through Indira Gandhi Canal Project (IGNP) and Mashitawali Head Project. In some of the area of the district the irrigation from Ghaggar canals are also available after the renovation Bhakra canals project which has become helpful for increasing the irrigational facilities to a greater extent.

In the Naurangdesar village, Jat Hindus and Jat Sikhs are two important communities while Scheduled Caste families are found in good number in both Hindu and Sikh communities and only few households were found from Scheduled Tribes. Out of total population, 55.9 percent population was reported literate, while across the gender, rate of literacy was higher for male than female in the village. The livelihood of the village is mainly based on agriculture and animal husbandry activities along with support of rural artesian trade especially leather crafts, wood, and caste based profession, and wool established in the village. The rearing of livestock is being done at large scale i.e. each household has two to three milch animals. In general, each household has its own transport facilities and some of farmers are also rearing of camel. The net sown area accounted for the highest share of 83.68 percent with an area of which 90 per cent area is irrigated. The irrigated area by the Naurangdesar Distributary has increased and 97 per cent of total net sown area is irrigated in 2019. The proportion of the area under food crops to gross cropped area has declined from 77 per cent in 1968-69 to 52 per cent in 2019-20. The area under cash crops has increased both in absolutely and relatively in comparison to 2019-10 over 1968-69. The availability of irrigation facility improved the green and dry fodder situation, consequently not only the number of livestock has gone up but also they have also become more productive. Under land tenure system, leasing-in and leasing-out tenancy with share cropping basis of the output is prevalent among the land holders of Naurangdesher village. Under land reform measures, consolidation of holdings was done many year ago in the village.

There was a major change in the jurisdiction of the panchayat during current survey periods. Naurangdesar formed a part of the group panchayat for nine villages. Naurangdesar was the headquarter of the panchayat and nine other villages 11 NDR, 13 NDR, 14 NDR (CAD), 14 NDR (Rahit), 16 NDR, 17 NDR, 20 NDR-A, 1MWM and 3 MWM while in earlier survey only three villages were adjoined with Naurangdesar Panchayat which were Ranjutpura, Mohan Magaria and Bhompura villages. The village has Gram Seva Sahkari Sammittee, four schools, four SHGs. Besides, village infrastructure available in village includes glossary shops, health centre, electricity distribution centre, PDS shop, temples and IDCS centre, playground, etc. The sand cyclones are very frequents reported in summer season and drought occurs every three years reported in village or region.

The next chapter presents the social dynamics of selected households in the village.

4.1 Introduction:

The present chapter mainly deals with the social dynamics in terms of demographic profile of the resurveyed village Naurangdesar, age and sex distribution of population in village, distribution of population by age and marital status in the village, birth and death rate by APL/BPL categories and caste/religion of households during 2014-19, distribution of households by family size, population characteristics by caste and religion in the village, educational status by sex, enrolment level of children (aged 6 -12 years) in schools by caste, sex and type of school during 2018-19, food security issues at village level during 2018-19 and pattern of malnutrition among the children (Age-group 6 12 years) by caste and sex during 2018-19,

4.2 Population and Households:

As presented in table 3.5 and discussed in earlier chapter, the number of households in the village has increased by 127 per cent in 2011 over 1971, i.e. from 342 in 1971 to 775 in 2011 census. In recent survey, total population was reported doubled. In current survey of selected households, as noted in earlier chapter, the drastic decline in share of child (0-6) was also observed. The children (0-6 years) population to total population has decreased by 33 per cent points, which was 42.6 per cent in earlier survey has dropped to 9.3 per cent only. Total working population was also increased by almost 35 per cent points, which was 31 per cent of total population in earlier population increased to 65.3 per cent in recent survey. Also the share of main workers in total workers population has declined by almost 9 percent indicates the increase in marginal workers population. The rate of literacy has also increased from just 20 per cent in earlier survey to almost 88 per cent in current survey. Particularly significant increase in

female literacy was achieved which has increased from 4.27 per cent in earlier survey to 77.8 per cent in recent survey.

Table 4.1: Demographic profile of the Selected Households of Village

Sr. No.	Particulars	1974 (during last survey) N=342				In 2019 (during current survey) N=300				% Change
		Male	Female	Total	%	Male	Female	Total	%	
1	Total Population	1093	954	2047	100.0	741	629	1370	100.0	
	Adult	635	539	1174	57.4	567	501	1068	78.0	20.60
	Child (0-6)	458	415	873	42.6	73	55	128	9.3	-33.30
2	Scheduled Caste	377	338	715	34.9	262	229	491	35.8	0.91
3	Scheduled Tribe	0	0	0	0.0	6	6	12	0.9	0.88
4	Total Workers	632	0	632	30.9	473	421	894	65.3	34.38
	Main Worker	594	0	594	94.0	427	337	764	85.5	-8.53
	Marginal Worker	38	0	38	6.0	46	84	130	14.5	8.53
	Cultivator	470	0	470	74.4	129	17	146	16.3	-58.04
	Agricultural Labourer	48	0	48	7.6	193	91	284	31.8	24.17
	Works in household	0	0	0	0.0	8	191	199	22.3	22.26
	Other workers	76	0	76	3.7	91	36	127	9.3	5.56
5	Non worker	461	954	1415	69.1	94	80	174	12.7	-56.42
6	Literate population	207	23	230	19.6	548	390	938	87.8	68.24
7	Illiterates population	428	516	944	80.4	19	111	130	12.2	-68.24

Source: Field Survey data.

Out of the total households in villages, 72 per cent houses were pucca in nature which indicated the drastic change in the socioeconomic status of villagers after receipt of assure canal water as during the last two surveys, share of pucca houses in total was 1.3 and 4.6 per cent respectively (Table 4.2). Also the nature of families has diverted towards nuclear families. Around 83 per cent of families are reported nuclear in current census as compared to 57 per cent in 1961-62 (Table 4.3).

Table 4.2: Types of Houses of Selected Households

Type of houses	1961-62		1968-69		2019-20*	
	Number	% to total	Number	% to total	Number	% to total
No. of kutcha houses	125	78.1	237	73.3	84	28.0
No. of pucca houses	2	1.3	15	4.6	216	72.0
No. of mixed houses	33	20.6	72	22.2	0	0
Total	160	100.0	324	100.0	300	100.0

Note: Concrete and thatched houses.

Table 4.3: Types of Family of Selected Households

Type of houses	1961-62		1968-69		2019-20	
	Number	% to total	Number	% to total	Number	% to total
Joint families	82	42.7	125	43.0	50	16.67
Nuclear Families	110	57.3	166	57.0	250	83.33
Others	192	100.0	291	100.0	300	100.0

4.3 Sex Composition and Age Distribution:

Table 4.4 present the age and gender-wise distribution of the population in selected households of Naurangdesar village. This table shows very important feature that distribution of population in age group 36-55 years has significantly increased in recent survey over base period (from 6.34 per cent in 1973-74 to 28.18 per cent in 2019-20) means working population has increased by 21 per cent points and thus rural economy has also improved in recent survey. Children population has declined significantly showing demographic structure change in village means generally people want to have 1 or 2 child only which was observed during the current survey.

Table 4.4: Age and sex distribution of the population in Naurangdesar (in %)

Age Groups	In 1973-74			In 2019		
	(during last survey)			(during Current survey)		
	Male	Female	Total	Male	Female	Total
0-1	-	-	-	0.54	0.64	0.58
1-5	-	-	-	7.42	7.15	7.30
6-15*	48.41	47.32	48.15	18.08	14.15	16.28
16-35**	37.84	38.88	38.55	36.30	36.09	36.20
36-55***	6.66	7.07	6.34	25.91	30.84	28.18
56 -60	-	-	-	4.72	5.56	5.11
60 and above****	7.08	6.73	6.95	7.02	5.56	6.35
Total	52.18	48.37	100.00	54.09	45.91	100.00

Notes: * Age group consists in last survey is 0-14 age group category, ** age group consists 15-44, *** age group consists 45-54 and **** age group consists above 55 yr in earlier survey.

Source: Field Survey data.

Table 4.5 presents marital status by age groups selected households of in Naurangdesar village. It can be seen from the table that in earlier survey period, about two third of children aged between 16-20 years were married while in current survey, it was noticed that hardly 1.55 per cent of this age group children were married which is a very important change observed over the period. Early marriage is not socially, economically and physically better for children before

attending age of 21 years. One more important picture is depicting in table that 96.8 percent persons were married in age 26-30 group in earlier but same was just 16.54 persons were married in recent survey. It may be because of the fact that most of male and female are giving priority to get better education and employment before getting married. In recent survey, total 37 cases were reported under widow/er category (75.68 per cent persons) which belongs to age category of 56 and above age.

Table 4.5: Distribution of population by age and marital status in Naurangdesar (in %).

Age Groups	In1973-74 (Table IV-2).				In 2019			
	(during last survey)				(during Current survey)			
	Married	Unmarried	Widow/er	Divorced & others	Married	Unmarried	Widow/er	Divorced & others
0-10	-	-	-	-	0.00	38.20	0.00	0.00
11-15*	1.05	98.95	0	0	0.00	21.44	0.00	0.00
16-20**	65.4	34.3	0.3	0	1.55	23.78	0.00	0.00
21-25	-	-	-	-	7.24	11.35	0.00	0.00
26-30***	96.8	1.9	1.3	0	16.54	3.78	2.70	0.00
56 and above****	65.9	1.5	32.65	0	16.54	0.00	75.68	25.00
All age groups	42.45	54.05	3.5	0	56.50	40.51	2.70	0.29
Males	57.4	40.5	2.1	0	49.87	60.72	37.84	100.00
Females	50.6	44.4	4.9	0	50.13	39.28	62.16	0.00

Notes: * Age group consists in last survey is 0-14 age group category, ** age group consists 25-34, *** age group consists 45-54 and **** age group consists above 55 years in earlier survey.

Source: Field Survey data.

Table 4.6 presents distribution of households by family size in Naurangdesar village. It can be seen from the table that out of the total households reported, the highest number of households (about 29 percent) had four family members and they accounted for about 25.11 population of village whereas in earlier survey, corresponding figure in same category (4 family members/hh) was 28 families with share of 9.60 percent in village households and 6.29 percent in village population. In earlier survey, the highest share was of families having five members (15.46 per cent) followed by six-member family (14.45 per cent). The share of maximum number of about 11 per cent of total households had family members 10 and above, while in current survey, hardly 0.67 per cent of total households had the same. It indicates that over the period, mostly joint families are distributed in nuclear families.

Table 4.6: Distribution of households by family size

Family size	In1973				In 2019			
	(during last survey)				(during Current survey)			
	No. of households	% of total	No. of persons	% of total	No. of households	% of total	No. of persons	% of total
1	54	18.75	162	9.22	6	2.00	6	0.44
2					21	7.00	42	3.07
3					46	15.33	138	10.07
4	28	9.60	111	6.29	86	28.67	344	25.11
5	45	15.46	223	12.67	60	20.00	300	21.90
6	42	14.45	250	14.21	46	15.33	276	20.15
7	36	12.33	249	14.15	22	7.33	154	11.24
8	34	11.72	270	15.37	9	3.00	72	5.26
9	20	7.07	183	10.44	2	0.67	18	1.31
10 & above	31	10.76	310	17.65	2	0.67	20	1.46
Total	288	100	1757	100.0	300	100.0	1370	100.0

Note: Some problem in resurvey family size data 288 hh instead of 291 and 1757 population instead of 1807.

4.4 Caste/religion wise Distribution:

Table 4.7 presents caste/religion wise distribution of population in selected households of selected village. Share of all religion groups in total population has increased except OBC Hindu which has declined from 46.26 per cent in last survey to 27.74 percent in recent survey. The sex ratio in village has declined from 910 in last survey to 849 in current survey. For every 1000 male population, number of female have declined, which is a matter of concern. The sex ratio of village is lower than district (906), state (928) and national average (940). The average size of households has declined over the period from 6.21 person to 4.57 person which implies two aspects, viz. joint families are fragmented to nuclear family rapidly and every couple prefer to have two children as observed in demographic feature of the village.

Table 4.7: Population characteristics by Caste and Religions in Naurangdesar (in %)

Age Groups	In1968-69					In 2019				
	(during last survey)					(during Current survey)				
	Male	Female	Total	Sex ratio	Av size of hh	Male	Female	Total	Sex ratio	Av size of hh
Caste Hindu General	51.81	48.19	4.59	930	4.88	51.92	48.08	7.59	926	4.73
OBC Hindu	52.39	47.61	46.26	909	6.24	53.42	46.58	27.74	872	4.87
OBC Sikh	52.30	47.70	21.69	912	6.88	56.40	43.60	27.96	773	4.85
SC Hindu	52.35	47.65	22.63	910	5.93	53.95	46.05	25.84	854	4.12
SC Sikh	52.35	47.65	4.81	910	6.21	51.82	48.18	10.0	930	4.42
ST	-	-	-	-	-	50.00	50.00	0.88	1000	3.00
Total	52.35	47.65	100.0	910	6.21	54.09	45.91	100.0	849	4.57

Source: Field survey.

4.5 Literacy Pattern by Sex:

Table 4.8 presents educational status by sex in selected households. This table indicate that there is significantly declined in number of illiterate population in over the period of time, i.e. from 68.71 per cent in last survey to 26.05 percent in recent survey in case of male while corresponding figures for female are 94.77 per cent to 38.00 percent. The primary level education has significantly increased in recent survey that to very impressive growth was achieved in female literacy in village in current survey. Near about 13.63 percent population was literate up to post graduation level in current survey whereas in earlier survey, this was just 0.74 percent. Besides, in recent survey near about 0.54 percent population of village was literate in technical field which gives them higher employment opportunity in economy.

Table 4.8: Educational Status by Sex in Naurangdesar village.

Educational Status	In1972-73				In 2019			
	(during last survey)				(during Current survey)			
	No. of male	% of total	No of female	% of total	No. of male	% of total	No of female	% of total
Illiterate	650	68.71	816	94.77	193	26.05	239	38.00
Able only to read or write	NA	NA	NA	NA	NA	NA	NA	NA
Up to Primary	192	20.30	33	3.83	282	38.06	220	34.98
Up to Secondary	-	-	-	-	92	12.42	67	10.65
Up to Intermediate	97	10.25	12	1.39	69	9.31	38	6.04
Technical	0	0.00	0	0.00	4	0.54	3	0.48
Graduates	7	0.74	0	0.00	79	10.66	49	7.79
Post graduates & professionals	0	0.00	0	0.00	22	2.97	13	2.07
Total	946	100	861	100	741	100	629	100

4.6 APL/BPL wise Distribution:

APL/BPL wise population distribution in selected households of Naurangdesar village is presented in Table 4.9. It can be seen that the out of total households, 21.67 per cent household belongs to BPL category of which the highest share was of Hindu SC (40 percent) category followed by Hindu OBC (24.62 per cent). Other important picture depicts in table that total 80 percent Sikh SC families belong to MAPL (Antodaya Anna Yojana) category in village. Total 76.67 percent of total families in village were classified above poverty line

category which was lower than district average of 84.62 per cent (www.food.raj.nic.in). This data was not reported in earlier two surveys.

Table 4.9: APL/BPL wise population distribution in Naurangdesar village (in %) 2019-20

Religion/Caste Category	APL	BPL	MAPL	Grand Total
General Hindu	7.39	7.69	0.00	7.33
Hindu OBC	26.96	24.62	0.00	26.00
Hindu SC	25.65	40.00	20.00	28.67
Hindu ST	1.30	1.54	0.00	1.33
Sikh OBC	31.30	10.77	0.00	26.33
Sikh SC	7.39	15.38	80.00	10.33
Total	76.67	21.67	1.67	100.00

Source: Field survey data.

4.7 Birth and Deaths:

Table 4.10 presents birth rate and death rate reported in APL/BPL categories families in Naurangdesar village. It can be seen from the table that the highest rate of birth of 14.9 per 1000 live birth was reported in APL families whereas 10.1 per 1000 population was average of BPL families in 2014-19 in village. The highest death rate was found in BPL families (3.6 per 1000 population) of the village.

Table 4.10: Birth rate and death rate by categories of households during 2014-2019

Particulars	births				deaths			
	APL	MAPL	BPL	Overall	APL	MAPL	BPL	Overall
Caste								
Hindu General	15.0	-	0.0	11.5	2.5	-	8.3	3.8
OBC Hindu	15.9	-	0.0	13.2	1.3	-	6.1	2.1
OBC Sikh	11.3	-	20.0	12.0	3.4	-	6.7	3.7
SC Hindu	21.1	-	7.8	16.9	1.6	-	1.9	1.7
SC Sikh	5.7	12.5	27.5	14.6	0.0	-	0.0	0.0
ST	20.0	-	0.0	16.7	0.0	-	0.0	0.0
All Categories	14.9	9.5	10.1	13.9	2.1	-	3.6	2.3

Note: Birth rate and death rate are calculated on every 1000 population.

During the period 1962-68, out of 469 births which took place in the village, 245 were males and 224 were females (Table 4.11). The average number of births reported per year were 41 for the seven-year period from 1962 to 1968. However, one also observes wide year to year fluctuations in births the range of variation for the seven-year period being between 26 and 54. On the whole, the village experienced a slightly lower birth-rate (42 births per 1000 persons) for the period 1962-68 as compared to the period 1957-61 (48 births per 1000 persons). The birth rates for 9 males and females during the resurvey were 41 and 42 respectively. One of the reasons for decrease in the birth rate was to be the increasing awareness among the villagers about the family planning devices. Out of 47 deaths reported during the period 1962-68, 23 were males and 24 females. The morality rate which was 10 per 1000 persons for the period 1957-61 was reduced to 4 during 1962-68. The improvement in the medical facilities as well as in the standard of living of the villagers in the post benchmark survey period was mainly responsible for the same.

Table 4.11: Birth rate and death rate by categories of households during 1962-69

Year	Crude birth rate per 1000 of population			Crude death rate per 1000 of Population			Growth rate per 1000 of population		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1962	52	37	45	4	1	3	48	36	42
1963	49	58	54	4	3	3	45	55	51
1964	35	26	31	2	1	2	33	25	29
1965	47	53	50	6	5	6	41	48	44
1966	33	47	40	6	1	4	27	46	36
1967	50	43	46	4	6	5	46	37	41
1968	24	27	26	1	12	6	23	15	20
Average of seven years	41	42	42	4	4	4	37	38	38

4.8 Enrollment and drop outs in different educational level (gender-wise)

Table 4.12 presents enrolment level of children (aged 5-15 years) of selected households in schools by caste, sex and type of school. This table shows near about 74.75 percent of total children enrolled in hindi or vernacular medium language schools and 19.60 percent children were enrolled in English medium private school. This table also shows that 60 percent children of Hindu general caste families have enrolled in private school where as 68.18 percent of OBC Sikh family's children were enrolled in private school. Overall picture can be seen from

the table that most of the ST Hindu, SC Hindu and Sikh and OBC Hindu children were enrolled in government school with vernacular language. The drop out of children was mostly reported in case of children of SC Hindu, OBC Hindu, SC Sikh and OBC Sikh, whereas no children drop out was reported in General caste Hindu and ST Hindu families of the village. The drop out children shares just 5.65 percent in total enrolled children in government as well as private school. Total 19.60 percent children were enrolled in private English medium school in village in current survey suggest that if parents afford economic liability of English medium school than they enrolled their ward in same.

Table 4.12: Enrolment level of children (aged 5-15 years) in schools by caste, sex and type of school in Naurangdesar village 2019-20

Children categories/Caste	Govt. school		Private school		Other schools	Out of school	Total
	Vernacular	English	Vernacular	English			
(in %)							
Male Children							
Hindu General	25.00	0.00	16.67	58.33	-	0.00	100
OBC Hindu	66.67	0.00	2.38	28.57	-	2.38	100
OBC Sikh	35.56	0.00	20.00	44.44	-	0.00	100
SC Hindu	90.70	0.00	4.65	2.33	-	2.33	100
SC Sikh	94.44	0.00	0.00	5.56	-	0.00	100
ST Hindu	100.00	0.00	0.00	0.00	-	0.00	100
Female Children							
Hindu General	62.50	0.00	12.50	25.00	-	0.00	100
OBC Hindu	73.47	0.00	4.08	10.20	-	12.24	100
OBC Sikh	19.05	0.00	23.81	52.38	-	4.76	100
SC Hindu	84.09	0.00	0.00	0.00	-	15.91	100
SC Sikh	93.33	0.00	0.00	0.00	-	6.67	100
ST Hindu	100.00	0.00	0.00	0.00	-	0.00	100
All Children							
Hindu General	40.00	0.00	15.00	45.00	-	0.00	100
OBC Hindu	70.33	0.00	3.30	18.68	-	7.69	100
OBC Sikh	30.30	0.00	21.21	46.97	-	1.52	100
SC Hindu	87.36	0.00	2.30	1.15	-	9.20	100
SC Sikh	93.94	0.00	0.00	3.03	-	3.03	100
ST Hindu	100.00	0.00	0.00	0.00	-	0.00	100

Source: Field survey data.

The village did not have kindergarten facility either in 1968-69 or 1972-73. It had two schools, one being a middle school and the other a primary school. The number of rooms in the middle school increased from 7 in 1968-69 to 11 in 1972-73 and in the primary school from 1 in 1968-69 to 2 in 1972-73. In 1968-69, only the headmaster of the middle school was provided with rent free residential

quarters. In 1972-73, the headmaster of the middle school and the teacher of the primary school also secured this facility. During both points of study there were 9 teachers and all of them were trained. The village school had been extended and the number of male students had increased considerably in 1968-69 over 1961-62. However, the number of female students during both the surveys was discouraging. The number of students enrolled in the village schools as per Naurangdesar school records) increased from 1987 in 1968-69 to 220 or by 18 per cent in 1972-73. Though the proportion of girl students to the total students increased from 4.8 per cent in 1968-69 to 8.2 per cent in 1972-73, it was very low as compared to that for the boy students. In 1968-69, no native person of the village had crossed the high school education. The village had one arts graduate and five matriculates in 1972-73. Moreover, two students of the village were attending the college.

4.9 Food Security & Child nutrition (BMI):

Table 4.13 presents child nutrition level based on BMI (Body Mass Index) selected households of Naurangdesar village. It can be seen from the table that as per BMI index values, female child found to be healthier than male child. Out of total female child, 81.08 percent of female child were found healthy, 8.11 percent are obese and 10.81 per cent female child were underweight. While in case of male children, 64.63 per cent were found healthy, 3.66 per cent were with obesity and 31.71 per cent were present are underweight. If we see class wise nutrition level, we found that up to class III, male child were all healthy while in case of female child its differ. A very surprising picture was observed when we see up to IV standard to X class, it can be seen that most of female child were healthier than male child in Naurangdesar village in current survey. This survey was performed in government Sr. Sec. School in village and it was found that mid-day meal and milk Yojana of state government was helpful in increasing child nutrition level of weaker section in the village.

Table 4.13: Child Nutrition based on BMI (Body Mass Index) in village 2019-20

Class of study	Av. BMI score	Av. Percentile Score*	Children-BMI ¹ -Percentage				Total
			Under-weight	Healthy Weight	At risk of Over Weight	Over Weight/ Obesity	
Female Children							
I	16.37	70.7	0.00	33.33	66.67	0.00	100.0
II	15.82	57.4	20.00	60.00	20.00	0.00	100.0
III	14.89	29.9	14.29	85.71	0.00	0.00	100.0
IV	15.66	34.3	0.00	100.00	0.00	0.00	100.0
V	15.75	29.6	10.00	90.00	0.00	0.00	100.0
VI						0.00	100.0
VII	14.00	6.0	100.00	0.00	0.00	0.00	100.0
VIII	15.90	6.0	0.00	100.00	0.00	0.00	100.0
IX						0.00	100.0
X	18.87	33.0	0.00	100.00	0.00	0.00	100.0
Grand Total	15.84	36.6	10.81	81.08	8.11	0.00	100.0
Male Children						0.00	100.0
I	15.68	56.8	0.00	100.00	0.00	0.00	100.0
II	14.90	32.5	0.00	100.00	0.00	0.00	100.0
III	14.78	24.6	0.00	100.00	0.00	0.00	100.0
IV	15.88	34.7	21.43	57.14	21.43	0.00	100.0
V	18.20	13.5	30.77	69.23	0.00	0.00	100.0
VI	14.45	8.7	77.78	22.22	0.00	0.00	100.0
VII	13.92	11.7	45.45	54.55	0.00	0.00	100.0
VIII	15.09	18.2	31.25	68.75	0.00	0.00	100.0
IX	16.21	24.0	0.00	100.00	0.00	0.00	100.0
X	17.40	15.0	50.00	50.00	0.00	0.00	100.0
Grand Total	15.37	21.7	31.71	64.63	3.66	0.00	100.0

Note: Survey of randomly selected students of the schools from all. *Calculated online on <https://www.calculator.net>

Source: Field survey data.

4.10 Access to basic amenities and changes therein (Electrification, sanitary toilet, health, safe drinking water, etc.)

Out of the total households, total three households have reported non-availability of legal electricity connection, 14.67 per cent of total households have no toilet facility in their houses and 5.33 per cent households have no government drinking water connection for which they have to travel just 10-100-meter distance in village. This picture is self-explanatory about the basic amenities

¹ BMI for Children

Category	Percentile Range
Underweight	<5%
Healthy weight	5% - 85%
At risk of overweight	85% - 95%
Overweight	>95%

expansion in village has reached to satisfactory level in current survey and villagers are aware about self-hygiene and cleanliness which is must for betterment of life, particularly after COVID19 pandemic.

4.11 Participation, Inclusiveness and Empowerment:

Out of total households, about 39 percent of member of households had participated in Gram Sabha and Gram Sansad meeting whereas remaining household members who could not participate were either busy, uneducated and due to old age they did not participate. About 6.33 per cent household members have approached to elected representatives like Panchayat/MLA/MP for village and panchayat development related issue while 73.68 per cent households persons were satisfied that elected representatives had addressed their issues and tried to solve them willingly, which shows empowerment of Naurangdesar villagers in recent survey.

4.12 Perception of various groups and households in the village about different changes in the village:

4.12.1 Rigidity in Caste System:

In the Naurangdesar village, during recent survey, it was observed that there was no caste biasness and no caste rigidity was reported. Economic gap was observed in Sikh OBC and Sikh SC families due to economic condition. Mostly SC Sikh families are working in on the land of OBC Sikh for several years. This was not a case in case of OBC Hindu and Hindu SC families because education level of these groups was much better than SC Sikh families in the village.

4.12.2 Gender bias/Women Empowerment:

In recent survey, no gender biasness was seen in village. In current Gram Panchayat election, Naurangdesar Sarpanch seat was reserved for women category. The newly elected Sarpanch and processor Sarpanch both are active in village activities and they have taken interest in development work in village with full enthusiasm.

4.12.3 Political bias or deprivation:

No political bias or deprivation was seen in village and village is properly connected with district headquarter. The MLA/Pradhan (originally from Naurangdesar village) and other political leader are well connected with villagers.

4.13 Chapter Summary:

The social dynamics of selected households of selected village are presented and discussed in this chapter. The survey data indicate that the number of households in the village as well as total population has increased over the period of time. But the children (0-6 years) population to total population has decreased by 33 per cent points. The rate of literacy has also increased by 68 per cent points, particularly significant increase in female literacy was achieved. Majority of houses were pucca in nature and most of the families are reported nuclear. Share of all religion groups in total population has increased except OBC Hindu which has declined. The sex ratio in village has declined. The average size of households has also declined over the period from 6.21 person to 4.57 person which implies two aspects, viz. joint families are fragmented to nuclear family rapidly and every couple prefer to have two children as observed in demographic feature of the village.

There is significantly declined in number of illiterate population in over the period of time. Out of total households, 21.67 per cent household belongs to BPL category. Near about 74.75 percent of total children enrolled in hindi or vernacular medium language schools and 19.60 percent children were enrolled in English medium private school. As per BMI index values, female child found to be healthier than male child. Out of total households, about 39 percent of member of households had participated in Gram Sabha and Gram Sansad meeting whereas remaining household members who could not participate were either busy, uneducated and due to old age they did not participate. During recent survey, it was observed that there was no caste biasness, no caste rigidity no gender biasness was seen in village. No political bias or deprivation was seen in village.

Economic Status

5.1 Introduction

This chapter mainly deals with the economic status of surveyed household of Naurangdesar village, mainly focus on occupation/ livelihood and employment pattern, extent of migration, agrarian status, land holding, basic characteristics of farm households, cropping pattern, nature and extent of crop diversification, yield of major crops, profitability of major crops, disposal of major farm produces and price realization, composition of annual income of households by livelihood groups and income sources.

5.2 Livelihood and Employment:

5.2.1 Labour force and workforce distribution and changes therein

The distribution of households by occupation/livelihood in selected Naurangdesar village is presented in Table 5.1. It can be seen from the table that out of total household, about 79.67 per cent households were dependent on agriculture and allied activities, 7 per cent households were working in service sector job and 7 per cent households were doing business and trade in village. One of the important observations was that 5 per cent households were working as casual and marginal laborer and just one per cent households were dependent on pension/old age pension/widow pension etc. in the recent survey. The total 62.61 per cent of total cultivators belongs to OBC Sikh families and 26.09 per cent cultivators were from OBC Hindu category while other caste categories share was negligible in farming activity. Out of total agriculture labour, about 74.19 per cent agricultural labour belongs to SC Hindu and SC Sikh families and not a single family of OBC Sikh was involved in agricultural labor in village. Most of the SC Hindu households were working as casual and marginal labour in or outside the village.

Table 5.1: Distribution of households by occupations/livelihood in Naurangdesar village. (No of households & %)- 1961-62 and 1968-69

Livelihood Groups /Caste		High caste Hindus		Jat Hindus		Intermediary caste Hindus		Lower caste Hindus		Scheduled caste Hindus		Jat Sikhs		Scheduled caste Sikhs		TOTAL	
		Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total
Cultivation	1961-62	5	29.4	67	93.1	1	0.0	6	50.0	31	72.1	36	94.7		0.0	145	75.5
	1968-69	6	35.3	104	91.2	1	25.0	6	37.5	23	33.3	50	87.7		0.0	190	65.3
Dairying	1961-62		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	1968-69		0.0		0.0		0.0	1	6.3		0.0		0.0		0.0	1	0.3
Agricultural Labour	1961-62		0.0		0.0		0.0	2	16.7	8	18.6		0.0	1	100.0	11	5.7
	1968-69		0.0	1	0.9		0.0	5	31.3	42	60.9	1	1.8	14	100.0	63	21.6
Non-Agricultural Labour	1961-62		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	1968-69		0.0		0.0		0.0		0.0	1	1.4		0.0		0.0	1	0.3
Trade	1961-62	6	35.3		0.0	1	11.1		0.0		0.0		0.0		0.0	7	3.6
	1968-69	4	23.5	2	1.8		0.0		0.0	1	1.4		0.0		0.0	7	2.4
Service	1961-62	5	29.4	3	4.2	7	77.8	1	8.3	3	7.0	1	2.6		0.0	20	10.4
	1968-69	7	41.2	5	4.4	3	75.0	1	6.3	2	2.9	3	5.3		0.0	21	7.2
Profession	1961-62	1	5.9	1	1.4		0.0		0.0		0.0		0.0		0.0	2	1.0
	1968-69		0.0	1	0.9		0.0		0.0		0.0		0.0		0.0	1	0.3
Art & Crafts	1961-62		0.0	1	1.4	1	11.1	3	25.0	1	2.3	1	2.6		0.0	7	3.6
	1968-69		0.0	1	0.9		0.0	3	18.8		0.0	1	1.8		0.0	5	1.7
Others	1961-62		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	1968-69		0.0		0.0		0.0		0.0		0.0	1	1.8		0.0	1	0.3
Remittances	1961-62		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	1968-69		0.0		0.0		0.0		0.0		0.0	1	1.8		0.0	1	0.3
Total	1961-62	17	100.0	72	100.0	9	100.0	12	100.0	43	100.0	38	100	1	100.0	192	100.0
	1968-69	17	100.0	114	100.0	4	100.0	16	100.0	69	100.0	57	100	14	100.0	291	100.0

Table 5.2: Distribution of households by occupations/livelihood in Naurangdesar village. (No of households & %)- 2019-20

Livelihood Groups /Caste	2019-20 Current resurvey													
	General Hindu		OBC Hindu		OBC Sikh		SC Hindu		SC Sikh		ST Hindu		ALL	
	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total	Nos.	% to total
Cultivator	1	4.55	30	38.46	72	91.14	12	13.95		0.00			115	38.33
Agricultural labour	3	13.64	27	34.62		0.00	63	73.26	29	93.55	2	50.00	124	41.33
Dairy/Fishing/Poultry keeping		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Govt Salaried	4	18.18	2	2.56	4	5.06	2	2.33	1	3.23		0.00	13	4.33
Private Salaried		0.00	4	5.13	2	2.53	2	2.33		0.00		0.00	8	2.67
Pensioner	2	9.09		0.00		0.00	1	1.16		0.00		0.00	3	1.00
Caste based profession		0.00	6	7.69		0.00		0.00		0.00		0.00	6	2.00
Trade & business	11	50.00	7	8.97	1	1.27		0.00		0.00	2	50.00	21	7.00
Entrepreneur		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Casual labour		0.00	2	2.56		0.00	3	3.49	1	3.23		0.00	6	2.00
Marginal labour	1	4.55		0.00		0.00		0.00		0.00		0.00	4	1.33
Household		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Others		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Overall	22	100.0	78	100.0	79	100.0	86	100.0	31	100.0	4	100.0	300	100.0

Note: Based on primary occupation only for households

5.2.2 Livelihood pattern and distribution and changes therein

5.2.2.1 Livelihood pattern

The livelihood pattern of adult (age more than 14 years) in Naurangdesar village is presented in Table 5.3. It can be seen from the table that the out of total sample household, about 62.53 per cent adults were working in agriculture sector as a cultivator or agricultural labour or both. Out of total cultivators, about 53.05 per cent cultivators belong to OBC Sikh family whereas 45.60 per cent adults working as agricultural labours are from SC Hindu families. Out of total households in general category, about 38.46 per cent adult of General Caste Hindu were in government service and 50 per cent adult of same category were under pension scheme of government. All caste based profession especially furniture work, gold smith work is being performed by OBC Hindu families in village.

Table 5.3: Distribution of adult population by occupations/livelihood in Naurangdesar village (No of households & %)

Livelihood Groups/ Caste	General Hindu	OBC Hindu	OBC Sikh	SC Hindu	SC Sikh	ST Hindu	ALL
Cultivator	4 (1.29)	78 (25.08)	165 (53.05)	62 (19.94)	2 (0.64)	-	311 (23.98)
Agricultural labour	6 (1.20)	105 (21.00)	11 (2.20)	228 (45.60)	143 (28.60)	7 (1.40)	500 (38.55)
Dairy/Fishing/Poultry keeping	-	-	-	-	-	-	-
Govt Salaried	10 (38.46)	2 (7.69)	8 (30.77)	5 (19.23)	1 (3.85)	-	26 (2.00)
Private Salaried	2 (7.69)	13 (50.00)	3 (11.54)	5 (19.23)	3 (11.54)	-	26 (2.00)
Pensioner	6 (50.00)	-	6 (50.00)	-	-	-	12 (0.93)
Caste based profession		15 (100.00)	-	-	-	-	15 (1.16)
Trade & business	20 (37.74)	21 (39.62)	3 (5.66)	3 (5.66)	-	6 (11.32)	53 (4.09)
Entrepreneur	-	-	-	-	-	-	-
Casual labour	3 (2.44)	13 (10.57)	28 (22.76)	60 (48.78)	14 (11.38)	5 (4.07)	123 (9.48)
Marginal labour	1 (14.29)	3 (42.86)	2 (28.57)	1 (14.29)	0 (0.00)	-	7 (0.54)
Household	17 (8.54)	66 (33.17)	85 (42.71)	26 (13.07)	5 (2.51)	-	199 (15.34)
Social Security Pensioner	3 (12.00)	9 (36.00)	3 (12.00)	10 (40.00)	-	-	25 (1.93)
Overall	72 (5.55)	325 (25.06)	314 (24.21)	400 (30.84)	168 (12.95)	18 (1.39)	1297 (100.00)

Note: Based on occupation of individual adult members

Out of total sample households, about 15.34 per cent adult especially women were working in house in which 42.71 per cent belongs to OBC Sikh category. The important picture was seen from the table that out of total households, about 40 per cent of SC Hindu adult were getting social security pension like old age pension, disabled pension, widow pension and other government scholarship scheme in village. The total population of selected sample was 1370 of which 94.67 per cent adult persons were involved in economic activity. This shows that mostly adult persons of village were working and their major contribution was in village development as well as rural development.

5.2.2.2 Livelihood diversification

The occupational distributions of adult members by sex in selected households of Naurangdesar village are given in Table 5.4. It can be seen from the table that out of total sample household, about 58.71 per cent male and 41.25 per cent female were working in different livelihood in village. This table also shows that male adults dominantly working agricultural and agricultural labour work than female. Most of the adult female were working (81.30 %) as casual labour and no female worker were working as a marginal labour in village. Out of total trade and business oriented activity doing by male in village.

Table 5.4: Occupational distribution of adult members by sex in Naurangdesar village. (Nos and %)

Livelihood Groups	Male		Female		Total	
	Numbers	%	Numbers	%	Numbers	%
Cultivator	279	89.71	32	10.29	311	23.98
Agricultural labour	326	65.20	174	34.80	500	38.55
Dairy/Fishing/Poultry keeping	-	-	-	-	-	-
Govt Salaried	16	61.54	10	38.46	26	2.00
Private Salaried	23	88.46	3	11.54	26	2.00
Pensioner	6	50.00	6	50.00	12	0.93
Caste based profession	15	100.00	0	0.00	15	1.16
Trade & business	50	94.34	3	5.66	53	4.09
Entrepreneur	-	-	-	-	-	-
Casual labour	23	18.70	100	81.30	123	9.48
Marginal labour	7	100.00	0	0.00	7	0.54
Household	8	4.02	191	95.98	199	15.34
Social Security Pensioner	9	36.00	16	64.00	25	1.93
Overall	762	58.75	535	41.25	1297	100.00

Note: Based on occupation of individual adult members

The data on the selected sample households in village indicate that about 96 per cent of households, home work was being done by adult female members while in case of around 4 per cent households, male members was completing the household work (most of old age persons). Out of total security pensioner, about 64 per cent females were getting social security pension like old age pension, disabled pension, widow pension from government which was equal share with men.

5.2.2.3 Shift in Livelihood Pattern

Though the village economy has remained predominantly agrarian, the relative importance of cultivation in terms of number of households primarily dependent on it in the occupational structure of the village has gone down. In 1961-62, 76 per cent of the village households followed cultivation as primary occupation which dropped down to 65 per cent in 1968-69 and further down to 38 per cent in 2019-20. While share agricultural labours have increased from 5.7 per cent in 1961-62 to 21.6 per cent in 1968-69 and 41 per cent in 2019-20. Thus, as like at national level, share of cultivators has declined and agricultural labours has increased. The total number of household dependent on agriculture (cultivation, dairying and agricultural labour taken together) has increased-from 81 per cent in 1961-62 to 87 per cent in 1968-69 which again declined to 80 per cent in 2019-20. In other words, only one-fifth of the total households during bench-mark and a little more than one-tenth of the total households during resurvey and two fifth of the total households during last survey depended on non-agricultural sector. The economic development, resulting from irrigation facility, instead of diversifying the occupational pattern, has created converging, forces in favour of strengthening the primary sector. The traditional occupation of Jat Hindus and Jat Sikhs is cultivation and naturally around ninety per cent of their households were cultivating households during all surveys. The overwhelming importance of cultivation in these two caste groups has virtually remained unchanged.

The change in the occupational pattern of scheduled caste Hindu group which is next in importance to Jat Hindus in terras of number of households is quite significant, 72 per cent of these households pursued cultivation and 19 Per cent

agricultural labour as primary occupation during the bench-mark survey. However, during the resurvey period, 1968-69 and 2019-20, the corresponding percentages were 33 and 61; 14 and 73 per cent respectively suggesting a marked change. The process of proletarianisation of this down trodden section of the community appears to be of a continuous nature. The scheduled caste Hindu households were reduced to the rank of agricultural labour class who were having cultivation as their main occupation in the near past. This suggests that income from cultivation of scheduled caste Hindu households might have either declined or had not risen as much as in the case of Jat Hindu and Jat sikh cultivating households. their (scheduled caste households) poor resource endowment and relatively lower availability or irrigation facility seem to have been responsible for aggravating their economic condition. For the first time during resurvey one household each from this caste group had taken up non-agricultural labour and trade occupations. Like scheduled caste Hindu households more of low caste Hindu households had taken up agricultural labour occupation. All scheduled caste Sikh households during both surveys were primarily dependent on agricultural labour.

5.2.3 Pattern of Migration and Changes therein:

The patterns of migrations by caste and economic status in selected households of Naurangdesar village is presented in Table 5.5.

Table 5.5: Extent of migration by caste and economic status in Naurangdesar village. (% of respondents reported migration)

Particulars/ Caste	Economic Categories			
	APL	MAPL	BPL	Overall
General Hindu	11.76	-	-	1.42
OBC Hindu	25.81	-	18.75	24.36
OBC Sikh	1.39	-	-	1.27
Scheduled Caste Hindu	6.78	-	-	4.65
Scheduled Caste Sikh	5.88	-	-	3.23
Scheduled Tribe	-	-	-	-
Minorities	-	-	-	-
All Categories	10.43	-	4.62	9.00

Out of total, 27 cases were reported migrated to other city or town in recent survey. Out of total migrated households, about 24.36 per cent households belongs

to OBC Hindu family members which have migrated to other cities in search of jobs. Out of total sample household, about 10.43 per cent household belongs to APL family.

At the time of benchmark survey in 1961-62, out of 192 households of the bench-mark survey, 35 had left the village, one was merged with the other household and 5 could not be accounted for out the time of survey. Thus 21 per cent of the total households of the had left the village. It was noted that there was a demand for labour, especially in years of good rainfall, which was concentrated for a few months at the time of harvest. Hence the village attracted only the floating type of seasonal immigrant labour. On the other hand, during lean agricultural season, some of the local labour households had to out migrate in search of jobs. During resurvey temporary out migration was on a very low level and only three males in the age group 45-55 years were reported as temporary out migrants. Each one of them belonged to high caste Hindu, intermediate caste Hindu and scheduled caste Hindu households. Out migrants from the first two caste groups were engaged in service within the Rajasthan State whereas the third person. It was observed during resurvey in 1968-69 that the introduction of irrigation facility in the village had enlarged the scope of employment with more even distribution of employment around the whole year. This helped immigrant labour households, especially of Harijan Sikhs, to settle in this village during the post bench-mark period. The conditions of stability created by irrigation considerably restricted out migration from the village.

5.3 Agrarian System

5.3.1 Distribution of land ownership and changes therein:

Tables 5.6 and 5.7 present distribution of land ownership of selected households in selected village at three time periods (1961-62, 1968-69 and 2019-20). The details on leased in land and irrigated land by size of holding for three-time period is presented in Tables 5.8 and 5.9.

Table 5.6: Land Owned by Size Holding (1961-62 & 1968-69)

Size	Number of land owning households (Area in Hectares)		Increase (+) or decrease (-)	Total Land owned (Area in Hectares)		Av land owned per land owning household		Increase (+) or decrease (-)
	1961-62	1968-69		1961-62	1968-69	1961-62	1968-69	
0.01 - 2.49	4	18	350.0	11.74	23.49	2.93	1.31	- 55.3
2.50 - 4.99	16	34	112.5	62.22	99.88	3.89	2.94	- 24.4
Sub Total Small land owners	20	52	160.0	73.96	123.67	3.7	2.37	- 35.9
5.00 - 7.49	20	46	130.0	114.72	269.58	5.73	5.86	+ 2.3
7.50 - 9.99	17	32	88.2	147.4	229.87	8.67	7.18	- 17.2
10.00 - 14.99	41	47	14.6	503.66	532.19	12.59	11.32	- 10.0
Sub Total Small land owners	78	125	60.30	765.78	1031.64	9.82	8.25	- 16.0
15.00 - 19.99	23	23	-	392.36	391.12	17.08	17	- 0.5
20.00 & over	24	21	-12.5	771.97	500.66	32.17	23.84	- 25.9
Sub Total Small land owners	47	44	-6.4	1164.33	891.78	24.77	20.27	- 18.2
Grand Total	145	221	52.4	2004.07	2046.79	13.82	9.26	- 33.0

Notes: The last village resurvey, the holdings of land below 4.99 hectares have been treated as small farms, holdings between 5.00-14.99 hectares as medium farms and holdings above 15.00 hectares as large farms.

The main important feature of this table is that Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties and at time of first survey the total irrigated area was only 6.1 per cent, which has increased to 55 per cent during resurvey period 1973-74 and reached to 90.5 percent in current survey. This indicates that almost 91 per cent area was brought under irrigation of Naurangdesar village. The main source of irrigation was canal in village.

Table 5.7: Land Owned by Size Holding (2019-20) in ha

Size of holdings	Owned land	Leased in land	Leased out land	Net cultivated area
Rainfed				
MF (< 1 ha)	0.14	0.00	0.00	0.14
SF (1-2 ha)	0.30	0.00	0.00	0.30
MDF (2-10 ha)	0.24	0.00	0.00	0.24
LF(1> and 10 ha)	0.61	0.00	0.00	0.61
Total	0.14	0.00	0.00	0.14
Irrigated				
MF (< 1 ha)	1.22	0.09	0.38	0.93
SF (1-2 ha)	1.39	0.09	0.15	1.32
MDF (2-10 ha)	2.41	0.28	0.03	2.67
LF(1> and 10 ha)	7.07	0.33	0.00	7.39
Total	1.39	0.09	0.15	1.32
ALL				
MF (< 1 ha)	0.65	0.00	0.07	0.59
SF (1-2 ha)	1.52	0.09	0.38	1.23
MDF (2-10 ha)	2.66	0.28	0.03	2.91
LF(1> and 10 ha)	7.68	0.33	0.00	8.00
Total	1.53	0.09	0.16	1.46

The leased-in land accounted for 9 per cent of the operated land in 1961-62 and for 11 per cent in 1968-69 which declined to 6.3 per cent 2019-20 (table 5.8). However, there was a positive relationship between the two in 1968-69. The land leased-in by small farms accounted for 9 per cent of the operated land in 1961-62 and 17 per cent in 1968-69. Similarly, for medium farms its proportion increased from 8 per cent in 1961-62 to 14 per cent in 1968-69. However, the proportion of leased-in land to total operated land for large farms remained at 9 per cent during both the surveys. Average area leased-in per farm had increased for large farms in 1968-69 as compared to that in 1961-62. During both surveys, the large farms had cornered larger proportion of total leased-in land. However, during resurvey, the average land leased-in per farm had increased for small farm from 0.26 hectares in 1961-62 to 0.45 hectares in 1968-69 and for medium farms from 0.78 hectares in 1961-62 to 1.24 hectares in 1968-69, whereas it was reduced from 2.51 hectares in 1961-62 to 1.77 hectares in 1968-69. During both surveys the small land owners had leased-out large proportion of their owned land as compared to that by medium and large land owners.

While none of the marginal farmer had taken land on leased-in during 2019-20, while 7.5 per cent of total operational holdings of small farmers group was land leased-in category (table 5.9).

Table 5.8: Leased in Land and Irrigated Land by Size of Holding (1961-62 & 1968-69)

Size of holding group (in Hectares)	Leased in Land (in Hectares)		Leased in land as percentage to total land operated		Net Irrigated area		Net area irrigated as percentage to net area sown	
	1961-62	1968-69	1961-62	1968-69	1961-62	1968-69	1961-62	1968-69
Small farms	6.06	19.71	8.6	16.6	1.26	43.62	1.8	37.7
Medium farms	63.85	139.88	7.7	13.5	58.56	492.29	7.1	51
Large farms	115.6	93.58	9.3	8.6	70.67	605.98	5.7	60
TOTAL	185.51	253.17	8.7	11.3	130.49	1141.89	6.1	55

Notes: The last village resurvey, the holdings of land below 4.99 hectares have been treated as small farms, holdings between 5.00-14.99 hectares as medium farms and holdings above 15.00 hectares as large farms

Table 5.9: Leased in Land and Irrigated Land by Size of Holding (2019-20)

Size of holding group (in Hectares)	Leased in Land 2019-20		Net Irrigated area	
	Area in ha	% to total	Area in ha	% to NSA
MF (< 1 ha)	0.00	0.00	8.4	75.3
SF (1-2 ha)	2.38	7.45	24.1	75.7
MDF (2-10 ha)	13.50	9.66	128.1	91.7
LF(1> and 10 ha)	10.50	4.10	236.6	92.4
Total	26.38	6.01	397.3	90.5

5.3.2 Major land tenure system in the village and changes therein

Under land tenure system in village, leasing-in and leasing-out tenancy with share cropping basis of the output was found prevalent among the cultivators. The prevailing rate of leasing-in and leasing-out was about Rs. 60000 per hectare of irrigated land and Rs. 16000 per hectare for rainfed land in Naurangdesar Village.

5.3.3 Operational holding and size distribution (including changes therein)

The distribution of land holdings in the village in Naurangdesar village is presented in Table 5.10. It can be seen from the table that the comparative analysis of distribution of land holdings during last resurvey (1968-69) and current survey indicate that the average size of land holding size has declined significantly. The average size of land holdings has declined from 10.5 ha in 1968-69 to 3.51 ha in 2019. The main reason behind this significant land holding size declining was that population is increasing very rapidly and land holding is distributed in small fraction which is noticed also at all India level. Also, one more reason was noticed that in previous survey Naurangdesar village was distributed in many villages according to chak system so that total number of households were also declining in current survey.

Table 5.10: Distribution of land holdings in the village in Naurangdesar village (in Hectares)

Particulars	In 1968-69 #	In 2019	
	(during last survey)	(during current survey)	
Total number of holdings	214	125	
Marginal farms	0	Marginal farms (>1 ha)	19
Small farms (0.01 to 4.99 ha)	44	Small farms (1.00 to 2.00 ha)	26
Medium (5.00 to 14.99 ha) & Large (15.00 and above)	170	Medium (2.00 to 10.0 ha) & Large (10.00 and above)	80
All Farms	214	All Farms	125
Total area operated	2246.02	845.875	
Marginal farms	0	21	
Small farms	118.74	59.5	
Medium & others	2127.28	765.375	
All Farms	2246.02	845.875	
Average size of holdings	10.5	3.511	
Marginal farms	0	0.586	
Small farms	2.7	1.226	
Medium & others	12.51	4.948	
All Farms	10.5	3.511	

Notes: #: These area figures are export from Resurvey of Naurangdesar Village (1973-74)
Source: Field survey 2019.

5.2.4 Land Utilization and Changes Therein

The basic characteristics of farm households in Naurangdesar village is presented in Table 5.11. From the table, it can be seen that the average family size in selected households of Naurangdesar village was 4.77 and they operated land area of average 3.51 hectare. The land man ratio was found higher or near about one in medium and above categories farmers and the lowest was noticed in marginal and small farmers' categories. The average cropping intensity was almost same in all categories and net irrigated area was estimated to be 94.3 percent of net sown area in village. The average education of head of the family was 5th class which was almost same in all classes and on an average three crops were grown in village every year.

Table 5.11: Basic characteristics of farm households (2019-20)

Category	Average family size	Average operated area (In Ha)	Land man ratio	Cropping intensity (%)	Net irrigated area to NSA (%)	Education of head of family (Years)	Average nos. of crop grown in year
Marginal	3.74	0.59	0.16	188.8	94.0	4	2
Small	4.42	1.23	0.23	186.7	82.8	5	2
Medium & above	5.13	4.95	0.96	193.3	95.2	5	4
Total	4.77	3.51	0.76	192.7	94.3	5	3

Source: Field survey 2019-20.

5.3.5 Major farming system in the village and changes therein

Farming systems in India are strategically utilized, according to the locations where they are most suitable. Farming system is a set of agro economic activities that are interrelated and interact with themselves in a particular agrarian setting. It is a mix of farm enterprises to which farm families allocate its resources in order to efficiently utilize the existing enterprises for increasing the productivity and profitability of the farm. These farm enterprises are crop, livestock, aquaculture, agro forestry and agri-horticulture. In Naurangdesar village, crops were grown in both seasons during current survey period which was possible only due to canal irrigation facility. After IGNP canal and Naurangdesar Distributary, the area under irrigation has been increased by more than 90 per cent and farmer are growing high values crops. During 1960s only rainfed crops were grown in which mostly Guar, Barley and rainfed pulses crops cultivated.

5.3.6 Cropping Pattern and Changes therein

5.2.6.1 Cropping Pattern:

Table 5.12 presents the cropping pattern of selected households in Naurangdesar village in 2019. The main crops grown during the kharif season were cotton and guar which contributed about 58.49 and 26.62 percent area respectively. Cotton crop is grown in irrigated condition. The main crops grown during rabi season were wheat and rapeseed & mustard which accounted for about 60.76 and 36.36 percent area respectively in Rabi season. Very few farmers are growing crops in summer season while only one sample farmer has grown fruit

and vegetables in village. The kharif and rabi season accounts for 51.80 and 48.09 percent of gross cropped area of the village which was near about to same due canal irrigation facility in both seasons.

Table 5.12: Cropping Pattern in the Village Naurangdesar in 2019. (in %)

Particulars	Kharif	Rabi	Summer/ Zaid/Boro	Perennial crops	Total
Irrigated					
1. Cereal Crops					
Paddy	2.0	-	-	-	1.03
Wheat	-	60.76	-	-	29.22
Bajra	-	-	-	-	-
2. Pulses	-	-	-	-	-
Gram	-	0.92	-	-	0.44
3. Oilseeds	-	0	-	-	-
Rapeseed & Mustard	-	36.36	-	-	17.48
Groundnut	3.59	-	-	-	1.86
4. Fruits & vegetables	-	-	-	-	-
Kinnow	-	-	-	100	0.12
5. Others					
Cotton	58.49	-	-	-	30.29
Guar	26.62	-	-	-	13.74
Fodder	0.11	-	-	-	0.06
Rainfed					
1. Cereal Crops	-	-	-	-	-
Paddy	-	-	-	-	-
Wheat	-	-	-	-	-
Bajra	1.54	-	-	-	0.8
2. Pulses	-	-	-	-	-
Gram	-	1.97	-	-	0.95
3. Oilseeds	-	-	-	-	-
Rapeseed & Mustard	-	-	-	-	-
Groundnut	-	-	-	-	-
4. Fruits & vegetables	-	-	-	-	-
Kinnow	-	-	-	-	-
5. Others	-	-	-	-	-
Cotton	-	-	-	-	-
Guar	7.65	-	-	-	3.96
Fodder	-	-	-	-	-
Total Area (Irrigated + Rainfed)	51.8	48.09	-	0.12	100

It can be seen from the table 5.13 that crops like rice, wheat, cotton, rapeseed and mustard, fodder and Kinnu are grown under irrigated conditions while gram and guar are grown under both irrigated and rainfed condition and bajra is grown under rainfed condition only.

Table 5.13: Crop wise Irrigated and Rainfed Area

Crop	Rainfed/ Irrigated	Farmers Category				Grand Total
		MF	SF	MDF	LF	
Rice	irrigated	-	-	100.00	100.00	100.00
Bajra	irrigated	0.00	-	0.00	0.00	0.00
	Rainfed	100.00	-	100.00	100.00	100.00
Wheat	irrigated	100.00	100.00	100.00	100.00	100.00
Gram	irrigated	100.00	16.67	31.25	-	31.91
	Rainfed		83.33	68.75	-	68.09
Guar	Irrigated	57.14	19.48	84.17	80.85	77.69
	Rainfed	42.86	80.52	15.83	19.15	22.31
Ground Nut	irrigated	-	-	-	100.00	100.00
Cotton	Irrigated	100.00	100.00	100.00	100.00	100.00
R&M	irrigated	100.00	100.00	100.00	100.00	100.00
Fodder	irrigated	-	-	100.00	100.00	100.00
Kinnu	irrigated	-	100.00	-	-	100.00

Table 5.14 provides data on the relative allocation of gross cropped area under major crops during 1961-62 and 1968-69. The data reveal that though the crop pattern during both the surveys was food crop oriented irrigation has contributed towards a gradual shift in area from food to non-food commercial crops. The area under food crops which accounted for as much as 90 per cent of the gross cropped area in 1961-62 was reduced to 77 per cent in 1968-69. The analysis of crop pattern in different farm size groups clearly shows the tendency for the area under food crops to go down progressively with the increase in the farm size. The same trend was continued in latest survey in 2019-20 (table 5.15). The drastic decline in area under food grain crop has been reported (from 76.8 per cent of GCA in 1968-69 to 32.4 per cent in 2019-20).

Table 5.14: Area Under Major Crop Heads as Percentage of GCA by size of Holdings (1961-62 & 1968-69)

Size of holding (in Hectares)	Year	Cereals	Pulses	Mixed area under cereals & pulses	Total	oilseed	Cotton	Sugarcane	Fodder Crops	Other	Total
Small Farms	1961-62	18.1	65.8	14.3	98.2				1.8		100
	1968-69	28.2	51.3	4.6	84.1		2.4	0.1	13.4		100
Medium Farms	1961-62	32.4	60	1.2	93.6				6.2	0.2	100
	1968-69	23.9	51.4	1.9	77.2	0.2	6.2	0.4	16		100
Large Farms	1961-62	29.2	55.2	3.6	88				12		100
	1968-69	27.9	44.2	3.3	75.4	0.3	8.9	0.5	14.9		100
Total	1961-62	30.1	57.4	3	90.5				9.4	0.1	100
	1968-69	26.1	48	2.7	76.8	0.2	7.3	0.4	15.3		100

Table 5.15: Area Under Major Crops Heads as Percentage of GCA by size of Holdings (2009-20)

Size of Landholding	Cereals	Pulses	Total Food	Oilseed	Cotton	Guar	Fodder	Kinnu	Total
MF	42.86	3.57	46.4	2.98	42.26	8.33	0.00	0.00	100.0
SF	38.24	5.04	43.3	1.47	37.39	16.18	0.00	1.68	100.0
MDF	32.97	2.93	35.9	15.00	31.69	17.33	0.09	0.00	100.0
LF	28.61	0.00	28.6	24.62	28.15	18.57	0.05	0.00	100.0
Total	31.05	1.39	32.4	19.34	30.29	17.75	0.06	0.12	100.0

The second important change was observed in the crop pattern was with regard to increase in the area under fodder crops from 9 per cent of gross cropped area in 1961-62 to 15 per cent in 1968-69. While same declined to 0.06 per cent in 2019-20. In 1961-62, guar alone was grown as fodder crop but in 1968-69, 76 percent of the area under fodder crops was accounted for by guar. The increased importance of fodder crops in terms of land utilization in 1968-69 was due to two factors: firstly, the guar had a ready market at remunerative prices. The demand for guar had gone up due to the starting of a factory for making gum from guar in the post bench-mark period in the region. The second reason for the popularity of fodder crops was the increase in the number of livestock in general and of stall-fed animals like draught animals and buffaloes in particular which created a necessity for the farmers to allocate large area under fodder crops. The area under guar crop was separately from fodder crops in 2019-20 and it account significant share in GCA which accounts for almost 18 per cent of GCA in 2019-20 and therefore area under fodder may be came down.

At the time of bench-mark the relative area under fodder crops was positively related with the farm size but during resurvey the middle sized farms were found to have more of the fodder area (16.0 per cent) than that of small farms (13.4 per cent) and of the large sized farm (14.9 per cent). It is worth noting that at the time of bench-mark there was a wide variation in the proportions of gross cropped area devoted to fodder crops among farms of different size groups but during resurvey the variations had considerably narrowed down. During 2019-20,

only medium and large land holders had devoted land for fodder cultivation other groups may have used bunds and common grazing land to feed their animals.

Last but not the least important change in the crop pattern was with regard to the introduction of altogether new crops like oil seeds cotton and sugarcane; also, rajko and mixture of jowar and maize were taken as fodder crops for the first time in the post bench mark period. Sugarcane and cotton are not only long duration crops but are also costly crops in the sense that besides the requirement of more of water at regular intervals they are labour and fertilizer intensive crops. In term of percentage of area cotton was the more important crop (7.3) cent of the gross cropped area) than sugarcane (0.4 per cent of area) and oilseeds (0.2 per cent of area). The proportions of area under these crops had a tendency to go up with the size of the farm. While during 2019-20, the cotton crop emerged as major crop having 30 per cent of GCA and no area under sugarcane crop was reported. Kinnu crop was reported by the small farmers.

The area under different cereals as percentage to total area under cereals by the size of holding during 1961-62, 1968-69 and 2019-20 is presented in Tables 5.16 and 5.17. Table 5.16 clearly reveals that considerable reshuffling in the relative importance of different crops among cereals has taken place during the resurvey period. The inferior cereals which were dominating in 1961-62 had gained a little in importance in terms of its share in gross cropped area during resurvey. In absolute terms the area under wheat has increased for farms below 7.49 hectares and for farms in the size-group 15.00 to 19.99 hectares. The area under wheat which occupied 41 per cent of the total area under cereals in 1961-62 formed only 38 per cent in 1968-69. The relative area allotted to wheat crop and the size of farm were not found to have any relationship during both the surveys. However, the proportion of area under wheat for small farms had been reduced significantly from 42 per cent in 1961-62 to 29 per cent in 1968-69 whereas for large farms proportionate area under wheat declined from 43 per cent in 1961-62 to 38 per cent in 1968-69. Table 5.19 indicates complete change in allocation of area under cereals, at the cost of losing the area under jowar and barley crops and drastic decline in area under bajra crops, more than 90 per cent of cereals crop area

shifted under superior cereal crop i.e. wheat. In fact, small farmers grow only wheat crop under cereal category.

Table 5.16: Area under different cereals as percentage to total area under cereals by the size of holding (1961-62 & 1968-69)

Figures in percentage

Size of holding (in Hectares)	Year	Superior Cereals	Inferior Cereals				Total Cereals
		Wheat	Bajra	Jowar	Barley	Total	
Small Farms	1961-62	41.6	8.9	11.8	37.7	58.4	100
	1968-69	28.8	63.2	1.4	6.6	71.2	100
Medium Farms	1961-62	36.8	12.2	18.3	32.7	63.2	100
	1968-69	39.5	53.4	4.6	2.5	60.5	100
Large Farms	1961-62	43.5	12.6	27.5	16.4	56.5	100
	1968-69	38.3	51.5	9.3	1.3	62.7	100
Total	1961-62	40.6	12.4	23.4	23.6	59.4	100
	1968-69	38.3	52.8	6.8	2.1	61.7	100

Table 5.17: Area Under Different Cereals as Percentage to Total area under Cereals by size of Holdings (2019-20)

Size of Landholding	Superior Cereals		Inferior Cereals	Total
	Wheat	Rice	Bajra	Cereals
MF	94.4	0.0	5.6	100.0
SF	100.0	0.0	0.0	100.0
MDF	93.9	1.4	4.7	100.0
LF	93.3	5.3	1.4	100.0
Grand Total	94.1	3.3	2.6	100.0

Table 5.18: Percentage Distribution of irrigated area under different crops by size of farm in 1968-69

Crop	Size of Farm			
	Small Farms	Medium Farms	Large Farms	Total
Gram	32.53	33.94	34.38	34.12
Guar	15.39	15.73	12.77	14.16
Deshi Wheat	10.23	13.09	10.64	11.69
Mexican Wheat	3.56	1.57	3.93	2.88
Deshi Bajra	13.18	12.24	8.35	10.24
HYV Bajra	3.92	3.29	5.49	4.47
Jowar	0.48	1.4	3.3	2.36
Barely	2.18	0.04	0.21	0.21
Barley and Gram Mix	4.89		1.06	0.74
Moth & Moong	0.48	0.37	1.41	0.92
Oilseed		0.3	0.28	0.26
Deshi Cotton	5.84	10.62	12.52	11.43
Improved Cotton		0.59	1.55	1.07
Sugarcane	0.25	0.64	0.79	0.7
Other Fodder Crops	7.06	6.18	3.36	4.72
Total Irrigated area	100	100	100	100

The analysis of irrigated area in different size groups presented in Tables 5.18 and 5.19 reveals that all size group of farms had accorded first priority to gram and second to guar in terms of area to be irrigated in 1968-69 and roughly speaking irrigated area under these two crops accounted for about half of the total area under irrigated crops for all size group of farms. The medium farms accorded third priority to local variety of wheat whereas third priority was accorded to local bajra by the small farms. The scenario got changed in 2019-20 wherein cotton crop accorded first choice followed by wheat crop and then rapeseed mustard and gaur crop. The distribution of irrigation facility among different crops was dependent on several factors. Important among them were distance of the farm to be irrigated from the main field channel (the fields at the tail of the field channels were in disadvantageous position in terms of quantity of water and its frequency, the number of years of irrigation on a plot type of soil (both in terms of fertility and level of land) and the economic condition of the farmer.

Table 5.19: Percentage Distribution of Irrigated Area under Different Crops by Size of Farm in 2019-20

Crop	Size of Farm				Grand Total
	MF	SF	MDF	LF	
Rice	0.0	0.0	0.5	1.6	1.1
Wheat	43.0	46.2	33.0	27.8	31.0
Gram	3.8	1.0	1.0	0.0	0.5
Guar	5.1	3.8	15.6	15.6	14.6
Ground Nut	0.0	0.0	0.0	3.3	2.0
Cotton	44.9	45.2	33.8	29.3	32.1
R&M	3.2	1.8	16.0	22.3	18.5
Fodder	0.0	0.0	0.1	0.1	0.1
Kinnu	0.0	2.0	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0

5.3.6.2 Crop diversification

The changes in cropping pattern on the farms of Naurangdesar village during the current resurvey over the last survey is analyzed and presented in Table 5.20. It can be seen from the table that due to availability of canal water for irrigation, the crop area is diverted from pulses crops to other crops like paddy, oilseed crops and cotton. During current survey, it was reported by the villagers

that area under wheat and guar has increased at the cost of decline under pulses crops which was grown as rainfed crops.

Table 5.20: Change in Cropping Pattern on the farms in the Naurangdeshar Village

Crops	Share in total cropped area (%)		Change in per cent points in 2019
	In 1968-69	In 2019	
	(during last survey)	(during Current survey)	
Paddy	0.0	1.03	1.03
Wheat	12.3	29.22	16.92
Gram	56.1	1.39	-54.71
Barley	7.1	0.00	-7.1
Wheat/	1.7	0.00	-1.7
Gram/ Barley	1.3	0.00	-1.3
Rapeseed & Mustard	0.0	17.48	17.48
Groundnut	0.0	1.86	1.86
Jowar	7.0	0.00	-7
Bajra	3.7	0.80	-2.9
Guar	9.4	17.75	8.35
Moth	1.2	0.00	-1.2
Moong	0.1	0.00	-0.1
Fodder	0.1	0.06	-0.04
Kinnow	0.0	0.12	0.12
Cotton	0.0	30.29	30.29

Table 5.21: Crop Diversification Index

Category	Herfindahl Index (HI)	Simpson Index =1-HI	Entropy Index (EI)	Modified Entropy Index (MEI)
MF	0.537	0.463	0.746	0.691
SF	0.462	0.538	0.756	0.701
MDF	0.381	0.619	0.940	0.871
LF	0.374	0.626	0.979	0.908
Overall	0.370	0.630	0.975	0.904

For measuring the extent of diversification of study, HI, SI, EI and MEI index are used. All these indices are computed on the basis of proportion of gross cropped area under different crops cultivated in a particular geographical area. As Herfindahl index are concentration indices, a high index value shows lesser diversification and increased specialization and a low index value shows higher diversification. The Herfindahl index value is 0.37 being relatively low implies a significant level of diversification in the Study area. Diversification over the period has also been measure by Simpson's Index, Herfindahl index, Entropy and Modified Entropy Index. The Herfindahl and Simpson Index do not show any clear trend in index values. However, the Modified Entropy Index, which overcomes the

limitation of Entropy index by using a variable logarithmic base, shows a steady upward trend in the value of index 0.975 implying an increase in diversification in the study area. While across groups, more area resulted in more diversification is noticed.

5.3.6.3 Shift in Cropping Pattern

The trend of cropping pattern in Naurangdesar village during 1968-69 to 2019 is presented in Table 5.22. It can be seen from table that that the area under cereals has increased by 18.96 per cent points over base year, i.e. which has increased from 26.1 per cent in 1968-69 to 31.05 per cent in 2019 whereas the area under pulses has significantly declined by 46.6 per cent points during corresponding period. The area under oilseed crops has increased by 19.14 per cent points because most of farmers preferred to grow cereals and oilseeds (high value) crops due easy availability of irrigation facility. The area under cotton crop has also increased by about 23 per cent points. The area under fodder crop has declined by 15.24 per cent points may be due to the fact that farmers are more interested in growing cash crops rather than fodder crops, which is not good for livestock rearing. The expansion of irrigation facility through IGNP canal system to farmers has changed the cropping pattern and now farmers are more intended to grow cash crops or more profitable crops like, wheat, cotton, rapeseed & mustard and guar.

Table 5.22: Trends in cropping pattern in Naurangdesar village during 1968-69 to 2019

Crop groups	Share in total cropped area (%)		growth in area (%) over base year
	In 1968-69	In 2019	
	(during last survey)	(during Current survey)	
Cereals	26.1	31.05	4.95
Pulses	48	1.39	-46.6
Oilseeds	0.2	19.34	19.14
Cash crops (Cotton)	7.3	30.29	22.99
Fruits	0.0	0.12	0.12
Fodder	15.3	0.06	-15.24
Condiments & Spices			
Vegetables			
Sugarcane and others (Guar)	3.1	17.75	14.65
Total	100	100	-

Source: Field survey data 2019 and resurvey report 1973-74.

5.3.7 Irrigated area by sources and changes therein

The drastic changes were observed in irrigated area by sources in Naurangdesar village. Most of farmers used to grow rainfed crops during last survey but in current survey, it was observed that more than 90 per cent area was irrigated by canal water.

5.3.8 Average yield of different crops and changes therein:

Average yield level of different crops in Naurangdesar village in both survey is presented in Table 5.23. It can be seen from the table that there is a tremendous improvement in crops yield except guar crop in recent survey over base survey. The yield of wheat crop has increased by 481.45 per cent while yield of bajra crop has increased by about 204 percent, gram crop yield by 80.93 percent, and cotton crop yield by 202.36 percent. Only guar crop yield was marginally declined from 8.35 to 7.26 Qtls/ha in village and mostly farmers were growing guar crop in unirrigated condition in village that's why yield was observed less in earlier period.

Table 5.23: Trends in yield in Naurangdesar village during 1968-69 to 2019

Crop groups	Yield (Qtls/Ha.)		Changes (%)
	In 1968-69	In 2019	
	(during last survey)		
Wheat	8.84	51.4	481.45
Bajra	4.44	13.48	203.60
Gram	5.35	9.68	80.93
Guar	8.35	7.26	-13.05
Cotton	9.34	28.24	202.36

Source: Field survey data 2019 and resurvey report 1973-74.

5.3.9 Average Value of input use per hectare (crop-wise) and changes therein

Production is a function of inputs. The demand for agricultural inputs is largely governed by the type of crop availability of irrigation facility the financial position of the farm operator and the price level of various factor inputs and output. During the resurvey conducted for the year 1968-69, impact of irrigation on the input structure was studied through cost of different inputs per hectare of irrigated and unirrigated land. On the whole total cost of main variable inputs per hectare of irrigated crops was worked out to be less than one-fifth of it for dry crops. Out of

total cost of inputs of irrigated crops the cost of seed and fertilizer were the most important variable costs. The third important cost of input of irrigated crops was hired casual labour charges. The analysis suggests that the cost of seed farm yard manure and tractor charges for irrigated crops were inversely related and the cost of fertilizers, hired casual labour irrigation charges insecticides and even the total cost of all inputs for irrigated crops were positively related with the size of the farm. In the case of dry crops, the costs on seed and farm yard manure were inversely related and that of fertilizers and hired labour charges positively related with the farm size.

Impact of irrigation on different inputs was most felt on the use of fertilizers. Sugarcane was found to be the highest fertilizer consuming crop followed by Mexican wheat, improved cotton and HYV bajra. Irrigation does not seem to have brought perceptible impact on the per hectare fertilizer costs for crops like guar and gram. Apart from sugarcane the farm yard manure was generally given to the kharif crops like hybrid bajra oilseeds and fodder crops only. Among kharif crops also crops like barley mixed crops and minor pulses were not given any farm yard manure at all. The per hectare cost of fertilizers arid farm yard manure taken together accounted for more than half of the total input cost for crops like sugarcane, bajra, cotton and oil seeds. Irrigation by encouraging the introduction of such crops requiring high level of ancillary inputs had indirectly pushed up the demand for labour. Sugarcane both varieties of cotton Mexican wheat and hybrid bajra were relatively more labour intensive crops as compared to other crops. Guar and gram were the least labour intensive crops and this was one of the important factors for their dominant position in the crop pattern of the village.

5.3.10 Distribution of livestock resources and changes therein

The importance of livestock in rural economy in general and cultivation in particular needs the emphasis. Besides providing milk, so necessary for the sustenance they provide traction power required in cultivation and its allied pursuits. Fortunately, Naurangdesar had superior breed of cattle. Prominent breed of cows "sindhi" and that of buffaloes "Hathi", both famous for their high yield of milk. Despite this, dairying as a commercial pursuit or even as a subsidiary source

of income had not developed at all. Very few of the households in the village were reported to have sold within or outside the village. The reasons given for not selling milk were firstly, larger quantitatively of milk was being consumed to supplement the shortage of drinking water and secondly, sale of milk was treated as violating the religious principles. Viewed from this angle, the economic utility of the cattle in the village apart from providing milk for self-consumption was confined to the provision of traction power during 1970s survey situation. But in current survey, it was observed that there is a milk cooperative society in the village which purchases milk on the basis of fat percentage from the member. Milk also being collected by private dairy and bike vendor and sold in near city. According to our survey, there were milch animal resources increased by 49 per cent as compared to last survey (table 5.24). Young stock also increased but sheep and goat has declined in Naurangdesar Village. It was also observed that some poultry farms especially hen rearing were managed by Sikh community in the village.

Table 5.24: Livestock resources in Village -Naurangdesar

Livestock	Livestock Resources		% Changes
	In 1968-69	In 2019	
Milch Cattle	43.4	64.67	49.00
Young stock	36.6	59.00	61.20
Sheep/goat/pig	7.0	6.00	-14.28
Poultry/Duck	0.0	0.33	100

5.3.11 Tools, implements and machinery use in agriculture

The main implements owned by the villagers were ploughs, harrow, handhoes, kassi, danti, kassia and crushers. Recently improved grass cutting machiner and iron ploughs were also purchased by a few families. Only two families owned tractors. But a large majority of the cultivators owned primitive type of tools and implements in last survey reported but in current survey more than 23 per cent farmers had tractor and most of farmers had farm implements and machinery for used in agriculture (table 5.25).

Table 5.25: Tools, implements and machinery use in agriculture in Village

Sr. No.	Farm Implements	Per cent age of Household	Average Value (Rs.)
1	Tractor	23.33	323695.65
2	Power tiller	0.67	95000.00
3	Bullock cart	8.67	11057.69
4	Plough	0.33	20000.00
5	Water pump	2.00	25833.33
6	Threshers	0.33	100000.00
7	Sprayers	1.67	2900.00

5.3.12 Input use (fertilizer, pesticide, etc) in agriculture and changes therein

The market of several of the home produced inputs is so imperfect and or limited that values cannot be imputed the measure of accuracy that is essential for a meaningful analysis. Therefore, only a broad picture of input structure, incorporating the significant among them is sought to be presented. Main attention is focused on those inputs use of which is likely to change, in volume or quality, significantly in foreseeable future; the inputs discussed are wage paid labour, seeds fertilizers, manures, water charges and land revenue. They also, broadly correspond to the out of the pocket expenses incurred by the farmers. In current survey we observed that the availability of irrigation water high intension of chemical fertilizer and pesticide were used for high production in Naurangdesar village while last survey reported that the most of farmer's in village used farm manure and less use of chemical fertilizer due to less irrigation facility in the village.

5.3.13 Production and disposal of farm outputs:

The profitability of major crops cultivated in Naurangdesar village in recent survey is given in Table 5.26. It can be seen in the table that the all crops are profitable except Guar crop. Guar crop has incurred loss in irrigated as well as under rainfed condition of 1.64 and 3.85 percent respectively in village which means only one selected farmer have incurred loss in cultivating guar crop in village.

Table 5.26: Profitability of major crops cultivated in the village Naurangdesar (% respondents)

Particulars	Profitable	No profit no loss	Incurred loss	Total
Irrigated				
1. Cereal Crops	-	-	-	-
Paddy	100	-	-	100
Wheat	100	-	-	100
Bajra	-	-	-	-
2. Pulses	-	-	-	-
Gram	100	-	-	100
3. Oilseeds	-	-	-	-
Rapeseed & Mustard	100	-	-	100
Groundnut	100	-	-	100
4. Fruits & vegetables	-	-	-	-
Kinnow	-	-	-	-
5. Others	-	-	-	-
Cotton	100	-	-	100
Guar	98.36	-	1.64	100
Fodder	100	-	-	100
Rainfed				
1. Cereal Crops	-	-	-	-
Paddy	-	-	-	-
Wheat	-	-	-	-
Bajra	100	-	-	100
2. Pulses	-	-	-	-
Gram	100	-	-	100
3. Oilseeds	-	-	-	-
Rapeseed & Mustard	-	-	-	-
Groundnut	-	-	-	-
4. Fruits & vegetables	-	-	-	-
Kinnow	-	-	-	-
5. Others	-	-	-	-
Cotton	-	-	-	-
Guar	96.15	-	3.85	-
Fodder	-	-	-	-

5.2.14 Prevalent marketing channels and procurement arrangements

Table 5.27 presents the disposal of major farm produces and price realization in Naurangdesar village. This table shows that Cotton and Kinnoo crops were 100 percent sold through market/businessman/government agency in village. More than 90 percent farm produce like Paddy, Gram, Rapeseed & Mustard, Groundnut and Guar were sold through market/businessman/government agency etc different marketing channels. About 78.87 per cent of wheat and 54 percent of Bajra produce was sold by selected farmers through market. As far as concern about prevailing market price of major crops which received by selected farmers is comparatively higher than other districts farmers in state because they are well aware about new agriculture technique and they have good irrigation facility.

Table 5.27: Disposal of major farm produces and price realization in Naurangdesar village.

Particulars	% produce sold	Average price received	Units	Sold to whom? *
1. Cereal Crops			Rs./Qtl	
Paddy	99.33	2500	Rs./Qtl	Market/Government Agency
Wheat	78.87	1776	Rs./Qtl	Market/Businessman/Govt Agency
Bajra	54	1280	Rs./Qtl	Market/Businessman
2. Pulses			Rs./Qtl	
Gram	98.75	4775	Rs./Qtl	Market/Businessman
3. Oilseeds			Rs./Qtl	
Rapeseed & Mustard	91.72	3931.25	Rs./Qtl	Market/Businessman/Govt Agency
Groundnut	93.33	4066.67	Rs./Qtl	Market
4. Fruits & vegetables			Rs./Qtl	
Kinnow	100	1500	Rs./Qtl	Market
5. Others			Rs./Qtl	
Cotton	100	4939	Rs./Qtl	Market/Businessman/Govt Agency
Guar	94.94	3546.84	Rs./Qtl	Market/Businessman
Fodder	0	500	Rs./Qtl	Home Retained for Feed

Source: Field survey data 2019.

Note *: Showing in descending order.

5.4 Poverty, Income and Consumption:

The composition of annual income of households in Naurangdesar village by livelihood groups is presented in Table 5.28. This table shows that the annual average income from all sources is estimated to be Rs 327003 in all occupational groups in village. The average income of cultivator is estimated to be Rs 484494 and farm income contributes 81.06 percent while non farm income contributes near about 19 percent. The highest income earned was by government salaried persons in village and the lowest income earned by casual labours groups having estimated Rs. 759700 and Rs. 124333 per annum respectively. This table suggests a very important feature that off farm income generated through labour earnings, other off farm and asset hiring income like tractor and other agricultural equipments rented out and agricultural labour getting highest income in village. Private salaried person's earning was Rs. 296125 per year which is lesser than 38 percent of government salaried persons earned annually. The overall average income of village is very economical viable and this suggest economic activities in

village is better. The Gini coefficient estimated across the land holding groups as well as landless group indicate that there is inequality across the groups (0.284).

Table 5.28: Composition of annual income of households in Naurangdesar village by livelihood groups. (Rupees per capita per annum)

Livelihood Groups	Farm Income	Off-farm Income	Non-farm Income	Total
Cultivator	392755	29052	62687	484494
Agricultural labour	18871	82571	59321	160763
Dairy/Fishing/Poultry keeping	-	-	-	-
Govt Salaried	124777	0	634923	759700
Private Salaried	90000	10500	195625	296125
Pensioner	20000	6667	264333	291000
Caste based profession	30833	20833	142667	194333
Trade & business	38588	13429	273667	325683
Entrepreneur	-	-	-	-
Casual labour	32333	64167	27833	124333
Marginal labour	9000	25000	111000	145000
Household	-	-	-	-
Others	-	-	-	-
Overall	170448	48586	107969	327003

Source: Field survey data 2019.

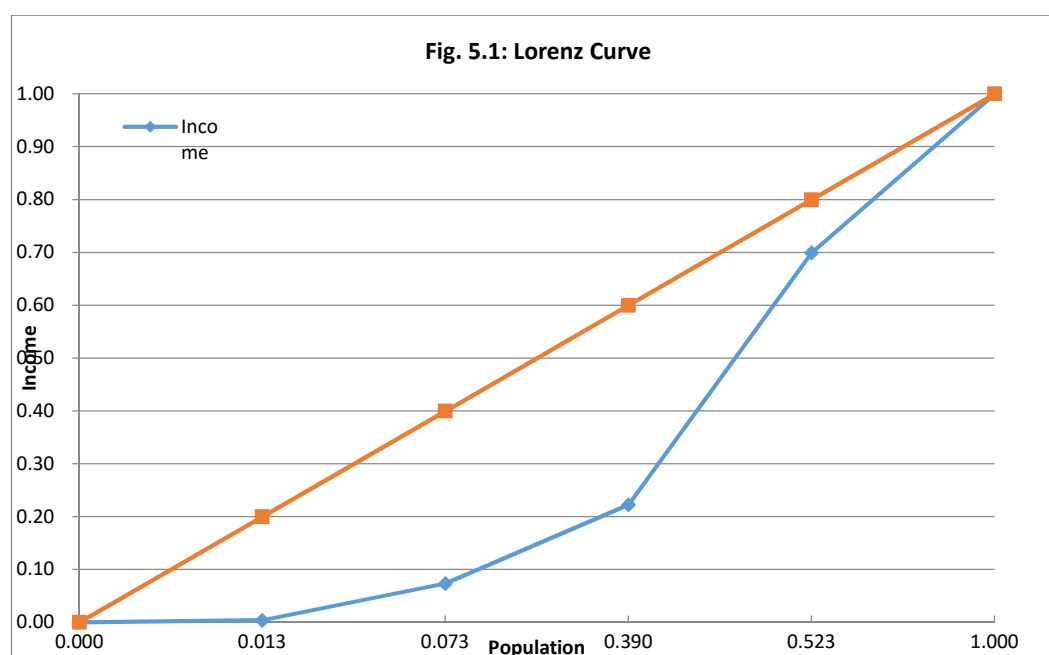
5.4.1 Distribution of households by income and poverty level:

Table 5.29 presents the composition of annual income in Naurangdesar village by caste group. This table shows that highest income per annum gained by Sikh OBC caste and the lowest income gained by ST Hindu caste in village and they got income Rs. 574035 and Rs. 101750 per annum respectively. General caste Hindu and General caste OBC have reported more or less same annual income though income structures were quite different in all manner. The very important observation is that income level of SC Hindu families was higher than SC Sikh families, having Rs 198297 and 153935 per annum respectively and the main reason behind this seen at the time of survey was that SC Sikh families receive less employment opportunity in other sectors in outside village area and generally they have been working like permanent agricultural labourer under capitalist rich Sikh OBC families since several decades. The SC Sikh families were migrated from Punjab and Haryana state when IGNP canal irrigation system was developed in Naurangdesar village. The Gini coefficient is estimate d to be 0.1658 indicates the inequality in the village in terms of income distribution across the groups (Fig. 5.1).

Table 5.29: Composition of annual income in Naurangdesar village by castes

Religion & Castes		Composition of annual income in Naurangdesar village by castes. (Rupees per capita per annum)			
		Farm Income	Off-farm Income	Non-farm Income	Total
Caste Hindu	General	14886	8182	305636	328705
OBC	Hindu	154038	47000	124872	325910
	Sikh	446162	16835	84038	547035
SC	Hindu	37442	77683	83172	198297
	Sikh	10484	81935	61516	153935
ST		0	44750	57000	101750
All		170448	48586	107969	327003

Source: Field survey data 2019.



5.4.2. Asset profile of the rural households

The assets include land (both owned and government allotted), owned building (both residential and others), livestock, implements and machineries, financial assets and consumer durables. We have included government allotted land in ownership of assets because such lands will eventually be owned by the cultivator households when they pay land values. The asset profiles of the rural households in Naurangdesar village is given in Table 5.30. Out of total sample households in the village, all the households owned their own house in village which has an average value about Rs. 3.54 lakh, while during last survey, around 83 per cent households owned house. Out of total households, 23 percent households possessed tractor in current survey while during last survey recorded

only two tractors were in the village. In Naurangdesar village, the number of vehicles, livestock, farm implements have been increased as compared to last survey. In can be also observed that some durable assets like TV radio, Refrigerator, AC, Computer, Electric machine and LPG gas are used by these households which were not used in early 1970s.

Table 5.30 Asset profile of the rural households

Sr. No.	Particulars	Average assets	Average value
1	Res. House	100.00	354970.00
2	Com land/building	3.67	422727.27
3	Cultivated Land	48.33	7388275.86
4	Cattle shed	11.00	54515.15
5	Cattle shed	11.00	54515.15
6	Working Cattle	8.67	12346.15
7	Milch Cattle	64.67	50845.36
8	Young stock	59.00	15564.97
9	Sheep/goat/pig	6.00	10500.00
10	Poultry/Duck	0.33	2500.50
11	Tractor	23.33	323695.65
12	Power tiller	0.67	95000.00
13	Bullock cart	8.67	11057.69
14	Plough	0.33	20000.00
15	Water pump	2.00	25833.33
16	Threshers	0.33	100000.00
17	Sprayers	1.67	2900.00
18	Boat	-	-
19	Other farm machine	0.33	50000.00
20	Any other	1.33	80000.00
21	Bicycle	8.00	2670.83
22	Rickshaw	-	-
23	e-Rickshaw/Auto	1.00	35000.00
24	Two wheeler	43.67	31984.73
25	Four wheeler	11.00	456969.70
26	Other vehicle	0.33	400000.00
27	Sewing machine	21.67	2253.85
28	Radio	7.00	1928.57
29	TV	69.00	7526.57
30	Computer	4.67	28571.43
31	Refrigerator/WM	57.00	14321.64
32	LPG set	85.33	5304.69
33	AC machine	3.00	36666.67

5.4.3 Food security

As village has developed over the time period due to availability of assure canal water which has given face lift to village, all the respondents have reported that they never went a whole day and night without eating or went sleep hungry. More than 97 per cent households had no worry about food while remaining had

sometime thought about same (table 5.31). Almost one third of the total respondents went for outside eating while about one fifth of total households are eating too much of packed food. This as such there is no issue of food security at village level.

Table 5.31: Food security issues at village level (% of respondents)

During last 12 months any member of the household	Never	Rarely	Sometimes	Often	Total
a. Went a whole day and night without eating due to poverty?	100.00	0.00	0.00	0.00	100
b. Went to sleep hungry due to inability to purchase food?	100.00	0.00	0.00	0.00	100
c. Ever worried that the households would not have enough food?	99.67	0.00	0.33	0.00	100
d. Ate some poor quality foods that you really did not liked?	97.67	0.67	1.67	0.00	100
e. Were not able to eat the kind of food you preferred?	97.33	0.33	2.33	0.00	100
f. Did you offered food to your neighbours and guests?	94.33	4.67	0.67	0.33	100
g. Went for outside eating in hotel/restaurant?	66.33	25.67	7.33	0.67	100
h. Are you eating too much packed food/purchased food like ice-cream, cold-drinks, etc?	81.33	11.33	6.67	0.67	100

5.5 Financial Transactions

5.5.1 Borrowings details during last 5 years:

The occupation wise borrowings detail in Naurangdesar village is given in table 5.32. It can be seen that out of total borrowings, about 81.63 per cent of loan was borrowed by cultivators and they generated income Rs 5.57 crore through farm and nonfarm sources. The outstanding loan was also highest in cultivator group. The cultivators had taken average loan of Rs. 3.7 lakh through banks and cooperative society in village. The Government of Rajasthan had waived loan of cooperative society up to Rs 50000/- in 2018-19. The loan taken by government servant was the highest in village which was Rs. 6.9 lakh for housing purpose. The Income-Loan borrowing ratio was the highest in cultivators, pensioners, government servants, trade & business man and private salaried class because of surety of payback and its influence to take more loan from institutional sources. Whereas agricultural labourers means unorganized sector workers has taken loan

taken from institutional sources and the reason behind this was that they have less income security.

Agricultural labours have paid the highest annual rate of interest on their borrowing capital (11.39 percent) from different sources mainly non-institutional sources, whereas farmers/cultivators took loan through Kisan Credit card and paid only 4.06 percent of rate of interest for their borrowings.

Table 5.32: Occupation wise borrowing details in Naurangdesar village (in Rs.)

Livelihood Groups	Total Borrowings	Average Rate of Interest	Amount Outstanding	Total Numbers of Loan availed	Total Number of not repaid the loan	Average Loan	Outstanding Loan of Total Loan (%)	Gross Income	Income-Loan Borrowing Ratio
Cultivator	356.44	4.06	16.25	97	6	3.67	4.6	557.17	63.97
Agricultural labour	16.05	11.39	5.55	18	11	0.89	34.6	199.34	8.05
Dairy/Fishing/Poultry keeping									
Govt Salaried	34.5	6.6	1	5	1	6.9	2.9	98.76	34.93
Private Salaried	5.4	6.67	0	3	0	1.8	0	23.69	22.79
Pensioner	4	4	0	2	0	2	0	8.73	45.82
Caste based profession								11.66	
Trade & business	17.78	8.75	0.55	8	1	2.22	3.1	68.39	26
Entrepreneur									
Casual labour	2.5	6.67	0.15	3	1	0.83	6	7.46	33.51
Marginal labour								5.8	0
Household									
Social Security Pensioner									
Overall	436.67	5.51	23.5	136	20	3.21	5.4	981.0	44.51

Source: Field survey data.

5.6. Perception about economic changes in the village

The opinions about changes in Naurangdesar village are given in Table 5.33. It can be seen that about 93.33 percent selected households were satisfied about economic condition of villagers. In current survey, it was observed that the standard of living and income of selected household has been increased since last survey period. When villagers were asked about village infrastructure specially road/electricity etc. then mix responses were reported. About half of the respondents were agreed that village infrastructure has improved in current survey than earlier survey whereas about 45 percent respondents reported no change in village infrastructure while 5.33 percent respondents reported that village infrastructure is deteriorated in current survey.

Table 5.33: Opinion about Changes in Naurangdesar village (%)

Opinion about perception	(General)	OBC		SC		ST	All
	Hindu	Hindu	Sikh	Hindu	Sikh		
Economic condition of villagers							
Improved	68.18	92.31	94.94	96.51	100.0	100.0	93.33
Deteriorated	13.64	3.85	0.00	1.16	0.00	0.00	2.33
No change	18.18	3.85	5.06	2.33	0.00	0.00	4.33
Economic condition of hh							
Improved	77.27	64.10	94.94	74.42	67.74	25.00	76.00
Deteriorated	13.64	17.95	1.27	8.14	29.03	50.00	12.00
No change	9.09	17.95	3.80	17.44	3.23	25.00	12.00
Village infrastructure							
Improved	63.64	48.72	51.90	56.98	19.35	50.00	50.00
Deteriorated	18.18	5.13	7.59	2.33	0.00	0.00	5.33
No change	18.18	46.15	40.51	40.70	80.65	50.00	44.67
Agricultural situation							
Improved	100.00	93.59	93.67	97.67	100.0	100.0	96.00
Deteriorated	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No change	0.00	6.41	6.33	2.33	0.00	0.00	4.00

5.7 Chapter Summary:

The economic status of surveyed household is presented and discussed in this chapter. It was observed that out of total household, about 79.67 per cent households were dependent on agriculture and allied activities. The main important feature of this table is that Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties and at time of first survey the total irrigated area was only 6.1 per cent, which has increased to 55 per cent during resurvey period 1973-74 and reached to 90.5 percent in current survey. This indicates that almost 91 per cent area was brought under irrigation of Naurangdesar village. The main source of irrigation was canal in village. The average size of land holdings has declined from 10.5 ha in 1968-69 to 3.51 ha in 2019 with average family size in selected households was 4.77. The main crops grown during the kharif season were cotton and guar which contributed about 58.49 and 26.62 percent area respectively. Due to availability of canal water for irrigation, the crop area is diverted from pulses crops to other crops like paddy, oilseed crops and cotton. The overall average income of village is very economical viable and this suggest economic activities in village is better.

Ecology, Vulnerability and Sustainability

6. Introduction

This chapter mainly deals with the natural resource profiles of village and its changes and also includes extreme events and exposures to shocks (ecology), degree of hardships faced (vulnerability) by rural groups. crops and livestock, major coping strategies of household levels for different extreme events relating to farmers, labour class and poor peoples and major adaptation strategies by different stakeholders to combat extreme events during last 5 years.

6.1. Natural Resource Profile of the Village

6.1.1 Flora and Fauna in the village and changes therein

The Naurangdesar village is situated in the North-Western part of Rajasthan faces severe water scarcity mostly in summer season, has poor rainfall, and is classified as arid/semiarid region. Any change in climatic determinants could not only adversely impact food security and nutrition but also affect the well-being of the population that derives its income from the sector. Shifting cropping patterns to more heat adapted and less water consuming varieties is a strategy already practiced by farmers. Reports indicate a shift in cropping patterns to local varieties of pulses, green gram, millets and mustard, which need less water. Dairying of goats and other small ruminants was promoted; indigenous varieties with heat resistance capacities are identified and promoted to minimize related losses in milk production.

6.1.2 Land, Water, Soil, Forest and Livestock resources in the village and changes therein

The village has sandy loam and sandy soil broken at short intervals by sandy ridges. Owing to its porous character, the soil does not retain moisture for long. The soil is suitable for crops like gram, bajra, guar and moong which do not

need much of water. Wherever irrigation is available, the soil is getting hard and this enables the farmers to grow crops like cotton and wheat. Similarly, those pieces of cultivated land which were intensively cultivated in 1961 and which were brought under the command area of the canal later on were levelled by the farmers either with the help of bullocks or by tractors and currently they using land leveler and level their land easily in current survey. Since levelling of land was a costly proposition, only the better-off cultivators could do so. It was observed at the time of resurvey in 1974 that all farmers of the command area with uneven land expressed their desire that the State Government should provide bulldozer services for levelling their land so that they can take full benefit of canal water. The beneficiary farmers were willing to pay the levelling charges. In current survey sand dunes was not seen in village farms or in nearby villages because most of the farmers have levelled their land and they are cultivating crops like cotton, wheat and rapeseed mustard with the help of canal water in village.

During post bench-mark period two major developments took place in the village, Firstly, in 1964, the government of Rajasthan constructed 340 ft., wide Gaggar flood control bed in the periphery of this village. The Gaggar flood control bed starts from Rajasthan feeder and ends in sandunes. It is 50 kilometers long. The main objective is to direct flood water. In the next year, a new residential colony, namely, Adarshnagar with 35 houses for the villagers was established on the other bank of this river bed.

Livestock resources:

The table 6.1 presents a comparative livestock status in Naurangdesar village. The milch animal population has increased very significantly in village in recent survey. The growth of milch animals in 2019-20 over 1968-69 was around 307.22 percent, in which number of sheep and goat has declined marginally in village. The number of work stock like Camels have declined significantly in village and main reason behind this was that agricultural work is being completed with machinery like tractors and other implements whereas in previous survey camels were helping in agriculture land sowing and drinking water facility in village.

Table 6.1: Livestock status in Naurangdesar village

Type of animal	1961-62	1968-69	Increase in no. of animals in 1968-69 over 1961-62	2019-20	Increase in no. of animals in 2019-20 over 1968-69
1	2	3	4	5	6
Milch Animals :					
a) Cows	194	263	69	1916	1653
b) Buffaloes	101	181	80	1673	1492
C) Sheep and Goat	168	567	399	528	-39
TOTAL	463	1011	548	4117	3106
Work stock :					
a) Camels	188	226	38	15	-211
b) Bullocks	11	30	19	-	-
TOTAL	199	256	57		
Young stock of :					
a) Cow	173	311	138	-	-
b) Buffaloes	92	216	124	-	-
TOTAL	265	527	262		
Others	2	3	1		

Source: Field survey data 1968-69 and current data of livestock from Farmer portal of GOI.

6.1.3 Ground water level, pollution and changes therein

The ground water level in village did not declined and due to canal water; the ground water level is very high in village especially in Naurangdesar CAD area. The industrial development is almost zero in village so that pollution issue was almost observed and air quality was very healthy in village.

6.1.4 Input use (fertilizer, FYM, pesticide, etc.) in agriculture and changes therein

The market of several of the home produced inputs is so imperfect and or limited that values cannot be imputed the measure of accuracy that is essential for a meaningful analysis. Therefore, only a broad picture of input structure, incorporating the significant among them is sought to be presented. Main attention is focused on those inputs use of which is likely to change, in volume or quality, significantly in foreseeable future; the inputs discussed are wage paid labour, seeds fertilizers, manures, water charges and land revenue. They also, broadly correspond to the out of the pocket expenses incurred by the farmers. In current survey we are observed that the availability of irrigation water high intension of chemical fertilizer and pesticide were used for high production in

Naurangdesar village while last survey reported that the most of farmer's in village used farm manure and less use of chemical fertilizer due to less irrigation facility in the village.

6.2 Natural and Manmade Disasters

Tables 6.2 indicate that the occurrences of floods during the last 5 years were reported to be negligible whereas droughts were not occurred in last five years. Farmers as well as labourers were found to be most vulnerable groups among the villagers of Naurangdesar. On the other hand, villagers reported that cotton and wheat crops are the most vulnerable crops and barley is the least vulnerable crops. Sand Cyclones, erratic rainfall and heat and cold waves are also reported to occurs often and farmers as well as labourers are the vulnerable groups. Landslides and epidemics are not at all reported during the last 5 years in Norangdesher Village. Few cases of Suicides and accidents were reported among SC and OBC groups of Household in Naurangdesar. No case of Violence and loss of job were reported while 2 cases of robbery are reported during the last 5 years in selected village. Price hikes crushes for vegetables crops occurred more often in Norangdesher Village.

Table 6.2: Frequency of extreme events during last 5 years and exposures to shocks in Village

Extreme Events	Change in occurrence (Increased/Decreased/ No change)	Frequency during last 5 years	Most vulnerable groups*	Least vulnerable groups*	Most vulnerable crops or enterprises	Least vulnerable crops or enterprises
Drought	-	-	-	-	-	-
Flood	-	2	SC	Gen/OBC	-	-
Cyclone	-	-	-	-	-	-
Erratic Rainfall	-	-	-	-	-	-
Heat wave	-	-	-	-	-	-
Cold wave	-	-	-	-	-	-
Land slides	-	-	-	-	-	-
Epidemic	-	-	-	-	-	-
Major accident	-	19	SC/Gen/OBC	-	-	-
Suicide	-	10	SC/OBC	-	-	-
Robbery	-	2		-	-	-
Violence	-	-	-	-	-	-
Loss of job	-	-	-	-	-	-
Price crush	-	-	-	-	-	-
Any others	-	-	-	-	-	-

Degree of Hardship Faced (Vulnerability) During Last 5 Years (in 0 - 5scales) in Notrangdesher Village:

The degree of hardship faced (Vulnerability) during last 5 years (in 0 -5 scales) in Naurangdesar village worked out in table 6.3. It can be seen that due to drought and heat wave damages to crops as well as hardship to cattle were reported to be nil, while low level hardship of reported being reported for poor, and women. Few accidents and suicide due to drug addicted were reported by hardship to poor. Other no degree of hardship faced was reported in the village.

Table 6.3: Degree of hardship faced (vulnerability) during last 5 years (in 0-5 scale)

Climate Extremes	Damages to crops	Hardship to cattle	Hardship to small ruminants	Damages to fisheries	Hardship to poor	Hardship to children	Hardship to aged people	Hardship to women
Drought	-	-	-	-	2	-	-	2
Flood	-	-	-	-	-	-	-	-
Cyclone	-	-	-	-	-	-	-	-
Erratic Rainfall	-	-	-	-	-	-	-	-
Heat wave	-	-	-	-	2	2	1	2
Cold wave	-	-	-	-	-	-	-	-
Land slides	-	-	-	-	-	-	-	-
Epidemic	-	-	-	-	-	-	-	-
Major accident	-	-	-	-	2	-	-	-
Suicide	-	-	-	-	2	-	-	-
Robbery	-	-	-	-	-	-	-	-
Violence	-	-	-	-	-	-	-	-
Loss of job	-	-	-	-	-	-	-	-
Price crush	-	-	-	-	-	-	-	-
Any others	-	-	-	-	-	-	-	-

Note: Rank (0=Nil; 1=Negligible; 2= Low; 3=Moderate; 4=High; 5=Extreme); Consider only relevant shocks if there was any during last 5 years

Major coping Strategies at Household Levels for Different Extreme Events

Major coping strategies at household level for different extreme events during last 5 years in Naurangdesar village worked-out and presented in Table 6.4. It can be seen that to combat with drought the crop raising farmers had used

their savings as coping strategy. Labour class as well as poorest people farmers had migrated outside for jobs and also adopt borrowing as coping strategy. Thus, in the whole village the poorest peoples were the hardest hit from drought/ heat wave, suicide and accidents during the last 5 years. Robbery in ATM machine had been occurred in last 5 year and to stop robbery closed the ATM facility as coping strategy.

Table 6.4: Major coping strategies at household level for different extreme events

Extreme Events	Crop farming Community	Dairy farmers	Fish farmers	Labour class	Poorest peoples
Drought	11	0	-	11	11
Flood	-	-	-	-	-
Cyclone	-	-	-	-	-
Erratic Rainfall	-	-	-	-	-
Heat wave	11	11	-	11	11
Cold wave	-	-	-	-	-
Land slides	-	-	-	-	-
Epidemic	-	-	-	-	-
Major accident	6	6	0	6,9	6,9
Suicide	12	-	-	12	12
Robbery	14	14	-	14	14
Violence	-	-	-	-	-
Loss of job	-	-	-	-	-
Price crush	-	-	-	-	-
Any others	-	-	-	-	-

Notes: 1=Mortgaged assets; 2=Sold assets; 3=Used savings; 4=Migration; 5=Borrowing; 6=Reduced consumption; 7=Rely on help/relief; 8=Postpone family festivals; 9=Increase working hours; 10=Change crop/livelihood; 11=Change lifestyle; 12=Passive sufferings; 13=Suicide; 14= ATM closed in village.

Major Adaptation Strategies by Different Stakeholders to Combat Extreme Events.

The major adaptation strategies by different stakeholders to combat extreme events worked-out and presented in the Table 6.5. During survey and group discussion, it was observed that there has been no extreme climate or other event so happened in the village during the last five years period. While, state and central government scheme like PMFBY, Soil Health Card/PMFSY/ MGNREGA were adopted by farmers to combat with drought/Flood/ Cyclone and loss of job in this village. For erratic rainfall as well as for heat and cold waves, crop diversification and livelihood diversification were adopted at individual level in the village. To stop major accidents, strictly follow up of transport safety rules was insisted among the villagers and police surveillance was conducted to stop robbery like incidents.

Table 6.5: Major adaptation strategies by different stakeholders to combat extreme events

Extreme events	Individual level	Government level	By NGO	Community level
Drought				
Flood				
Cyclone				
Erratic Rainfall				
Heat wave				
Cold wave				
Land slides				
Epidemic				
Major accident				
Suicide		Police raid for Drug supply/ illegal Drug Addicted		
Robbery		ATM closed		
Violence				
Loss of job				
Price crush				
Any others				

Notes: 1= Livelihood diversification; 2=Crop diversification; 3=Crop insurance; 4= Health insurance; 5=General insurance; 6=Pond making; 7=Relief programme; 8=Income support schemes; 9=MGNAREGA; 10=Livelihood creation; 11=Afforestation; 12=Immunization; 13= Infrastructure (road, irrigation, storage) development; 14=Easy lending; 15=Loan waiving; 16=Community preparedness; 17=specific (mention)

6.2 Perception about ecological changes in the village

The majority of the households have reported that there is change in rainfall pattern as well as heat and cold waves and air over the period of time (Table 6.6). while majority of them denied the increase in incidence of diseases and expenditure on medical (table 6.7).

Table 6.6: Any change in rainfall pattern or heat/cold waves or air

Rainfall pattern	All
Yes	87.33
No	12.67
Total	100.00

Table 6.7: Increased incidence of disease and medical expenditure in your family during last five years

Rainfall pattern	All
Yes	24.00
No	76.00
Total	100.00

6.3 Chapter Summary:

The selected village faces severe water scarcity mostly in summer season, has poor rainfall, and is classified as arid/semiarid region. The village has sandy loam and sandy soil broken at short intervals by sandy ridges. Owing to its porous character, the soil does not retain moisture for long. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. Wherever irrigation is available, the soil is getting hard and this enables the farmers to grow crops like cotton and wheat. During post benchmark period two major developments took place in the village, viz. the government of Rajasthan constructed 340 ft. wide Gaggar flood control bed in the periphery of this village and a new residential colony, namely, Adarshnagar with 35 houses for the villagers was established on the other bank of this river bed. The ground water level in village did not decline and due to canal water; the ground water level is very high in village. The industrial development is almost zero in village so that pollution issue was almost not observed and air quality was very healthy in village. The occurrences of floods during the last 5 years were reported to be negligible whereas droughts were not occurred in last five years. Farmers as well as labourers were found to be most vulnerable groups among the villagers. To combat with drought, the crop raising farmers had used their savings as coping strategy. The majority of the households have reported that there is change in rainfall pattern as well as heat and cold waves and air over the period of time. While majority of them denied the increase in incidence of diseases and expenditure on medical.

Policy and Governance

7.1 Introduction

This chapter mainly deals with the coverage under different government sponsored schemes and participation in Gram Sabha/Gram Sansad meeting by caste and economic, crop-wise list of major varieties cultivated and major livestock rearing in Naurangdesar Village.

7.2 Nature and Coverage under Different Government Sponsored Schemes

The coverage under different government sponsored schemes is given in Table 7.1. It can be seen from the table that under the BPL card scheme, total 65 households were found entitled in the village during 2014-2019 and all had availed this facility. Thus, 100 per cent village coverage was under this scheme. Under KCC Card Scheme, total 118 households were entitled and all of them have availed the facility. Under public health insurance card scheme, 100 per cent coverage was reported as all 286 entitled households were benefited. About 212 households were entitled under MGNAREGA job Card Scheme, but the coverage was 96.7 per cent. Almost all the entitled households for Crop Insurance; PMFBY, LPG Scheme (PM Ujjala) have availed the facility. Under ICDS/Mid day Meal scheme, all the 91 households had availed this facility and were satisfied with same. Under Government Scholarship scheme, only 22 households were entitled but all have availed the same facility. All the households those were entitled under Seed Minikit scheme, Farm loan waiver, Old age pension scheme, and Widow Pension Scheme have availed the facility. Under Cattle Shed scheme, 22 households were entitled but only 2 households had availed this facility. Thus, only 9.09 per cent coverage was there.

Table 7.1: Coverage under different government sponsored schemes

Sr. No.	Name of the scheme	Number of entitled households	No of households/ beneficiaries	% coverage	% of beneficiaries satisfied with the scheme
			availed the facility		
1	BPL Card	65	65	100	100
2	KCC Card	118	118	100	100
3	Public Health Insurance Card	286	286	100	100
4	Soil Health Card	16	16	100	100
5	MGNAREGA Job Card	212	205	96.7	100
6	ICDS/Mid-Day Meal	91	91	100	100
7	Govt. Scholarship Schemes	22	22	100	100
8	Govt. Housing Scheme (IAY/PMAY)	39	39	100	100
9	Crop Insurance: PMFBY/Others	109	108	99.08	100
10	Irrigation: PMKSY/Others	-	-	-	-
11	Seed Minikit scheme	15	15	100	100
12	Farm machinery or implements	0	0	0	0
13	Life Insurance (Govt sponsored)	6	6	100	100
14	CG Farm Income Support (PM-KISAN)	7	7	100	100
15	SG Farm Income Support Schemes	-	-	-	-
16	Old Age Pension Schemes	35	35	100	100
17	Farm Pension Scheme (PM-KMY)	-	-	-	-
18	Widow Pension Scheme	13	13	100	100
19	Farm Loan Waiver Scheme	85	85	100	100
20	LPG scheme (PM UJJALA)	119	119	100	100
21	PMKVY/Organic Farming	-	-	-	-
22	MSP/PM-AASHA Scheme	-	-	-	-
23	Any Other (Specify)				
	(a) Disabled pension	6	6	100	100
	(b) Cattle Shed scheme	22	2	100	100

7.3 Perception about Government schemes

As discussed above, all the beneficiaries have reported 100 per cent satisfaction about these scheme. None of the beneficiary household have reported any dis-satisfactions over implementation of these schemes. While during discussion, the villagers have suggested for complete coverage of village under these schemes those who are eligible as per prescribed norms.

7.4 Participation in Local Governance

Out of total households, 39 per cent of member of households had participated in the meetings of Gram Sabha and Gram Sansad whereas remaining household members could not participate in Gram Sabha meeting may be due to their busy schedule of field work, uneducated and due to old age. Out to total households, only 40 per cent were categorised under APL category, 37 per cent were under BPL category. Around 6.33 per cent household persons had approached to elected representatives like Panchayat/MLA/MP for village and

panchayat development related issue. About 74 per cent household persons were satisfied with that elected representatives have addressed their issues and tried to solve their problems willingly.

Table 7.2: Participation in Gram Sabha/Gram Sansad meeting by caste and economic status
(% of respondents participated in such meetings)

Particulars	Economic Categories			
	APL	MAPL	BPL	Overall
General Caste/Caste Hindu	41.18	-	40.00	40.91
OBC Hindu	45.16	-	43.75	44.87
OBC Sikh	44.44	-	14.29	41.77
Scheduled Caste Hindu	38.98	-	34.62	37.21
Scheduled Caste Sikh	17.65	-	50.00	25.81
Scheduled Tribe	-	-	-	-
Minorities	-	-	-	-
All Categories	40.43	-	36.92	39.00

It can be seen from the table 7.3 that relative status in the village power structure across the caste category group was mostly dominated by General Hindu followed by OBCs while SC and STs are having poor status in village power structure. Thus, despite of drastic changes in village, the power formula has not changed so far.

Table 7.3: Relative status in the village power structure

Relative status level	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Nil	4.55	5.13	5.06	3.49	0.00	0.00	4.00
Top	0.00	0.00	1.27	1.16	0.00	0.00	0.67
High	22.73	10.26	13.92	1.16	0.00	0.00	8.33
Medium	59.09	29.49	50.63	23.26	0.00	25.00	32.33
Low	13.64	55.13	29.11	70.93	100.00	75.00	54.67
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The reasons for the one sided power structure and status in the society were poor economic conditions of SC and ST population along with no political affiliation as such as well as qualification (table 7.4). While during the field survey, all the respondents have denied any incidence of deprivation on the accounts of caste, gender or any association with political party (Table 7.5).

Table 7.4: Reasons for such power/status in the society

Reason for	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Caste	26.09	69.57	0.00	4.35	0.00	0.00	7.67
Economic Condition	3.88	23.71	25.86	31.47	13.36	1.72	77.33
None	12.50	37.50	37.50	12.50	0.00	0.00	2.67
Political affiliation	30.77	15.38	15.38	38.46	0.00	0.00	4.33
Qualification	8.33	8.33	58.33	25.00	0.00	0.00	8.00
Grand Total	7.33	26.00	26.33	28.67	10.33	1.33	100.00

Table 7.5: Is there any caste/gender/political deprivation in your village (%)

Reason for	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Yes	0	0	0	0	0	0	0
No	100	100	100	100	100	100	100
Total	100	100	100	100	100	100	100

All the respondents have reported that they approach their friend in case any advice is require on livelihood specific issue, contact relatives in case of social related issues, consult friend and relative in case of educational matter and visit advocate and friends to seek advice on legal issues (Table 7.6 to Table 7.9).

Table 7.6: For any advice/decision on livelihood issue whom do you approach

Livelihood specific	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Friend	100	100	100	100	100	100	100
Relative	0	0	0	0	0	0	0
Friend/Relative	0	0	0	0	0	0	0
Advocate	0	0	0	0	0	0	0
Total	100	100	100	100	100	100	100

Table 7.7: For any advice/decision on social issue whom do you approach

Social Specific	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Friend	0.00	1.28	0.00	0.00	0.00	0.00	0.33
Relative	100.00	98.72	98.73	100.00	100.00	100.00	99.33
Friend/Relative	0.00	0.00	1.27	0.00	0.00	0.00	0.33
Advocate	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7.8: For any advice/decision on education whom do you approach

Education specific	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Friend	0.00	2.56	0.00	3.49	0.00	0.00	1.67
Relative	0.00	1.28	0.00	3.49	0.00	0.00	1.33
Friend/Relative	100.00	96.15	100.00	93.02	100.00	100.00	97.00
Advocate	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 7.9: For any advice/decision on legal issue whom do you approach

Legal/Others	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Friend	0.00	5.13	0.00	4.65	9.68	0.00	3.67
Relative	4.55	10.26	2.53	9.30	9.68	0.00	7.33
Friend/Relative	50.00	61.54	43.04	83.72	77.42	100.00	64.33
Advocate	45.45	23.08	54.43	2.33	3.23	0.00	24.67
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Most of the households in the selected villages have sold their output in market (table 7.10).

Table 7.10: Where do you to sell your output (%)

Output sell medium	Caste Hindu	OBC		SC		ST	All
	(General)	Hindu	Sikh	Hindu	Sikh		
Businessmen	4.55	5.13	1.27	5.81	0.00	0.00	3.67
Market	0.00	33.33	84.81	4.65	0.00	0.00	32.33
Market/Businessman	0.00	1.28	2.53	4.65	0.00	0.00	2.33
Market/Government Agency	9.09	0.00	1.27	0.00	0.00	0.00	1.00
Nil	86.36	60.26	10.13	84.88	100.00	100.00	60.67

7.5 Socio Economic Problems in Village

The socio-economic problems of the village are presented in Table 7.11. It can be seen from the table that the major problems narrated by the villagers are low wage rate and non-availability of work under NREGA, no sewage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, Gym facility, no employment opportunity available, non-availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers.

Table 7.11: Socio-economic problems in village

Socio-economic problems in village	% of HH responded	Caste Hindu	OBC		SC		ST	All
		(General)	Hindu	Sikh	Hindu	Sikh		
No APMC in village	15.3	0.00	34.78	54.35	4.35	6.52	0.00	100.00
No proper bus stand facility with barricades	42.3	7.87	37.01	28.35	25.20	1.57	0.00	100.00
Small village roads and no bus stand	13.0	5.13	38.46	53.85	0.00	2.56	0.00	100.00
No college education and public library	21.3	23.44	18.75	42.19	14.06	1.56	0.00	100.00
No facility of public library, sport complex, Gym facility	8.3	24.00	36.00	24.00	16.00	0.00	0.00	100.00
No employment opportunity available	6.3	0.00	42.11	26.32	26.32	5.26	0.00	100.00
No purchase of crop produce by Govt at MSP	8.0	0.00	16.67	75.00	8.33	0.00	0.00	100.00
Low wage rate and Non availability of work under NREGA	55.3	1.20	24.10	10.24	44.58	17.47	2.41	100.00
Not received PMAY scheme benefit	8.3	0.00	0.00	4.00	52.00	32.00	12.00	100.00
Not received PMAY scheme benefit to APL family	6.3	0.00	31.58	0.00	31.58	36.84	0.00	100.00
No sewage line	46.3	5.76	16.55	20.86	40.29	15.83	0.72	100.00
Non receipt of old/widow pension	6.0	0.00	44.44	0.00	22.22	16.67	16.67	100.00
Village roads are small and no lights on roads	37.7	11.50	25.66	34.51	24.78	3.54	0.00	100.00
Non availability of crematory shed	3.3	20.00	10.00	40.00	20.00	10.00	0.00	100.00

While across the social groups and problems reported, intensity of problem faced by each social group seems to be different except few common

problems as mentioned above. About three fourth of the respondents were from Sikh religion who reported that no purchase of crop produce by Govt at MSP. Thus, most of the cultivators from Sikh community faced lower rate for the crop produce and therefore suggested procurement at MSP by the government. Also non availability of crematory shed for OBC sikh was main problem. Low wage rate and Non availability of work under NREGA was more problematic for SC category, while non availability of employment opportunity was faced by OBC Hindu. While, most of the problems were inter counter and reported by the OBC Hindu and OBC Sikh community peoples.

7.6 Major suggestion for improvement /development in Village

In order to have further improvement/development in village, the villagers have given few suggestions which are presented in Table 7.12. It can be seen form the table that the suggestions made are availability of work under MGNREGA with high wage rate, construction of sewage line, proper bus stand facility with barricades, expansion of village roads and fixing of lights on roads, college education and library facility APMC market in village, four lane highway with over bridge facility, public library, sport complex and gym facility, more coverage under PMAY scheme and purchase of crop produce by Govt at MSP.

Table7.12: Major suggestion for improvement /development in Village

Suggestions	% of HH responded	percentage to total responses						All
		Caste Hindu (General)	OBC		SC		ST	
			Hindu	Sikh	Hindu	Sikh		
Availability of work under NREGA with high wage rate	55.3	1.20	24.10	10.24	44.58	17.47	2.41	100.00
Construction of Sewage line	46.3	5.76	16.55	20.86	40.29	15.83	0.72	100.00
Proper bus stand facility with barricades	42.3	7.87	37.01	28.35	25.20	1.57	0.00	100.00
Expansion of Village roads and fixing of lights on roads	37.7	11.50	25.66	34.51	24.78	3.54	0.00	100.00
College Education and Library facility	21.3	23.44	18.75	42.19	14.06	1.56	0.00	100.00
APMC Market in village	15.3	0.00	34.78	54.35	4.35	6.52	0.00	100.00
Four lane Highway with over bridge facility	13.0	5.13	38.46	53.85	0.00	2.56	0.00	100.00
Public Library, Sport Complex and Gym facility	8.3	24.00	36.00	24.00	16.00	0.00	0.00	100.00
More Coverage under PMAY scheme	8.3	0.00	0.00	4.00	52.00	32.00	12.00	100.00
Purchase of Crop Produce by Govt at MSP	8.0	0.00	16.67	75.00	8.33	0.00	0.00	100.00

7.7 Chapter Summary:

It was observed that coverage under different government sponsored schemes was satisfactory and majority of the beneficiaries have reported 100 per cent satisfaction about these schemes. All the respondents have reported that they approach their friend in case any advice is require on livelihood specific issue, contact relatives in case of social related issues, consult friend and relative in case of educational matter and visit advocate and friends to seek advice on legal issues. The major problems narrated by the villagers are no swage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, Gym facility, no employment opportunity available, Non availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers. The suggestions made by villagers are availability of work under MGNREGA with high wage rate, construction of sewage line, proper bus stand facility with barricades, expansion of village roads and fixing of lights on roads, college education and library facility APMC market in village, four lane highway with over bridge facility, public library, sport complex and gym facility, more coverage under PMAY scheme and purchase of crop produce by Govt at MSP

The next chapter presents the summary and policy implications.

Summary and Policy Implications

8.1 Backdrops

India has a long record of village surveys and resurveys, since pre-independence period to the post-independence period, which witnessed a sharp increase in the interest among social scientists, economists and policy formulators in village surveys across India. This was partly in response to the need felt by the state and union governments to have a reliable and accurate information on socio-economic and political configurations in the rural context to facilitate the process of economic growth and change that it planned for, but the interest was also sustained by the fact that the critics of state and union government policies provided a central place to the rural context in the scheme of village survey studies. During the span of 10 years since independence, the union government and other institutions have been sponsoring researches on the conditions and structure of rural India and on the management and economics of farming etc. wherein, these data appeared to be and useful source of basic information about villages. Thus, it is this realization that led to a spate (series) of village surveys by various Agro-Economic Research Centres of the Ministry located at different States of India, one among them is our Centre.

The village society is characterized as a highly static society and village people excessively immobile. However, this kind of common understanding has undergone a tremendous change with the introduction of Five-Year Plans and the revolution in mass media. The earlier village life, which did not have any political and economic power, has now acquired adult franchise, democracy and accelerating transformation. During the last five decades, rural societies have witnessed massive changes. The village life today has reached a stage, where the glamour of urban life has made inroads in villages. It is in this context; it is important to have resurvey of villages surveyed earlier.

The present village resurvey work was undertaken in the village of Naurangdesar of Hanumangarh tehsil of Hanumangarh district (earlier Sriganganagar district) of Rajasthan which was first surveyed in 1964 and then re-surveyed in 1974. This is the third report and second re-survey report of same village. This village is located in canal zone of Rajasthan located in Hanumangarh taluka of Hanumangarh district of Rajasthan.

8.2 Data and Methodology:

This study is based on both primary and secondary level data. The secondary data were collected from the government publications (Primary Census Abstracts, Agricultural Census, Livestock Census, etc.), online databases and published reports and research papers and related websites. The required secondary data were also collected from the offices of State, district, tehsil, development block, village and village level institutions. The primary data were collected from the village households of selected village by survey method through five types of survey schedules.

As per the study designed suggested by the Coordinator of the study, one village from the list of villages already surveyed before and was moderately developed was selected. Accordingly, Naurangdesar village was selected as same village was surveyed in the year 1964 and further resurveyed in 1974. Before undertaking the field survey work, visit was made to define the study area in view of development occurred during last five decades or so. As per the study designed suggested by the Coordinator of the study, village census method was adopted to cover minimum 300 households. As selected village Naurangdesar has developed a leaps and bound and spread overs chaks, the study area covered under earlier village survey was also considered under this survey, i.e. Naurangdesar Distributary Area 14 and 15, of which NDA 15 area is land under cultivation, thus residential area of NDA 14 was covered which was total number of households of 775 (as per Census). As per the methodology, village census was conducted and proportionate sampling was attempted to restrict the total sample households to 300 households. Though the village data indicate that 775 households are there but most of the households found to be having divided into two-three households

within single household for ration card and other benefit use purpose. Thus, village census noted 300 households which covers almost 90 per cent of total households in the village.

8.3 Profile of the Selected Village

Naurangdesar is a village in Hanumangarh tehsil in Hanumangarh district of Rajasthan State, India. It belongs to Bikaner division. It is located on Hanumangarh Jaipur Highway and 30 km towards East from district headquarters Hanumangarh and 388 km from State capital Jaipur. Hanumangarh town which is not only the tehsil as well as district headquarter of this village but also an important marketing centre and a railway junction on Delhi Ganganagar meter gauge line is at a distance of 22 kilometres in the north of this village. Naurangdesar is surrounded by Tibbi tehsil towards East, Pilibanga tehsil towards west, Sangaria tehsil towards North, Sadulshahar tehsil towards North. Hanumangarh, Pilibanga, Sangaria, Sadulshahar are the nearby Cities to Naurangdesar. This village was without irrigation facilities before getting water through Indira Gandhi Canal sometime in 1960s before which Centre has conducted village survey in 1964. Prior to the introduction of irrigation, the region was part of under-developed arid zone with no tank or well irrigation facility. This area was having sand dunes which were levelled to make land suitable for cultivation after getting assure canal water. The region which receives scanty and precarious rainfall (of average 260 mm per year), is inhabited by hardy Jat people. The passing river Ghaggar river is another option available to fetch water for agriculture purpose mainly during rainy season which brings water level up in nearby wells and tube wells. After getting the canal water, farmers from Punjab have migrated in to this village area which makes half each of Punjabi and Rajasthan population and mix language. The whole village is divided under NDR14 and NDR 15. The village is in group Gram Panchayat having nine revenue villages, viz. 11NDR, 13NDR, 14 NDR (CAD), 14NDR (CAD RAHIT), 16NDR, 17 NDR, 20 NDR(A), 1MWM, 3MWM. Naurangdesar distributary is the first among the distribution channels forming part of the Rajasthan Canal system which is 26.4 miles long. Masitawadi from where the Rajasthan canal

feeder ends and the canal starts is 16 kilometres away from this village. The ancient 'Bhatner fort' is situated on the bank of river Ghaggar which was built in 253 CE by Bhupat, son of king Bhati of Jaisalmer is located about 30 km from the selected village.

The climate of this region is largely arid, that turns extremely hot during the summer and extremely cold during winter. The mean daily maximum temperature varies from 20.5°C during January to 42.2°C during June while mean daily minimum temperature in the district varies from 4.7°C during January to 28.1°C during July. The normal annual rainfall during the period 1968-1971 has been reported between 100mm to 371 mm. In recent years, the average annual rainfall per annum is reported to be 227 mm and varied from 195 mm to 325 mm. The district experiences either mild or normal drought once in two years. Severe drought has also been recorded frequently. Such a low rainfall during different years explains the decisive role the canal irrigation to play in the economic life of the people in the command area. The district is endowed with rich sandy loam soil and is well drained with moisture retaining characteristics which is very much helpful for the production of food and cash crops. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. It was observed at the time of resurvey that all farmers are in command area and this enable the farmers to grow crops like cotton and wheat.

Naurangdesar village have one telecommunication centre and one post office branch. Village is well connected with road transport and it is situated on Hanumangarh- Jaipur state highway. Rajasthan State Road Transport Corporation (RSRTC), Rajasthan Lok Pariwahan Bus Seva and Private bus facility available for transportation. On the whole, the well-developed and convenient mode of transport available near the very doors had exposed the village to all exogenous changes taking place around it. It has made the mobility of villagers, as well as the marketing of goods, easy and cheap. Rail facility is available in Hanumangarh district headquarters and Hanumangarh city is connected all-important cities of state as well as country with broad-gauge rail facility. It is well connected with other cities like Jalore, Jaipur and Agra. Few trains such as Delhi-Jaisalmer Express, Guwahati-Bikaner Express, Rishikesh to Barmer Link Express and Kalka-

Barmer Express are available from Delhi, Kalka, Haridwar and Guwahati for Hanumangarh district. The nearest Airport from Hanumangarh is at Chandigarh Airport, roughly five and half hour drive from the city.

8.3.1 Demographic Profile of the Village

- As per Census 2011, total population in village was 3846, of which 53.09 per cent was male population and 46.91 was female population (14 NDR CAD and 14NDR CAD Rahit). Total geographical area of Naurangdesar village is 434.35 hectares. Population density of Naurangdesar village was 9 persons per sq. kms. Total number of households in village has been increased by 125 percent during 1973 to 2019, i.e. from 342 in 1971 (during last survey) to 775 in 2019 as per 2011 census.
- As per the Census Data 2011, there were 890 females per 1000 males which was lower than sex ratio reported all State level (928 females) in 2011. Total working population of in village was 1952 which were either main or marginal workers. Out total workers, 59 per cent were male and 41 were female workers. Total main workers were 1597 out of which female main workers were 31.68 per cent and male main workers were 68.32 per cent. Total marginal workers of village were 18.2 per cent of total workers in the village.
- In the Naurangdesar village, Jat Hindus and Jat Sikhs are two important communities while Scheduled Caste families are found in good number in both Hindu and Sikh communities and only few households were found from Scheduled Tribes. Muslim and Christians households were not found in village. The majority of the households were from Hindu religion followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines and Sikh shrine Gurudwara. Most of the Hindus belongs to Jat community and some other are like Suthar, Arora, and others. In Sikhs household, most of households are from Jat Sikh community and good number of houses were found from SC Sikhs families which were migrated from Punjab and Haryana state when IGNP canal

system was started operating in Rajasthan. Naurangdesar distributary is first canal system which was launched in early 70's in Rajasthan.

- Out of total population, 55.9 percent population was reported literate, while across the gender, rate of literacy was higher for male (63.96 per cent) than female in the village (46.78 per cent).

8.3.2 Livelihood/Employment and Migration Status

- The livelihood of the village is mainly based on agriculture and animal husbandry activities along with support of rural artesian trade especially leather crafts, wood, and caste based profession, and wool established in the village. The rearing of livestock is being done at large scale i.e. each household has two to three milch animals. In general, each household has its own transport facilities and some of farmers are also rearing of camel.
- In the panchayat village Naurangdesar, about 80 per cent of total households were reported their livelihoods from agriculture and agricultural labourers (as their primary occupation) while 7 per cent get their livelihoods from trade and business as secondary occupation and 4.5 per cent had got their livelihood from Government jobs. Out of the total peoples of village only 9 percent were reported migrated to nearby town and other states for outside jobs during the year 2018-19.

8.3.3 Agriculture Status of the Village

- As per Census 1971 records, the total geographical area of village was reported to be 484.5 ha and net sown area was 267.84 ha. As per 2019 Land records as well as Census 2011 records, the total geographical area was 434.35 ha. This may be due to reallocation of area among Chaks. Near about 90 percent area was irrigated by canal while in earlier survey this was just 30 percent of NSA which was possible only due to availability of irrigation facilities through Naurangdesar Distributary (NDR) of IGNP canal. In selected village current fallow land has reduced very significantly to 1.04 percent while was higher in earlier survey, i.e. 23.58 percent.
- Irrigation facility on which the whole process of agricultural transformation hinges has enlarged during last five decades or so. The

irrigated area by the Naurangdesar Distributary has increased and 97 per cent of total net sown area is irrigated in 2019. The Naurangdesar village area is irrigated by main Indira Gandhi Canal 0639 RD and sub distribution by NDR minor (Naurangdesar minor) with 460 qusec/sec water discharge from Masitawali head which far from village near about 17-20 km. The flow of water is very good so that most of the farmers irrigated area with flood irrigation method whereas negligible area was irrigated with micro irrigation system like drip/sprinkler.

- The proportion of the area under food crops to gross cropped area has declined from 77 per cent in 1968-69 to 52 per cent in 2019-20. The same trend has been also observed at State as well as at National level, which has a tendency to decrease with the increase in the farm size. The area under cash crops has increased both in absolutely and relatively in comparison to 2019-10 over 1968-69. The orchards like kinnu has been introduced in recent years. The area under guar/cluster bean (*Cyamopsis tetragonoloba*) has grown which is predominantly grown during kharif season. Area under mixed cropping has been declined.

8.3.4 Livestock resources (Cattles/Birds/Others)

- The availability of irrigation facility improved the green and dry fodder situation, consequently not only the number of livestock has gone up but also they have also become more productive. Total livestock population in village in 2019 was 2859 of which 48.84 percent were cattle, 26.7 per cent were buffalo, and 13.67 per cent were goat and sheep together.

8.3.5 Developmental Institutions & Infrastructure

- There was a major change in the jurisdiction of the panchayat during current survey periods. Naurangdesar formed a part of the group panchayat for nine villages. Naurangdesar was the headquarter of the panchayat and nine other villages 11 NDR, 13 NDR, 14 NDR (CAD), 14 NDR (Rahit), 16 NDR, 17 NDR, 20 NDR-A, 1MWM and 3 MWM while in earlier survey only three villages were adjoined with Naurangdesar Panchayat which were Ranjutpura, Mohan Magaria and Bhompura villages. The

Panchayat was housed in its own building. The Panchayat elections are held at the end of every five years. The first election was held in 1961 and recent last election was held in 2020. The Naurangdesar gram Panchayat was reserved under women category. For election purpose, the votes were divided into eleven wards and each ward consists of about 500 voters. Every voter had a right to cast two votes, one for the post of a Sarpanch and the other for post Panchayat. With the growth of the villages in the jurisdiction of the Panchayat during post bench-mark period, the number of Panchayat members have increased from 8 in 1961-62 to 11 in 1968-69 and same remain in current survey.

- Gram Seva Sahkari Sammittee was established on 14 November, 1969. It means it was working in past survey period also. At that time, there were 141 members in the society and share capital was of Rs. 11480. On an average share capital per member in society was Rs. 81.42. In the recent survey, the total member has increased to 824 members. The Gram Seva Sahkari Sammittee disburses short term crop loan up to 1.50 Lakh in 2018-19. At the time of survey, total 523 farmer's loan was waived in 2018 and total amount waived was Rs. 1.18 Crore. In second time, 223 farmers were included in 2019 for cooperative loan up to Rs 50,000 and total Rs. 93 Lakh was disbursed. The Gram Seva Sahkari Sammittee also works for distribution seed and fertilizers in village with subsidized rate.
- In the recent survey, four schools were found functioning in village, of which two schools were government school and two schools were private schools. One of the government schools provide education to children from 1 to 12th standard and this school has co-education facility. The Senior Higher Secondary school provides Commerce and Arts education stream. The Middle school is girls school education but some boys are also educated there with flexibility in rules as brothers of elder sisters are studying in same school to develop habit of going school regularly.
- The State Bank of India is operating in Naurangdesar village since 1980. Total 6-person staff is working having 2 officers, 3 Clerks and 1 peon. Total

9000 saving accounts are opened in branch and accounts holders are from near about 10-15 villages located closed to Naurangdesar. Total 1400 Kisan Credit Card are distributed in recent survey. As per bank officer statement, 125 accounts of KCC are NPA (Non-Performing Asset). Total 150 accounts were opened under MUDRA (Micro Units Development and Refinance Agency) loan. Only 5 percent of total accounts holders of Naurangdesar village save their money in Fixed Deposit because they usually deposit their saving money with traders of APMCs for gaining more interest amount. Total four Self Help Group (SHG) are associated with bank and out of four, three SHGs are NPA. Two robbery incidences were happened in bank and in 2016-17, near about 2.5 Lakh amount was robbed from ATM. Therefore, at present survey, ATM facility was not provided.

- Four SHGs are working in village but villagers are not much aware about theses SHGs and its work.

8.3.6. Village Infrastructure

- The market potential for any product depends on money aspects viz. population of the area living standard of the people, their income, social customs and habits geographical conditions. etc. Total 15 to 16 Glossary shops are reported in Naurangdesar Village.
- One post office is in operation in Naurangdesar village having one post master working in post office. Post office working time is as per any other post offices working time. Generally, villagers contact post master for official purpose and no official building is there for post office.
- The network of medical and health services in the village are satisfactory. The health services are provided by government as well as private sector. At the time of benchmark survey, there was no government primary health centre but near about year 1970 or 1975 government has opened primary health centre in village. At the time of present survey, Primary Health Centre is found working in village and 07 posts are filled-up including one MBBS doctor, one ayurvedik doctor and other supporting staff. Only outdoor patient facility was available and one day IPD (when patient is

treated one day or some hours in hospital) facility is also available but hospitalization facility is not available in PHC. The public health services are provided by 2 private clinics and there are four medical shops in village.

- The Government of Rajasthan has opened an Ayurvedic Dispensary in this village in July 1967. At present, three posts are fill up, one doctor, one Nurse/Compounder and one Peon. Total 16369 patents were treated in 2017-18 from April to March. The Government of Rajasthan has also opened a Veterinary Hospital in this village sometime in the year 1979-80 where total 06 posts are sanctioned but only 03 posts are filled up (veterinary doctor, veterinary assistant and sweeper).
- The electricity department in Naurangdesar is working under Jodhpur DISCOM. The major electricity consumption in the village is found in domestic and agriculture uses. The electricity department provides 6/7 hours electricity for agricultural purpose and charged first three year 2.50 Rs/unit and after that charges were Rs.1.10 /unit. For domestic purpose, rate per unit is Rs.3.85 and near about 22 hours electricity is available. In Naurangdesar village, near about 93 percent houses are electrified and only 60 connections were cut in Nov, 2019 for non-payment of electricity bills for long time.
- The drinking water availability is provided by Public Health Irrigation Department in village. Total water connection in village are more than 500 and department provide drinking water on the basis of 3 or 4 days in week on rotation basis. The irrigation water department receives water from Naurangdesar distributary and total storage capacity of three tanks is 21500 KL and two pump house are fixed for distribution of water.
- The public distribution system as a social safety net can be understood by the fact that aggregate availability of food grains per se is not enough to ensure the ability to acquire food grains. In Naurangdesar village, there are 2 PDS shops where wheat, rice, pulses, sugar and kerosene is provided to ration card holder.

- Apart from necessary facilities generally available in every village, selected village has small scale industry, bike garage, etc.

8.3.7 Cultural Profile of the Village

- The entertainment sources are folk dances, organization of dramas and arrangements of various types of in-door games. Among the popular dances, mention may be made of Ghumer, Bhangra and Giddha. The main festivals of Hindus are Deewali, Holi, Dashera, Gangaur, Sheetla Ashtami, Akshaya Tritiya, Raksha Bandhan, Makar Sankranti etc. The birth days of all the ten Gurus are celebrated by the Sikhs but the birth days of first Guru Nanak and the tenth Guru Govind Singh are celebrated on a larger scale.
- The majority religion here is Hinduism followed by Sikhism due to its proximity with Punjab. The place has several Hindu shrines. Sikh shrine Gurudwara is located here.
- The embroidered Odhni (mostly red in colour) is a symbol of Bagri women. A long shirt and ghaghro (long frock type clothes) and borlo (a head ornament) is the traditional dress of Bagri women. Punjabi women wear a suit and salwar with chunni (cloth on head). The Purdah (or veil) is mainly in vogue among Bagri women. Men mainly wear a pant-shirt, kurta-payjama and dhoti (Punjabis call it the chadara-kurta). Punjabi music is very popular and are listened to with the same enthusiasm as in other northern Indian regions.
- Most of people of village spoke hindi, punjabi, and bagri language. Hindi is the official language. Bagri, a dialect of Rajasthani language, a dialect of Punjabi language, are spoken by majority of population.
- The arid nature of the region, the extreme climatic conditions, scarcity of water and vegetation has witnessed evolvement of unique cooking styles and food habits of the natives that is noticeably different from other region of country. Bajre ki roti made with bajra (millet) is very popular and healthy flat bread that is relished across Rajasthan. Though it can be taken with any vegetable dish or kadhi, it is generally savoured with onions and Lasun ki chutney that is a saucy preparation made with garlic. This

combination has remained a staple food for the locals. Khichdi, a wholesome and healthy meal made out of rice and different pulses. Originated from the Bikaner region of the state, this crispy snack made of besan (gram flour), moth beans and a mix of spices has become a household snack in India

- In Naurangdesar village, a large number of immigrants especially from Punjab have had a marked influence on the behaviour and social thinking of the native villagers and were instrumental in the changes in various traditional customs of village. This, however, does not mean that caste as a force had lost its importance totally. It was still playing its role, thorough to a lesser degree, and had its ramifications on socio-economic structure of the village. In Naurangdesar village Jat, Sikhs and Schedules castes were dominant groups.
- The dowry system was quiet in vogue. In fact, this practice expresses its dislike and disapproval for this system in almost all the families in the villages. Whereas, the amount of dowry was increasing day by day even among Hindus and Scheduled Castes of other castes in the village.
- Political Parties such as BJP, Congress, BSP, INL and Jamidara are popular in the Village. But political establishments by the parties was not at all reported in the village.
- Not a single library of any type was reopened in Naurangdesar village. But in School, library is reported.
- Integrated Child Development Services (ICDS) scheme is world's largest community based programme. The scheme is targeted at children up to the age of 6 years, pregnant and lactating mothers and women 16–44 years of age. The scheme is aimed to improve the health, nutrition and education (KAP) of the target community. The village as a whole only one Integrated Child Development Service Centres was established and it was found working regularly.
- About 15 hand pumps / nalkoop and one village tank was in Naurangdesar village. Due to the convenience of the canal in the village, the canal water is

used for drinking. The canal water is collected in the village tank and through pipes that supply water to every household in the village.

- As regard to the agro processing units ,6 floor mill/ aata chakki in which 2 mobile Atta Chakki are reported in the service of villagers in Naurangdesar.
- The playground facility was available in higher secondary school of Naurangdesar village.
- No illegal activities are reported in this village. During the survey, it was observed that peoples of this village are very polite and helping nature. The most of youngsters are well educated and participated in every social work.
- Many government schemes are being implemented in the village, which includes job-related MNREGA, and agriculture-related mainly crop insurance (PMFBY), seed minority, soil health card, PM- farmer, KCC, PMKVY etc.

8.3.8. Occurrence and frequency of natural calamities

- The sand cyclones are very frequents reported in summer season and drought occurs every three years reported in village or region.
- Sand Cyclone occur often but damages were never measured by government. But in drought year, 35 to 50 per cent agriculture production was affected in the village. The State Departments of Irrigation, Ground Water, Revenue, Agriculture, Animal Husbandry etc., need to evolve a robust method for drought intensity assessment.
- Government is well aware about the fact that farmers must adopt crop insurance scheme to avoid natural disaster. Many farmers of the village of Naurangdesar have benefitted from crop insurance schemes.

8.4 Social Dynamics

8.4.1 Profile of Selected Households:

- The number of households in the village has increased by 127 per cent in 2011 over 1971, i.e. from 342 in 1971 to 775 in 2011 census. In recent survey, total population was reported doubled. In current survey of

selected households, as noted in earlier chapter, the drastic decline in share of child (0-6) was also observed. The children (0-6 years) population to total population has decreased by 33 per cent points, which was 42.6 per cent in earlier survey has dropped to 9.3 per cent only. Total working population was also increased by almost 35 per cent points, which was 31 per cent of total population in earlier population increased to 65.3 per cent in recent survey. Also the share of main workers in total workers population has declined by almost 9 percent indicates the increase in marginal workers population. The rate of literacy has also increased from just 20 per cent in earlier survey to almost 88 per cent in current survey. Particularly significant increase in female literacy was achieved which has increased from 4.27 per cent in earlier survey to 77.8 per cent in recent survey.

- Out of the total households in villages, 72 per cent houses were pucca in nature which indicated the drastic change in the socioeconomic status of villagers after receipt of assure canal water as during the last two surveys, share of pucca houses in total was 1.3 and 4.6 per cent respectively. Also the nature of families has diverted towards nuclear families. Around 83 per cent of families are reported nuclear in current census as compared to 57 per cent in 1961-62.
- The distribution of population in age group 36-55 years has significantly increased in recent survey over base period (from 6.34 per cent in 1973-74 to 28.18 per cent in 2019-20) means working population has increased by 21 per cent points and thus rural economy has also improved in recent survey. Children population has declined significantly showing demographic structure change in village means generally people want to have 1 or 2 child only which was observed during the current survey.
- In earlier survey period, about two third of children aged between 16-20 years were married while in current survey, it was noticed that hardly 1.55 per cent of this age group children were married which is a very important change observed over the period. Early marriage is not socially,

economically and physically better for children before attending age of 21 years. Around 96.8 percent persons were married in age 26-30 group in earlier but same was just 16.54 persons were married in recent survey. It may be because of the fact that most of male and female are giving priority to get better education and employment before getting married. In recent survey, total 37 cases were reported under widow/er category (75.68 per cent persons) which belongs to age category of 56 and above age.

- Out of the total households reported, the highest number of households (about 29 percent) had four family members and they accounted for about 25.11 population of village whereas in earlier survey, corresponding figure in same category (4 family members/hh) was 28 families with share of 9.60 percent in village households and 6.29 percent in village population. In earlier survey, the highest share was of families having five members (15.46 per cent) followed by six-member family (14.45 per cent). The share of maximum number of about 11 per cent of total households had family members 10 and above, while in current survey, hardly 0.67 per cent of total households had the same. It indicates that over the period, mostly joint families are distributed in nuclear families.

8.4.2 Caste/religion wise Distribution:

- Caste/religion wise distribution of population in selected households of selected village indicate that share of all religion groups in total population has increased except OBC Hindu which has declined from 46.26 per cent in last survey to 27.74 percent in recent survey. The sex ratio in village has declined from 910 in last survey to 849 in current survey. For every 1000 male population, number of female have declined, which is a matter of concern. The sex ratio of village is lower than district (906), state (928) and national average (940). The average size of households has declined over the period from 6.21 person to 4.57 person which implies two aspects, viz. joint families are fragmented to nuclear family rapidly and every couple prefer to have two children as observed in demographic feature of the village.

8.4.3 Literacy Pattern by Sex:

- There is significantly declined in number of illiterate population in over the period of time, i.e. from 68.71 per cent in last survey to 26.05 percent in recent survey in case of male while corresponding figures for female are 94.77 per cent to 38.00 percent. The primary level education has significantly increased in recent survey that to very impressive growth was achieved in female literacy in village in current survey. Near about 13.63 percent population was literate up to post graduation level in current survey whereas in earlier survey, this was just 0.74 percent. Besides, in recent survey near about 0.54 percent population of village was literate in technical field which gives them higher employment opportunity in economy.

8.4.4 APL/BPL wise Distribution:

- Out of total households, 21.67 per cent household belongs to BPL category of which the highest share was of Hindu SC (40 percent) category followed by Hindu OBC (24.62 per cent). Total 80 percent Sikh SC families belong to MAPL (Antodaya Anna Yojana) category in village. Total 76.67 percent of total families in village were classified above poverty line category which was lower than district average of 84.62 per cent. This data was not reported in earlier two surveys.

8.4.5 Birth and Deaths:

- The highest rate of birth of 14.9 per 1000 live birth was reported in APL families whereas 10.1 per 1000 population was average of BPL families in 2014-19 in village. The highest death rate was found in BPL families (3.6 per 1000 population) of the village.
- During the period 1962-68, out of 469 births which took place in the village, 245 were males and 224 were females. The average number of births reported per year were 41 for the seven-year period from 1962 to 1968. However, one also observes wide year to year fluctuations in births the range of variation for the seven-year period being between 26 and 54. On the whole, the village experienced a slightly lower birth-rate (42 births per 1000 persons) for the period 1962-68 as compared to the period 1957-

61 (48 births per 1000 persons). The birth rates for 9 males and females during the resurvey were 41 and 42 respectively. One of the reasons for decrease in the birth rate was to be the increasing awareness among the villagers about the family planning devices. Out of 47 deaths reported during the period 1962-68, 23 were males and 24 females. The morality rate which was 10 per 1000 persons for the period 1957-61 was reduced to 4 during 1962-68. The improvement in the medical facilities as well as in the standard of living of the villagers in the post benchmark survey period was mainly responsible for the same.

8.4.6 Enrollment and drop outs in different educational level (gender-wise)

- Near about 74.75 percent of total children enrolled in hindi or vernacular medium language schools and 19.60 percent children were enrolled in English medium private school. Around 60 percent children of Hindu general caste families have enrolled in private school where as 68.18 percent of OBC Sikh family's children were enrolled in private school. Most of the ST Hindu, SC Hindu and Sikh and OBC Hindu children were enrolled in government school with vernacular language. The drop out of children was mostly reported in case of children of SC Hindu, OBC Hindu, SC Sikh and OBC Sikh, whereas no children drop out was reported in General caste Hindu and ST Hindu families of the village. The drop out children shares just 5.65 percent in total enrolled children in government as well as private school. Total 19.60 percent children were enrolled in private English medium school in village in current survey suggest that if parents afford economic liability of English medium school than they enrolled their ward in same.
- The village did not have kindergarten facility either in 1968-69 or 1972-73. It had two schools, one being a middle school and the other a primary school. The number of rooms in the middle school increased from 7 in 1968-69 to 11 in 1972-73 and in the primary school form 1 in 1968-69 to 2 in 1972-73. In 1968-69, only the headmaster of the middle school was provided with rent free residential quarters. In 1972-73, the headmaster of the middle school and the teacher of the primary school also secured this

facility. During both points of study there were 9 teachers and all of them were trained. The village school had been extended and the number of male students had increased considerably in 1968-69 over 1961- 62. However, the number of female students during both the surveys was discouraging. The number of students enrolled in the village schools (as per Naurangdesar school records) increased from 1987 in 1968-69 to 220 or by 18 per cent in 1972-73. Though the proportion of girl students to the total students increased from 4.8 per cent in 1968-69 to 8.2 per cent in 1972-73, it was very low as compared to that for the boy students. In 1968-69, no native person of the village had crossed the high school education. The village had one arts graduate and five matriculates in 1972-73. Moreover, two students of the village were attending the college.

8.4.7 Food Security & Child nutrition (BMI):

- As per BMI index values, female child found to be healthier than male child. Out of total female child, 81.08 percent of female child were found healthy, 8.11 percent are obsessed and 10.81 per cent female child were underweight. While in case of male children, 64.63 per cent were found healthy, 3.66 per cent were with obesity and 31.71 per cent were present are underweight. If we see class wise nutrition level, we found that up to class III, male child were all healthy while in case of female child its differ. A very surprising picture was observed when we see up to IV standard to X class, it can be seen that most of female child were healthier than male child in Naurangdesar village in current survey. This survey was performed in government Sr. Sec. School in village and it was found that mid-day meal and milk Yojana of state government was helpful in increasing child nutrition level of weaker section in the village.

8.4.8 Access to basic amenities and changes therein

- Out of the total households, total three households have reported non-availability of legal electricity connection, 14.67 per cent of total households have no toilet facility in their houses and 5.33 per cent households have no government drinking water connection for which they have to travel just 10-100 meter distance in village. This picture is self-

explanatory about the basic amenities expansion in village has reached to satisfactory level in current survey and villagers are aware about self-hygiene and cleanliness which is must for betterment of life, particularly after COVID19 pandemic.

8.4.9 Participation, Inclusiveness and Empowerment:

- Out of total households, about 39 percent of member of households had participated in Gram Sabha and Gram Sansad meeting whereas remaining household members who could not participate were either busy, uneducated and due to old age they did not participate. About 6.33 per cent household members have approached to elected representatives like Panchayat/MLA/MP for village and panchayat development related issue while 73.68 per cent households persons were satisfied that elected representatives had addressed their issues and tried to solve them willingly, which shows empowerment of Naurangdesar villagers in recent survey.

8.4.10 Perception about different changes in the village:

- In the Naurangdesar village, during recent survey, it was observed that there was no caste biasness and no caste rigidity was having been seen. Economic gap was observed in Sikh OBC and Sikh SC families due to economic condition. Mostly SC Sikh families are working in on the land of OBC Sikh for several years. This was not a case in case of OBC Hindu and Hindu SC families because education level of these groups was much better than SC Sikh families in the village.
- In recent survey, no gender biasness was seen in village. In current Gram Panchayat election, Naurangdesar Sarpanch seat was reserved for women category. The newly elected Sarpanch and processor Sarpanch both are active in village activities and they have taken interest in development work in village with full enthusiasm.
- No political bias or deprivation was seen in village and village is properly connected with district headquarter. The MLA/Pradhan (originally from

Naurangdesar village) and other political leader are well connected with villagers.

8.5 Economic Status

8.5.1 Livelihood and Employment:

- Out of total household, about 79.67 per cent households were dependent on agriculture and allied activities, 7 per cent households were working in service sector job and 7 per cent households were doing business and trade in village. One of the important observations was that 5 per cent households were working as casual and marginal laborer and just one per cent households were dependent on pension/old age pension/widow pension etc. in the recent survey. The total 62.61 per cent of total cultivators belongs to OBC Sikh families and 26.09 per cent cultivators were from OBC Hindu category while other caste categories share was negligible in farming activity. Out of total agriculture labour, about 74.19 per cent agricultural labour belongs to SC Hindu and SC Sikh families and not a single family of OBC Sikh was involved in agricultural labor in village. Most of the SC Hindu households were working as casual and marginal labour in or outside the village.
- Out of total sample household, about 62.53 per cent adults were working in agriculture sector as a cultivator or agricultural labour or both. Out of total cultivators, about 53.05 per cent cultivators belong to OBC Sikh family whereas 45.60 per cent adults working as agricultural labours are from SC Hindu families. Out of total households in general category, about 38.46 per cent adult of General Caste Hindu were in government service and 50 per cent adult of same category were under pension scheme of government. All caste based profession especially furniture work, gold smith work is being performed by OBC Hindu families in village.
- Out of total sample households, about 15.34 per cent adult especially women were working in house in which 42.71 per cent belongs to OBC Sikh category. About 40 per cent of SC Hindu adult were getting social

security pension like old age pension, disabled pension, widow pension and other government scholarship scheme in village. The total population of selected sample was 1370 of which 94.67 per cent adult persons were involved in economic activity. This shows that mostly adult persons of village were working and their major contribution was in village development as well as rural development.

- Out of total sample household, about 58.71 per cent male and 41.25 per cent female were working in different livelihood in village. Male adults dominantly working agricultural and agricultural labour work than female. Most of the adult female were working (81.30 %) as casual labour and no female worker were working as a marginal labour in village. Out of total trade and business oriented activity doing by male in village.
- The data on the selected sample households in village indicate that about 96 per cent of households, home work was being done by adult female members while in case of around 4 per cent households, male members was completing the household work (most of old age persons). Out of total security pensioner, about 64 per cent females were getting social security pension like old age pension, disabled pension, widow pension from government which was equal share with men.
- Though the village economy has remained predominantly agrarian, the relative importance of cultivation in terms of number of households primarily dependent on it in the occupational structure of the village has gone down. In 1961-62, 76 per cent of the village households followed cultivation as primary occupation which dropped down to 65 per cent in 1968-69 and further down to 38 per cent in 2019-20. While share agricultural labours have increased from 5.7 per cent in 1961-62 to 21.6 per cent in 1968-69 and 41 per cent in 2019-20. Thus, as like at national level, share of cultivators has declined and agricultural labours has increased. The total number of households dependent on agriculture (cultivation, dairying and agricultural labour taken together) has increased-from 81 per cent in 1961-62 to 87 per cent in 1968-69 which

again declined to 80 per cent in 2019-20. In other words, only one-fifth of the total households during bench-mark and a little more than one-tenth of the total households during resurvey and two fifth of the total households during last survey depended on non-agricultural sector. The economic development, resulting from irrigation facility, instead of diversifying the occupational pattern, has created converging, forces in favour of strengthening the primary sector. The traditional occupation of Jat Hindus and Jat Sikhs is cultivation and naturally around ninety per cent of their households were cultivating households during all surveys. The overwhelming importance of cultivation in these two caste groups has virtually remained unchanged.

- The change in the occupational pattern of scheduled caste Hindu group which is next in importance to Jat Hindus in terms of number of households is quite significant, 72 per cent of these households pursued cultivation and 19 Per cent agricultural labour as primary occupation during the bench-mark survey. However, during the resurvey period, 1968-69 and 2019-20, the corresponding percentages were 33 and 61; 14 and 73 per cent respectively suggesting a marked change. The process of proletarianisation of this down trodden section of the community appears to be of a continuous nature. The scheduled caste Hindu households were reduced to the rank of agricultural labour class who were having cultivation as their main occupation in the near past. This suggests that income from cultivation of scheduled caste Hindu households might have either declined or had not risen as much as in the case of Jat Hindu and Jat sikh cultivating households. their (scheduled caste households) poor resource endowment and relatively lower availability or irrigation facility seem to have been responsible for aggravating their economic condition. For the first time during resurvey one household each from this caste group had taken up non-agricultural labour and trade occupations. Like scheduled caste Hindu households more of low caste Hindu households had taken up agricultural labour occupation. All scheduled caste Sikh

households during both surveys were primarily dependent on agricultural labour.

8.5.2 Pattern of Migration and Changes therein:

- Out of total, 27 cases were reported migrated to other city or town in recent survey. Out of total migrated households, about 24.36 per cent households belongs to OBC Hindu family members which have migrated to other cities in search of jobs. Out of total sample household, about 10.43 per cent household belongs to APL family.
- At the time of benchmark survey in 1961-62, out of 192 households of the bench-mark survey, 35 had left the village, one was merged with the other household and 5 could not be accounted for out the time of survey. Thus 21 per cent of the total households of the had left the village. It was noted that there was a demand for labour, especially in years of good rainfall, which was concentrated for a few months at the time of harvest. Hence the village attracted only the floating type of seasonal immigrant labour. On the other hand, during lean agricultural season, some of the local labour households had to out migrate in search of jobs. During resurvey temporary out migration was on a very low level and only three males in the age group 45-55 years were reported as temporary out migrants. Each one of them belonged to high caste Hindu, intermediate caste Hindu and scheduled caste Hindu households. Out migrants from the first two caste groups were engaged in service within the Rajasthan State whereas the third person. It was observed during resurvey in 1968-69 that the introduction of irrigation facility in the village had enlarged the scope of employment with more even distribution of employment around the whole year. This helped immigrant labour households, especially of Harijan Sikhs, to settle in this village during the post bench-mark period. The conditions of stability created by irrigation considerably restricted out migration from the village.

8.5.3 Agrarian System

- Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties and at time of first survey the total irrigated area was only 6.1 per cent, which has increased to 55 per cent during resurvey period 1973-74 and reached to 90.5 percent in current survey. This indicates that almost 91 per cent area was brought under irrigation of Naurangdesar village. The main source of irrigation was canal in village.
- The leased-in land accounted for 9 per cent of the operated land in 1961-62 and for 11 per cent in 1968-69 which declined to 6.3 per cent 2019-20. However, there was a positive relationship between the two in 1968-69. The land leased-in by small farms accounted for 9 per cent of the operated land in 1961-62 and 17 per cent in 1968-69. Similarly, for medium farms its proportion increased from 8 per cent in 1961-62 to 14 per cent in 1968-69. However, the proportion of leased-in land to total operated land for large farms remained at 9 per cent during both the surveys. Average area leased-in per farm had increased for large farms in 1968-69 as compared to that in 1961-62. During both surveys, the large farms had cornered larger proportion of total leased-in land. However, during resurvey, the average land leased-in per farm had increased for small farm from 0.26 hectares in 1961-62 to 0.45 hectares in 1968-69 and for medium farms from 0.78 hectares in 1961-62 to 1.24 hectares in 1968-69, whereas it was reduced from 2.51 hectares in 1961-62 to 1.77 hectares in 1968-69. During both surveys the small land owners had leased-out large proportion of their owned land as compared to that by medium and large land owners.
- While none of the marginal farmer had taken land on leased-in during 2019-20, while 7.5 per cent of total operational holdings of small farmers group was land leased-in category.
- Under land tenure system in village, leasing-in and leasing-out tenancy with share cropping basis of the output was found prevalent among the cultivators. The prevailing rate of leasing-in and leasing-out was about Rs.

60000 per hectare of irrigated land and Rs. 16000 per hectare for rainfed land in Naurangdesar Village.

- The comparative analysis of distribution of land holdings during last resurvey (1968-69) and current survey indicate that the average size of land holding size has declined significantly. The average size of land holdings has declined from 10.5 ha in 1968-69 to 3.51 ha in 2019. The main reason behind this significant land holding size declining was that population is increasing very rapidly and land holding is distributed in small fraction which is noticed also at all India level. Also, one more reason was noticed that in previous survey Naurangdesar village was distributed in many villages according to Chak system so that total number of households were also declining in current survey.

8.5.4 Land Utilization and Changes Therein

- The average family size in selected households of Naurangdesar village was 4.77 and they operated land area of average 3.51 hectare. The land man ratio was found higher or near about one in medium and above categories farmers and the lowest was noticed in marginal and small farmers' categories. The average cropping intensity was almost same in all categories and net irrigated area was estimated to be 94.3 percent of net sown area in village. The average education of head of the family was 5th class which was almost same in all classes and on an average three crops were grown in village every year.
- Farming systems in India are strategically utilized, according to the locations where they are most suitable. Farming system is a set of agro economic activities that are interrelated and interact with themselves in a particular agrarian setting. It is a mix of farm enterprises to which farm families allocate its resources in order to efficiently utilize the existing enterprises for increasing the productivity and profitability of the farm. These farm enterprises are crop, livestock, aquaculture, agro forestry and agri-horticulture. The crops were grown in both seasons during current survey period which was possible only due to canal irrigation facility. After

IGNP canal and Naurangdesar Distributary, the area under irrigation has been increased by more than 90 per cent and farmer are growing high values crops. During 1960s only rainfed crops were grown in which mostly Guar, Barley and rainfed pulses crops were cultivated.

8.5.5 Cropping Pattern and Changes therein

- The main crops grown during the kharif season were cotton and guar which contributed about 58.49 and 26.62 percent area respectively. Cotton crop is grown in irrigated condition. The main crops grown during rabi season were wheat and rapeseed & mustard which accounted for about 60.76 and 36.36 percent area respectively in Rabi season. Very few farmers are growing crops in summer season while only one sample farmer has grown fruit and vegetables in village. The kharif and rabi season accounts for 51.80 and 48.09 percent of gross cropped area of the village which was near about to same due canal irrigation facility in both seasons.
- Crops like rice, wheat, cotton, rapeseed and mustard, fodder and Kinnu are grown under irrigated conditions while gram and guar are grown under both irrigated and rainfed condition and bajra is grown under rainfed condition only.
- Though the crop pattern during both the surveys was food crop oriented irrigation has contributed towards a gradual shift in area from food to non-food commercial crops. The area under food crops which accounted for as much as 90 per cent of the gross cropped area in 1961-62 was reduced to 77 per cent in 1968-69. The analysis of crop pattern in different farm size groups clearly shows the tendency for the area under food crops to go down progressively with the increase in the farm size. The same trend was continued in latest survey in 2019-20. The drastic decline in area under food grain crop has been reported (from 76.8 per cent of GCA in 1968-69 to 32.4 per cent in 2019-20).
- The second important change was observed in the crop pattern was with regard to increase in the area under fodder crops from 9 per cent of gross cropped area in 1961-62 to 15 per cent in 1968-69. While same declined to

0.06 per cent in 2019-20. In 1961-62, guar alone was grown as fodder crop but in 1968-69, 76 percent of the area under fodder crops was accounted for by guar. The increased importance of fodder crops in terms of land utilization in 1968-69 was due to two factors: firstly, the guar had a ready market at remunerative prices. The demand for guar had gone up due to the starting of a factory for making gum from guar in the post bench-mark period in the region. The second reason for the popularity of fodder crops was the increase in the number of livestock in general and of stall-fed animals like draught animals and buffaloes in particular which created a necessity for the farmers to allocate large area under fodder crops. The area under guar crop was separately from fodder crops in 2019-20 and it account significant share in GCA which accounts for almost 18 per cent of GCA in 2019-20 and therefore area under fodder may be came down.

- At the time of bench-mark the relative area under fodder crops was positively related with the farm size but during resurvey the middle sized farms were found to have more of the fodder area (16.0 per cent) than that of small farms (13.4 per cent) and of the large sized farm (14.9 per cent). It is worth noting that at the time of bench-mark there was a wide variation in the proportions of gross cropped area devoted to fodder crops among farms of different size groups but during resurvey the variations had considerably narrowed down. During 2019-20, only medium and large land holders had devoted land for fodder cultivation other groups may have used bunds and common grazing land to feed their animals.
- Last but not the least important change in the crop pattern was with regard to the introduction of altogether new crops like oil seeds cotton and sugarcane; also, rajko and mixture of jowar and maize were taken as fodder crops for the first time in the post bench mark period. Sugarcane and cotton are not only long duration crops but are also costly crops in the sense that besides the requirement of more of water at regular intervals they are labour and fertilizer intensive crops. In term of percentage of area cotton was the more important crop (7.3) cent of the gross cropped area) than sugarcane (0.4 per cent of area) and oilseeds (0.2 per cent of area).

The proportions of area under these crops had a tendency to go up with the size of the farm. While during 2019-20, the cotton crop emerged as major crop having 30 per cent of GCA and no area under sugarcane crop was reported. Kinnu crop was reported by the small farmers.

- Considerable reshuffling in the relative importance of different crops among cereals has taken place during the resurvey period. The inferior cereals which were dominating in 1961-62 had gained a little in importance in terms of its share in gross cropped area during resurvey. In absolute terms the area under wheat has increased for farms below 7.49 hectares and for farms in the size-group 15.00 to 19.99 hectares. The area under wheat which occupied 41 per cent of the total area under cereals in 1961-62 formed only 38 per cent in 1968-69. The relative area allotted to wheat crop and the size of farm were not found to have any relationship during both the surveys. However, the proportion of area under wheat for small farms had been reduced significantly from 42 per cent in 1961-62 to 29 per cent in 1968-69 whereas for large farms proportionate area under wheat declined from 43 per cent in 1961-62 to 38 per cent in 1968-69. Data indicates complete change in allocation of area under cereals, at the cost of losing the area under jowar and barley crops and drastic decline in area under bajra crops, more than 90 per cent of cereals crop area shifted under superior cereal crop i.e. wheat. In fact small farmers grow only wheat crop under cereal category.
- All size group of farms had accorded first priority to gram and second to guar in terms of area to be irrigated in 1968-69 and roughly speaking irrigated area under these two crops accounted for about half of the total area under irrigated crops for all size group of farms. The medium farms accorded third priority to local variety of wheat whereas third priority was accorded to local bajra by the small farms. The scenario got changed in 2019-20 wherein cotton crop accorded first choice followed by wheat crop and then rapeseed mustard and gaur crop. The distribution of irrigation facility among different crops was dependent on several factors. Important among them were distance of the farm to be irrigated from the main field

channel (the fields at the tail of the field channels were in disadvantageous position in terms of quantity of water and its frequency) the number of years of irrigation on a plot type of soil (both in terms of fertility and level of land) and the economic condition of the farmer.

- Due to availability of canal water for irrigation, the crop area is diverted from pulses crops to other crops like paddy, oilseed crops and cotton. During current survey, it was reported by the villagers that area under wheat and guar has increased at the cost of decline under pulses crops which was grown as rainfed crops.
- The Herfindahl index value is 37 being relatively low implies a significant level of diversification in the Study area.
- The trend of cropping pattern in Naurangdesar village during 1968-69 to 2019 indicate that the area under cereals has increased by 18.96 per cent points over base year, i.e. which has increased from 26.1 per cent in 1968-69 to 31.05 per cent in 2019 whereas the area under pulses has significantly declined by 46.6 per cent points during corresponding period. The area under oilseed crops has increased by 19.14 per cent points because most of farmers preferred to grow cereals and oilseeds (high value) crops due easy availability of irrigation facility. The area under cotton crop has also increased by about 23 per cent points. The area under fodder crop has declined by 15.24 per cent points may be due to the fact that farmers are more interested in growing cash crops rather than fodder crops, which is not good for livestock rearing. The expansion of irrigation facility through IGNP canal system to farmers has changed the cropping pattern and now farmers are more intended to grow cash crops or more profitable crops like, wheat, cotton, rapeseed & mustard and guar.

8.5.6 Irrigated area by sources and changes therein

- The drastic changes were observed in irrigated area by sources in Naurangdesar village. Most of farmers used to grow rainfed crops during last survey but in current survey, it was observed that more than 90 per cent area was irrigated by canal water.

8.5.7 Average yield of different crops and changes therein:

- There is a tremendous improvement in crops yield except guar crop in recent survey over base survey. The yield of wheat crop has increased by 481.45 per cent while yield of bajra crop has increased by about 204 percent, gram crop yield by 80.93 percent, and cotton crop yield by 202.36 percent. Only guar crop yield was marginally declined from 8.35 to 7.26 Qtl/ha in village and mostly farmers were growing guar crop in unirrigated condition in village that's why yield was observed less in earlier period.

8.5.8 Distribution of livestock resources and changes therein

- The importance of livestock in rural economy in general and cultivation in particular needs the emphasis. Besides providing milk, so necessary for the sustenance they provide traction power required in cultivation and its allied pursuits. Fortunately, Naurangdesar had superior breed of cattle. Prominent breed of cows "sindhi" and that of buffaloes "Hathi", both famous for their high yield of milk. Despite this, dairying as a commercial pursuit or even as a subsidiary source of income had not developed at all. Very few of the households in the village were reported to have sold within or outside the village. The reasons given for not selling milk were firstly, larger quantitatively of milk was being consumed to supplement the shortage of drinking water and secondly, sale of milk was treated as violating the religious principles. Viewed from this angle, the economic utility of the cattle in the village apart from providing milk for self-consumption was confined to the provision of traction power during 1970s survey situation. But in Current surveys, it was observed that there is a milk cooperative society in the village which purchases milk on the basis of fat percentage from the member. Milk also being collected by private dairy and bike vendor and sold in near city. According to our survey, there were milch animal resources increased by 49 per cent as compared to last survey. Young stock also increased but sheep and goat has declined in Naurangdeshar Village. It was also observed that some poultry farms especially hen rearing were managed by Sikh community in the village.

8.5.9 Tools, implements and machinery use in agriculture

- The main implements owned by the villagers were ploughs, harrow, handhoes, kassi, danti, kassia and crushers. Recently improved grass cutting machiner and iron ploughs were also purchased by a few families. Only two families owned tractors. But a large majority of the cultivators owned primitive type of tools and implements in last survey reported but in current survey more than 23 per cent farmers had tractor and most of farmers had farm implements and machinery for used in agriculture.

8.5.10 Production and disposal of farm outputs:

- All crops are found profitable except Guar crop. Guar crop has incurred loss in irrigated as well as under rainfed condition of 1.64 and 3.85 percent respectively in village which means only one selected farmer have incurred loss in cultivating guar crop in village.

8.5.11 Prevalent marketing channels and procurement arrangements

- Cotton and Kinnoo crops were 100 percent sold through market/businessman/government agency in village. More than 90 percent farm produce like Paddy, Gram, Rapeseed & Mustard, Groundnut and Guar were sold through market/businessman/government agency etc different marketing channels. About 78.87 per cent of wheat and 54 percent of Bajra produce was sold by selected farmers through market. As far as concern about prevailing market price of major crops which received by selected farmers is comparatively higher than other districts farmers in state because they are well aware about new agriculture technique and they have good irrigation facility.

8.5.12 Poverty, Income and Consumption:

- The annual average income from all sources is estimated to be Rs 327003 in all occupational groups in village. The average income of cultivator is estimated to be Rs 484494 and farm income contributes 81.06 percent while non farm income contributes near about 19 percent. The highest income earned was by government salaried persons in village and the lowest income earned by casual labours groups having estimated Rs. 759700 and Rs. 124333 per annum respectively. Off farm income

generated through labour earnings, other off farm and asset hiring income like tractor and other agricultural equipments rented out and agricultural labour getting highest income in village. Private salaried persons are earning Rs. 296125 per year which is lesser than 38 percent of government salaried persons earned annually. The average income of village is very economical viable and this suggest economic activities in village is better.

8.5.13 Distribution of households by income and poverty level:

- The highest income per annum gained by Sikh OBC caste and the lowest income gained by ST Hindu caste in village and they got income Rs. 574035 and Rs. 101750 per annum respectively. General caste Hindu and General caste OBC have reported more or less same annual income though income structures were quite different in all manner. The very important observation is that income level of SC Hindu families was higher than SC Sikh families, having Rs 198297 and 153935 per annum respectively and the main reason behind this seen at the time of survey was that SC Sikh families receive less employment opportunity in other sectors in outside village area and generally they have been working like permanent agricultural labourer under capitalist rich Sikh OBC families since several decades. The SC Sikh families were migrated from Punjab and Haryana state when IGNP canal irrigation system was developed in Naurangdesar.

8.5.14 Asset profile of the rural households

- The assets include land (both owned and government allotted), owned building (both residential and others), livestock, implements and machineries, financial assets and consumer durables. We have included government allotted land in ownership of assets because such lands will eventually be owned by the cultivator households when they pay land values. Out of total sample households in the village, all the households owned their own house in village which has an average value about Rs. 3.54 lakh, while during last survey, around 83 per cent households owned house. Out of total households, 23 percent households possessed tractor in current survey while during last survey recorded only two tractors were in the village. In Naurangdesar village, the number of vehicles, livestock, farm

implements have been increased as compared to last survey. It can be also observed that some durable assets like TV radio, Refrigerator, AC, Computer, Electric machine and LPG gas are used by these households which were not used in early 1970s.

8.5.15 Food security

- As village has developed over the time period due to availability of assured canal water which has given a face lift to village, all the respondents have reported that they never went a whole day and night without eating or went to sleep hungry. More than 97 per cent households had no worry about food while remaining had sometimes thought about same. Almost one third of the total respondents went for outside eating while about one fifth of total households are eating too much of packed food. This is such that there is no issue of food security at village level.

8.5.16 Financial Transactions

- Out of total borrowings, about 81.63 per cent of loan was borrowed by cultivators and they generated income Rs 5.57 crore through farm and nonfarm sources. The outstanding loan was also highest in cultivator group. The cultivators had taken average loan of Rs. 3.7 lakh through banks and cooperative society in village. The Government of Rajasthan had waived loan of cooperative society up to Rs 50000/- in 2018-19. The loan taken by government servant was the highest in village which was Rs. 6.9 lakh for housing purpose. The Income-Loan borrowing ratio was the highest in cultivators, pensioners, government servants, trade & business man and private salaried class because of surety of payback and its influence to take more loan from institutional sources. Whereas agricultural labourers means unorganized sector workers has taken loan taken from institutional sources and the reason behind this was that they have less income security.
- Agricultural labours have paid the highest annual rate of interest on their borrowing capital (11.39 percent) from different sources mainly non-institutional sources, whereas farmers/cultivators took loan through Kisan

Credit card and paid only 4.06 percent of rate of interest for their borrowings.

8.5.17 Perception about economic changes in the village

- About 93.33 percent selected households were satisfied about economic condition of villagers. In current survey, it was observed that the standard of living and income of selected household has been increased since last survey period. When villagers were asked about village infrastructure specially road/electricity etc. then mix responses were reported. About half of the respondents were agreed that village infrastructure has improved in current survey than earlier survey whereas about 45 percent respondents reported no change in village infrastructure while 5.33 percent respondents reported that village infrastructure was deteriorated in current survey.

8.6 Ecology, Vulnerability and Sustainability

8.6.1. Natural Resource Profile of the Village

- The Naurangdesar village is situated in the North-Western part of Rajasthan faces severe water scarcity mostly in summer season, has poor rainfall, and is classified as arid/semiarid region. Any change in climatic determinants could not only adversely impact food security and nutrition but also affect the well-being of the population that derives its income from the sector. Shifting cropping patterns to more heat adapted and less water consuming varieties is a strategy already practiced by farmers. Reports indicate a shift in cropping patterns to local varieties of pulses, green gram, millets and mustard, which need less water. Dairying of goats and other small ruminants was promoted; indigenous varieties with heat resistance capacities are identified and promoted to minimize related losses in milk production.
- The village has sandy loam and sandy soil broken at short intervals by sandy ridges. Owing to its porous character, the soil does not retain moisture for long. The soil is suitable for crops like gram, bajra, guar and moong which do not need much of water. Wherever irrigation is available,

the soil is getting hard and this enables the farmers to grow crops like cotton and wheat. Similarly, those pieces of cultivated land which were intensively cultivated in 1961 and which were brought under the command area of the canal later on were levelled by the farmers either with the help of bullocks or by tractors and currently they using land leveler and level their land easily in current survey.

- During post bench-mark period two major developments took place in the village, Firstly, in 1964, the government of Rajasthan constructed 340 ft., wide Gaggar flood control bed in the periphery of this village. The Gaggar flood control bed starts from Rajasthan feeder and ends in sandunes. It is 50 kilometers long. The main objective is to direct flood water. In the next year, a new residential colony, namely, Adarshnagar with 35 houses for the villagers was established on the other bank of this river bed.

8.6.2 Livestock resources:

- The milch animal population has increased very significantly in village in recent survey. The growth of milch animals in 2019-20 over 1968-69 was around 307.22 percent, in which number of sheep and goat has declined marginally in village. The number of work stock like Camels have declined significantly in village and main reason behind this was that agricultural work is being completed with machinery like tractors and other implements whereas in previous survey camels were helping in agriculture land sowing and drinking water facility in village.

8.6.3 Ground water level, pollution and changes therein

- The ground water level in village did not declined and due to canal water; the ground water level is very high in village especially in Naurangdesar CAD area. The industrial development is almost zero in village so that pollution issue was almost observed and air quality was very healthy.

8.6.4 Natural and Manmade Disasters

- The occurrences of floods during the last 5 years were reported to be negligible whereas droughts were not occurred in last five years. Farmers as well as labourers were found to be most vulnerable groups among the

villagers of Naurangdeshar. On the other hand, villagers reported that cotton and wheat crops are the most vulnerable crops and barley is the least vulnerable crops. Sand Cyclones, erratic rainfall and heat and cold waves are also reported to occurs often and farmers as well as labourers are the vulnerable groups. Landslides and epidemics are not at all reported during the last 5 years in Naurangdesar Village. Few cases of Suicides and accidents were reported among SC and OBC groups of Household in Naurangdesar. No case of Violence and loss of job were reported while 2 cases of robbery are reported during the last 5 years in selected village. Price hikes crushes for vegetables crops occurred more often in Naurangdeshar Village.

- Due to drought and heat wave damages to crops as well as hardship to cattle were reported to be nil, while low level hardship of reported being reported for poor, and women. Few accidents and suicide due to drug addicted were reported by hardship to poor. Other no degree of hardship faced was reported in the village.

8.6.5 Major coping Strategies at Household Levels

- To combat with drought the crop raising farmers had used their savings as coping strategy. Labour class as well as poorest people farmers had migrated outside for jobs and also adopt borrowing as coping strategy. Thus, in the whole village the poorest peoples were the hardest hit from drought/ heat wave, suicide and accidents during the last 5 years. Robbery in ATM machine had been occurred in last 5 year and to stop robbery closed the ATM facility as coping strategy.

8.6.6 Major Adaptation Strategies to Combat Extreme Events.

- During survey and group discussion, it was observed that there has been no extreme climate or other event so happened in the village during the last five years period. While, state and central government scheme like PMFBY, Soil Health Card/PMFSY/ MGNREGA were adopted by farmers to combat with drought/Flood/ Cyclone and loss of job in this village. For

erratic rainfall as well as for heat and cold waves, crop diversification and livelihood diversification were adopted at individual level in the village. To stop major accidents, strictly follow up of transport safety rules was insisted among the villagers and police surveillance was conducted to stop robbery like incidents.

8.6.7 Perception about ecological changes in the village

- The majority of the households have reported that there is change in rainfall pattern as well as heat and cold waves and air over the period of time. while majority of them denied the increase in incidence of diseases and expenditure on medical.

8.7 Policy and Governance

8.7.1 Nature and Coverage under Different Government Sponsored Schemes

- Under the BPL card scheme, total 65 households were found entitled in the village during 2014-2019 and all had availed this facility. Thus, 100 per cent village coverage was under this scheme. Under KCC Card Scheme, total 118 households were entitled and all of them have availed the facility. Under public health insurance card scheme, 100 per cent coverage was reported as all 286 entitled households were benefited. About 212 households were entitled under MGNAREGA job Card Scheme, but the coverage was 96.7 per cent. Almost all the entitled households for Crop Insurance; PMFBY, LPG Scheme (PM Ujjala) have availed the facility. Under ICDS/Mid day Meal scheme, all the 91 households had availed this facility and were satisfied with same. Under Government Scholarship scheme, only 22 households were entitled but all have availed the same facility. All the households those were entitled under Seed Minikit scheme, Farm loan waiver, Old age pension scheme, and Widow Pension Scheme have availed the facility. Under Cattle Shed scheme, 22 households were entitled but only 2 households had availed this facility. Thus, only 9.09 per cent coverage was there.

8.7.2 Perception about Government schemes

- As discussed above, all the beneficiaries have reported 100 per cent satisfaction about these scheme. None of the beneficiary household have reported any dis-satisfactions over implementation of these schemes. While during discussion, the villagers have suggested for complete coverage of village under these schemes those who are eligible as per prescribed norms.

8.7.3 Participation in Local Governance

- Out of total households, 39 per cent of member of households had participated in the meetings of Gram Sabha and Gram Sansad whereas remaining household members could not participate in Gram Sabha meeting may be due to their busy schedule of field work, uneducated and due to old age. Out to total households, only 40 per cent were categorised under APL category, 37 per cent were under BPL category. Around 6.33 per cent household persons had approached to elected representatives like Panchayat/MLA/MP for village and panchayat development related issue. About 74 per cent household persons were satisfied with that elected representatives have addressed their issues and tried to solve their problems willingly.
- The relative status in the village power structure across the caste category group was mostly dominated by General Hindu followed by OBCs while SC and STs are having poor status in village power structure. Thus, despite of drastic changes in village, the power formula has not changed so far.
- The reasons for the one sided power structure and status in the society were poor economic conditions of SC and ST population along with no political affiliation as such as well as qualification. While during the field survey, all the respondents have denied any incidence of deprivation on the accounts of caste, gender or any association with political party.
- All the respondents have reported that they approach their friend in case any advice is require on livelihood specific issue, contact relatives in case of social related issues, consult friend and relative in case of educational matter and visit advocate and friends to seek advice on legal issues.

- Most of the households in the selected villages have sold their output in market.

8.7.4 Socio Economic Problems in Village

- The major problems narrated by the villagers are no sewage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, GYM facility, no employment opportunity available, Non availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers.

8.7.5 Major suggestion for improvement /development in Village

- The suggestions made are availability of work under MGNREGA with high wage rate, construction of sewage line, proper bus stand facility with barricades, expansion of village roads and fixing of lights on roads, college education and library facility APMC market in village, four lane highway with over bridge facility, public library, sport complex and gym facility, more coverage under PMAY scheme and purchase of crop produce by Govt at MSP.

8.8 Conclusions

Naurangdesar village was the first village which was irrigated by Indira Gandhi Canal Project (IGNP) in early sixties. After getting the canal water, farmers from Punjab have migrated in to this village area which makes half each of Punjabi and Rajasthan population and mix language. A large number of immigrants especially from Punjab have had a marked influence on the behaviour and social thinking of the native villagers and were instrumental in the changes in various traditional customs of village. Though the crop pattern during both the surveys was food crop oriented irrigation has contributed towards a gradual shift in area from food to non-food commercial crops. Last but not the least important change in the crop pattern was with regard to the introduction of altogether new crops like oil seeds cotton and sugarcane; also, rajko and mixture of jowar and

maize were taken as fodder crops for the first time in the post bench mark period. The Herfindahl index value is being relatively low implies a significant level of diversification in the Study area. Though the village economy has remained predominantly agrarian, the relative importance of cultivation in terms of number of households primarily dependent on it in the occupational structure of the village has gone down. In 1961-62, 76 per cent of the village households followed cultivation as primary occupation which dropped down to 65 per cent in 1968-69 and further down to 38 per cent in 2019-20. The basic amenities expansion in village has reached to satisfactory level in current survey and villagers are aware about self-hygiene and cleanliness. The major problems narrated by the villagers are no swage line, non-availability of higher education institutions and library, small village road and no facility of street lights, risky highway passing nearby village and non-variability of work under NREGA. Besides, no facility of public library, sport complex, GYM facility, no employment opportunity available, Non availability of crematory shed, no proper bus stand facility with barricades, etc. are some problems reported by villagers. There is urgent need to address these issues for further development of the village.

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Appendix I

Annexure I: Census-wise Village-wise Geographical Area, Total Population and Households

Village Code	Village Name	2011 Census			2001 Census			1991 Census			1981 Census			1971 Census		
		Total Geographical Area (in Hectares)	Total Households	Total Population of Village	Total Geographical Area (in Hectares)	Total Households	Total Population of Village	Total Geographical Area (in Hectares)	Total Households	Total Population of Village	Total Geographical Area (in Hectares)	Total Households	Total Population of Village	Total Geographical Area (in ha)	Total Households	Total Population of Village
Hanumangarh																
67828	35 NDR	274.53	10	55	275	5	24	274		*	262	1	1	337.8	0	*
67829	32 NDR	215	103	602	215	59	381	262	30	247	461	129	802	461.2	74	506
67831	30 NDR	252	43	217	253	25	178	252.01	24	197	252	20	137	252.4	13	78
67832	31 NDR	221.79	190	1037	222	126	839	221.78	88	534	222	60	402	354.8	5	30
67839	29 NDR	265.21	14	97	265	12	77	265.23	9	41	265	6	23	420.3	19	81
67840	26 NDR-B	211.32	148	706	211	110	664	211.3	75	514	213		*	0.0	0	0
67841	26 NDR-A	159.57	2	17	160	2	15	160	6	40	162	2	13	414.6	0	*
67842	25 NDR-A	255.2	28	126	255	17	106	255.15	14	79	255	5	29	473.3	2	23
67843	25 NDR-B	193.47	6	35	193	8	47	193.46	9	49	194	7	41	0.0	0	0
67844	24 NDR	237	46	255	238	27	202	237	15	127	230	9	56	231.0	2	13
67845	27 NDR	248	57	272	248	54	321	248.1	37	256	250	34	211	249.6	0	
67846	28 NDR	152	186	988	152	137	821	152	38	421	152	28	184	151.7	5	21
67850	23 NDR	212.74	109	565	213	77	509	212.84	46	315	188	8	63	187.3	4	29
67851	22 NDR	163.6	233	1284	164	161	1080	157	127	861	244	85	598	243.9	19	159
67855	19 NDR	211.14	4	19	211	2	15	210	3	27	242	5	36	227.8	0	
67856	18 NDR	379	7	26	380	6	36	379	2	6	369	1	10	384.7	0	
67873	7 NDR-B	352.54	26	126	353	23	127	353	16	120				0.0	0	0
67874	7 NDR-A	319.15	27	133	319	8	51	319	1	15	589	16	113	525.5	0	
67876	12 NDR-A	124.11	6	39	124	5	32	124	7	40	124	1	3	178.4	0	
67877	12 NDR-B	148.27	5	25	148	4	24	148	7	30	148	4	17	0.0	0	0
67882	15 NDR-B	170	1	5	170	140	892	170		*	170	5	40	0.0	0	0
67883	15 NDR-A	137	269	1558	137	91	580	137	232	1414	137	189	1185	155.7	168	1067
67884	14 NDR-CAD	256.09	554	2816	178	113	678	178	527	3116	467	433	2529	485.8	342	2047
67885	14 NDR-CAD (RAHIT)	178.26	221	1030	256	480	2878	256	7	40				0.0	0	0
67886	16 NDR	379.6	53	276	380	28	186	380	1	7	244	2	8	0.0	0	0
67887	17 NDR	149.93	3	18	150	3	16	150	5	25	150	6	14	195.0	0	

67889	20 NDR-A	139.37	209	1160	139	152	959	139.49	137	869	138		*	515.8	0	
67890	20 NDR-B	253.45	25	119	246	18	89	246	8	50	248	3	18	0.0	0	0
67891	21 NDR	336.9	46	249	333	39	293	330	26	182	337	19	145	0.0	0	0
67918	13 NDR	441.8	53	289	441	30	219	441	11	71	566	2	13	565.9	0	
67923	11 NDR	203.55	19	102	204	20	115	204	24	168	204	10	82	203.5	7	53
67922	10 NDR	114.9	15	79	115	13	78	115	12	77	147	4	21	148.9	0	
67924	9 NDR	171.71	24	122	172	11	59	172	1	11	168	2	12	165.9	0	
67926	8 NDR	187.62	419	2190	187	379	2187	187	373	2290	183	276	1767	143.2	166	937
	34 Village	7715.82	3161	16637	7707	2385	14778	7740.36	1918	12239	7981	1372	8573	7673.9	826	5044
Tibi																
67452	1 NDR	194.99	33	174	195	27	143	195	6	33				0.0	0	0
67460	5 NDR	260.69	38	230	261	7	42	260.7	20	156				0.0	0	0
67461	6 NDR	216.11		0	217	1	4	216.73	3	16				0.0	0	0
67462	5 NDR-A	366	7	40	367	5	20	366.87	5	16				0.0	0	0
67464	4 NDR	273	65	359	274	40	259	273.69	29	197				0.0	0	0
67465	2 NDR	138	21	101	139	13	81	138.65	15	84				0.0	0	0
67466	3 NDR	134	9	48	134	7	39	133.76	7	48				0.0	0	0
67477	5 NDR-C	219.99	56	317	221	44	237	220.63	16	111				0.0	0	0
	8 Village	1802.78	229	1269	1808	144	825	1806.03	101	661	0		0	0.0	0	0
Pilibanga														0.0	0	0
068191	46 NDR	252.73	27	206	253	31	206							0.0	0	0
068192	45 NDR	329	182	1109	329	131	905							0.0	0	0
068193	42 NDR-A	231	86	379	231	41	285							0.0	0	0
068194	42 NDR	243	19	89	243	8	67							0.0	0	0
068195	41 NDR	203	85	431	203	26	145							0.0	0	0
068200	38 NDRTP	194	400	2243	193	181	1098							0.0	0	0
068201	36 NDR	192.43	14	74	192	3	26							0.0	0	0
068202	38 NDR-A	127.14	1	4	127	2	14							0.0	0	0
068203	33 NDR	233.64	31	189	233	20	147							0.0	0	0
068206	34 NDR	176.06	9	48	175	6	50							0.0	0	0
068207	37 NDR	213.16	42	223	213	31	180							0.0	0	0
068210	39 NDR	179.63	26	139	180	14	88							0.0	0	0
068211	40 NDR	258.04	193	1073	258	153	881							0.0	0	0
068213	43 NDR-A	297.12	18	77	297	6	64							0.0	0	0
068214	43 NDR	106.43	12	67	106	3	19							0.0	0	0
068215	44 NDR	288.65	193	961	289	124	843							0.0	0	0
068216	47 NDR	300.3	7	40	300	4	21							0.0	0	0
	17 Village	3825.33	1345	7352	3822	784	5039	0		0	0		0	0.0	0	0

Notes: * Unpopulated

Glimpses of Naurangdesar Village

Photo 1: Gram Panchayat Bhavan at Naurangdesar Village



Photo 2: Anganawadi at Naurangdesar Village



Photo 3: Government Girl Higher Secondary School at Naurangdesar Village



Photo 4: Government Higher Secondary School at Naurangdesar Village



Photo 5: Saraswati Vidyaniketan Higher Secondary Vidyalaya at Naurangdesar Village



Photo 6: Play Ground at Naurangdesar Village



Photo 7: Cooperative Society at Naurangdesar Village



Photo 8: Land Registration Office and Kisan Seva Kendra at Naurangdesar Village



Photo 9: Service Centre at Naurangdesar Village



Photo 10: Public Health Centre at Naurangdesar Village



Photo 11: Govt. Ayurvedic Medical at Naurangdesar Village



Photo 12: Primary Animal Husbandry Hospital at Naurangdesar Village



Photo 13: State Bank of India ATM at Naurangdesar Village



Photo 14: Water Tank available at Naurangdesar Village



Photo 15: Open Defecation Free Village -Naurangdesar Village



Photo 16: MGNREGA -Naurangdesar Village



Photo 17: Village Pond -Naurangdesar Village



Photo 18: IGNL distributary near Naurangdesar Village

HYDRAULIC DATA FOR HEAD REGULATOR OF INDIRA GANDHI
TAIL R.D.-671-000

Particulars	Indira Gandhi FEEDER	Indira Gandhi Muktisra Nahar	Rawatsar BRANCH	Naurang Desar Disty
1. BED WIDTH	134.00 FT.	118.00 FT.	—	38.50 FT.
2. F.S.L.	632.08	632.08	629.93	627.08 FT.
3. F.S.D.	21.00	21.00 FT.	192.49 FT.	42 FT.
4. Discharge	18164 QS	17237 QS	585.10 QS	445.93 QS
5. G.C.A.	7926 LAC ACRES	76.98 LAC ACRES	136.27 ACRES	101.76 ACRES
6. C.A.A.	3686 LAC ACRES	35.38 LAC ACRES	842.17 ACRES	642.81 ACRES
7. CREST	—	613.33	618.23 FT.	623.08 FT.
8. WAVES	—	5X20 FT.	3X10 FT.	3X10 FT.



**Comments on the Draft Report received from
Agro-Economic Research Centre
(For the States of West Bengal, Sikkim and Andaman & Nicobar Islands),
Visva-Bharati**

1. **Title of report** Village Survey Study in Rajasthan
(Naurangdesar Village, Hanumangarh District)
2. **Date of receipt of the draft report** 23 March 2021 (Through e-mail)
3. **Date of dispatch of the comments** 07 May 2021 (Through e-mail)
4. **Comments on the Title of the Study**
 - The title of the study is in line with the title proposed by the coordinating centre.
5. **Comments on the objectives**
 - The overall objectives of the study are appropriate and kept unchanged as supplied by the Coordinating Centre (AERC, Visva-Bharati). Since, it was neither changed nor any specific objectives included, the report is reviewed based on stated objectives.
6. **Comments on the methodology**
 - Methodology followed in the study is, by and large, in tune with the stated objectives. The sampling design has been a proportionate sampling from the total 775 households. The total sample consisted of 300 households across different social groups or land size classes.
 - Moreover, ASER tool kit for assessing the educational attainment of children, though optional, is not used. However, the same is discussed in the methodology section. The same is the case with CAGR; BMI; Gini co-efficient and Lorenz curve.
7. **Comments on analysis, organization, presentation etc.**
 - a. The overall presentation of the report is very good.
 - b. Detailed and worthy presentation is undertaken as to the overview of the Naurangdesar village.
 - c. Detailed analysis is undertaken and organized as required to satisfy the objectives of the study.

However, following corrections are needed:

- i. There are few typographical as well as grammatical errors in write-up that needs correction. For example, the value of HI should be 0.37 instead of 37 as mentioned in the texts.
- ii. The results provided four different measures of crop diversification but the methodology discussed only one. Further, size category wise variations in crop diversification indices would have been better.
- iii. Classification of children as per BMI category (Table-4.10) is different than what is discussed in methodology section.
- iv. It is not clear why the results pertaining to changes in rainfall patterns (Table 6.6) are presented across the caste categories. What is the justification that rainfall pattern of the village are perceived to be different by different castes?
- v. A detailed discussion of the table 7.11 would be helpful to provide a clear insight.

8. Overall view on acceptability of report

- The overall quality of the report is very good and covered most of the issues decided during the Initiation Workshop held at IEG, Delhi and in the Methodology Workshop held at AERC, Visva- Bharati, Santiniketan. The report provides many insights and it is valuable. The researchers have collected huge information and deserve credit for conducting the field survey even under Covid-19 situation. The report may be accepted after considering the issues suggested above.
-

Action taken by the authors based on the comments received

- All the suggestions and corrections are adopted at appropriate places in the report.

6. All four measures of crop diversification indices are presented in methodology chapter. ASER is added in methodology to keep on record for future use though we could not use in present survey due to Corona Pandemic. Also revised BMI indicators for Children are added and Gini Coefficient and Lorenz curve is presented in respective chapter.

7(i) - Corrected

7(ii) -Added

7(iii) - Corrected. Now calculated for Children by using percentile criteria

7(iv)- It was perception of respondents across the social group about change in rainfall pattern or heat/cold waves or air and also about increased incidence of disease and medical expenditure in your family during last five years. While as suggested, only overall results are presented in Table 6.6.

7(v)-a detailed discussion is added as suggested.

8. Edited the report.

Project Team
