COMPREHENSIVE DISTRICT AGRICULTURE PLAN (C-DAP)

DISTRICT JUNAGADH






सत्यमेव जयते

Department of Agriculture & Co-operation
Government of Gujarat
Gandhinagar

COMPREHENSIVE DISTRICT AGRICULTURE PLAN JUNAGADH DISTRICT

JUNAGADH AGRICULTURAL UNIVERSITY
JUNAGADH-362 001

AUGUST, 2012

PROJECT TEAM

Overall Coordination:
Dr. C. J. Dangaria
Director of Research & Dean PG Studies, JAU, Junagadh

Nodal Officer:
Dr. I. U. Dhruj
Associate Director of Research, JAU, Junagadh

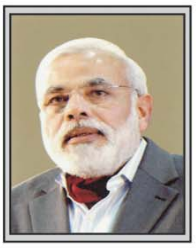
Convener:
Dr. N. K. Gontia
Professor and Head, Dept. of Soil & Water Engg., CAET, JAU, Junagadh

Coordinator:
1. Dr. P. Mohnot
   Associate Director of Research, JAU, Junagadh
2. Dr. V. V. Rajani,
   Research Scientist, Directorate of Research, JAU, Junagadh

Member Secretary:
Er. H. V. Parmar,
Asstt. Professor, Dept. of Soil & Water Engg., CAET, JAU, Junagadh

Members:
1. Er. B. B. Limbasiya, Asstt. Professor, Dept. of Soil & Water Engg., CAET, JAU, Junagadh.
2. Dr. Virendra Singh, Asstt. Research Scientist, Dept. of Horticulture, COA, JAU, Junagadh
3. Dr. K. D. Patel, Asstt. Prof., Dept. of Horticulture, COA, JAU, Junagadh
4. Dr. K. B. Asodaria, Asstt. Research Scientist, Vegetable Research Station, JAU, Junagadh.
5. Dr. M. B. Patel, Asstt. Research Scientist, Main Oilseeds Research Station, JAU, Junagadh
6. Shri. D. R. Kanzaria, Asstt. Research Scientist, Fruit Research Station, JAU, Mangrol
7. Dr. H. L. Kacha, Agri. Officer, Sugarcane Research Station, JAU, Kodinar
8. Dr. V. D. Tarpara, Asstt. Res. Sci., Deptt. of Economics, COA, JAU, Junagadh.
9. Er. P. A. Damor, Tech. Asstt., Dept. of Soil & Water Engg., CAET, JAU, Junagadh.
10. Er. H. Y. Maheta, Asstt. Prof., PGIABM, JAU, Junagadh.

Printing: JAY Offset
Sabri Shopping Centre,
Kalva Chowk, Junagadh
M. : 98252 68641



Narendra Modi
Chief Minister, Gujarat State

Dt. 01-08-2012

MESSAGE

Gujarat agriculture has recorded the fastest growth about 11 per cent amongst all Indian states, since 2000, which is more than three times agricultural growth at all India level (2.9 per cent per annum during 2000-01 to 2007-08). In the last decade the agriculture income of state farmers increased from Rs. 9,000 cores to Rs. 80,000 cores. Agriculture in Gujarat is a success story for other states to emulate. An important question facing Indian policy makers at the centre as well as states is how to promote faster and more inclusive agricultural growth. Due to significant regional disparity in agricultural growth across the state, it became imperative to prepare micro level planning and understand the drivers of this high growth in agricultural sector in Gujarat.

In spite of increase in cropping intensity, crop production and productivity in the post green revolution period, there exists ample scope to enhance the production by interventions of modern technologies and capacity building of the farmers. Planning receives equal importance in the process of development with that of investment and execution. An appropriate planning has several advantages such as adequate capital investments, less gestation period, better flow control and farmers friendly. Therefore, ways and means need to be planned at micro level to augment the resources is highly essential to increase crop productivity and farm income. Hence, in order to implement the State and Central Government schemes by formulation of action plans and utilizing the resources efficiently, the **Comprehensive-District Agriculture Plans** (C-DAP) have been prepared for each district of Gujarat State.

The task of preparing the C-DAP of all districts of Gujarat state has been given to State Agricultural Universities of Gujarat. In this context, **Junagadh Agricultural University, Junagadh** has prepared the plans for seven districts of Saurashtra region. I appreciate Dr. N. C. Patel, Vice Chancellor and the team of Junagadh Agricultural University for putting their inclusive efforts in preparing the C-DAP.

In my opinion, these Comprehensive District Agriculture Plans are unique Endeavour for reducing the yield gap in important crops and increase production and productivity in agriculture and allied sectors through focused and holistic initiatives. The C-DAPs also suggesting way forward to various government agencies working for the benefit of the farmers in using the resources judiciously to enhance farm productivity and income.

(Narendra Modi)

To,
Dr. C. J. Dangariya, The Research Director,
Office Of The Director Research,
Junagadh Agricultural University, Junagadh.
Email : dr@jau.in

Narendra Modi
Chief Minister, Gujarat State

Minister for Agriculture, Co-operation,
Animal Husbandry, Fisheries,
Cow-breeding, Prison, Law and Justice,
Legislative and Parliamentary Affairs
Government of Gujarat.

Date : 31 JUL 2012

Dileep Sanghani

Message

In India, with the green revolution period from the mid-1960s to 1991, the agricultural sector grew at 3.2 per cent, but despite the changes in the macro-economic policy frame work and trade liberalisation, Indian agricultural sector did not experience any significant growth subsequent to the initiation of economic reforms in 1991; nor has the new macro-economic policy frame work resulted in accelerating agricultural growth. In fact, Gujarat agriculture has a record growth of about 11 per cent since 2000 in spite of 2.9 per cent per annum growth at all India level and in last decade the agricultural income of state farmers' increased by ten times, which has presented a role model for others to follow.

Government of Gujarat has launched various innovative schemes to accelerate the growth in the agriculture and allied sectors and to implement this, formulation of action plans by means of developing Comprehensive-District Agriculture Plans (C-DAP) have been undertaken. Junagadh Agricultural University, Junagadh has prepared the C-DAP for seven districts of Saurashtra region, which comes under its jurisdiction. I convey my hearty congratulations to Dr.N.C. Patel, Vice Chancellor; Dr.C.J. Dangariya, Director of Research and Dean, P.G.Studies and their team for their deterministic approach in preparing the C-DAP.

Comprehensive District Agriculture Plans will become a torch bearer for the implementing agencies in the field of agricultural education, research and programme execution by utilizing the resources effectively. Saurashtra agriculture sector will get faster and more inclusive agricultural growth, which helps in increasing farm income and up gradation of livelihood of the farmers in the region.

Dileep Sanghani

(Dileep Sanghani)

To,
DR. N. C. PATEL
Vice-Chancellor,
Junagadh Agricultural University
JUNAGADH-362 001.

Office : 1, Sardar Patel Bhavan, 7th Floor, Sachivalaya, Gandhinagar-382 010.

A. K. JOTI, *IAS*
Chief Secretary

GOVERNMENT OF GUJARAT
Block No. 1, 3rd Floor,
New Sachivalaya, Gandhinagar-382 010.
Phone : 079-23250301, 23250303
Fax : 079-23250505
E-mail : csguj@gujarat.gov.in

Dt.: 08/08/2012

Message

The Gujarat government envisages agricultural production through focused and innovative agricultural development programmes which resulted in extra ordinary average agricultural growth rate of above 10 per cent during last decade and presented a role model in the field of agricultural development in India. However, instead of saying how much Gujarat has done, we shall see how much remains to be done. We are at important stage of agricultural transformation and looking at 12th plan as an opportunity for making appropriate change and formulate winning strategy to make agriculture more rewarding and remunerative.

As per directives of the National Development Council, the State agricultural plan should be based on district plans, subject to all available resources from its own plan and adding those available from the Central Government, aimed at achieving the State's Agricultural growth objective, keeping in view the sustainable management of natural resources and technological possibilities in each district. Accordingly, Gujarat has prepared micro level planning in the form of a document entitled Comprehensive District Agriculture Plan (C-DAP). During the last decade a silent agricultural revolution has emerged in Gujarat, with a shift from traditional subsistence to modernized/ mechanized farming, which stove to inject technology lead diversification within agriculture. The major areas of focus in the C-DAP are integrated development of major food crops, agricultural mechanization, strengthening of market infrastructure and marketing development, activities relating to enhancement of horticultural production and popularization, micro irrigation systems and development activities in sector of animal husbandry and fisheries. The State Agricultural Universities (SAU) of Gujarat have worked as nodal agencies for preparation of the C-DAPs. For seven districts of Saurashtra region, Junagadh Agricultural University, Junagadh has prepared the plans. I complement the efforts made by JAU to come up with C-DAP of districts having potential to transform Gujarat agriculture towards sustainable and remunerative agriculture.

I am sure that the forward looking approach and proposed strategies presented for each district of Saurashtra by Junagadh Agricultural University would bring a substantial change in agriculture to further accelerate the agricultural growth of Gujarat.

(A. K. Joti)

Dr. N. C Patel

Vice Chancellor
Junagadh Agricultural University
Junagadh

Date : August 9, 2012

Message

Gujarat has recorded the highest decadal agricultural growth rate of 10.97% in the period 2000-01 to 2009-10. Gujarat has the highest productivity in the country for the crops grown in Saurashtra such as cotton and castor and second highest productivity in groundnut and bajra. To enhance the agricultural productivity further, a comprehensive planning is required. The task of preparing the Comprehensive-District Agriculture Plan (C-DAP) for 7 districts of Saurashtra region had been given to Junagadh Agricultural University, Junagadh by the Government of Gujarat. The C-DAP focussed on integrated development of major food crops, cereals, oilseeds, fibre crops, horticultural crops, vegetables and spices. It also included the agricultural mechanization, use of micro irrigation systems, watershed development activities, protected cultivation, infrastructure and development in animal husbandry & fisheries sector, market infrastructure & marketing development.

The Comprehensive-District Agriculture Plan for Junagadh District is very well prepared. It is an outcome of fruitful discussions at different levels and valuable directives given by Shri R. K. Tripathi, Principal Secretary (Agriculture), Government of Gujarat. I extend my hearty congratulations to Dr. C.J. Dangariya, Director of Research and Dean, P.G. Studies, I U. Dhruj, Dr. N. K. Gontia, Dr. P. Mohnot, members of the committee and all the concerned scientists for their contribution in preparing the Comprehensive District Agricultural Plan (C-DAP) of Junagadh district. This document will provide the guidelines to all the officials working for the development of agriculture and rural sector. With the proper execution of C-DAP in 12th five year plan, the Saurashtra region of Gujarat will get the benefit to increase its crop production, productivity and ultimately the income of farmers.

N Patel

(N. C. Patel)

Dr. C. J. Dangaria
Director of Research & Dean, P. G. Studies
Junagadh Agricultural University
JUNAGADH - 362 001

FOREWORD

The District Agriculture Plan indentifies the problems, needed interventions and the financial requirement for the developments in Agriculture and allied sectors viz. Horticulture, Agricultural Engineering, Animal husbandry, Fisheries and Agricultural marketing and Agricultural business. The plan documents have identified the major thrust areas in agriculture and allied sectors for achieving the envisioned growth in the district and also in Gujarat state. The task of preparing the Comprehensive-District Agriculture Plan (C-DAP) for seven districts of Saurashtra region had been given to Junagadh Agricultural University, Junagadh by the Government of Gujarat. The Saurashtra area is divided in four agro climatic zones *viz*. North Saurashtra Agro-climatic zone, South Saurashtra Agro-climatic zone, part of North-West Agro-climatic zone and part of Bhal & Coastal Agro-climatic zone.

State level meeting of SAUs of Gujarat was held at AAU, Anand under the chairmanship of Shri R. K. Tripathi, IAS, Principal Secretary, Department of Agriculture & Co-operation, Government of Gujarat who provided valuable guidance and direction in bringing out this plan document. Subsequently several meetings were held at Junagadh Agricultural University during the last few months. Coordination committee, district plan preparation committee and plan finalizing team of JAU made concerted efforts in shaping up the District Agriculture Plans. Hon'ble Vice Chancellor, Junagadh Agricultural University, Dr. N. C. Patel has played active role in the sensitising the meetings held at JAU.

I congratulate Dr. N. K. Gontia, Dr. I U. Dhruj, Dr. P. Mohnot, the members of committee and all the scientists of Junagadh Agricultural University, Junagadh who have contributed for preparing the Comprehensive District Agriculture Plan (C-DAP) of Junagadh district. I appreciate the officials from line departments for extending the help to the university scientists in bringing out the valuable action plans for each district. The C-DAP document narrates key challenges and opportunities in making the agriculture more remunerative and sustainable and provides solid basis of appropriate strategies to articulate role of all the stakeholders in achieving sustainable agricultural growth. It is envisaged that all the stakeholders, viz., line departments, government institutes, co-operatives, private sectors, NGOs and farmers will implement the plan with zeal and required thrust to achieve a still better growth in agriculture and allied sectors during XII plan in Gujarat State.

Dangaria

(C. J. Dangaria)

Junagadh
July 31, 2012

PREFACE

The Comprehensive District Agriculture Plan (C-DAP) of Junagadh district is brought out for the developments in Agriculture and allied sectors viz. Horticulture, Agricultural Engineering, Animal husbandry, Fisheries and Agricultural marketing and Agricultural business based on the details provided by the scientists of Junagadh agricultural University, Junagadh and the line department officials of the district. The Government sponsored various on-going schemes and programmes in the development of agriculture have also been dovetailed in the preparation of plan. Keeping in view, the Government of Gujarat approach of Apno Taluko Vibrant Taluko (ATVT), the taluka-wise plans were prepared and subsequently, a Comprehensive District Agriculture Plan (C-DAP) was prepared by integrating these taluka plans.

My sincere thanks and profound gratitude are due to Shri R. K. Tripathi, I.A.S., Principal Secretary, Department of Agriculture and Cooperation, Government of Gujarat, Gandhinagar who is instrumental in integrating the multi-level functionaries and providing valuable directives and guidance in bringing out this plan document. It is my privilege to express the deep sense of gratitude to Dr. N. C. Patel, Hon'ble Vice Chancellor, Junagadh Agricultural University, Junagadh for his valuable guidance and wise advice for the completing this work successfully. I express my thanks to Dr. B. R. Shah, Director of Agriculture, Dr. B. S. Patel, Director Department of Horticulture and Dr. A. J. Kachhiyapatel, Director Department of Animal Husbandry, GoG, Gandhinagar for supplying the required information for the district plan. I express my deep sense of gratitude to Dr. T. P. Singh, Director BISAG, Gandhinagar and his colleagues for providing the thematic maps and other geo-information support for the plan.

I am thankful to Shri Manish Bhardwaj, District Collector, Junagadh, who has been instrumental in providing the felt needs of the farmers and other stakeholders. The help and full cooperation rendered by the Shri Dilip Kumar Rana, District Development Officer, Zilla Panchayat Junagadh, Shri B. T. Chadachaniya, Director, District Watershed Development Unit, Junagadh, the line department officials of the district is highly appreciable. Without their assistances, the formulation of the plan would not have materialised.

My sincere thanks to Dr. C. J. Dangaria, Director of Research and Dean, P.G. Studies, both ADRs Dr. I. U. Dhruj & Dr. P. Mohnot and Dr. V. V. Rajani, Dr. B. B. Ramani as well as all the professors and research scientists of Junagadh Agricultural University for their technical support, supply of needed inputs without which the time schedule in preparing the document could not have been adhered to. Sincere thanks to all the Principals and Deans of the colleges, Agril. Engg. & Tech., Agriculture, Veterinary Science & Animal Husbandry, Fisheries and PG Institute of Business Management, Junagadh Agricultural University for their cooperation and valuable support in preparation of plan documents.

Special thanks are due to Er. H. V. Parmar, Member Secretary and all committee members of C-DAP district Junagadh Er. B. B. Limbasiya, Dr. Virendra Singh, Dr. K. D. Patel, Dr. K. B. Asodaria, Dr. M. B. Patel, Shri. D. R. Kanzaria, Dr. V. D. Tarpara, Shri H. L. Kacha, Er. P. A. Damor, and Er. H. Y. Maheta, JAU, Junagadh for their sustained support in the preparation and documentation of the taluka and district plans.

Date: July 30, 2012
Place: Junagadh

(Narendra K. Gontia)
Convener and Professor & Head
Department of Soil and Water Engineering
College of Agricultural Engineering and Technology
Junagadh Agricultural University, Junagadh-362001

EXECUTIVE SUMMARY

An important question facing Indian policy makers at the centre as well as states is how to promote faster and more inclusive agricultural growth. Gujarat agriculture has recorded the fastest growth (about 11 percent) amongst all Indian states, since 2000, which is more than three times agricultural growth at all India level (2.9 percent per annum during 2000-01 to 2007-08). Agriculture in Gujarat is a success story for other states to emulate. Due to significant regional disparity in agricultural growth across the state, it became imperative to prepare micro level planning and understand the drivers of this high growth in agricultural sector in Gujarat.

Planning receives equal importance in the process of development with that of investment and execution. An appropriate planning has several advantages such as adequate capital investments, less gestation period, better flow control and farmers' friendly. Therefore, ways and means need to be planned at micro level to augment the resources, which is highly essential to increase crop productivity and farm income. In spite of increase in cropping intensity, crop production and productivity in the post green revolution period, there exists ample scope to enhance the production by interventions of modern technologies and capacity building of the farmers. Hence, in order to implement the State Government and central Government schemes by formulation of action plans and utilizing the resources efficiently, Comprehensive-District Agriculture Plans (C-DAP) have been prepared for each district of Gujarat State.

The task of preparing the Comprehensive District Agriculture Plan (C-DAP) of all districts of Gujarat state has been given to State Agricultural Universities of Gujarat. In this context, Junagadh Agricultural University, Junagadh has prepared the plans for seven districts of Saurashtra region. To prepare the comprehensive District Agriculture Plan (C-DAP) for Junagadh district the major areas of focus were integrated development of major food crops like Groundnut, wheat, cotton, coarse cereals, millets, pulses & oilseeds; Agriculture mechanization; Strengthening of Market Infrastructure & Marketing Development; Activities relating to enhancement of Horticultural Production & Popularization of Micro Irrigation Systems and Animal Husbandry & Fisheries Development activities.

Several meetings were held at various Talukas of Junagadh district to discuss the various components of the C-DAP in the presence of stakeholders viz., Taluka Panchayat Officials, Line Department Officials, Panchayat leaders and progressive farmers. The feedback received in the Meetings was incorporated before finalization of the District Agriculture Plan.

District Agriculture Plan for Junagadh District

Junagadh district is located in western part of Gujarat and it falls under the South Saurashtra Agro-climatic Zone of Gujarat. The district is bound on the north by Rajkot and Porbandar districts, on the east by Amreli district and on the south-west by Arabian Sea. There are 14 talukas in the district and this district as per administrative view is distributed in six sub divisions Junagadh, Keshod, Veraval, Visavadar, Mendarada and Una; 14 talukas are distributed among these sub divisions.

Average annual rainfall in Junagadh district is 900 mm (70 years average), however the last decade average is 1059 mm, which indicate an increase in annual rainfall in the region. In this District, total area is 8.848 lakh ha among it the net sown area is 60 % (5.34 lakh ha) and 1.23 lakh ha of land is covered by reserved Gir forest, where mainly wood like sag and acacia sp. (for building construction)

and bidileaves similarly fruits like custard apple (Sitafal) Rayan, Jambus, Timbru, Karmada etc. are found. The barren, uncultivable, degraded and waste lands which are present in the district to the extent of 16 per cent (1.40 lakh ha) of the total geographical area have to be reclaimed so that the net sown area could be increased. The 14 % area (1.23 lakh ha) of the district is under forest and has opportunity to develop dense forest. There is a need to improve the pastures in the district, which occupies about 10 % of area.

Strategies to Achieve the Objectives of DAP for Junagadh District

Development of suitable technologies such as varietal improvement, input management supported by a strong institutional arrangements for the supply of inputs like seed, fertilizers, plant protection chemicals, credit, etc, price support system favourable to farmers and market infrastructure for major crops like groundnut, cotton, wheat, bajra, horticultural crops, vegetables, spices and fodder crops.

- Development of minor irrigation with drip irrigation system.
- Mechanization of farms with tractor operated implements, combined harvester, cotton picker, ground nut decorticator, etc.
- Strengthening water harvesting structures like farm ponds and check dams.
- Reclamation of fallow and degraded lands.
- Training and exposure visit to the farmers, traders, and other stakeholders on grading, post harvest technologies, value addition and market intelligence.
- Establishment of food parks to create necessary infrastructure for value addition in agricultural products.
- Strengthening of rural markets with storage facilities.
- Strengthening of farmers' market with additional storage facilities.
- Establishment of cool chains for better distribution of milk.
- Establishment of cattle feed units.
- Inland fisheries development in major tanks and reservoirs.
- Processing units for marine fish (catch).
- Strengthening the extension machinery for effective dissemination of technology.

District Agriculture Plan

In order to dovetail the components and magnitude of the ongoing schemes implemented by the line departments as far as agriculture was concerned, in Part I schemes like Procurement of groundnut, wheat, cotton, millet, pulses, green manure seeds, biological control in groundnut and coconut, integrated cotton development, increasing the production of oilseeds, production and distribution of micro nutrient mixtures and bio-fertilizers were taken up. Under Part II, schemes like conducting Crop Cutting Experiment, kits for Taluka level, strengthening of Pesticide Testing Laboratories and strengthening of infrastructure at government coconut nurseries were taken up. Under centrally sponsored schemes, purchase of improved/ hybrid seeds, subsidizing foundation and certified seeds, conducting demonstration and farmers' training, distribution of bio fertilizers and bio control agents and Seed Village Programme were taken up.

Agricultural development of a district can be well represented by composite indices which are used as yardsticks not only to gauge the development of each district but also to compare its performance in relation to other districts. The analysis was performed to highlight the Strength, Weakness, Opportunities and Threats (SWOT) of Junagadh district.

Junagadh District is very near to Rajkot, Ahmedabad, Surat and Mumbai cities and this has resulted in the large scale migration of farm labourers and in turn has resulted in a demand for agricultural labourers. Junagadh district is known for the presence of groundnut oil based industries. As there is a heavy demand for fruits, vegetables and flowers from the nearby cities, farmers who cultivate these crops are much benefited. Surplus milk produced in this district is being transported daily to Rajasthan from Junagadh dairy unit. The marine fish industries at Veraval is exporting fish to various countries.

The line departments like Agricultural University, Agriculture, Horticulture, Animal Husbandry, Fisheries, NABARD, DRDA and Agricultural Marketing have proposed the developmental projects to be taken up under various agriculture and allied sectors during XII five Plan Period in Junagadh district and the total financial outlay of the C-DAP of Junagadh district is Rs. 151454.64 lakhs for XII five Plan. The details of financial outlay are given in the following table.

Sector wise budget Proposal of the Comprehensive-District Agriculture Plan of Junagadh District for XII five year plan **(Rs. in lakh)**

Budget proposal head-wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Agriculture	15428.64	17166.99	19845.16	23107.93	27096.17	**102644.89**
Horticulture	2294.99	4197.52	2401.30	2077.23	2070.36	**13041.40**
Animal Husbandry	3378.90	4828.45	3374.00	3378.00	3378.00	**18337.35**
Fisheries	808.7	2128.7	2110.2	2447.2	1614.7	**9109.50**
Forestry	100.80	114.80	136.30	167.30	207.30	**726.50**
Employment Generation Activities	27.70	27.70	27.70	27.70	27.70	**138.50**
New Innovative Projects	3611.50	1086.50	911.50	921.50	925.50	**7456.50**
Grand Total (Rs in Lakh)	**25651.23**	**29550.66**	**28806.16**	**32126.86**	**35319.73**	**151454.64**

A brief account of SWOT of agricultural sector:

Junagadh District is well connected by rail and bus routes to major towns of the states like Rajkot, Ahmedabad, Vadodara, Surat and Gandhinagar. There is a good network of the roads within the district and its towns and villages. An airport is also situated at Keshod, located on the National Highway connecting Junagadh and Veraval. A vast area (60% of geographical area) is under cultivation with a large number of crop species and horticultural crops also a variety of vegetables and horticultural crops are grown round the year. Gir Kesar variety of mango registered for Geographical Indication (GI). All the major crops have higher productivity than national average. Junagadh city and Girnar mountain has historical and religious importance. There is abundance of solar energy round the year and availability of wind energy is also round the year. A good breed of Gir cows is reared as draught and milking animal. A good breed of Jafrabadi Buffaloes is reared as milking animal. Being the coastal Dist. marine fish catching is practiced and fish is processed on large scale for export in Veraval Taluka.

In Junagadh district the over exploitation of ground water through open wells and deep bore wells, created the threat of sea water intrusion in coastal talukas Mangrol, Maliya, Veraval, Sutrapad, Kodinar and Una and resulted in poor quality of groundwater and ultimately hampered the crops in the region. Out of 14 Talukas in the district one is over exploited, two are critical, semi- critical are seven and four are safe in terms of exploitation of ground water potential. Proper planning and reclamation of fallow and degraded lands could also enhance the net sown area in the district. Apart from this the other weaknesses are inadequate processing and cold chain facilities for horticultural produce. Critical technological gaps exist in specific areas like seed treatment, balanced use of fertilizers and insect pest and disease management in major crops. Ground water is saline and water table is very deep.

The industrial development opportunities are tremendous in the major towns of the district like Keshod, Veraval, Junagadh and Kodinar, as there is a National Highway and rail track connectivity linking these towns with Ahmedabad. Kodinar and Sutrapada has heavy chemical industries and cement plants. Surplus milk produced in Junagadh district is also being transported daily to Rajasthan from Mother dairy, Junagadh. The Gir wild life sanctuary is situated in the district, which is the only habitat of Asiatic lions, a Jyotirling temple of Lord Somnath near Veraval and other sea beaches are attracting large number of tourists, therefore there is a great opportunity of developing good tourist industry and making a tourist hub in the district. The specific opportunities for the district are good scope for export of processed food products, productivity enhancement, farm mechanization, improve water use efficiency (MIS), expansion of inland and brackish water aquaculture, mango and sapota processing industries, coconut water packaging industry, groundnut HPS industry, pack houses for fruits and vegetables, availability of non conventional energy sources like solar, wind and Sea waves.

Somanath Temple

CONTENTS

List of Tables

List of Figures


Makbara

CHAPTER I

INTRODUCTION

1.1 General:

India's policies should be shaped to take the full advantage of present emerging realignment of economic power; the slowdown of industrialized countries and gaining weight of emerging market economies, were the directives emerged from the Prime Minister's inaugural address in the National Development Council (NDC) held at New Delhi in 2011. Therefore, our policies in the 12th five year plan must stands to gain on both counts. Seventy per cent of the Gujarat State population is either wholly or significantly dependent for their livelihoods on agriculture, horticulture, animal husbandry or fisheries. The Gujarat Government envisages agriculture promotion through focused agricultural research, and technological interventions. Government of Gujarat has planned several initiatives in the back drop to achieve the current agricultural growth rate of about 11% and have carved a niche in the field of agricultural development in India, when the country's growth rate is less than 3%. Agricultural income of state farmers' risen from Rs. 9000 crores to Rs. 80,000 crores in last 10 years, not denying the fact that the state received normal rains during last decade, which also holds true for most of the states of the country.

As per the agenda- VII of the 5th meeting of Gujarat State Level Steering Committee (SLSC) held on May 26, 2011, it was directed to prepare the Comprehensive District Agriculture Plan (XII five year plan) by the Agricultural Universities for all the districts under their jurisdiction. These plans present the vision for agriculture and allied sectors within the overall development perspective of the district apart from financial requirement and the sources of financing agriculture development plan in a comprehensive way, in order to revive the agriculture during XII plan with a growth rate of more than 4 per cent per annum has to be achieved (as per NDC commitment). The DAP, therefore could integrate multiple programmes that are in operation in the district concerned, include the resources and activities indicated by the state, combine the resources available from the other programmes.

1.2 Objectives and Expected Outcomes:

Keeping above points in view, the present database/information systems were developed with the following objectives:

- Analysis on the existing farming practices to identify the development opportunities and potentialities for employment generation in agriculture and allied sector.
- Collection and analysis of secondary data on agriculture and allied sectors and documentation of existing marketing pattern.
- Identification of production constrains and technological gap for understanding prevailing agricultural and allied situations in the district.
- Formulation of strategies and action plan for different agricultural production systems to increase productivity, production and farm income.

1.3 Agricultural Scenario of Gujarat State:

Gujarat has geographical area of 19.6 M ha, out of which 55.10 per cent is under agriculture land i.e.10.8 Mha. The major Crops grown in the state are wheat, bajra, rice, maize, groundnut, mustard, sesame, pigeon pea, green gram, gram, cotton and sugarcane. Gujarat is the largest producer of castor, fennel, tobacco and isabgul (psyllium) whereas it is second largest producer of sesame seeds, cotton and groundnut in the country. Gujarat has highest productivity in mustard, castor and cotton, also has second highest productivity in groundnut and bajra, records third highest productivity in gram and guar in the country. Horticultural crops are grown in about 14.04 lakh ha, the major crops are mango, banana, sapota, lime, guava, tomato, potato, onion, cumin, garlic, isabgul and fennel. In the country, Gujarat has highest productivity in guava, potato, onion, cumin and fennel and third highest productivity in banana and isabgul. In 2001, Gujarat produced 23 lakh bales of cotton, but today the figure stands at 123 lakhs bales (one bale equals 170 kg).

Gujarat State Horticulture Mission (GSHM) has been set up for implementation of National Horticulture Mission (NHM) in the state. The area and production of horticultural crops was 14.04 lakh ha (5.1 % of total cropped area) and 180.16 lakh MT respectively in 2010-11. The production of fruits, vegetables and spices & flowers were 74.73 lakh MT, 93.79 lakh MT and 11.64 lakh MT respectively during year 2010-11. Gujarat state is leading in the production of banana, mango, sapota, onion, potato & seed spices (cumin & fennel) in the country. Gujarat ranks 2nd among the states in India, for the export of banana with exports of 1430 tonnes to Middle East in April-June 2009. In social forestry Gujarat has achieved a benchmark of 14 trees per hectare.

Gujarat has total livestock of 199.39 lakh with cattle population of 67.49 lakh. It has 72.36 lakh poultry. In dairy sector, Gujarat has 12 District Milk Producers' Union, 10,725 Milk Cooperative Societies, 20.84 lakh members of milk cooperative. In last decade the Gujarat's milk production has risen by 68 per cent and reached to 150 lakh litres/day. Gujarat has 1600 km long coastal belt and occupies first position in production of marine fish (6.71 lakh MT/year) with a share of 24 % in total quantity of the country. Value of fish production is Rs. 1200 crore per annum and export worth Rs. 390 crore. In inland fisheries katla, rohu, mrigral are the major fish varieties.

In Gujarat, under 'Jyoti Gram Yojna' villages are getting round the clock uninterrupted electricity supply that covers 18,065 villages and 9,680 suburbs. The farmers are getting 8 hour per day assured 3 phase power supply for irrigation. Gujarat is the first state who has issued Soil Health Card to the farmers, till now the soils of 42 lakh farmers have been tested and 31 lakh soil health cards have been distributed, which is a record in itself. The State has strong cooperative credit & marketing structure, along with 213 cold storages having 9.50 lakh MT storage capacities. About 42 Fruit & Vegetable Co-operative Marketing Societies and 197 Agriculture Produce Market Committees (APMCs) dealing with selling & buying of horticulture produce in the State. Gujarat's advancement in the field of solar energy is also coming up; the state has dedicated 600 MW of solar energy to the national grid, while the rest of the country is producing only 120 MW of solar energy. The solar park set up at Charanka will be the Asia's largest, the innovative canal-top solar power project was beneficial in saving about one crore litres of water per kilometre from evaporation annually and would save 16 per cent of electricity and land for farmers.

Gujarat Government has created history in water conservation, by launching a drive for blue revolution, constructing more than 3.5 lakh check dams, boribunds and khet talavadies (farm ponds). The water conservation work was carried out by various state Govt. departments in cooperation with NGOs and the private sector in last 10 years, which has brought up the ground water level throughout the state and increased the Agriculture income by four folds. On behalf of Government of Gujarat (GoG), GGRC as an implementing agency is aimed to promote Micro Irrigation System (MIS) to the farmers to bring 2nd green revolution. MIS saves water and energy, besides multiple benefits to improve agricultural productivity and farmer's prosperity at large, till now more than 35 lakh ha area is brought under MIS in the state.

For comprehensive development of tribe community, improve their standard of living, empower them through education and social initiatives the State Government has initiated the 'Vanbandhu Kalyan Yojana' and allocated a huge sum of Rs. 15,000 crores, however already Rs. 17,000 crores has been spent in four years and it may reach to Rs. 20,000 crores by the end of five years. There is no parallel scheme to compare in the entire country with these inclusive initiatives.

Hon'ble Chief Minister of Gujarat State Mr. Narendra Modi has initiated a mega event *Krishi Mahotasav* for dissemination of agricultural and allied field technology to the farmers in Gujarat. In a month long *Krishi Mahotasav,* the government officials, agro-scientists and experts from SAUs are visiting all the villages of the state with informative *Krushi Rath* to give helpful information about farming to the farmers. During Krishi Mahotsav-2012, an intensive animal vaccination and animal health camps programmes were launched in all the villages so as to focus on disease management and the rearing of healthy livestock.

Fig. 1.3.1 Hon'ble Chief Minister, GoG Shri Narendra Modi inaugurated month-long Krishi Mahotsav-2012 at Manavadar Taluka in Junagadh district.

1.4 Saurashtra region of Gujarat State:

The total geographical area of Saurashtra is 6.43 million hectares representing 32.82 per cent area of the state out of which 3.70 million hectares (61%) is cropped area. The Saurashtra area is divided in two agro climatic zone viz. North Saurashtra Agro-climatic zone (Bhavnagar, Jamnagar,

Surendranagar, part of Amreli and Rajkot) and South Saurashtra Agro-climatic zone (Junagadh, Porbandar, part of Bhavnagar, Amreli and Rajkot). It is flanked by Arabian Sea on the south and west side, the Gulf of Kutch in the north and Gulf of Khambhat in east. The total population of Saurashtra region is 15.44 million as per 2011 census with a density of 240 people per km^2 living in 4767 villages spread over in seven districts. The overall literacy percentage in the Saurashtra is 77.17. Saurashtra receives precipitation through the south west monsoon with average annual rainfall varies widely from 400 mm in the northern part to 1000 mm in the southern part. In Saurashtra region, the major field crops are groundnut, cotton, wheat, bajra, sesame & cumin, while mango, coconut, citrus, sapota, guava & ber are the major fruit crops, and onion, brinjal, okra, tomato & cluster bean are the major vegetable crops. Among the major crops, oilseeds (groundnut, sesame and castor) occupy 47.42 per cent of the gross cropped area followed by cotton (31.64%) and total food grains (20.28%). Other important crops grown in the region are spices (1.96%), fruits (mango 0.66% & sapota 0.17%) and vegetables (brinjal 0.50% & okra 0.24%).

As per the 2007 census, there is 238 lakh total livestock population in Gujarat State in which sharing of Saurashtra region is about 26.71 per cent with population of 64 lakh. Saurashtra is the home of famous breed of cattle (*Gir*), buffalo (*Jafrabadi*), goat (*Zalawadi*) and horse (*Kathiavadi*). Saurashtra has a long coastal-line, and the area available for fishing activities extends from Okha to Bhavnagar. Important commercial varieties of fish namely pomfret, jew fish, bombay duck, shrimp, lobster, squid, cuttle fish, silver bar, shark, catfish, mullets, etc. are caught in large quantities in these areas. Some ports like Okha, Sikka, Porbandar, Veraval and Pipavav are located in Saurashtra region.

1.5 Major Issues and Areas of Focus:

The major part of the Saurashtra region, falls under semi arid and arid types with varying climatic as well as soil conditions, has been divided into two Agro-climatic zones. The major issues and areas to be focused in the plan are:

i. In Saurashtra about 70 per cent of total area is rainfed, needs an integrated development of crop varieties and cultivation practices for major cereals, food, cash, fruits, vegetables and spices crops.

ii. Activities related to enhancement of soil health, integrated nutrient management, use of organic and bio-fertilizers. Integrated pest management schemes.

iii. In the adjoining areas of 788 km long coastal belt, sea water ingress and inland salinity caused soil health/fertility problems needs integrated watershed development, water harvesting, groundwater recharge and more area to be brought under MIS.

iv. Development of mechanization by introducing improved tractors, machines, implements, equipments and tools. Increasing use of renewable energy i.e. solar, wind and bio energy in agriculture.

v. Activities relating to enhancement of horticultural production, high density cultivation and popularization of micro irrigation systems. Food processing and value addition of produce; cold storage, handling, packaging, transportation and marketing of perishable produce (fruits and vegetables).

vi. Good local breed of cattle (Gir) and Buffalo (Jafrabadi) are reared, but needs breed establishment and increased involvement of various farming communities in animal rearing. Proper clinical care of animals, increased fodder production and feed management for increasing milk production.

vii. Modernization of marine fish processing units and quality control as per HACCP norms for accelerating export at Veraval, Mangrol and Sutrapada. Development of cage culture of commercial marine fauna. Development of inland fisheries by utilizing salt affected land and water by introducing diversified fish and shrimp fauna.

viii. Strengthening of Market Infrastructure and Marketing Development.

ix. Strengthening of infrastructure to promote extension services for farmers.

x. Innovative schemes.

1.6 Methodology Adopted for Preparation of District Agriculture Plan:

The C-DAP was prepared adopting participatory appraisal mode. Junagadh Agricultural University, Junagadh, Gujarat was identified as Technical Support Institute (TSI). The TSI, under the guidance of Director of Research, provided all necessary technical help to planning units and support groups for preparation of this plan through participatory bottom-up process. The TSI trained the Planning Units/ Groups in designed formats for data collection, guided in data collection and analysis and conducted regular workshops and meetings for plan preparation. In coordination with Scientists/ Professors from JAU, Junagadh and officials from Department of Agriculture, Horticulture, Animal Husbandry and Fisheries, District Panchayat, DRDA, BISAG, NABARD, ATMA, PGVCL, Dept. of Disaster Management, Dept. of Irrigation, etc. the task is fulfilled.

1.6.1 Collection of Data:

The preparation of district level plan involved basically collection of base line and bench mark details. So a template is developed to collect these particulars from the different districts under the jurisdiction of JAU, Junagadh. The district level scientist's teams from JAU were formed for the collection and compilation of the information. The Taluka wise information was collected with the help of Taluka Development Officer (TDO) and his team, officers from Animal Husbandry, officers from Agriculture Department, Jilla Panchayat, Taluka Panchayat, Village Panchayat, NGOs, BISAG, NABARD, ATMA, DRDA, Watershed development agency, etc.

1.6.2 Formulation of District Planning Unit:

To facilitate the involvement of local representatives in the preparation of plans, planning units in each district was formulated. The composition of the district planning units is as follows:

a) Director of Research & Dean PG studies, Dean, College of Agricultural Engg., Dean College of Agriculture, Dean College of Veterinary Sciences, Dean College of Fisheries and one scientist for every 2 talukas.

b) Coordinating staff from Directorate of Research.

c) Officials of Line Departments from Agriculture, Horticulture, Animal Husbandry, Fisheries, District Panchayat and DRDA.

Numbers of meetings were held at state and University level with authorities and concerned officials of C-DAP. The current priorities discussed with scientists of the JAU, officers of the line departments, NGOs and farmers. During the meetings of stakeholders discussed about the proposed design, trials, Front line demonstration (FLDs) and other activities in a farming system approach. The group identified the farmers' needs and constraints and subsequent changes proposed in management practices. The time frame of various activities and expected out comes of five year plan were incorporated. The following meetings were arranged.

Sr. No.	Date	Meeting
1	12-11-11	To discuss the guideline of C-DAP
2	27-01-12	Review meeting to prepare C-DAP
3	28-03-12	Regarding to prepare C-DAP of seven districts of Saurashtra
4	April, 2012	Various stakeholders meeting at different talukas
5	05-04-12	Presentation of Report at AAU, Anand
6	10-04-12	To discuss the future line of action for collection of Talukawise information
7	04-05-12	Review of C-DAP under the chairmanship of the Vice Chancellor, JAU, Junagadh.
8	23-05-12	Discuss future planning regarding various aspects of C-DAP with HoDs of the university and committee members of C-DAP Junagadh
9	13-07-12	A meeting with Taluka leader to prepare taluka level plan
10	07-07-12	C-DAP presentation at JAU, Junagadh
11	19-07-12	Presentation of final report at Gandhinagar
12	27-7-12	Final meeting with all concerns to modify the report as per the directions of Gandhinagar's meeting

1.6.3 An indicative outline for the preparation of C-DAP:

1: A brief introduction to the District, its location, features, etc.
2: Main points of SWOT of the District
3: Areas/ Sectors which need to be addressed in the district
4: Various on- going programmes in the district- a brief contextual gist
5: The District Plan at a Glance.

CHAPTER II

GENERAL DESCRIPTION OF JUNAGADH DISTRICT

2.1 Brief History of Junagadh:

The history says that ancient names of Junagadh were Karankubj, Manipur, Mujaferrabad, Revant, Chandraketupur, Narendrapur, Girinagar and also known as Puratanpur.After 1820 A.D. British Government gave the name Junagadh which is registered by the State. Junagadh was ruled by various rules as Maurya: 319 BC, Shring: 185 BC, Greek:70 to 73 BC, Shak: A.D. 100 to 296, Gupt: A.D. 456 to 770, Chudasama: A.D. 875 to 1472. In A.D. 640, Chinese traveller Huen Sang visited Junagadh. After 1472 Mohmad Begda, Khalil Khan, Muzaffar, Sikandar, Bahadurshah and Ibadatkhan were ruling Junagadh. Between 1573 to 1748 Mughals ruled over. Thereafter various Babis/Nawabs were rulling Junagadh up to 1947 Last Nawab of Junagadh Mohabatkhanji left for Karanchi on 9/11/1947 due to attack by Aarzi Hakumat established by people of Junagadh. In 1949 Junagadh state was merged with Saurashtra State.

2.2 Junagadh District at a Glance:

Junagadh district is located on the west most part of Saurashtra region in Gujarat State of India. Junagadh district is situated at 20.44° to 21.44° North Latitude and 69.40° to 71.05° East Longitude. It falls under the South Saurahstra Agro-Climatic Zone of Gujarat. It is surrounded by Amreli district in the east, Jamnagar and Rajkot districts in the North, Porbandar district in north west and in the South and west direction it is covered by Arabian Sea. The Junagadh District has geographical area of 8,848 sq. km. This district as per administrative view is distributed in Junagadh, Keshod and Veraval-3 among these divisions there are total 14 talukas. Gir jungle (forest) Girnar mountains and rivers flowing through the district beautified by waterfalls is world famous for its vanraaj (king of jungle). This remains a different attraction for foreign tourists. Junagadh city and Girnar mountain has historical and religious importance. A religious fair of Maha Shivratri in Maha Month is being held, the Devotees from all over India visit the Junagadh. The location of Junagadh district is depicted in the Fig. 2.2.1.

2.3 Demographic Profile:

The Directorate of Census Operations in Gujarat has released the Census 2011 details of Junagadh district. Junagadh had population of 2,742,291 of which male and female were 1,404,506 and 1,337,785 respectively. There was increase of 12.01 per cent in the population compared to 2001. In the previous census of India 2001, Junagadh District recorded increase of 17.07 per cent to its population compared to 1991. The initial provisional data suggest a density of 310 in 2011 compared to 277 of 2001. Average literacy rate of Junagadh in 2011 was 76.88 compared to 67.78 of 2001; gender wise, male and female literacy were 85.80 and 67.59 per cent respectively. With regards to Sex Ratio in Junagadh, it stood at 952 female per 1000 male compared to 2001 census figure of 955. The average national sex ratio in India is 940 as per the latest reports of Census 2011. The General information of the Junagadh District is shown in Tab 2.3.1.

Table: 2.3.1: Area, population density, habitat, inhabitat villages of Junagadh district

Sr.	Name of Taluka	Area in ha	Population Density/ Sq.km.	Total Villages			No. of Gram Panch.
				Habitat	Inhabitated	Total	
1.	Bhesan	43860	168	44	2	46	37
2.	Junagadh	68691	554	69	2	71	57
3.	Keshod	55661	316	53		53	53
4.	Kodinar	53681	369	63		63	54
5.	Malia	53969	269	63		63	63
6.	Manavadar	59170	216	55		55	55
7.	Mangrol	62116	304	63		63	60
8.	Mendarda	36386	182	45	3	48	39
9.	Sutrapada	32671	375	46		46	46
10.	Talala	95156	134	68	31	99	47
11.	Una	157847	210	159	61	220	131
12.	Vanthli	39315	248	46		46	46
13.	Veraval	36097	777	55		55	55
14.	Visavadar	90168	147	86	16	102	77
	Total	**884788**	**310**	**915**	**115**	**1030**	**820**

Source: Taluka Ankadakiya Ruprekha 2010-11, District Panchayat, Junagadh and Disaster Management Plan, Junagadh District, Junagadh.

Table 2.3.2: Demographic changes in Junagadh district from 2001 to 2011.

Description	2001	2011
Actual Population	**2,448,173**	**2,742,291**
Male	1,252,350	1,404,506
Female	1,195,823	1,337,785
Population Growth	**17.07%**	**12.01%**
Area Sq. km.	8,846	8,846
Density/sq.km	**277**	**310**
Proportion to Gujarat Population	4.83%	4.54%
Sex Ratio (Per 1000)	**955**	**952**
Child Sex Ratio (0-6 Age)	903	904
Average Literacy	**67.78**	**76.88**
Male Literacy	78.74	85.80
Female Literacy	56.43	67.59
Total Child Population (0-6 Age)	**369,691**	**301,395**
Male Population (0-6 Age)	194,292	158,328
Female Population (0-6 Age)	175,399	143,067
Literates	**1,408,878**	**1,876,671**
Male Literates	833,064	1,069,199
Female Literates	575,814	807,472
Child Proportion (0-6 Age)	**15.10%**	**10.99%**
Boys Proportion (0-6 Age)	15.51%	11.27%
Girls Proportion (0-6 Age)	14.67%	10.69%

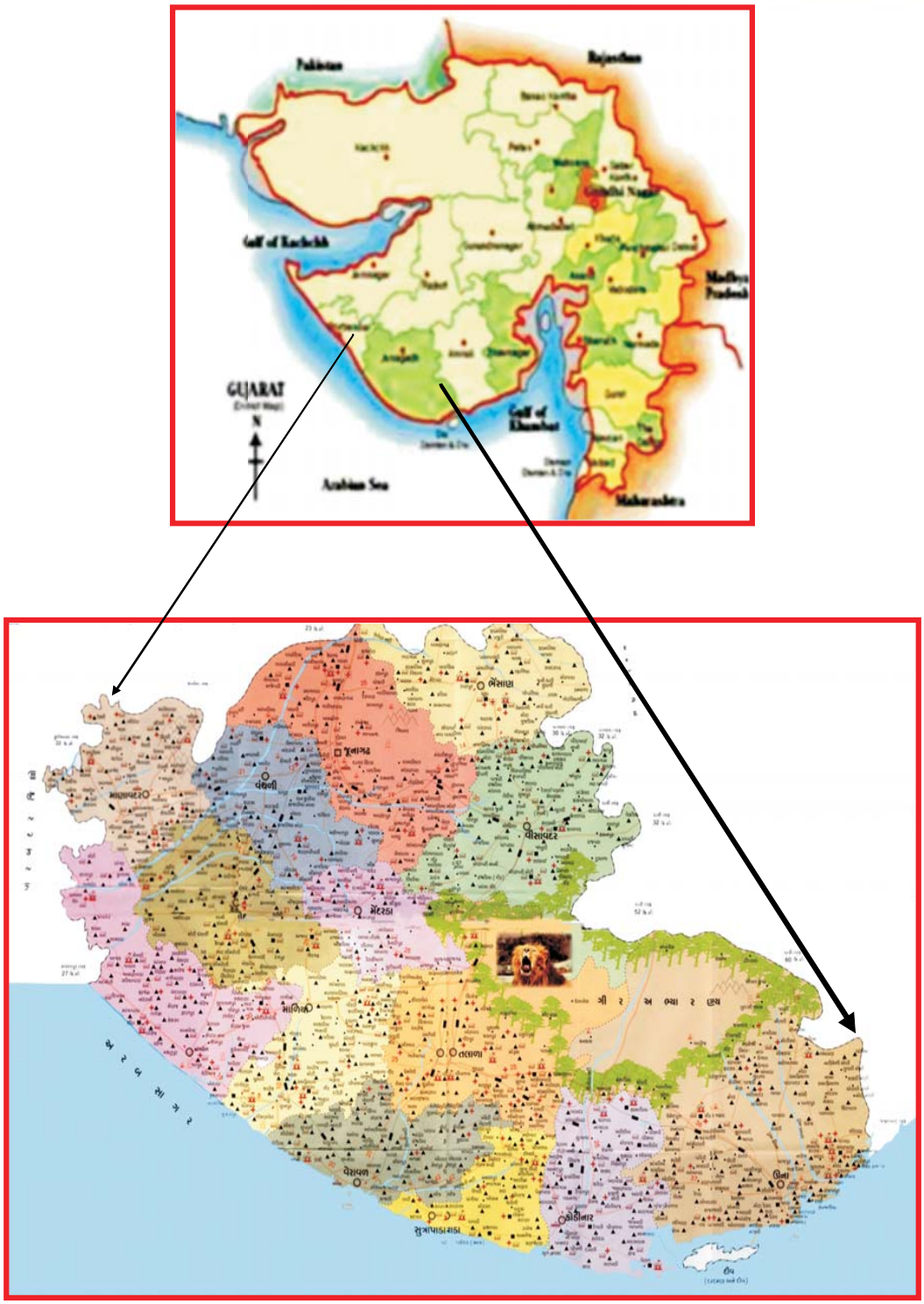


Fig. 2.2.1: Location Map of Junagadh district

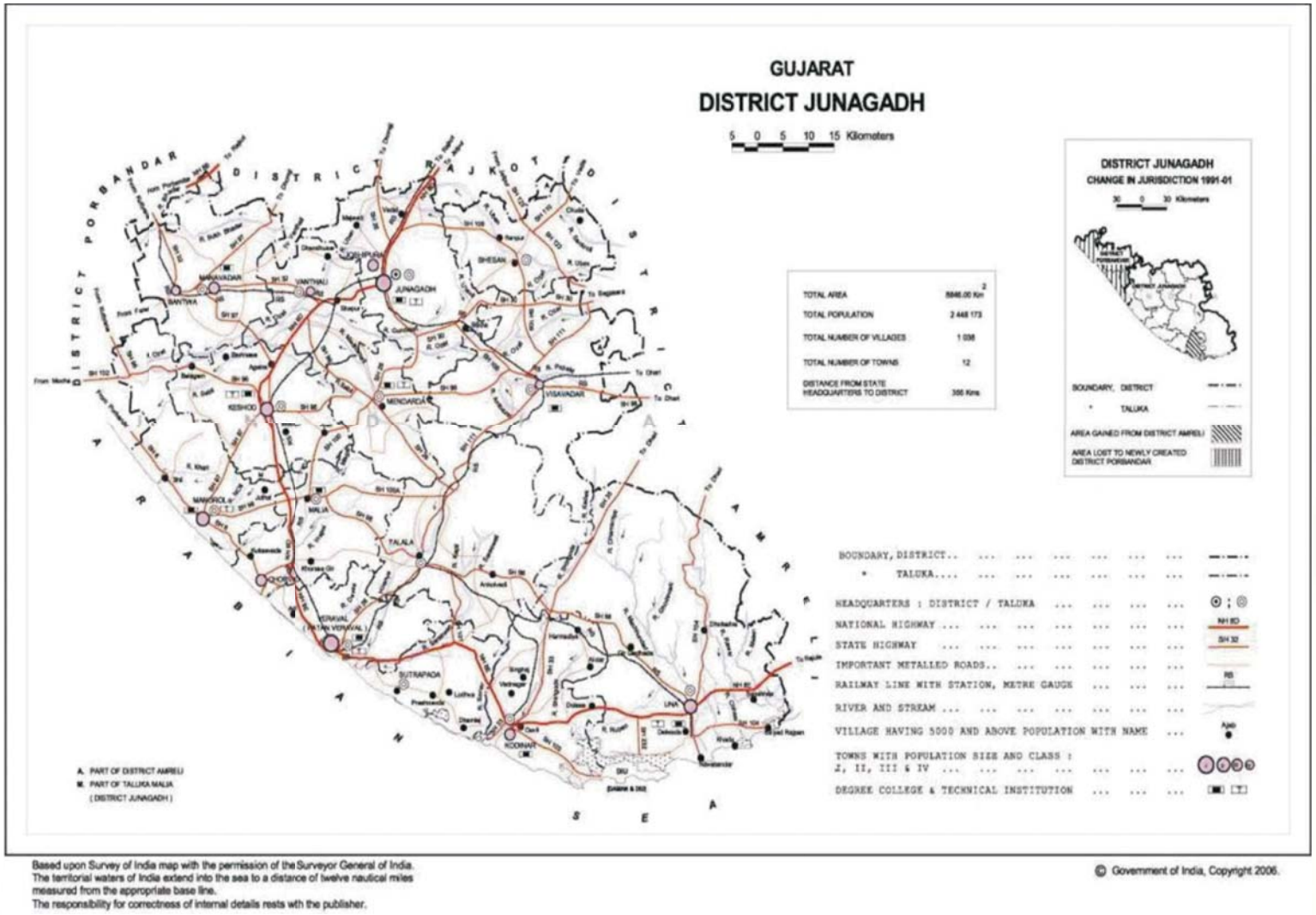


Fig. 2.2.2: Map of Junagadh district **Source: BISAG, Gandhinagar**

2.4 Educational Facilities:

Junagadh district has two universities one Junagadh Agricultural University, Junagadh and another Gujarat Sanskrit University, Veraval. District is covered by Saurashtra University, Rajkot for general streams with all major faculty & branches of education including one medical college, Gujarat Technology University for engineering and Gujarat Ayurved University for ayurved. The Directorate of Groundnut Research of ICAR and Wild life breeding centre are also situated in the district. The statistics relating to school educational facilities available in the Talukas of the district, is furnished in the Tab 2.4.1.

Table: 2.4.1 Taluka-wise school educational facilities (nos.)

Taluka	Primary school	Secondary schools	Higher Sec. Schools
Bhesan	45	11	5
Junagadh	112	62	27
Keshod	94	32	12
Kodinar	93	20	17
Malia	112	31	11
Manavadar	71	29	8
Mangrol	127	37	11
Mendarda	52	11	5
Sutrapada	95	11	13
Talala	66	20	13
Una	191	28	15
Vanthli	58	21	4
Veraval	113	34	25
Visavadar	101	23	8
Total	**1330**	**370**	**174**

Source: Taluka Ankadakiya Ruprekha 2010-11, District Panchayat, Junagadh

2.4.1 Junagadh Agricultural University

The Gujarat Agricultural University (GAU) was established as an autonomous body in 1972, the College of Agriculture, Junagadh which was established in 1960 was transferred to the GAU. Junagadh Agricultural University was carved out of GAU with its splitting in to four universities on May 01, 2004. The head quarter of Junagadh Agricultural University is situated at Junagadh. University's jurisdiction is spread over the districts of Junagadh, Jamnagar, Rajkot, Porbandar, Surendranagar, Bhavnagar and Amreli comprising nearly 32.82 per cent (6.43 million ha) area of the Gujarat State. University offers higher education (UG & PG) in the faculties of Agriculture, Agricultural Engineering & Technology, Fisheries Science, Veterinary Science & Animal Husbandry and MBA in Agri Business Management. Offers Diploma/Certificate Coursers in the field of Agriculture, Agro processing, Horticulture, Livestock, Home science, Bakery and Mali. University also imparts training to extension functionaries of the line departments. The research on various issues related to different crops and disciplines including Wheat, Pearl Millet, Pulses, Oilseeds, Cotton, Sugarcane, Fruit Crops, Vegetables, Dry Farming, Grassland, Agricultural Engineering, Cattle Breeding and Fisheries. University is having Krishi Vigyan Kendras (KVKs), Sardar Smruti Kendra (SSK) etc. to transfer the agricultural technologies to the farmers.

2.5 Agriculture and allied sectors:

Agriculture sector is the main occupation in the district and alone occupy about 79% workers. The Taluka wise Land Utilisation Statistics is presented in Table 2.5.1; it shows that the gross cropped area is about 80% of the total geographical area of the district. There are total 2,39,368 farmers in the district who have total 5,09,434 ha of land; out of which the marginal farmers are 64,917 with 42,141ha of land, small farmers are 89,665 with 1,30,574 ha of land and Semi-med. to large Farmers are 84,786 with 3,36,719 ha of land. The Taluka wise land capability classification of Junagadh district is presented in Table 2.5.2.

Table 2.5.1: Taluka wise Land Utilisation Statistics

Taluka	Geographical area	Forest Area	Non- agril. Use	Cultivable waste	Permanent pastures
1	2	3	4	5	6
Bhesan	43860	100	2337	532	3079
Junagadh	68691	17965	5525	0	3609
Keshod	55661	234	2665	105	5894
Kodinar	53681	2739	3255	2727	3985
Malia	53969	2462	3354	55	9417
Manavadar	59170	659	4415	2	3509
Mangrol	62116	1296	2288	317	6445
Mendarda	36386	6511	1258	244	1680
Sutrapada	32671	0	1850	281	5617
Talala,	95156	10023	2965	2030	11398
Una	157847	5246	5910	115	15176
Vanthli	39315	52	2046	54	4071
Veraval	36097	1770	3110	300	6050
Visavadar	90168	3778	4487	2036	8995
Total	**884788**	52835	45465	8798	88925

Continue…

Taluka	Current Fallows	Other Fallows (Barren)	Net sown area	Gross cropped area	Cropping intensity (%)
1	7	8	9	10	11
Bhesan	593	1504	35709	43911	122.97
Junagadh	3624	1167	35773	43996	122.99
Keshod	1406	2100	43890	58247	132.71
Kodinar	434	387	40131	59069	147.19
Malia	451	1185	37050	40452	109.18
Manavadar	338	1761	48489	53668	110.68
Mangrol	1081	1519	43872	55614	126.76
Mendarda	430	2066	24200	32130	132.77
Sutrapada	746	2261	21400	29467	137.70
Talala,	1101	37629	30216	33839	111.99
Una	2236	64038	65745	87173	132.59
Vanthli,	828	756	31508	34207	108.57
Veraval,	208	370	25092	46282	184.45
Visavadar	102	16192	54587	82620	151.35
Total	**13578**	**132935**	**537662**	**700675**	**130.31**

Source: Taluka Ankadakiya Ruprekha 2010-11, District Panchayat, Junagadh.

Table 2.5.2 : Land capability classification of Junagadh district (Area in hectares)

Taluka	Class-III	Class-IV	Class-V	Class-VI	Class-VII	Geographical area
1	4	5	6	7	8	10
Bhesan	10915	7277	7277	7277	3638	43860
Junagadh	24041	10303	10303	10303	13738	68691
Kodinar	37576	8052	5368	2684	0	55661
Keshod	22264	16698	8349	5566	2700	53681
Malia	32400	8100	8100	2700	5717	53969
Manavadar	17751	17751	11434	5717	2783	59170
Mangrol	36180	5566	5566	5566	0	62116
Mendarda	14552	10914	7277	3638	0	36386
Sutrapada	22870	3267	3267	3267	0	32671
Talala,	61851	19031	9515	4758	0	95156
Una	94708	31570	15785	15785	0	157847
Vanthli,	15726	9829	9829	3931	0	39315
Veraval,	21658	5415	5415	1804	0	36097
Visavadar	31559	22542	22542	9017	11271	90168
Total	**444051**	**176315**	**130027**	**82013**	**39847**	**884788**

Note: Class- III: Moderately good cultivable land, Class-IV: Fairly good land suited for occasional cultivation, Class-V: Nearly level land not suitable for cultivation because of stoniness, wetness, etc., Class- VI: Steep slopes, highly erosion prone with shallow soils, Class-VII: Steep slope with sever soil erosion resulting in eroded stony and rough soil surfaces with shallow soil depth.
Source: Department of Soil Science and Chemistry, JAU, Junagadh

2.5.1 Agriculture

Junagadh is agriculture dominated district. About 79% of population is engaged in agriculture and allied activities. Out of total Geographical area of 8.848 lakh ha the forest area is 52,835 ha, Non-agricultural use is 45,465 ha, cultivable waste is 8798 ha, permanent pasture is 88,925 ha, current fallow is 13,578 ha, other fallow (barren) is 1,32,935 ha, net sown area is 537662 ha and the gross cropped area is 7,00,675 ha. The Taluka wise land holding of the district is shown in tab 2.5.3. Groundnut, cotton, wheat, bajra, sesame, pulses, castor, sugarcane and sorghum are the major field crops grown in the district. The major horticultural crops are mango, coconut, sapota, banana, guava, pomegranate, ber, jambu etc.. The major vegetables and spices crops grown are brinjal, cabbage, cauliflower, tomato, chilly, radish, spinach, fenugreek, turmeric, coriander, cumin etc. The major field crops cultivated in *Kharif* season are groundnut, cotton, pulses, bajra, castor and sesame. Junagadh district is the major producer of groundnut not only in the state, but also in the country. Wheat, gram, pulses, sugarcane, garlic, onion and other vegetables are the important *Rabi* crops of the area, in summer the major crops grown are groundnut, pulses and sesame.

The district is poor in farm mechanization with little availability of farm machines. The farmers are still using bullock drawn traditional wooden implements and the hand tools used are also traditional. Recently the use of rotavators, combine harvester, low horse power tractor (mini tractors), seed drill

and tractor drawn sprayer is increasing. The farmers have adopted micro irrigation system like drip irrigation, sprinkler irrigation etc. to save the scarce water resources. Still there is long gap in development of agricultural engineering in the district.

Table 2.5.3: Land Holdings (Agriculture Census 2005-06)

Taluka	Marginal Farmers (below 1 ha)		Small Farmers (between 1-2 ha)		Semi-med. to large Farmers (above 2 ha)		Total	
	No.	Area	No.	Area	No.	Area	No.	Area
Bhesan	2333	1546	5545	8295	6500	26222	14378	36063
Junagadh	3739	2457	6449	9526	6734	27719	16922	39702
Keshod	5579	3821	8542	12492	7832	31632	21953	47945
Kodinar	7666	4506	5778	8333	6234	25332	19678	38171
Malia	5905	3700	6887	9996	5951	24150	18743	37846
Manavadar	4458	3088	8586	12658	8326	35004	21370	50750
Mangrol	7826	4746	7790	11205	7442	29998	23058	45949
Mendarda	2240	1574	4761	7036	4115	16263	11116	24873
Sutrapada	6309	3700	4897	7013	3364	11710	14570	22423
Talala	3732	2463	6096	8884	5019	22450	14847	33797
Una	11283	7426	13698	19896	10840	40774	35821	68096
Vanthli	3553	2423	5540	8090	5540	22538	14633	33051
Veraval	6402	3874	5765	8315	3985	13830	16152	26019
Visavadar	3612	2413	8208	12266	10088	42029	21908	56708
Total	**74637**	**47737**	**98542**	**144005**	**91970**	**369651**	**265149**	**561393**

2.5.2 Animal Husbandry and Fisheries:

The breeds of Gir cow and Jafrabadi buffalo are not only well known to the Gujarat State but extend its real importance over the country too. The Gir cow has proved its superiority among dual purpose cow breeds and earned the great honour in Brazil. The Gir cow has replaced the Jursey and H.F. in entire Brazil. The Jafrabadi buffalo is very giant and the heaviest among all buffalo breeds in the country and also having much higher milk fat per cent (10-11). Beside this, district has very potential horse breed which is known as "Kathiawadi Horse", it has very speciality for its unique type of running speed known as "Revar Chal". This has made the familiarity not only in state but over the country too.

Fish processing industry is a major sector in Junagadh. Processed fishes from Junagadh are exported to Singapore, China, Hongkong, Japan, Dubai and other parts of the world. The industrial giant Hindustan Lever Ltd. has a frozen fish packing unit in Maliya taluka of the district. About 92,028 fishermen population in the district including 7,730 full time and 5,143 part time fishermen engaged in fishing activity. Ancillary activities like sea-food processing, preservation, sales etc. provide employment to about 15,000 persons. A fleet of 9,654 mechanized boats and 257 non-mechanized boats and 2,60,459 fishing nets are at the service of the fishermen whose catch is registered at 2,80,229 M tonnes in 2010-11. There are 169 Primary Fisherman Co-operative Societies with a membership of 41,336 are functioning in the district. Veraval, Kodinar, Sutrapada, Mangrol and Una blocks have large fishermen population. There are 148 ice plants, 48 friezing plants, 27 fish processing units and 23 URO plants working in fishing activities.

2.6 Natural Resources:

The district is rich in natural resources as compared to rest of the districts of Saurashtra region of Gujarat state. The district is known for its hilly Girnar mountain and dense forest of Gir hills. The Asiatic lion of Gir forest put the district on the world's map. The larger coastal area comprising the part of Mangrol, Maliya-Hatina, Veraval, Sutrapada, Kodinar, and Una taluka of district and much potential for fisheries business. Fishing is an important component of rural economy in coastal area. The Veraval is known as the main centre for the fisherman. The important rivers are Ozat, Shingoda, Hiren, Machhundri, Meghal, Raval, Ambazal, Uben, Utavali, Madhuvanti and others. In general, the water flows in most of the rivers for about 60-80 per cent duration during a year.

2.6.1 Soil Type:

Major soils of the area are comprised of shallow to medium black soil. By large soils are well drained with moderate water holding capacity. From sustainable development perspectives, what is alarming is the steady decline in the soil quality due to sheet erosion. There has a considerable reduction in the application of farm yard manure resulting in reduced in moisture retention capacity and porosity in the soils. Generally the organic carbon content too is low. Being agriculture oriented district, large portion of population is engaged in agriculture and animal rearing. Almost entire coastal tract of Junagadh district has sandy soil with deep to moderate depth. The deep soils have high productivity; whereas, sporadic patches running parallel to the coastline have moderate depth and productivity. The land close to coast and parallel to the coastline has low productivity. The saline soils are characterized by medium soil texture, acidic in nature with deep water levels. The acidic soils become sticky when wet and hard when it becomes dry. The reclamation of these soil demands use of gypsum and soil conditioners. The saline soils found in Veraval and Mangrol taluka are saline in nature with low sodium absorption which can be reclaimed by leaching.

2.6.2 Agro Climate Characteristics:

Junagadh district is situated near Girnar Mountain and North West in low-lying Ghed areas. In this district Gir's famous forest is situated. Similarly many areas are of low lying, which are known as Ghed area. Ghed's area is known as Sorathi and Barda Ghed. In which monsoon's river water remains flooded for long time rest of region is levelled. In the district 28 villages are declared as Ghed area, which includes 13 villages of Mangrol, 11 of Keshod and 4 of Manavadar Taluka.

In this district rain is brought by seasonal winds. Rain lashes it in June last week till September's last week normally. The average annual rainfall of 70 years comes about 900 mm, however in the last decade it was 1059 mm, which indicates the increase in annual rainfall in the region. In the district the proportion of rain is more in Gir forest area. In the district rainy days are varying from 33- 38 days. In last year 2011 Junagadh District's annual rainfall was 963 mm in 45 rainy days. Weather of the district is much variant. One side of district have humid weather and on the other side warm and dry weather is experienced. In year 2009 in summer, maximum temperature was 42.8°C and in winter minimum temperature registered was 7.6 °C. In Malia, Keshod, Bhesan and Manavadar wind was considered dry.

2.6.3 Water Resources:

The surface and groundwater available in the district is utilised for agriculture, animal husbandry, domestic and industrial uses. The gross groundwater recharge in the district is 1200.48 MCM/Year and out of this 95% is available groundwater recharge i.e. about 1140.46 MCM/Year as per the GWRE-2002 report. At present about 85% of available groundwater recharge i.e. about 970.0 MCM/Year is gross groundwater draft for all uses including agriculture, animal husbandry, domestic and industrial uses.

Table 2.6.1 : Taluka wise Annual Rainfall (mm) detail of Junagadh District (2001-2010)

Sr. No.	Taluka	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Av., mm
1.	Bhesan	622	435	863	687	943	910	939	880	515	1158	795
2.	Junagadh	896	589	1178	890	1191	1053	1505	1307	750	1527	1089
3.	Keshod	781	352	813	980	1063	912	1543	1100	1048	1481	1007
4.	Kodinar	570	420	1205	1104	1155	1026	2035	1197	1532	1570	1181
5.	Maliya	895	335	923	1397	907	1085	1829	1171	1418	1815	1178
6.	Manavadar	725	235	824	682	1020	992	1686	872	1019	1471	953
7.	Mangrol	771	221	690	1072	913	990	1400	1048	1901	1868	1087
8.	Mendarda	948	458	859	1034	635	834	1746	972	1091	1644	1022
9.	Sutrapada	558	334	887	1030	653	796	1360	960	1584	1399	956
10.	Talala	994	447	1180	1263	732	1322	1925	1400	1183	2020	1247
11.	Una	645	735	991	794	1260	1111	1493	1071	1042	1333	1048
12.	Vanthali	812	395	922	1117	1094	790	1493	1286	965	1561	1044
13.	Veraval	674	454	931	994	578	841	1705	1079	1855	1549	1066
14.	Visavadar	1065	642	950	1015	1395	1454	1625	1495	524	1364	1153
Average Rainfall		**783**	**432**	**944**	**1004**	**967**	**1008**	**1592**	**1131**	**1173**	**1554**	**1059**

Source: Disaster Management & Response Plan Year 2011 District Junagadh

2.6.3.1 Irrigation Facilities:

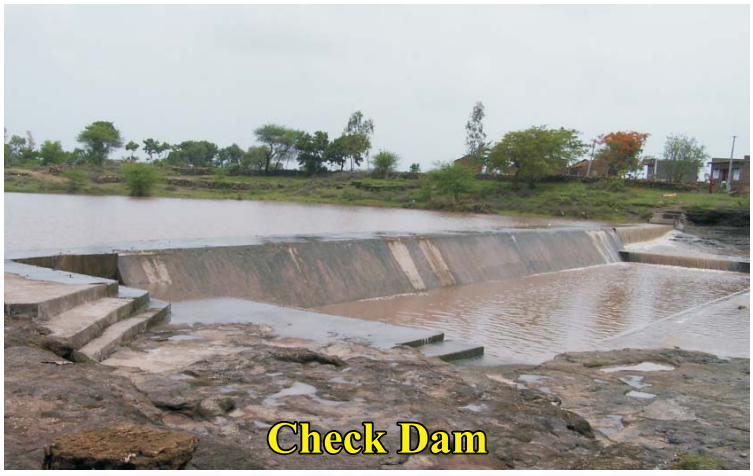
This district is categorized under hard rock. Out of 14 talukas four are classified in dark zone category namely Manavadar, Mangrol, Vanthali, Kodinar (recently dark zone prohibition is partially lifted by State Government of Gujarat) and the rest of the Talukas are in white and Grey categories. The rainfall in the district, in recent years, is moderate too. People are doing well recharging activities in a big way. Total irrigated land is 201992 ha and the length of canals is 277 km. in the district. Important major & medium irrigation projects of the district are Machhundri, Uben, Hiran-1 & 2, Ozat, Madhuvanti, Ambajal, Janjeshwri, Magharadi, Shingoda and Raval. The other 17 minor irrigation schemes are also existing in the district. 36 minor and medium irrigation dams are located in Junagadh district viz Madhuvanti, Chandravadi, Ratada, Vrajami, Lachhadi, Ambakui, Bantwa, Kharo, MotaGujariya, Uben, Galath, Pasavada, Chhodvadi, Hasnapur, Ozat -2, Uben weir, Ozat weir, Baliyavad, Ravat Sagar, Dhrafad, Prempara, Magharadi, Zanzeshri, Ambajal, Vekariya, Sonaradi and Shingoda.

At present overall canal irrigation potential of district is available for about 14,000 ha in good rainy years. Sprinkler and drip irrigation aided by liberal subsidy scheme of the State Government, are gaining acceptance. A few other irrigation schemes are also coming up every year. The coastal belt of about 8-10 kms. in Mangrol, Malia, Veraval, Sutrapada, Kodinar and Una are experiencing ingress of sea water converting the highly fertile green belt into saline land of low productivity. However, the Irrigation facility in the district seems limited and Agricultural sector continues to depend on monsoon. Details of Medium irrigation dams of Junagadh district are shown in Tab. 2.6.4 and the Source wise Area Irrigated in various Talukas of the district is presented in Tab. 2.6.5.

Table 2.6.2: Details of Medium Irrigation Dams of Junagadh District

SR.	DAM	O.S.L. METRE	F.S.L. METRE	Total Height (Metre)
1	Hiran-1	31.24	44.20	12.96
2	Hiran-2	62.42	71.26	8.84
3	Madhuvanti	149.65	165.19	15.54
4	Ambajal	171.80	182.31	10.51
5	Jhanjeshri	140.15	149.96	9.81
6	Uben	100.61	107.61	7.00
7	Dhrafad	117.50	124.00	6.50
8	Machchhundri	99.50	109.50	10.00
9	Raval	129.85	148.85	19.00
10	Hasanapur	137.76	148.12	10.36
11	Vrajami	84.60	94.00	9.40
12	Shingoda	122.78	141.58	18.80
13	Ozat Wiar Anandpur	20.48	38.70	8.22
14	Batava- Kharo	13.80	16.25	2.45
15	Ozat Wiar Shapur	29.80	32.80	3.00
16	Galath	41.65	45.10	3.45

O.S.L: Over sill level, F.S.L.: Full supply level
Source: Disaster Management & Response Plan Year 2011 district Junagadh


Check Dam

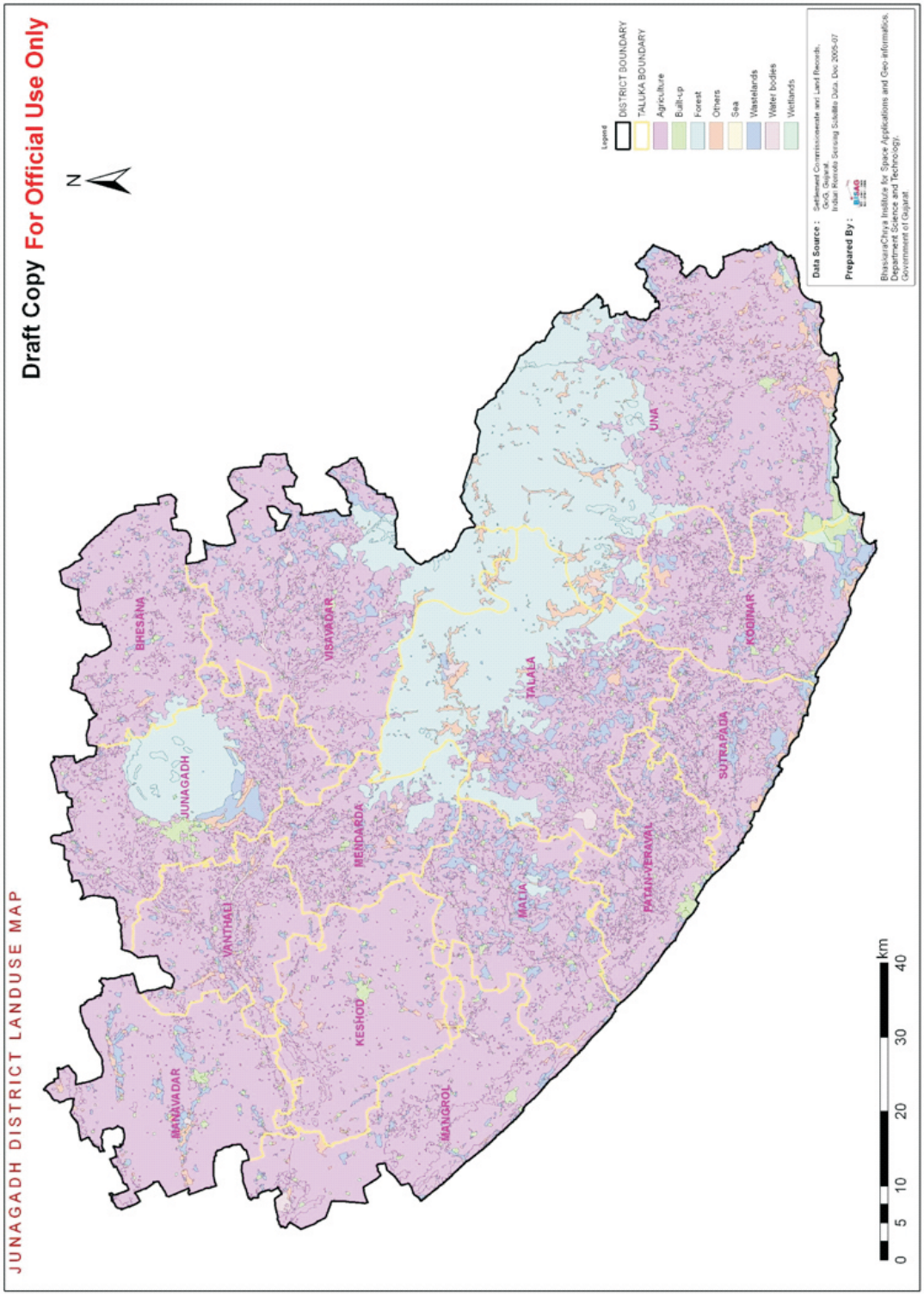


Fig. 2.5.1: Land use map of Junagadh district

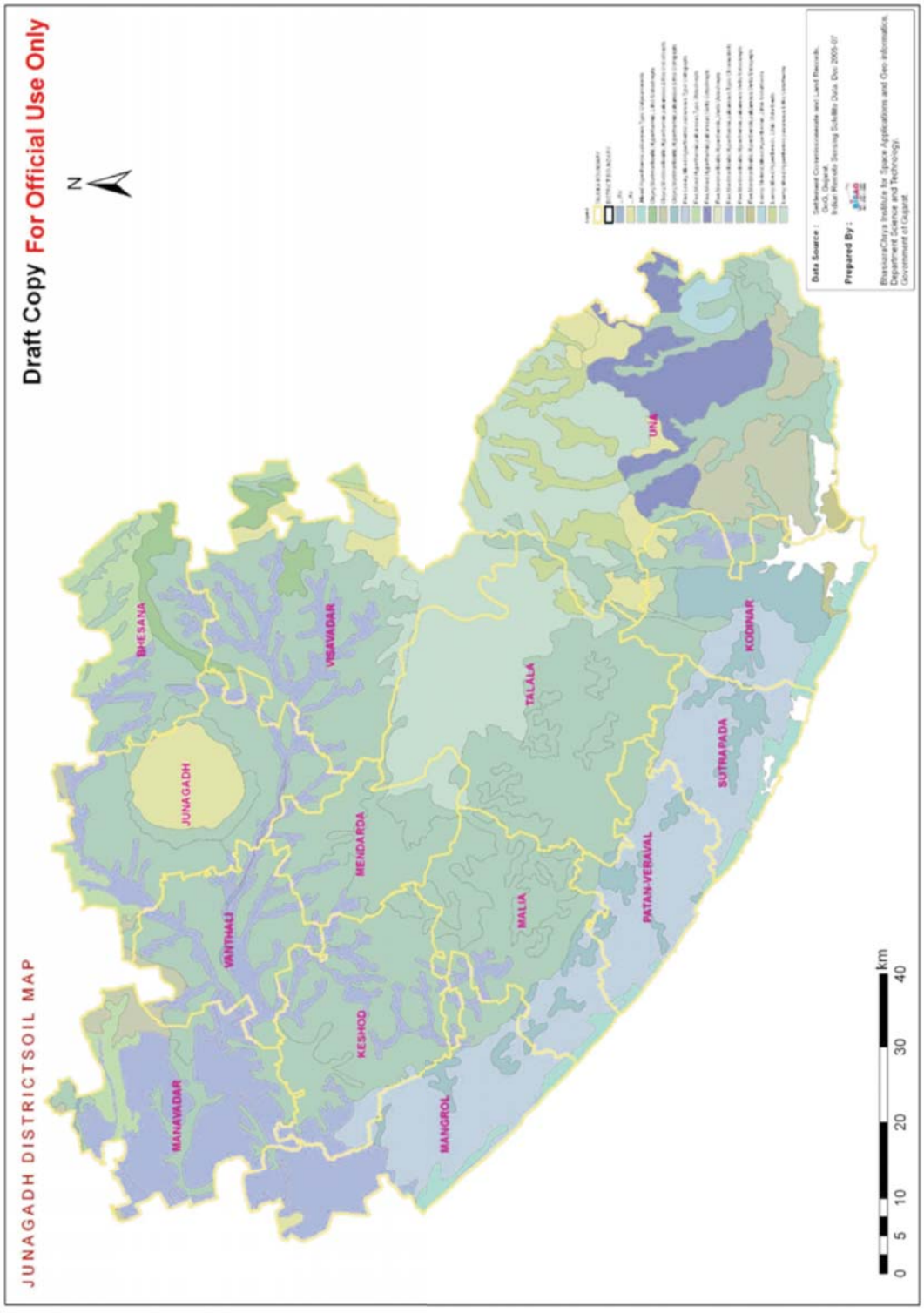


Fig. 2.5.2 Soil map of Junagadh district

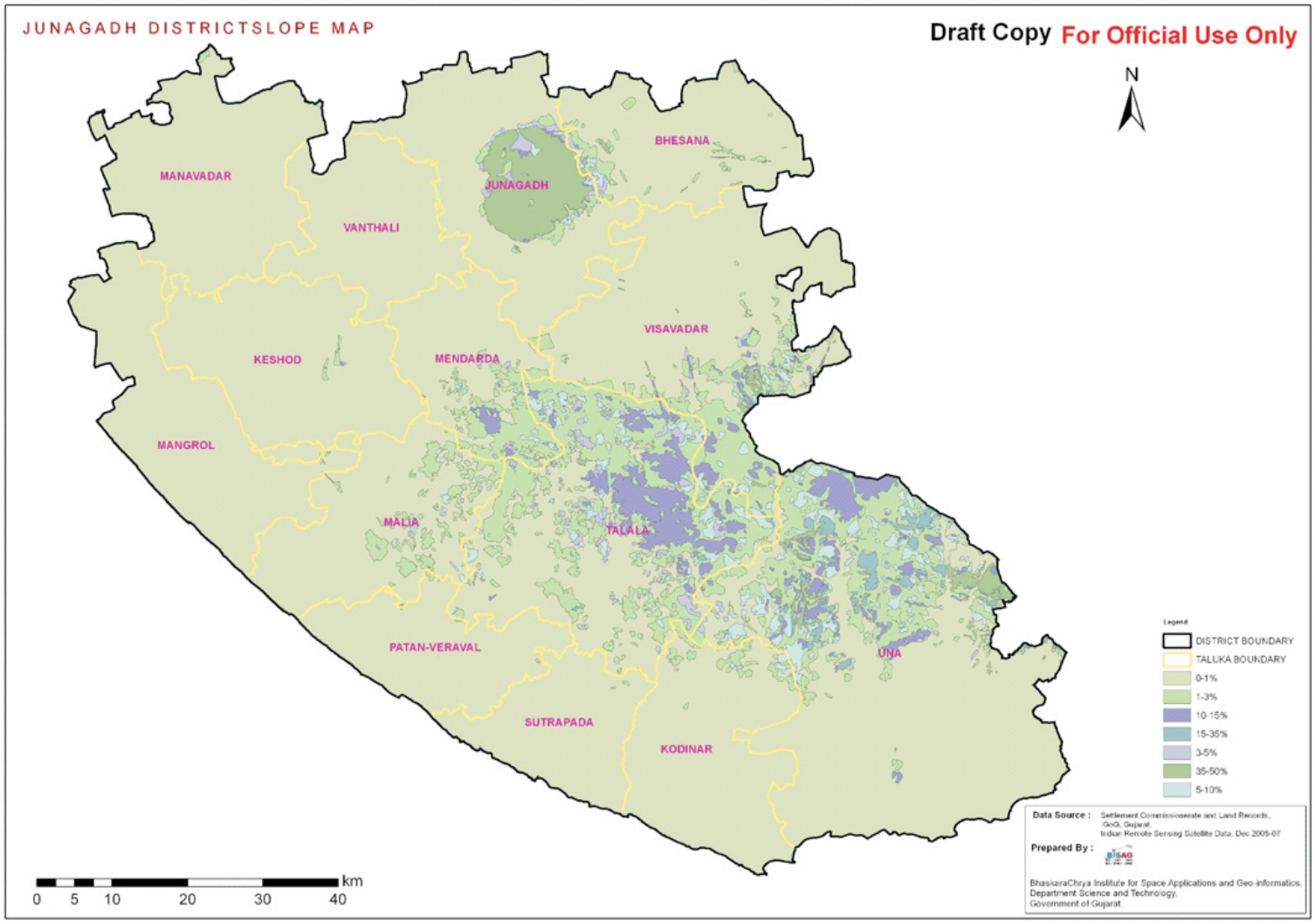


Fig. 2.5.3 Slope map of Junagadh district

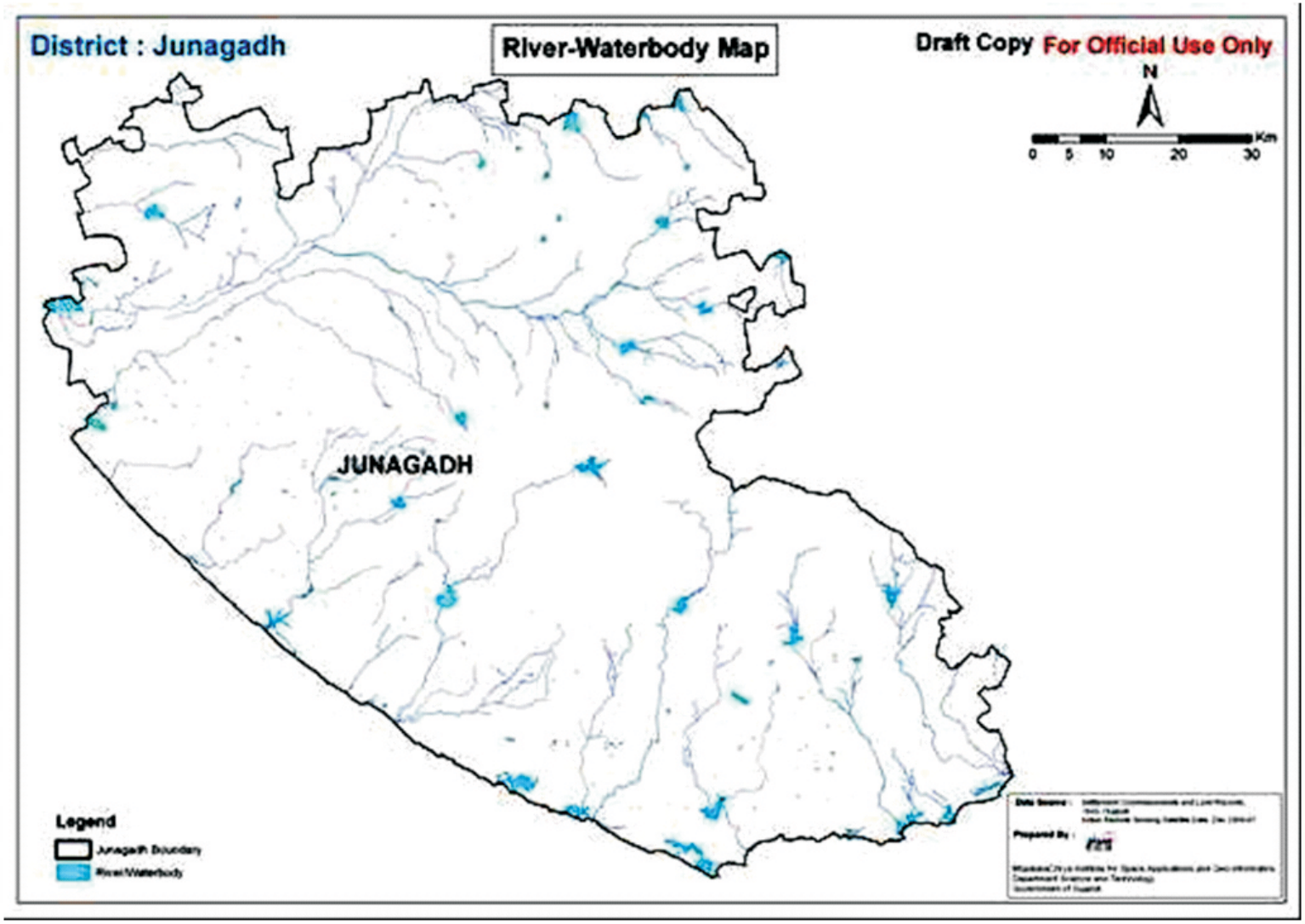


Fig. 2.6.1 River and water body map of Junagadh district

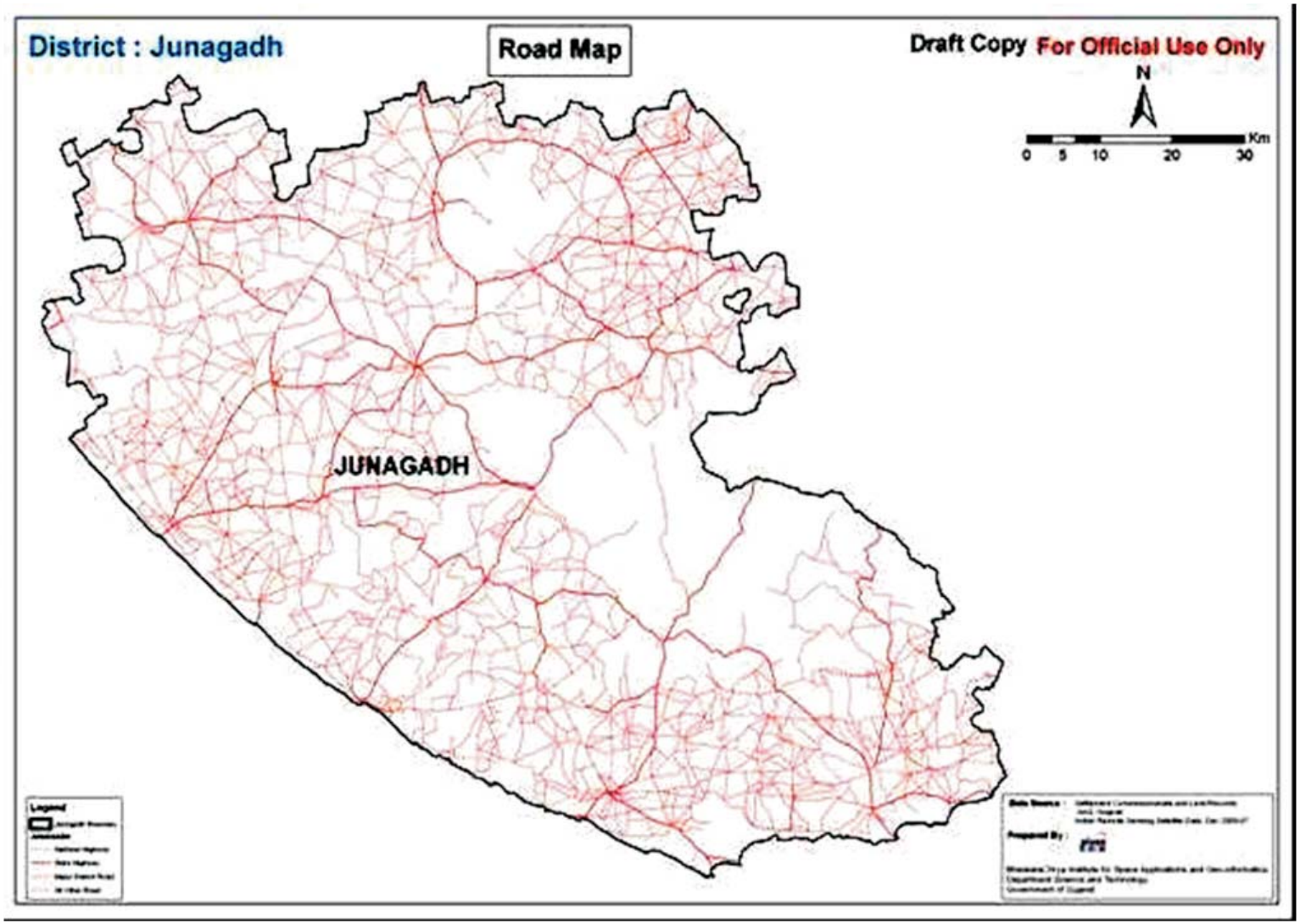


Fig. 2.6.2 Road map of Junagadh district

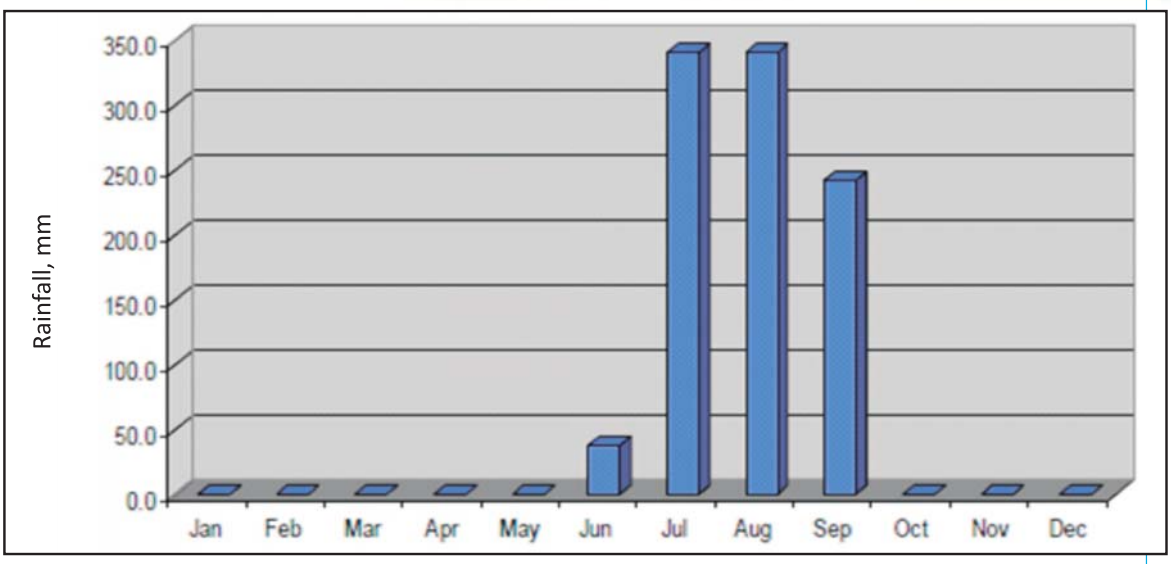


Fig. 2.6.3. Monthly rainfall of Junagadh district for the year 2011

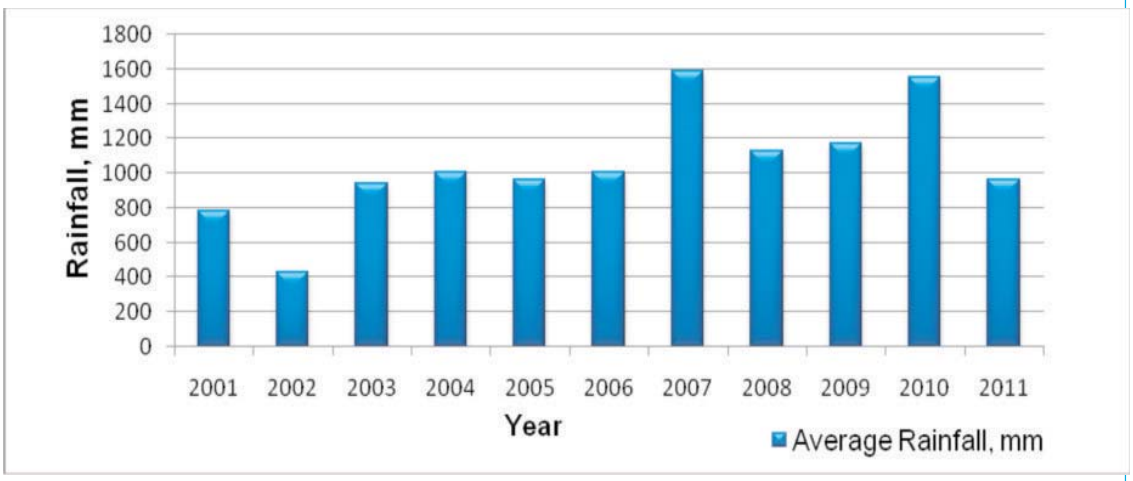


Fig.2.6.4: Average annual rainfall of Junagadh District for 11 years (2001-2011)

Table 2.6.3: Source wise Area Irrigated (Area in hectares)

Taluka	Canal (Area)	Pond		Well / Tube well		Check Dams/Others	Area Irri.
		Nos.	Area	Nos.	Area	Nos.	Area
Bhesan		0	0	5088	10217	5088	10217
Junagadh	3720	1	100	6653	4719	6654	8539
Keshod	0	0	0	10801	12133	10801	12133
Kodinar	1050	1	150	9030	24016	9031	25216
Malia	570	0	0	6308	7282	6308	7852
Manavadar	0	2	100	6734	9997	6736	10097
Mangrol	600	4	400	9873	15945	10017	16945
Mendarda	1055	0	0	3829	6575	3829	7630
Sutrapada	0	0	0	1724	10480	1724	10480
Talala	1028	2	120	5230	11449	5232	12597
Una	1850	0	0	15651	22778	15651	24628
Vanthli	610	0	0	5598	8617	5598	9227
Veraval	1120	0	0	5016	17599	5016	18719
Visavadar	2170	0	0	10282	25542	10282	27712
Total	**13773**	**10**	**870**	**101817**	**187349**	**101967**	**201992**

Source: Taluka Ankadakiya Ruprekha 2010-11, District Panchayat, Junagadh

2.6.4 Coastal area in Junagadh district:

Junagadh district has 14 talukas of which six talukas namely, Mangrol, Malia, Veraval, Sutrapada, Kodinar and Una are the coastal talukas, which cover geographical area of 3,13,061 ha (35% of the district). A survey conducted by GSPC authority has covered 293 villages out of total of 551 villages of six coastal talukas. The geographical area of 293 villages is 2,07,788 ha which constitute 23.39% of the total area of the district and 66.37% of the area of talukas covered under the study. The villages covered under the survey are divided in to fully saline, partially saline and prone to saline by irrigation department, Government of Gujarat. There is 261 nautical miles coastal line having major ports like Veraval, Mangrol and other small ports. The coastal line of the district constitutes 14 % of the total coastal line of the state. Junagadh district continues to occupy second position for fishing activities. The district has inland as well as marine fishing activities. There are 169 Fisheries co-operative societies with a membership of 27,068 are functioning in the district. There is scope for pond and brackish water fish culture. During 1960-61 marine fish production was 25,474 MT which was increased to 2,80,229 MT in the year of 2010-11. There are 9,654 mechanized boats and 257 non-mechanized boats, 148 ice plants, 46 freezing plants, 72 pulverizing plants in Junagadh district. Junagadh has 24 fish landing centers & main fishing activity of the district is trawling for fish catch.

2.6.5 Forest:

In this District, total area is 884788 sq km among it 52,835 ha (6%) under forest land and 1,23,091 ha (14%) of land is covered by reserved Gir forest. From the forest area, building (construction) wood like saag (teak) and bamboo and bidi leaves similarly fruits like custard apple (sitafal) rayan, timbru, karmada etc. are obtained.

2.7 Natural calamities:

The information on natural calamities in the district is as below.

Flood June-2005: Total Relief Centres - 12, Total Persons got Shelter – 2,994, Total Human Death - 36, Total Animal death – 88, House Collapse - Huts-10, Pucca House- 29, Kachchha House- 106, House damaged - Huts-2, Pucca house-122, Kachchha house- 1756.

Heavy Rain-2009: Total Human Death - 12, Total Animal Death – 110, House Damaged - Fully- 26, Partial- 1614.

2.8 Infrastructure:

2.8.1 Railways:

There is 421 kms. Railway track connecting Junaghdh with other important centers, towns of Saurashtra & Ahmedabad. 47 villages are directly connected with railway service. Mangrol, Bhesan, Mendarada & Manavadar are not connected with railway service. Though there is no change in total length of railway track, the frequency of trains between Veraval to Ahmedabad have increased in past years. Foundation stone of Veraval-Rajkot Broadguage line was laid on 15.11.96 covering 266 km. Out of 266 km Broad gauge line covers 106 km & Meter gauge line covers 160 km. Railway line from Rajkot to Veraval have been completed with approximate expenditure of Rs. 153 Crores.

2.8.2 Roads :

The district has 3,668 km roads connecting 917 villages. In which 667 villages by B.T. Surface pucca roads & other 44 inherited villages by Metal & katcha roads. As against the total net work of road in the district, the National Highway is 255 km, State Highway is 823 km, District Main roads & other rural roads are 2,590 km. The State Transport Bus services cover 711 villages.

2.8.3 Post and Telegraph Facilities :

There are 452 post and sub-post offices which cover 851 villages in the district. There are three telegraph offices covering all 915 villages. The STD facility is available in all talukas, This has made the communication faster and easier. The BSNL has started first stage of G.S.M. (Global Service Management) services in the district from 21-10-2002.

2.8.4 Airport:

There is one air port situated at Keshod. Keshod airport was once a busy airport providing link to Mumbai and Porbandar. At present the airport of Keshod has no commercial flight.

2.8.5 Marine Transport :

The bulk of the marine transport is handled by Veraval port. Urea Fertilizer etc. had been handled in earlier years from Veraval port. Now there has no any direct exports of any items undertaken from Veraval Port but diverted to Kandla, Porbunder & Pipavav Ports. The total fish production of 2,80,561 M.T. valued Rs.87,738 lakhs during 2010-11 were exported from Veraval and Mul Dwarka ports. There is no further scope for financing new trawlers/ boats, however there is enough scope for replacement of boat engines, mechanization of non-mechanized boats, repairing of boats as well as financing for gears.

2.8.6 Milk Routes:

There are 285 milk routes covering 776 villages. There are total 37805 members of the 140 Milk Mandalies. The processing capacity of dairy is 3.5 lakh litres per day of Govt. owned (GDDC) dairy. Now Mother Dairy (NDDB) took over management of Junagadh Dairy and at present dairy function is going on. During the year 2011-12 about 810.66 lakh liters collection of milk recorded.

2.8.7 Power:

In the district all 915 inhabitant villages and 19 towns are electrified. There is no village remained to be electrified except 27 depopulated villages of the district.

2.8.8 Industries:

The number of industrial units registered in the district were 7,405, with an investment of Rs.890.69 crores, which are providing employment to 28,217 persons (November-2008). Nearly 481 units have started manufacturing items like plastic bags, strips, foot wear, plastic lamps/granules, food processing, chemical and mineral band items, fabrication etc. There are eight Joint Stock Limited Company units which have started the production of Ramazol dyes and sodium silicate. A fish processing unit of Hindustan Leaver Limited, which has been allotted land near Chorwad has became operative. There are six industrial estates viz, Junagadh-1, Junagadh-2, Veraval and Visavadar, Sutrapada and Sheel. 603 units are functioning in these industrial estates supporting further employment. Further three more industrial estates at Una, Kodinar and Bhesan are also under consideration.

The Government Polytechnic/Technical Schools/ TRYSEM and CED (Center for Entrepreneurs Development) provide training facilities. There are big industrial units like Indian Rayon Industries at Veraval, Gujarat Heavy Chemical Ltd. at Sutrapada, Gujarat Ambuja Cement Co. Ltd. at Kodinar, Sidhdhi Cement at Morasa and Sugar factories at Talala and Kodinar which provides employments to more than 14,000 persons in the district.

2.8.9 Marketing and APMCs:

Remunerative price for agricultural produce is an essential incentive for sustaining agricultural production. Agricultural Produce Marketing Committees (APMCs) have been constituted at taluka level under Agricultural Produce Marketing Act, 1963. At present, there are 13 APMCs in the district out of which seven are working regularly, three working seasonally & three are not functioning. Ideally each taluka should have a market yard. The existing facilities for storage and market yards in the district

are considered inadequate, which are required to be strengthened. Three market yard schemes were sanctioned by NABARD in recent years in Mangrol, Manavadar and Malia which have been implemented. The district has about 5,500 ha area under onion & garlic during Rabi season. Veraval, Keshod, Junagadh, Bhesan and Una are some of the talukas where cultivation of onion & garlic is highly fluctuating. Farmers can derive benefits by storing of onion and garlic till the prices are increased. In order to extend the storage life of onion and garlic, special storage godowns are constructed which take care of ventilation and other post harvest technical requirements. Banks need to support these items of investment. The potential Talukas are Veraval, Keshod, Junagadh, Visavadar, Mendarda and Bhesan.

2.9 Bank Net Work and Co-Operatives:

2.9.1 Bank Net Work:

The State Bank of India is the lead bank of the district, having its two Regional offices at Junagadh, provides quality and efficient service to the people in the district. There are total 272 Branches of Commercial Banks, RRB, Co-op. Banks and Private Banks, operating in the District. The average population served per bank branch is 10,082.

2.9.2 Co-Operatives:

The co-operative sector in the district is having wide network. However, many of the co-operative credit societies, non-agricultural credit societies are weak affecting the performance of the district as a whole. The Co-operative Societies functioning in the district are presented in Table 2.9.1. The Table 2.9.2 shows the Industrial Co-operative Societies functioning in the district.

Table 2.9.1. Co-operative societies functioning in the district

Sr. No.	Nature of Co-operative Society	No.
1.	Seva sahkari mandali	567
2.	Agricultural co-operative	24
3.	Milk co-operatives	140
4.	Oilseeds growers co-operative	12
5.	Purchase and sale union	15
6.	Irrigation co-operative	11
7.	Transport co-operative	17
8.	Consumer co-operative	130
9.	Housing co-operative	359
10.	Sugar co-operative factory	03
11.	Fisherman co-operative	169
12.	Money lenders	133
13.	Poultry co-operative	8
14.	Labourers co-operative	510
15.	Other misc.co-operative (Film)	01
16.	Nagrik bank	05

Table 2.9.1. Con.

17.	Cotten co-operative	39
18.	Forest societies	05
19.	Plants developments	09
20.	Land conservation	44
21.	Gopalak Sangh	04
22.	Centrai co-operative Bank	02
23.	Vegetable seeds	114
24.	Sahkari Sangh	02
TOTAL		**2323**

Source: Junagadh district Annual credit Plan-2012-13, Lead Bank SBI, Junagadh

Table 2.9.2. Industrial Co-operative Societies functioning in the district

Sr. No.	Industrial Co-operative Societies Registered In DIC. (**Position** as on 31-03-2008)	No.
1.	Weaving Co-operative	138
2.	Leather Tanning co-operative	48
3.	Co-operative Federations	03
4.	Carpentry & Black-smithy societies	03
5.	Bamboo Workers Co-operative	13
6.	Chemical Co-operative	02
7.	Women Co-operative	51
8.	Film Co-operative	01
9.	Industrial Estates	01
10.	Handicrafts Co-operative	07
11.	Woolen Workers Co-operative	02
12.	Printing Press Co-operative	06
13.	other Co-operatives	06
TOTAL		**281**

Source: Junagadh district Annual credit Plan-2012-13, Lead Bank SBI, Junagadh

Training for Farmers

CHAPTER III

SWOT ANALYSIS

3.1 Introduction

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. Analysis of SWOT is a basic and straight forward tool that gives direction and serves as a basis for the development of an enterprise or organization. It accomplishes this by assessing an enterprise or organization Strengths (what it can do) and Weaknesses (what it cannot do) in addition to Opportunities (potential favorable conditions for it) and Threats (potential unfavorable conditions for it). The role of SWOT analysis is to take the information from the concerned agencies and separate it into internal issues (strengths and weaknesses) and external issues (opportunities and threats). In applying the SWOT analysis in agriculture, it is necessary to minimize both weaknesses and threats. Weaknesses should be looked at in order to convert them into strengths. Likewise, threats should be converted into opportunities. The strengths and opportunities should be matched to optimize the potential production. Applying SWOT in this fashion can generate income for the farmers in sustainable manner.

3.2 SWOT analysis of the Junagadh District (with special focus on the agriculture and allied sectors)

3.2.1 Strength:

Junagadh, the head-quarters of Junagadh District, is well connected by rail and bus routes to major towns of the states like Rajkot, Ahmedabad, Vadodara, Surat and Gandhinagar. There is a good network of the roads within the district and its towns & villages. An airport is also situated at Keshod, located on the National Highway connecting Junagadh and Veraval. The major strengths of the district are:

- A vast area (60% of geographical area) is under cultivation with a large number of field crop species and horticultural crops. Typical calcareous soil highly suitable for groundnut and mango plantation.
- Junagadh is the largest producer of Groundnut and Garlic in the country and in total State production contributing 26% and 34% respectively. Groundnut kernel HPS industry one of the best in the country.
- Junagadh is the 4th largest producer of Cereals in the State with total annual production of about 5,69,800 MT.
- Summer green chilies cultivation is the highest in the district. Beetle leaf cultivation is specific in Mangrol and Maliya taluka.
- Mango and onions are produced in large quantities in the district. Gir Kesar variety of mango registered for Geographical Indication (GI).
- All the major crops have higher productivity than national average. The per day productivity of wheat crop is the highest in the country.

- A good breed of Gir cows and Jafrabadi Buffaloes are reared as draught and milking animal. Surplus milk produced in this district is also being transported daily to Rajasthan from Mother dairy, Junagadh.
- Being 200 km of coastal line in the district, has good potential of exportable fish fauna, marine fish catching is practiced and fish is processed on large scale at Veraval, Mangrol and Sutrapada and exported.
- District has 6.0% forest area and reserve Gir forest about 14% of geographical area; with a large number of tree species in Gir forest and Girnar hills. Gir wild life sanctuary is also located in the District which is the abode of Asiatic lion. Junagadh city and Girnar mountain has historical and religious importance.
- Availability of solar energy and wind energy round the year.
- Major Talukas have their own APMC (Agricultural Produce Marketing Committee) and their marketing yards.
- There are over 7,000 Small Scale Industries operating in Junagadh district in sectors which includes food products, cotton ginning, fish processing, chemicals, electrical equipments and repairing & servicing.
- There are over 40 medium and large scale industries present in Junagadh district, involved in sectors such as, Cement plants, edible oil, refinery plants and fish processing units. Edible oil base industry of Junagadh is one of the best in the country.

3.2.2 Weakness:

Junagadh District has average annual rainfall of 900 mm and varies from 1000 mm in south to 800 mm in north. Most of the rivers in this district remain dry in the summer season. This enforced the over exploitation of ground water through open wells and deep bore wells, which has created the sea water intrusion problem in coastal Talukas and resulted in poor quality of groundwater and ultimately hampered the crops in the region. Hence, it is absolutely essential to recharge the ground water table which has gone very deep during the last decade. Out of 14 Talukas in the district one is over exploited (Mangrol; covers district area of 7.5%), two are critical (Manavadar and Vanthali; covers district area of 11.2%), semi- critical are seven (Junagadh, Keshod, Veraval, Kodinar, Sutrapada, Visavadar and Bhesan; covers district area of 42.2%) and remaining four are safe (Mendarda, Talala, Una and Maliya covers district area of 39.1%) in terms of exploitation of ground water potential. Proper planning and reclamation of fallow and degraded lands could also enhance the net sown area in the district. Apart from this the other weaknesses are

- Large area under rainfed farming, only 40% area is under irrigation.
- Cropping intensity is only 130.31 per cent.
- Inadequate processing and cold chain facilities for horticultural produces.
- Improper management of cow dung and crop residue, poor adoption level of FYM, green manuring, vermi-compost and farm crop residue.

- Critical technological gaps in specific area of crop like seed treatment, balanced use of fertilizers and insect pest and disease management in major crops.
- Annual rainfall is 900 mm, particularly low in Manavadar, Vanthali and Bhesan taluka. Ground water is saline and water table is deep.
- Lacking in scientific rearing of cattle particularly milch animals.
- Apathy towards poultry and inland fisheries.

3.2.3 Opportunities:

There is a heavy demand for fruits, vegetables and flowers from Rajkot, Ahmedabad, Mumbai and other cities, farmers who cultivate these crops are much benefited. The major crop groundnut produced in the district is used in oil mills only, but there is a need of value addition industry for various groundnut based products. The industrial development opportunities are tremendous in the major towns of this district like Keshod, Veraval, Junagadh and Kodinar, as there is a National Highway and rail track connectivity linking these towns with Ahmedabad. Kodinar and Sutrapada has heavy chemical industries and cement plants. The Gir wild life sanctuary is situated in the district, which is the adobe of Asiatic lions, a Jyotirling temple of lord Somnath near Veraval and number of sea beaches are attracting large number of tourists, therefore there is a great opportunity of developing good tourist industry and making a tourist hub in the district. The specific opportunities for the district are

- To raise the energy use at farm from present level of 1 kWh/ha to 3 kWh/ha through increasing the farm mechanization.
- Improve water use efficiency from 60% to 90% through micro irrigation system (MIS) and productivity enhancement of more than 30%.
- Protected cultivation in green house and shed net (low cost) for off season vegetable cultivation.
- Linking of local rivers for sustaining irrigation potential.
- Export quality of wheat and mango.
- Value added products from agriculture waste. Mango and sapota processing industries. Coconut water packaging industry.
- Groundnut HPS industry.
- Pack houses for fruits and vegetables and establishment of vegetables markets.
- Scope for dairy enterprises.
- Expansion of inland and brackish water aquaculture.
- Scope for export of processed food products.
- Utilization of non conventional energy sources solar, wind and sea waves in agriculture.
- Biomass and agricultural wastes utilization through Gobar gas and Gasifires.

3.2.4 Threats:

Junagadh District is well connected to industrial cities like Rajkot, Ahmedabad, Surat and Mumbai this has resulted in the large scale migration of farm labourers in various industries located in these towns. This has resulted in a great demand for agricultural labourers and the farmers in this district face a lot of problems in getting farm labourers. The district is having a vast sea coast and over exploitation of groundwater in the region created a serious threat of sea water intrusion and salinity ingress and resulted in degradation of land and reduction of farm produce, which ultimately initiated the migration of the farmers from the Talukas like Mangrol, Maliya, Veraval, Sutrapad, Kodinar and Una.

- Sea water intrusion in aquifers of coastal talukas over exploitation of groundwater.
- Climate change is a threat for horticultural crops like Mango, Sapota and Coconut.
- Industrial and residential use of highly fertile lands, diversion of agricultural resources and harmful effect of industrial effluents and pollutants.
- Less interest of rural young generation in agriculture.

3.3 SWOT Analysis of farming situation of major crops or commodities and the research and extension gaps emerged and the strategies to bridge the gaps

On the basis of primary and secondary information collected by the team members from representative Talukas, SWOT analysis was carried out with respect to existing farming systems. The details of SWOT analysis are given in table.

Table 3.3.1. Farming System: Agriculture

i. Cropping Pattern : Groundnut

Strength	Weakness
a) Traditional knowledge for cultivation of crop in semi –arid region, where rain is the limiting factor. b) Good yield potentiality of groundnut under the soil & climate. Fodder quality also very nutritive for milch animals.	a) Poor quality of water in coastal area. b) Mono cropping of creates soil health problems. c) Shortage of quality seed.
Opportunities	**Threats**
a) Short duration salt resistant Cash crop. b) Better suitability under the soil, water and climate of district. c) Healthy available market, as it is the very important crop of this area. d) high quality of groundnut suitable for HPS	a) Drought and erratic rainfall restricts the yield. b) Lowering ground water table. c) Pest and diseases problems. d) Fluctuating in market price may affect the sustainability. e) Labour intensive harvesting, labour problem during peak seasons.

ii. Cropping Pattern : Groundnut + Wheat

Strength	Weakness
a) Groundnut–Wheat is the best cropping sequence in all AES. b) Congenial atmosphere of soil and climate for this sequence. c) Traditional knowledge of cultivation of these crops. d) Wheat yield potentiality / day is very high.	a) Irrigation is for 40% area only, restricts yield potentiality. b) Traditional practices are followed. c) Fluctuating in market price may affect the sustainability. d) Labour intensive harvesting, labour problem during peak seasons.
Opportunities	**Threats**
a) Groundnut–Wheat is the best Legume-cereal sequence provides better soil health condition and provide maximum opportunities to explore the yield potentiality in the region. b) Very good quality of Groundnut kernels and Wheat grains under this situation.	a) Erratic and uncertainty of rain restricts the yield. b) Fluctuating in market price may affect the sustainability. c) Pest and diseases especially in groundnut that affects the soil health and ultimately the entire sequence.

iii. Cropping Pattern : Bt. Cotton

Strength	Weakness
a) Cotton is highly remunerative cash crop as it restricts plant protection measures. b) Inter cropping in cotton provides higher income and restricts the risk. c) Knowledge for cultivation of the crop. d) Organic farming. e) Bio-control of pest.	a) Lack of high yielding & diseases, pest resistant varieties from JAU and Govt. Institutes. b) Erratic and uncertainty of rain restricts the yield. c) Irrigation is for 40% area only, restricts yield potentiality. d) Less risk bearing ability. Higher skills & knowledge is required for this crop.
Opportunities	**Threats**
a) Congenial atmosphere for this crop. b) One of the best cash crops for higher income. c) Providing fuel for cooking. d) Composting of cotton stalks can be done after chaffing. e) Inter cropping is one of the important tools for minimizing the risk.	a) Comparatively longer duration crop, it requires soil moisture for the longer time. b) Irregular rain restricts the crop growth and yield. c) Problems of sucking pests. d) Fluctuating in market price. e) High rainfall causes failure of the crop.

Table 3.3.2. Farming System: Agriculture + Animal husbandry

Strength	Weakness
a) Experience in management of animal husbandry and dairy. b) Knowledge of agriculture farming and feed and fodder management. c) Higher remunerative farming system as compared to only agriculture / animal husbandry. d) Co-operative activities certainly encourage this system.	a) Negligence towards maintenance of cattle. b) Risk bearing ability is low. c) Less availability of feed and fodder.
Opportunity	**Threats**
a) Availability of pure breed of cows (Gir cow) and buffalos (Jafarabadi) are very famous for higher milk yield. b) Risk is minimizing under this farming system. c) Finance can be easily available through bank. e) All Members of family may be involved. f) Increased availability of FYM and biogas.	a) Diseases infective. Veterinary facilities are limited. b) Unavailability of soft drinking water during the summer. c) Rapid decrease in the pasture/ grazing lands.

Table 3.3.3. Farming System: Agriculture + Horticulture + Animal husbandry

Strength	Weakness
a) Soil and climate suit to this farming system. Knowledge and skills are available. b) Minimum risk is involved. All family members are involved for the entire year. c) Income available throughout the year. d) Good variety of mango (Kesar) is very famous over the country. e) Available technical personals.	a) Risk bearing ability is low. b) Pest and disease problems in fruit crops. Negligence towards maintenance of cattle. c) Less availability of feed and fodder.
Opportunity	**Threats**
a) Improved seed / pure breed of milch animals and pure varieties of mango and coconut. b) Transport facility is good. c) Healthy market available.	a) Irregular rainfall. Negligence towards maintenance of cattle. b) Diseases infective. Veterinary facilities are limited. d) Unavailability of soft drinking water during the summer. e) Rapid decrease in the pasture/ grazing lands.

Table 3.3.4. Farming System: Fisheries

Strength	Weakness
a) Longest coast line provide good production of sea food b) Good scope for cage culture of fin fish/ shell fish c) Sea coast provides very well facilities for fishing. d) Good qualities of fishes are available at the west coast. e) Very good environment for aquaculture.	a) No risk bearing ability in fishery business. a) Socio-economic status is poor. Technical know-how is very low. b) Not well established market for small fishermen.
Opportunities	**Threats**
a) Sea water is very near to this area. b) Demand of fish is very high. c) Technical support is available from Fisheries college Veraval and the fisheries department.	a) Low market price. b) People are mostly vegetarian. c) Poor financial capacity.

3.4 Sectoral / Regional Growth Drivers of the District

Groundnut farming and processing Cotton seed and groundnut oil Cattle feed and poultry farm Absorbent cotton and surgical cotton bandage.

I Agriculture:

1. The economy of Junagadh is mainly based on agriculture. Increasing area under hybrids/ high yielding varieties in cotton, castor, bajra and improved variety in wheat.
2. Seed treatment and enhancing seed replacement rate.
3. Resource conservation technologies for sustaining and improving the productivity levels.
4. Groundwater recharge and increasing water use efficiency using MIS.
5. Demonstration and capacity building of field functionary and farmers for implementation of IPM, INM and IWM.
6. Training the farmers, traders, and other stakeholders on micro irrigation, protected cultivation, grading, post harvest technologies, value addition and market intelligence.
7. Establishment of rural godown with drying yards.
8. Formation of commodity groups for groundnut, cotton and wheat crops; as well as for cattle breeding and fisheries.
9. Encouraging contract farming and increasing cropping intensity through mechanization.
10. Increasing in the use of Trichodarma for management of soil born diseases in groundnut.
11. Manufacturing and repairing units of agriculture equipments/ implements and agricultural machine parts.

II Soil Health:

1. Prevention of degradation of soil fertility using west biomass available from livestock, crop & farm.
2. Reclamation of salinity and sodicity in coastal area.

III Horticulture:

1. Increasing area under fruits and vegetable crops by providing improved planting material.
2. Implementation of IPM and INM.
3. Demonstrations and trainings including farmers and field official.
4. Hightech green house for floriculture development.
5. Export oriented unit for horticulture crop (Keshar Mango)
6. High density plantation for mango.
7. Harvesting and post harvesting techniques for fruit crops.
8. Improvement in the processing and transportation technologies.

IV Forestry:

1. Increasing area under forests through plantation in community lands.
2. Increasing area under agro-forestry and plantation on farm bunds.
3. Demonstrations and trainings including farmers and field officials
4. Fodder and pasture land development.

V Animal Husbandry:

1. Breed improvement through community bulls and A.I.
2. Balanced feed and mineral mixture feeding.
3. Demonstration and capacity building of field functionary and farmers.
4. Animal feed industry.
5. Improvement in the fodder availability.
6. Modernization of cattle rearing.

VI Fisheries:

1. Renovation of village/town ponds for fisheries and making availability of good quality fish seed (Rearing unit/hatcheries)
2. Capacity building of fish farmers and field functionary.
3. Processing plants for marine fish, fish oil and powder.


Crab


Multi Cropping System

CHAPTER IV

DEVELOPMENT OF AGRICULTURAL SECTOR

4.1 Introduction

In this chapter, issues relating to utilization of natural resources available in the district and input management for the development of agriculture sector are discussed. The district is covered under South Saurashtra Agro-Climatic Zone. The soil topography, resource availability is varying in all the 14 talukas of the district. There is tremendous potentiality for increasing growth of the district by diversifying the farming system, in favour of vegetables and fruits and efficient management of inputs. The chapter covers the development of agriculture and agricultural engineering sector.

4.2 Land Use

In this District, total area is 8.848 lakh ha among it the net sown area is 60 % (5.34 lakh ha) and 1.23 lakh ha of land is covered by forest which is known as Gir forest. In forest region mainly wood like *saag* and bamboo (for building construction) and *bidileaves,* similarly fruits like custard apple (*Sitafal*) *Rayan, Timbru, Karmada* etc. are obtained.

The barren, uncultivable, degraded and waste lands which are present in the district to the extent of 16 per cent (1.40 lakh ha) of the total geographical area have to be reclaimed so that the net sown area could be increased. The 14 % area (1.23 lakh ha) of the district is under forest and has opportunity to increase density of forest.

4.3 Soil type and Soil Health Management

The table 4.3.1 is revealed that medium to shallow black soil is predominantly seen in the district, at some places mixed red & black soils, in costal talukas coastal alluvial soils and deep black in Ghed area are main soils of the district.

Table 4.3.1: Major Soils (common names) of different Talukas of Junagadh district

Taluka	Major soils	Area ('000 ha)	Per cent of total area of Taluka
Bhesan	Medium to Shallow Black	33.92	95
	Mixed Red and Black	01.79	5
Junagadh	Medium to Shallow Black	33.98	95
	Mixed Red and Black	17.88	5
Keshod	Medium to Shallow Black	43.89	100
Kodinar	Medium to Shallow Black	37.56	70
	Mixed Red and Black	05.36	10
	Coastal Alluvial	10.73	20
Maliya	Shallow to Medium Black	53.97	100
Manavadar	Shallow to Medium Black	48.49	100

Cont.

Taluka	Major soils	Area ('000 ha)	Per cent of total area of Taluka
Mangrol	Medium to Shallow Black	34.09	60
	Coastal Alluvial	17.04	30
	Deep black (Ghed Area)	05.68	10
Mendarda	Medium to Shallow Black	34.56	95
	Mixed Red and Black	01.81	05
Sutrapada	Medium to Shallow Black	15.31	72
	Coastal Alluvial	06.09	28
Talala	Shallow to Medium Black	30.22	100
Una	Medium to Shallow Black	110.93	70
	Mixed Red and Black	15.84	10
	Coastal Alluvial	31.69	20
Vanthali	Medium to Shallow Black	39.31	100
Veraval	Shallow to Medium Black	15.49	62
	Coastal alluvial	09.60	38
Visavadar	Medium to Shallow Black	90.17	100

Source: District contingency plan of Junagadh district-2011.

4.4 Water Resources

The district is having total irrigated area of 2,01,992 hectares among different sources of irrigation, the major sources are ground water (1,85,426 ha.) followed by canals (13,773 ha) and check dams (1,923 ha.). Eventhough, the district is receiving fairly good amount of rainfall (800-1,100 mm), due to lack of adoption of water harvesting practices and topography of land, limited area is under irrigation. The scarcity of irrigation water is major hurdle in the growth of agriculture. The major scope for the development of agriculture in irrigated area is by increasing gross sown area and by adopting micro irrigation system particularly in horticultural, spices and vegetable crops. Specific extension activities are being proposed on these important aspects in the plan.

4.5 Major crops and varieties in the district

4.5.1 Comman Varieties of Major Crops

The major field crops cultivated in *Kharif* season are groundnut, cotton, pulses, bajra, castor, and sesame. Wheat, gram, sugarcane, garlic, onion and other vegetables are the important *Rabi* crops of the area. There is need to evaluate and monitor the performance of released varieties and hybrids of field crops and vegetables. The measures to bridge the gaps have been suggested. Common varieties of major crops grown in Junagadh district are given Table 4.5.1.

Table 4.5.1: Major crops and their varieties cultivated in district

S. No.	Major crops	Varieties
1.	Groundnut	Bunch variety GG-2, GG-7, TAG-37A, TPG-41 Semi spreading variety GG-20, Spreading Variety GAUG-10, GG-11, GG-13
2.	Cotton	Bt. Cotton hybrids
3.	Wheat	Lok-1, GW-496, GW-366
4.	Bajra (Pearl Millet)	Kharif: GHB-558, GHB-538, Summer: GHB-558, GHB-526, GHB-732
5.	Pigeon Pea	GT-100, GT-101, BDN-2
6.	Gram	Gujarat Gram -1, Gujarat Gram - 2, Gujarat J Gram - 3
7.	Green gram	Guj. Mug-4, K-851
8.	Black gram	Guj. Urd-1, T-9
9.	Sesame	GT-2, GT-3, GT-10
10.	Castor	GAU-CH-1, GCH-6, GCH-7
11.	Sorghum	GFS-4. GFS-5, Gundhari, S-1049 (Fodder)
12.	Sugarcane	CoN 91132, CoN 5071, Co 86032, Co-6304, CoC-671
13.	Garlic	Gujarat Garlic-4, Gujarat Garlic-2, Gujarat Garlic-3, G-282
14.	Onion	Junagadh Local (Pilipatti), Gujarat White Onion-1, AFLR, AFDR
15.	Tomato	G.Tomato-1, Junagadh Tomato-3, Junagadh Ruby, Pvt. Hybrids.
16.	Brinjal	GBL-1, GBGR-1, GJB-2, GJB-3, Pvt. Hybrids.
17.	Okra	GO-2, GO-3, Parbhani Kranti, Pvt. Hybrids.
18.	Isabgul	Gujarat Isabgul-1, Gujarat Isabgul-2
19.	Fenugreek	Gujarat Methi-2
20.	Cumin	GC-4
21.	Coriander	GC-2
22.	Coconut	D x T, T x D, Dwarf green, West coast tall, Orange
23.	Mango	Kesar
24.	Sapota(Chiku)	Kalipatti, Cricket ball
25.	Banana	Grand nain, Robusta , Harichhal
26.	Lemon	Kagji Lime
27.	Ber	Umran, Gola, Seb, Mehrun
28.	Papaya	Madhu Bindu, Taiwan-786
29.	Custard Apple	GJCA-1, Sindhan
30.	Pomegranate	Sindoori, Ganesh
31.	Guava	Dholka, L-49, Bhavnagar red, Allahabad safeda

4.5.2 Cropping pattern

Major Cropping sequences in vogue in the district are given below:

i. Groundnut
ii. Groundnut - Wheat
iii. Cotton
iv. Cotton – Summer Groundnut/ Summer Sesame/ fodder
v. Groundnut - Wheat - Summer Pulses (urd bean or green gram)/ Summer Bajra
vi. Pearl Millet -Summer Groundnut /Summer pulses
vii. Sugarcane
viii. Sugarcane- Wheat- Summer Black gram/ Summer Groundnut
ix. Groundnut – Castor
x. Groundnut – Onion / Garlic
xi. Groundnut – Summer Sesame

4.6 Input Management

Besides improved seeds, the integrated nutrient, weed and pest management is essential to accelerate agricultural growth. At present, a gap exists between the actual productivity and the attainable /achievable / potential productivity of the crops grown in the district. The proper and timely management of following inputs for crops is essential to fill this gap.

4.6.1 Quality seed

Quality seed is the most critical input in crop production. The government agencies are trying their level best for assured supply of quality seeds through state seed program, mega seed project and university seed programme. For high yielding varieties like cotton and bajra, the seed replacement ratio (SRR) should be 100% and for major crop groundnut and wheat, it is 15% and 35% respectively. Series of steps have been suggested in this plan to overcome the situation.

4.6.2 Fertilizers

Next to irrigation, fertilizer is second most important input for the cultivation of high yielding varieties. The timely availability of fertilizer is a major constrain. The reason is not the short supply, due to poor economic condition of farmers the farmers rush to purchase at time of sowing. Further, the co-operative structure is very weak in the district. If it is being strengthened and purchase of the fertilizers is done well in advance, the problem can be solved. Due to continuous soil erosion in hilly area and growing cotton continuously in same field led to deficiencies in micronutrients like Zn and Fe. Therefore, location specific integrated nutrient management, use of bio-fertilizers, FYM, green manuring and vermi-composting are required to be popularized for wider adoption.

The data on consumption of fertilizers in Junagadh district clearly shows increasing trend over years. Total consumption of all types of fertilizer in the district in year 2010-11 was 2,41,890 MT. Out of total consumption of fertilizer in year 2010-11, the consumption of urea fertilizer (1,14,123 MT) was maximum. The requirement of fertilizers increased with the increasing awareness about use of fertilizers and availability in the market. The fertilizer consumption and NPK consumption of the district are presented in the Table 4.6.1 and Table 4.6.2 respectively.

Table 4.6.1: Fertilizer Consumption (in MT)

Fertilizer		Year wise consumption of Fertilizer (in MT)				
		2010-11	2009 - 10	2008- 09	2007 - 08	2006 - 07
Urea		114123	85306	92337	89164	79094
DAP		70396	72959	68994	62626	53874
MOP		6572	11285	8000	6743	5636
SSP		8958	5151	6250	4515	6205
AS		5536	2773	1205	3468	3989
CAN		5029	4048	4074	4220	4980
MAP		1142	597	0	264	0
Complex	10: 26: 26	7092	5153	7387	790	0
	12: 32: 16	12484	4777	7874	14343	13938
	15: 15: 15	1287	977	668	364	432
	20: 20: 00	9231	8939	8537	9567	9796
	23: 23: 00	40	112	26	64	0
Total		241890	202077	205658	196128	177944

Note: The consumption of Mixture/ TSP was in year 306 MT in year 2008-09
Source: Deputy Director of Agriculture, Junagadh District, Junagadh

Table 4.6.2: NPK consumption

Year	Fertilizer consumption in MT							
	N		P		K		Consumption in kg/ha	
	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi	Kharif	Rabi
2010-11	27200	44851	20828	21573	4261	3748	52289	70172
2009-10	57071		39525		9022		105618	
2008-09	23675	35983	19984	19148	4246	3835	47905	58966
2007-08	22964	34905	15935	20510	3919	2681	42818	58096
2006-07	51844		32259		5677		89780	

Source: Deputy Director of Agriculture, Junagadh District, Junagadh

4.6.3 Plant protection chemicals

The crop diseases, insect pests and weeds are other major problems in realizing optimum yield for all the crops in the district. The improper management of these control measures often results into increased cost of cultivation without much benefit in yield. In *Bt* cotton, Jassids and other sucking pests including mealy bugs are major threat. Farmers are mainly depending on chemical control method with higher doses of chemicals. In sugarcane, the borers are the major problems. In vegetables, the farmers are depending mainly on chemical control with higher doses of chemicals. Hence, integrated measures for control of insect/pests, diseases and weeds, which required to be adopted for sustainability and profitability of crops. Amongst the plant protection chemicals, the major proportion is contributed by insecticides. Fungicide consumption is the lowest. The total pesticide consumption of the district in the year 2011-12 was 221706 litre. Table 4.6.3 shows the planning of plant protection chemical requirements.

Table 4.6.3: Planning of plant protection chemical requirements (in kg or lit.)

Taluka	Type of Pesticides	Used in 2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Bhesan	L	18062	17500	16500	16000	16000	15000
Junagadh	L	18258	18000	18000	17000	17000	16500
Kodinar	G	1200	1200	1200	1200	1200	1200
	L	12400	12000	10000	10000	8000	8000
Keshod	L	21215	21000	20000	20000	19000	19000
Malia	L	17143	17000	17000	16500	16000	16000
Manavadar	L	23325	23000	22000	22000	21000	21000
Mangrol	L	15300	14500	14000	14000	13800	13800
Mendarada	L	12398	11000	11000	10500	10500	10500
Sutrapada	G	180	180	170	170	175	170
	L	10870	10000	10000	9500	9500	9500
Talala	G	350	345	345	340	340	340
	L	8052	8000	8000	7500	7500	7500
Una	G	125	120	120	120	115	115
	L	28450	28500	28000	27500	27500	27500
Vanthali	L	15975	15600	15600	15000	15000	15000
Veraval	L	8150	8000	8000	7500	7500	7500
Visavadar	L	30170	30000	30000	29500	29500	29000
Total	**G**	**1855**	**1845**	**1835**	**1830**	**1830**	**1825**
	L	**221706**	**216600**	**211600**	**206500**	**201800**	**200800**

Note: G: Granule (in kg), L: Liquid (in litre).

Source: Estimation based on pest status, crop area and insecticide requirement per hectare.

4.7 Integrated Weed Management (IWM)

Weed is a major problem in the rainfed farming situation. If continuous rain exists for several days, the farmers are unable to remove weed with help of human labour. Further, shortage of labours and high wages of labour makes weeding costlier. It is also observed that farmers are using poor spraying techniques thereby low efficiency of applied herbicides is achieved. Hence, it is proposed to train farmers by organizing trainings on spraying techniques and integrated weed management techniques as proposed in this chapter.

4.8 Existing Institutional Mechanism

The present institutional mechanism in Government sector is centralized in nature with Top-down approach. This approach focuses on individual commodities / enterprises rather than on a holistic / integrated approach. The involvement of stakeholders is rather restricted in this ad-hoc mechanism where farmers are considered as receivers of benefits rather than as responsible persons who can influence the productions process. The public extension system is supply driven rather than demand driven.

The institutional mechanism and conceptual frame work of Government sector extension is being gradually transformed under the aegis of Agricultural Technology Management Agency

(ATMA) in the district. The impact of this transformation is yet to be seen in the actual working of different Government departments and others involved in it.

Krishi Vigyan Kendra is one of the important institution in the district, which involved in transfer of technology related to agriculture and related occupations. At present Junagadh KVK is under the NGO Ambuja cement foundation at Kodinar, there are 14 talukas in the district and one KVK is not able to cater the need of the farmers of the district. Therefore, it is necessary to establish another KVK at district head quarter.

4.8.1 Krishi Vigyan Kendra

The following area the objectives and activities of KVK:

1. Conducting the "On farm testing" for identifying technologies in terms of location specific sustainable land use systems.
2. Organize training to update the extension personnel with emerging advances in agricultural research on regular basis.
3. Organize short and long term vocational training courses in agriculture and allied vocations for the farmers and rural youth with emphasis on "Learning by doing" for higher production and generating self employment.
4. Organize the front line demonstration on various crops for generating production data and feedback information.
5. KVK should work as Knowledge power centre for the district

4.9 Special projects / programmes on going in the district

State as well as central sponsored schemes in the district are for the farmers of weaker sections i.e., small, marginal and backward farmers. The schemes are composed of component like adding of organic manures and bio-fertilizers, seed supply, pesticides and its appliances, distribution of improved implements, creation of irrigation facilities, harvesting etc,. are included to help individual farmers at subsidize rates. The efficacy of these schemes is limited to certain groups of farmers. There is lacking of benefit to the other big farmers. So, there is a need to introduce schemes for the large farmers comprehensively. The details of ongoing schemes are listed below:

Schemes:

Department of Agriculture (DAO)		District Rural Development Agency	
SN	**Name of scheme**	**SN**	**Name of scheme**
1	AGR-1 : Agri. Development	1	Swarn Jayanti Gram Swarozgar Yojana (S.G.S.Y.)
2	AGR-2 : Marginal farmers	2	Indira Awaas Yojana (IAY) (New Awaas)
3	AGR-4 : Schedule Caste farmers	3	Mahatma Gandhi National Rural Employment Guarantee Act. (M.N.R.E.G.A.)
4	AGR-5: Intensive Cotton Dev. Project (Mini mission)	4	Indira Awaas Yojana (IAY) (Up-gradation)
5	AGR-6 :ISOPOM (Oil seeds)	5	Total Sanitation Components Yojana (T.S.C.)
6	NFSM: National food security mission	6	Gokul Gram Yojana (G.G.Y.)

Department of Agriculture (DAO)		District Rural Development Agency	
SN	**Name of scheme**	**SN**	**Name of scheme**
7	AGR-50 : Tractor help scheme	7	Sakhi Mandal Yojana
8	RKVY-Farm mechanization	8	Hariyali (DWDU)
9	RKVY special scheme	9	IWDP (DWDU)
10	Farmers accidence insurance	**Department of Animal Husbandary**	
	Department of Horticulture	1	ANH-2 : Veterinary Dispensary
			Organization of animal health camps
1	HRT-1- Normal	2	ANH-5 : a. Supply of liquid nitrogen & semen
2	HRT-2- Integrated Horticulture Development Programme		b. Infertility camp
3	HRT-3 – Horticulture Mission mode – Assistant in non NHM district	3	ANH-8 : a. Health package for milk animals of SC b. Subsidy for milch unit : NABARD patterns
4	HRT-4- Schedule cast		
5	HRT – 5- Training on fruit & vegetable preservation	4	ANH-9 : Integrated fodder & gauchar devel. Scheme (SC) Distribution of fodder minikits, subsidy for chaff cutter etc.
6	HRT – 7 – Promotion of medicinal & aromatic plant and floriculture in the district		
7	HRT – 8 – Horticulture development in the state	5	ANH-12 : a. Subsidy for goat (10-1) SC b. Subsidy for goat (100-1)
	Department of Fishery	6	DSM-1 (Naw) : Cattle insurance for SC
1	Matsya vechan sahay		DSM-1 (001) : Health package (Gen.)
2	boat -Net	7	Instrument for clean milk production
3	Plastic crate Aqu.hatchery	8	Chaff Cutter Scheme
4	Reservoir stocking Training		Chaff cutter (Round wheel)
			Chaff Cutter (Manually operated)
5	Modern Eqp.sahay Cycle Net sahay		Chaff cutter (Round wheel) - SC
			Chaff Cutter (Manually operated) - SC
6	O.B.M.	9	Cattle Shed Assistant Scheme
7	Cold storage		

4.10 Constraint Analysis

The reasons for the yield gaps are identified and the requisite interventions are planned using participatory processes involving stakeholders. The major constraints leading to yield gaps are fragmented land holdings, limited irrigation facility, poor economic condition of the farmers, use of poor quality of irrigation water, use of inferior quality seeds of local varieties, lack of knowledge regarding scientific cultivation of crops. Lack of proper management of water and non adoption of water saving system like drip irrigation is not possible. Another important issue is the post harvest processing and the marketing of the produce. Availability of seeds and other inputs in time is also one of

the important constraints in the district. The poor farm mechanization even with the small farm implements is also important constraint for higher cost of cultivation. The analysis of sustainability issues and reasons for gaps in the productivity of major crops grown in the district are presented in following pages.

4.10.1 Constraints in Agricultural Progress

The major obstacles affecting the progress and productivity of the district, as identified by participatory approach are listed here under:

- Fragmented land holding marginal and small farmer are 28% and 37% respectively.
- Irrigation facilities available for 30% area, remaining is rainfed farming.
- Ground water which contribute 90% of irrigation is of poor quality (moderate to saline water).
- Inadequate availability of quality seeds in time for Groundnut.
- Cropping intensity is low (130%).
- Rainfed area is 70% and suffers with weed problem.
- Post harvest losses are 20 to 30% due to poor management and marketing.

Sustainability issues and gap analysis of productivity of different crops and resources are presented in Table 4.10.1. Bridging the gaps for realizing the vision- agriculture sector is presented in Table 4.10.2. Taluka-wise yield gap analysis of major crops of the district is given in the Tab. 4.10.3.

Table 4.10.1: Sustainability issues and gap analysis of productivity of different crops and resources

Sr. No	Factors/ Constraints leading to gap	Strategies	Approach and methodology	Performance indicators/ outputs
1.	**Groundnut**			
a.	Imbalance use of fertilizer due to lack of knowledge	To popularize the integrated nutrient management practices	Creating awareness and adoption of INM through demonstrations, training, etc.	Improvement insoil health, productivity enhancement (8 - 10%)
b.	Weed problem due to lack of knowledge about scientific weed management	To popularize Integrated weed management	Creating awareness and adoption of IWM through demonstrations, training, *shibir*, literature etc.	Reduction in weed menace, labour saving, increase in productivity (15- 20%)
c.	Non availability of improved varieties of seeds	Establishment of seed selling centres	Creating awareness for quality seeds	Timely sowing, quality seeds and better harvest (10-15%)
2	**Cotton**			
a.	Imbalance use of fertilizer due to lack of knowledge	To popularize the integrated nutrient management practices	Creating awareness and adoption of INM through demonstrations, training, *shibir*, literature etc.	Improvement in soil health, productivity enhancement (9-12%)

b.	Weed problem due to lack of knowledge about scientific weed management	To popularize Integrated weed management	Creating awareness and adoption of INM through demonstrations, training, *shibir*, literature etc.	Reduction in weed menace and increase in productivity (10-15%)
c	Insect pest problem due to lack of knowledge of insect and their management options	Integrated Pest management	Creating awareness and adoption of INM through demonstrations, training, *shibir*, literature etc.	Management of insect pests leads to increased yield (5-7%)
d	Reddening of cotton due to micronutrient deficiency	Spraying of potassium nitrate and other micronutrients	Creating awareness and adoption of INM through demonstrations, training, *shibir*, literature etc	Increase in productivity (10-15%)
e	Non availability of seed selling centre of Gujarat seed corporation	Establishment of seed selling counters by Gujarat State seed certification Agency at taluka level or strengthening co-operative structures	Creating awareness for quality seeds and establishment of seed selling counters	Timely sowing of quality seeds leads to better harvest (3-5%)
3.	**Gram**			
a.	Use of inferior quality seeds of local variety due to lack of awareness Low SRR	Increase seed replacement ratio and quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about the importance of improved variety as worthiness of variety through demonstration. Supplying seeds as mini kits. Innovate the progressive farmers for seed production at village level	Increased area under improved variety
b.	Less adoption of seed treatment due to lack of awareness and non-availability of seed treatment material leading to wilt problem	Popularize the importance of seed treatment with fungicides/ bio-pesticides for managing wilt diseases	Educating and motivating farmers about importance of seed treatment and adoption through demonstrations, training, *shibir*s and field days,	Reduction in seed borne diseases.
4.	**Sorghum**			
a.	Use of inferior quality seeds of local variety due to lack of awareness	Increase seed replacement ratio and quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about the importance of improved variety as worthiness of variety through demonstration. Supplying seeds as mini kits. Innovate the progressive farmers for seed production at village level	Increased area under improved variety

5.	**Maize**			
a.	Use of inferior quality seeds of local variety due to lack of awareness	Increase seed replacement ratio and quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about the importance of improved variety as worthiness of variety through demonstration. Supplying seeds as mini kits. Motivate the progressive farmers for seed production at village level	Increased area under improved variety
6.	**Green gram**			
	Problem of viral diseases due to use of susceptible local seeds, poor management practices	Popularize tolerant varieties of green gram and management practices	Creating awareness and increase adoption of tolerant varieties of green gram and disease management practices through demonstrations, training, *shibir*	Increased production of pulses
7.	**Sesame**			
a	Low germination due to improper placement of seed and lack of knowledge aboutproper placement of seed	To popularize scientific package of practices	Creating awareness through demonstrations, training, *shibir*, literature etc.	Increased yield (5-8%)
b	Low adoption of improved package practices due to lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices through demonstrations, training, field days, *shibir*, literature etc	Increase in the production (10-12%)
c	Insect pest and disease problem due to lack of knowledge of insect pest and diseases and their management options	Integrated Pest and disease management	Creating awareness and adoption of IPM through demonstrations, training, *shibir*, literature etc.	Management of insect pests and diseases leads to increased yield (20-25%)
d	Maintain plant population and land configuration High seed rate and sowing in flat land	Thinning and sowing on ridge and furrow	Creating awareness and adoption thinning and land configuration through demonstrations, training, *shibir*, literature etc	Increase in yield (2-5%)
8.	**Bajra**			
a	Low adoption of improved package of practices due to lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices through demonstrations, training, field days, *shibir*, literature etc	Increase in the production

b	Insect pest and disease problem due to lack of knowledge of insect pest and diseases and their management options	Integrated Pest and disease management	Creating awareness and adoption of IPM through demonstrations, training, *shibir*, literature etc.	Management of insect pests and diseases leads to increased yield
c	Maintain plant population and land configuration High seed rate and sowing in flat land	Thinning and sowing on ridge and furrow	Creating awareness and adoption thinning and land configuration through demonstrations, training, *shibir*, literature	Increase in yield
9.	**Wheat**			
a	Use of inferior quality seeds due to Lack of awareness	Increase seed replacement ratio & quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about the importance of improved variety through demonstration. Innovate the progressive farmers for seed production at village level	Increased area under improved variety (5%)
b	Limited irrigation facility due to lack of knowledge of critical stages	Application of water at critical stages	Create awareness about critical stages through demonstration	Increase in yield (10-12%)
c	Weed problem due to lack of knowledge about scientific weed management	To popularize Integrated weed management	Creating awareness through demonstrations, training, *shibir*, literature etc.	Reduction in weed menace and increase in productivity (5-7%)

Table 4.10.2: Bridging the gaps for realizing the Vision

No	Program	Activities
1	**Thrust Areas/ Issues: Increase availability of quality seeds /Seed Production**	
	Seed planning and production	Identification of potential areas, Farmers led Participatory seed production of improved varieties of crops
		Motivating farmers to produce the seed of best Varieties. through Seed village programmes, capacity building of farmers and extension functionaries and exposure visits
	Seed distribution and seed storage	Establishment of seed selling units for timely distribution
		Construction of godowns at village and taluka level
2.	**Increase in seed replacement rate**	
	Production of quality seeds as per area sown	Create awareness about the production of quality seeds of improved varieties
		Strengthen the linkage between supply agencies and the farmers
3.	**Soil health management**	
	Soil testing	Establishment of soil and water testing laboratory at taluka level and mobile soil testing laboratory
		Create awareness about the importance of soil testing
	Bio fertilizer	Popularize the use of bio-fertilizer through capacity building and demonstrations
	Green manuring	Popularize the green manuring practices through capacity building and demonstrations
	Enrichment of FYM	Popularize the methods of preparation of good quality FYM and vermi-compost
	Integrated Nutrient Management	Educating farmers about the use of balanced fertilizer
	Micronutrient	Identification of micronutrient deficient areas and Educating farmers about their importance
	Soil erosion	Land leveling and bund formation Growing cover crops and vertiver grasses
	Recycling of crop residues	Converting of crop residue in small pieces through shredders and using it for composting
	Crop-rotation	Suggesting suitable crop rotation for improving soil health
	IWM	Educate the farmers about integrated weed management practices
4.	**Water management**	
	Water harvesting	Establishment of rain water harvesting units and deepening of well and its recharging Khet talavadi/ village pond
	Water use efficiency	Popularize the micro irrigation systems, scheduling of irrigation and capacity building
		Introduction of the participatory irrigation management approach
		Moisture conservations through organic and plastic mulch

5.	**Plant health management**	
	Plant health clinic	Establishment of plant health clinic at KVK and mobile health clinic at taluka level
	IPM/IDM	Educating the farmers about various insect pest and diseases of crops and their IPM/IDM through demonstrations and trainings
	Proper use of plant protection equipments	Educate the farmers about proper use of plant protection equipments, provide necessary inputs to the farmers
6.	**Farm mechanization**	
	Improved hand tools and small implements	Survey for drudgery reduction Educating farmers for use of machines/ implements.
	Hand rotary weeder, Power tiller Shredder Farm tractors, Mechanical harvesters, Oil engines , pumps, submersibles, Laser leveler, Bullock cart	Educate the farmers and providing units on co-operative basis and educate farmers for custom hiring
7.	**Value addition**	
	Processing Units, establishment of mini Dal mill/ oil extractor /cotton ginning/ grading and packaging units	Create awareness for value addition and educate farmers, provide units on co-operative basis, marketing awareness
8.	**Marketing**	
	Strengthening APMC and construction of ware houses at cluster and taluka levels	Establishment of ware house at cluster and taluka level
	Market linkage	Strengthening market linkage through AGMARK net
	Collection van	Units and monitoring

Table 4.10.3: Yield gap analysis of Junagadh district

Crop	Three Year (2008-11) Average Yield in kg/ha		Yield gap in kg/ha
	District	State	
Groundnut	1677	1414	263
Wheat	3606	2799	807
Cotton (Lint)	760	554	206
Sesame	490	387	103
Gram	1602	1038	564
Bajra	2069	1464	605
Maize	1927	1416	511
Sorghum	1798	1119	679
Sugarcane	7003	7076	-73
Cumin	624	556	68
Garlic	6029	5977	52

Source: District-wise Area, Production and Yield of Important Food & Non-food Crops in Gujarat State, Year: 2008-09, 2009-10 and 2010-11, Directorate of Agriculture, Gujarat State, Krishi Bhavan,Sector-10/A, Gandhinagar

4.10. 2 Area, Production &Productivity and Crop Diversification Plan

The Area, production and productivity of main crops of the district with the projected planning for 12th five year planning, Crop diversification plan for next 5 years and proposed area under crop production tools are presented in Tab. 4.10.4, Tab. 4.10.5 and Tab. 4.10.6 respectively. During year 2010-11 major area was under kharif groundnut as 402100 ha followed by cotton as 41,100 ha. In rabi season major area was under wheat crop (2,10,000 ha) followed by pulses as 10,000 ha. Crop Diversification Plan was proposed for Pulse, Oilseeds, Fruits and Vegetables. Different crop production tools like improved variety, Seed treatment, Biofertiliser, IPM, INM, Gypsum, etc were proposed for pulses, oilseeds for Higher seed production and to increase the awareness of farmers.

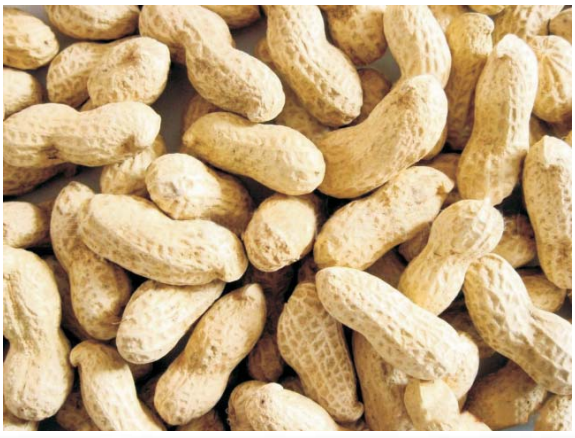


Table 4.10.4: Projection of Area, Production and Yield of Agricultural Crops in Junagadh district

(A:Area in'000 ha. , P: Production in '000 tonnes, Y: Yield in kg/ha)

Sr. No.	Item	2012-13			2013-14			2014-15			2015-16			2016-17		
		A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CEREALS																
1	Wheat	170	612	3600	175	662	3789	179	716	3988	184	774	4198	189	837	4419
2	Jowar	4	7	1798	4	8	1923	4	9	2057	4	9	2200	4	10	2353
3	Bajra	17	35	2069	17	38	2203	18	41	2346	18	45	2499	18	49	2661
4	Maize	8	11	1416	8	12	1486	9	13	1560	9	14	1637	9	16	1718
	Total Cereals	**199**	**666**	**3345**	**204**	**720**	**3524**	**210**	**779**	**3713**	**215**	**843**	**3912**	**221**	**912**	**4122**
PULSES																
5	Moong	3	1	475	3	2	511	3	2	550	3	2	592	3	2	637
6	Black Gram	6	4	600	6	4	643	6	4	689	6	5	738	6	5	790
7	Gram	9	14	1600	9	16	1708	9	17	1823	10	19	1946	10	20	2078
	Total Pulses	**18**	**19**	**1079**	**18**	**21**	**1155**	**19**	**23**	**1237**	**19**	**25**	**1324**	**19**	**27**	**1417**
	Total Food Grain	**217**	**685**	**3157**	**223**	**741**	**3330**	**228**	**802**	**3512**	**234**	**868**	**3703**	**240**	**939**	**3906**
OILSEED																
8	Groundnut	425	712	1675	432	771	1783	440	835	1898	448	905	2021	456	980	2151
9	Sesame	40	20	490	41	22	529	42	24	572	43	27	618	44	30	668
	Total Oilseeds	**465**	**731**	**1573**	**474**	**793**	**1675**	**482**	**860**	**1782**	**491**	**932**	**1897**	**500**	**1010**	**2020**
COMMERCIAL CROP																
10	Cotton	50	224	760	51	233	782	51	243	805	52	253	828	53	264	852
11	Sugarcane	10	70	7000	10	74	7323	10	78	7660	10	83	8013	10	87	8383
12	Cumin	11	7	624	11	7	653	11	8	683	11	8	714	11	9	747
13	Garlic	8	48	6030	8	51	6227	8	54	6430	9	57	6639	9	60	6856
14	Onion	5	137	27395	5	142	27929	5	147	28474	5	152	29029	5	157	29595
Total of Cropped Area		**766**	**1902**	**2483**	**781**	**2041**	**2613**	**797**	**2191**	**2749**	**813**	**2353**	**2894**	**829**	**2526**	**3046**

Table 4.10.5: Crop Diversification Plan in next 5 years

Existing cropping pattern		Crop Diversification proposed (Area in ha)									
Crop group	Area	2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)	
		Area under crop	Change in area with reference to 11-12 (+/-)	Area under crop	Change in area with reference to 11-12 (+/-)	Area under crop	Change in area with reference to 11-12 (+/-)	Area under crop	Change in area with reference to 11-12 (+/-)	Area under crop	Change in area with reference to 11-12 (+/-)
Pulse	26200	25000	-1200	25500	-700	27000	800	27200	1000	26500	300
Oilseeds	522400	523000	600	523500	1100	524000	1600	524200	1800	524500	2300
Fruits	39060	39560	500	40110	550	40710	600	41310	600	41810	500
Vegetables*	12200	12000	-200	11500	-700	15800	-400	12500	300	12900	700

*Onion & Garlic

Table 4.10.6: Proposed area under crop production tools (ha)

crop /Area under crop (ha)	Type of crop production tool	Area under crop production tools (ha) (2011-12)	Proposed area under crop production tools (ha)				
			2012-13	2013-14	2014-15	2015-16	2016-17
Pulse/ 26200	Imp. Var	24000	24700	25100	25400	25900	26000
	Seed treatment	13500	14300	14900	15400	16200	18400
	Biofertiliser	8000	8800	10000	10700	12300	14500
	IPM	7300	8400	9100	10400	12000	13500
	INM	11200	12300	13000	13900	14400	15900
Oilseeds/ 522400	Gypsum	14000	17000	24000	29000	32000	35000
	Biofertiliser	35000	41000	60000	75000	88000	100000
	INM	320000	370000	395000	415000	430000	450000
	IPM	327000	350000	380000	395000	410000	430000

Imp. Var.= Sort supply of Improved seeds.
Seed Treat.= Lack of awareness.
Bio. Fer.= Lack of awareness.
IPM+ Lack of awareness.
INM= Less availability of manures.
Gypsum= Lack of awareness and short supply of gypsum
Imp. Var.= Higher seed production in vast area.
Seed treat.= To increase the awareness of farmers through State level and university.
Bio Fer.= To increase the awareness of farmers through State level and university.

4.11 Activities for Development of Agriculture Sector

Under the Development of Agriculture Sector different activities pertaining to training of agriculture staff, farmers, demonstrations on different latest technologies like IPM, IWM, INM, etc are given with financial planning for XII five year plan. Capacity Building of Agriculture Staff (at District level) was proposed with financial requirement of Rs. 5.60 lakh per year under recurring fund and Rs. 21.0 lakh under non-recurring fund as presented in Table 4.11.1. Farmers field School Projection in next 5 years with 21 numbers of FFS and 57 villages to be cover in one year (Table 4.11.2).


Grain


Seed Treatment Drum


Treated Seed

Table 4.11.1: Training Proposal for Capacity Building of Agriculture Staff (at District level)

(Phy-No. of trainees, Fin. – Rs in Lakh)

Taluka	Year-wise staff to be trained (No)					No. of training faculty required	Recurring funds per year	Non-recurring funds
	2012-13	2013-14	2014-15	2015-16	2016-17			
Bhesan	50	50	50	50	50	1	0.40	1.5
Junagadh	50	50	50	50	50	1	0.40	1.5
Keshod	50	50	50	50	50	1	0.40	1.5
Kodinar	50	50	50	50	50	1	0.40	1.5
Malia	50	50	50	50	50	1	0.40	1.5
Manavadar	50	50	50	50	50	1	0.40	1.5
Mangrol	50	50	50	50	50	1	0.40	1.5
Mendarda	50	50	50	50	50	1	0.40	1.5
Sutrapada	50	50	50	50	50	1	0.40	1.5
Talala,	50	50	50	50	50	1	0.40	1.5
Una	50	50	50	50	50	1	0.40	1.5
Vanthli	50	50	50	50	50	1	0.40	1.5
Veraval	50	50	50	50	50	1	0.40	1.5
Visavadar	50	50	50	50	50	1	0.40	1.5
Total	**700**	**700**	**700**	**700**	**700**	**14**	**5.60**	**21.0**

Financial requirement:

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Training Proposal for Capacity Building of Agriculture Staff	**26.60**	**5.60**	**5.60**	**5.60**	**5.60**	**49.00**

Note: Name of Department : Agriculture, Cooperative & NGOs, PRI staff & others,
One FTC and One FIAC/ATMA available in Junagadh and one KVK in Kodinar.
Training equipments: Computer, LCD and audio visual accessories.
One training hall is proposed in 12 talukas except Junagadh and Kodinar

Table 4.11.2: Farmers Field School (FFS) projection in next 5 years

Taluka	2012-13		2013-14		2014-15		2015-16		2016-17	
	No. of FFS	No. of villages to be covered	No. of FFS	No. of villages to be covered	No. of FFS	No. of villages to be covered	No. of FFS	No. of villages to be covered	No. of FFS	No. of villages to be covered
Bhesan	1	3	1	3	1	3	1	3	1	3
Junagadh	2	5	2	5	2	5	2	5	2	5
Keshod	1	3	1	3	1	3	1	3	1	3
Kodinar	2	5	2	5	2	5	2	5	2	5
Malia	1	3	1	3	1	3	1	3	1	3
Manavadar	1	3	1	3	1	3	1	3	1	3
Mangrol	1	3	1	3	1	3	1	3	1	3
Mendarda	2	6	2	6	2	6	2	6	2	6
Sutrapada	1	2	1	2	1	2	1	2	1	2
Talala	2	2	2	2	2	2	2	2	2	2
Una	3	10	3	10	3	10	3	10	3	10
Vanthli	1	3	1	3	1	3	1	3	1	3
Veraval	2	5	2	5	2	5	2	5	2	5
Visavadar	1	4	1	4	1	4	1	4	1	4
Total	**21**	**57**	**21**	**57**	**21**	**57**	**21**	**57**	**21**	**57**

Training Proposal for Capacity Building of Farmers at district level on different technologies is given in Tab. 4.11.3 with total financial outlay of Rs. 221.25 lakh under different technologies like seed production, seed treatment, IPM, IWM, etc.


Shivratri Festival

Table 4.11.3: Training Proposal for Capacity Building of Farmers at district level on different technologies.

(Phy- No. , Fin. – Rs in lakhs)

Sr No	Name of Technology	Year-wise number of farmers to be trained											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin.
1	Seed production/ seed replacement	1400	4	1400	4	1400	4	1400	4	1400	4	7000	21
2	Seed treatment	700	2	700	2	700	2	700	2	700	2	3500	10.5
3	Soil health management (soil testing/ bio-fertilizers/ green manuring/ micronutrients	4000	12	4000	12	4000	12	4000	12	4000	12	20000	60
4	NRM	700	2	700	2	700	2	700	2	700	2	3500	10.5
5	Farm waste management	1400	4	1400	4	1400	4	1400	4	1400	4	7000	21
6	Organic farming	600	2	600	2	600	2	600	2	600	2	3000	9
7	Vermi-composting	700	2	700	2	700	2	700	2	700	2	3500	10.5
8	IPM	2000	6	2000	6	2000	6	2000	6	2000	6	10000	30
9	IWM	1500	4.5	1500	4.5	1500	4.5	1500	4.5	1500	4.5	7500	22.5
10	Farm mechanization	1000	3	1000	3	1000	3	1000	3	1000	3	5000	15
11	Value addition Processing/ Dal mill	500	1.5	500	1.5	500	1.5	500	1.5	500	1.5	2500	7.5
12	Marketing/ Co-operative societies	250	0.75	250	0.75	250	0.75	250	0.75	250	0.75	1250	3.75
	Total	**14750**	**44.25**	**14750**	**44.25**	**14750**	**44.25**	**14750**	**44.25**	**14750**	**44.25**	**73750**	**221.25**

Note: FTC, SSK-JAU, KVK, AKRSP present in the District.

Varietal Demonstrations in next five years are presented in Tab. 4.11. 4. Total 12515 demonstration of different crops in each taluka with 0.4 hectare per demonstration is proposed with financial requirement of Rs. 502.00 Lakh. The seed quantity requirement of different crops for next five year is presented in Table 4.11.5.

Table : 4.11.4: Varietal Demonstration in Next Five Years

(Phy-Area covered in ha, Fin – Rs. in Lakh)

Sr.No	Name of Crop	Average No Of Demon-stration	Number of demonstrations and financial requirements											
			2012-13		2013-14		2014-15		2015-16		2016-17		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	Groundnut	350	375	13	400	16	400	16	400	16	410	18	1985	80
2	Cotton	280	305	11	330	13	330	13	330	13	340	15	1635	66
3	Bajra	200	225	8	250	10	250	10	250	10	260	12	1235	50
4	Pulses	100	125	4	150	6	150	6	150	6	160	7	735	30
5	Wheat	300	325	11	350	14	350	14	350	14	360	16	1735	70
6	Gram	150	175	6	200	8	200	8	200	8	210	9	985	40
7	Sesamum	250	275	10	300	12	300	12	300	12	310	14	1485	60
8	Castor	250	275	10	300	12	300	12	300	12	310	14	1485	60
9	Cumin	200	225	8	250	10	250	10	250	10	260	12	1235	50
	Total	**-**	**2305**	**81**	**2530**	**101**	**2530**	**101**	**2530**	**101**	**2620**	**118**	**12515**	**502**

Note: Area of Demonstration is 0.40 ha

Table : 4.11.5: Seed quantity requirement and SRR

Sr. No.	Crop	Area, ('000 ha)	Seed rate kg/ha	Total Seed quantity, tonne	SRR	Seed quantity Required, tonne				
						2012-13	2013-14	2014-15	2015-16	2016-17
1	Wheat	170	120	20400	35	7140	7752	8160	8568	9180
2	Jowar	4	80	320	50	160	176	192	208	224
3	Bajra	17	3	51	100	51	51	51	51	51
8	Groundnut	425	120	51000	15	7650	9180	10200	11220	12750
9	Sesame	40	3	120	50	60	66	72	78	84
10	Cotton	50	2.5	125	100	125	125	125	125	125
12	Cumin	11	15	165	35	57.75	66	74.25	82.5	99
13	Garlic	8	550	4400	35	1540	1760	1980	2200	2640
14	Onion	5	10	50	20	10	12.5	15	17.5	20

The demonstrations on plant health management like seed treatment with bio-pest is proposed to create the awareness among the farmers are presented in Tab.4.11.6. The total number of demonstrations in all taluka of the district is proposed as 4500 with total financial requirement of Rs. 202.5.00 for the major corps of the district.

Table 4.11.6: Demonstrations on Plant health management to be conducted including seed treatment with bio-pest

(Phy – Number of demonstrations, Fin – Rs. in Lakh)

Name of Crop	Average Number of Demonstrations	Number of demonstrations and financial requirements											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Bajra	50	50	2	50	2.1	50	2.25	50	2.4	50	2.5	250	11.25
Wheat	200	200	8	200	8.4	200	9	200	9.6	200	10	1000	45
Gram	50	50	2	50	2.1	50	2.25	50	2.4	50	2.5	250	11.25
Groundnut	250	250	10	250	10.5	250	11.25	250	12	250	12.5	1250	56.25
Sesamum	50	50	2	50	2.1	50	2.25	50	2.4	50	2.5	250	11.25
Castor	100	100	4	100	4.2	100	4.5	100	4.8	100	5	500	22.5
Cotton	150	150	6	150	6.3	150	6.75	150	7.2	150	7.5	750	33.75
Cumin	50	50	2	50	2.1	50	2.25	50	2.4	50	2.5	250	11.25
Total	**900**	**900**	**36**	**900**	**37.8**	**900**	**40.5**	**900**	**43.2**	**900**	**45**	**4500**	**202.5**

Note: Area of demonstration is 0.4 ha.

The demonstrations on soil health management like use of bio fertilizers and bio compost is proposed to create the awareness among the farmers are presented in Tab. 4.11.7. The total number of demonstrations in all taluka of the district is proposed as 3625 with total financial requirement of Rs. 163.10 for the major corps of the district.

Table 4.11.7: Demonstrations on Soil health management to be conducted including use of bio fertilizers and bio compost.

(Phy – Number of demonstrations, Fin – Rs. in Lakh)

Name of Crop	Average Number of Demonstrations	Number of demonstrations and financial requirements											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Wheat	100	100	4	100	4.2	100	4.5	100	4.8	100	5.0	500	22.5
Gram	50	50	2	50	2.1	50	2.3	50	2.4	50	2.5	250	11.3
Groundnut	250	250	10	250	10.5	250	11.3	250	12	250	12.5	1250	56.3
Castor	100	100	4	100	4.2	100	4.5	100	4.8	100	5.0	500	22.5
Cotton	150	150	6	150	6.3	150	6.8	150	7.2	150	7.5	750	33.8
Cumin	50	50	2	50	2.1	50	2.3	50	2.4	50	2.5	250	11.3
Crop diversification	25	25	1	25	1.05	25	1.1	25	1.2	25	1.3	125	5.6
Total	**725**	**725**	**29**	**725**	**30.5**	**725**	**32.6**	**725**	**34.8**	**725**	**36.2**	**3625**	**163.1**

Note: Area of demonstration is 0.4 ha.

The demonstrations on IWM to be conducted during XII five year plan are presented in Tab. 4.11.8. The total number of proposed demonstrations are 2625 with the total financial requirement of Rs. 118.20 for different crops with 0.4 ha demonstration area.

Table 4.11.8: Demonstrations on IWM to be conducted during plan period

(Phy – Number of demonstrations, Fin – Rs. in Lakh)

Name of Crop	Average Number of Demonstrations	Number of demonstrations and financial requirements											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Wheat	100	100	4.0	100	4.2	100	4.5	100	4.8	100	5.0	500	22.5
Cotton	100	100	4.0	100	4.2	100	4.5	100	4.8	100	5.0	500	22.5
Groundnut	200	200	8.0	200	8.4	200	9.0	200	9.6	200	10.0	1000	45.0
Castor	50	50	2.0	50	2.1	50	2.3	50	2.4	50	2.5	250	11.3
Cumin	50	50	2.0	50	2.1	50	2.3	50	2.4	50	2.5	250	11.3
Gram	25	25	1.0	25	1.1	25	1.1	25	1.2	25	1.3	125	5.6
Total		**525.**	**21**	**525**	**22.1**	**525.**	**23.6**	**525.0**	**25.2**	**525.0**	**26.3**	**2625.0**	**118.2**

Note: Area of demonstration is 0.4 ha.

The taluka wise production of organic input and formation of organic groups (Table 4.11.9) and Additional area to be brought under organic farming (Table 4.11.10) for the XII five year plan is proposed to create awareness to reduce the chemical requirement. The vermi composting and other activities are proposed with the financial outlay of Rs. 19 Lakh. The additional area of 244 ha is proposed under organic farming in next five years.

Table 4.11.9: Production of organic input during plan period.

Taluka	Production of organic inputs (q)				Other activities (No.)			
	Bio fertiliser	Vermi-compost	Biodynamic compost/ Trichodarma	Bio-pesticide	Organic farming groups	Organic certification group	District level activities	Amount in Lakh Rs.
Bhesan	0	58	0	2	1	0	1	1.0
Junagadh	250	49	1800	500	1	1	1	6.0
Keshod	0	19	0	0	1	0	1	1.0
Kodinar	0	28	0	0	1	0	1	1.0
Malia	0	21	0	0	1	0	1	1.0
Manavadar	0	14	0	0	1	0	1	1.0
Mangrol	0	19	0	0	1	0	1	1.0
Mendarda	0	26	0	0	1	0	1	1.0
Sutrapada	0	16	0	0	1	0	1	1.0
Talala	0	38	0	0	1	0	1	1.0
Una	0	23	0	0	1	0	1	1.0
Vanthli	0	25	0	0	1	0	1	1.0
Veraval	0	17	0	0	1	0	1	1.0
Visavadar	0	57	0	0	1	0	1	1.0
Total	**250**	**410**	**1800**	**500**	**14**	**1**	**14**	**19**

Table 4.11.10: Additional area to be brought under organic farming in next five years

Sr. No.	Taluka	Year-wise area to be brought under organic farming in next 5 years (ha)					
		2012-13	2013-14	2014-15	2015-16	2016-17	Total
1	Bhesan	1	3	5	3	6	18
2	Junagadh	3	5	4	3	6	21
3	Kodinar	1	4	5	7	4	21
4	Keshod	2	4	6	5	7	24
5	Malia	1	2	2	4	4	13
6	Manavadar	1	1	2	3	5	12
7	Mangrol	2	4	5	5	4	20
8	Mendarda	2	3	5	4	7	21
9	Sutrapada	1	1	2	2	4	10
10	Talala,	2	2	4	4	3	15
11	Una	2	5	3	5	3	18
12	Vanthli,	1	3	5	4	5	18
13	Veraval,	1	3	4	4	4	16
14	Visavadar	2	2	3	5	5	17
	Total	22	42	55	58	67	244

IPM Demonstration and INM Demonstrations in next 5 years are presented in Table 4.11.11 and Tab. 4.11.12 respectively. The total of demonstrations on IPM as 8177 and on INM as 70 with the financial requirement of Rs. 108.23 Lakh and Rs. 50.5 Lakh respectively.

Table 4.11.11: IPM Demonstration in next 5 years **(Phy-ha, Fin- Lakh Rs)**

Crop	IPM Demo. in 2011-12		IPM Demonstration projections(financial target in lakh rupees)											
	Demo. conducted	Area covered (Rs. in Lakh)	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Cotton	470	470 (14.27)	480	14.55	490	14.84	500	15.13	510	15.6	520	15.9	2500	76.02
Other crops including groundnut	1071	1071 (6.08)	1092	6.2	1113	6.32	1135	6.44	1157	6.56	1180	6.69	5677	32.21
Total	**1541**		**1572**	**20.75**	**1603**	**21.16**	**1635**	**21.57**	**1667**	**22.16**	**1700**	**22.59**	**8177**	**108.23**

Note: Average area per demonstration is 1 ha.

Cotton

Table 4.11.12: INM Demonstrations in next 5 years

(Phy-ha, Fin- Lakh Rs)

crop	INM Demonstration projections											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Cotton	14	3.5	14	3.5	14	3.5	14	3.5	14	3.5	70	17.5
Groundnut	14	2.8	14	2.8	14	2.8	14	2.8	14	2.8	70	14
Sugarcane	2	1	2	1	2	1	2	1	2	1	10	5
Wheat	14	2.8	14	2.8	14	2.8	14	2.8	14	2.8	70	14
Total	44	10.1	44	10.1	44	10.1	44	10.1	44	10.1	220	50.5

Note: Average area per demonstration is 1 ha.

One demonstration of cotton, groundnut and wheat in each talukas. The demonstration of Sugarcane is only in Kodinar and Talala taluka.

Seed planning/ Seed village programme (Seed production enhancement) and the seed storage at University /Panchayat level and taluka level are proposed as per Table 4.11.13 Table 4.11.14. Total number of villages for the seed production enhancement in different crops is suggested as 26 with the total financial requirement of Rs. 72.60 Lakh which will cover 1,300 ha area. The seed storage at university farms, Panchayat level and Taluka level are proposed as 470 with total requirement of Rs. 1565.00 Lakh.

Table 4.11.13 : Seed planning/ Seed village programme (Seed production enhancement)

(Phy – Area in ha, Fin – Rs. in Lakh)

Name of Crop	No of villages /year in taluka	Seed rate (kg/ha)	Area under seed production in ha. and financial requirements											
			2012-13		2013-14		2014-15		2015-16		2016-17		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Wheat	5	120	50	2.5	50	2.5	50	2.5	50	2.8	50	2.8	250	13
Gram	3	60	30	1.5	30	1.5	30	1.5	30	1.7	30	1.7	150	7.8
Groundnut	10	120	100	5.0	100	5.0	100	5.0	100	5.5	100	5.5	500	26
Pulses	1	20	10	0.5	10	0.5	10	0.5	10	0.6	10	0.6	50	2.6
Bajra	2	3.75	20	1.0	20	1.0	20	1.0	20	1.1	20	1.1	100	5.2
Cumin	2	15	20	1.0	20	1.0	20	1.0	20	1.1	20	1.1	100	5.2
Sesame	3	2.5	30	1.5	30	1.5	30	1.5	30	1.7	30	1.7	150	7.8
Monitoring	-		--	1	--	1	--	1	--	1.0	--	1.0	--	5
Total	26		260	14	260	14	260	14	260	15.3	260	15.3	1300	72.6

Table 4.11.14: Seed storage at University /Panchayat level and taluka level

(Phy – No. of unit Fin – Rs. in Lakh)

Particulars	Number of storage godowns and financial requirements (Rs. in lakhs)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Modernization of University farms	1	25	1	10	1	10	1	10	1	10	5	65
Panchayat level	90	270	90	270	90	270	90	270	90	270	450	1350
Taluka level	3	30	3	30	3	30	3	30	3	30	15	150
Total	94	325	94	310	94	310	94	310	94	310	470	1565

The soil and water testing laboratory and mobile plant health clinic and strengthening of existing university / government laboratory are proposed in Table 4.11.15 with the total financial requirement of Rs. 875.00 Lakh. The taluka wise soil testing programme to test the general soil samples (5,35,400 samples), micro nutrient soil samples (4,575 samples) and water samples (9,150 samples) are planned with Rs. 871.70 Lakh (Table 4.11.16).

Table 4.11.15: Establishment of soil and water testing laboratory and mobile plant health clinic

(Phy – No. of units, Fin – Rs. in Lakh)

Particulars	Number of soil and water testing laboratory and mobile plant health clinic and financial requirements (Rs. in lakhs)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Soil and water testing lab	2	50	2	50	2	50	2	50	2	50	10	250
Strengthening & up gradation of existing univ./ govt. lab	1	50	1	50	1	50	1	50	1	50	5	250
Mobile soil testing and plant health clinic van	3	75	3	75	3	75	3	75	3	75	15	375
Total	6	175	6	175	6	175	6	175	6	175	30	875

Soil and Water Testing Laboratory

Table 4.11.16: Planning for soil testing programme (2012-13 to 2016-17)

Sr. No.	Taluka	Item	No. of villages	Total sample to be analysed	Amount Rs. In lakh for 5 years
1	Bhesan	General soil sample	44	35000	52.5
		Micronutrient soil sample		220	2.2
		Water sample		440	1.1
2	Junagadh	General soil sample	69	35000	52.5
		Micronutrient soil sample		345	3.45
		Water sample		690	1.725
3	Keshod	General soil sample	53	44000	66
		Micronutrient soil sample		265	2.65
		Water sample		530	1.325
4	Kodinar	General soil sample	63	40000	60
		Micronutrient soil sample		315	3.15
		Water sample		630	1.575
5	Malia	General soil sample	63	37000	55.5
		Micronutrient soil sample		315	3.15
		Water sample		630	1.575
6	Manavadar	General soil sample	55	48000	72
		Micronutrient soil sample		275	2.75
		Water sample		550	1.375
7	Mangrol	General soil sample	63	44000	66
		Micronutrient soil sample		315	3.15
		Water sample		630	1.575
8	Mendarada	General soil sample	45	24000	36
		Micronutrient soil sample		225	2.25
		Water sample		450	1.125
9	Sutrapada	General soil sample	46	21400	32.1
		Micronutrient soil sample		230	2.3
		Water sample		460	1.15

Cont.

Sr. No.	Taluka	Item	No. of villages	Total sample to be analysed	Amount Rs. In lakh for 5 years
10	Talala	General soil sample	68	30000	45
		Micronutrient soil sample		340	3.4
		Water sample		680	1.7
11	Una	General soil sample	159	66000	99
		Micronutrient soil sample		795	7.95
		Water sample		1590	3.975
12	Vanthali	General soil sample	46	31000	46.5
		Micronutrient soil sample		230	2.3
		Water sample		460	1.15
13	Veraval	General soil sample	55	25000	37.5
		Micronutrient soil sample		275	2.75
		Water sample		550	1.375
14	Visavadar	General soil sample	86	55000	82.5
		Micronutrient soil sample		430	4.3
		Water sample		860	2.15
	Total	General soil sample	915	535400	803.1
		Micronutrient soil sample		4575	45.75
		Water sample		9150	22.875
		Grand Total of all samples		**549125**	**871.7**

	Year wise soil testing programme (Rs. in lakhs)					
	2012-13	2013-14	2014-15	2015-16	2016-17	**Total**
Amount Rs. in lakh	**174.34**	**174.34**	**174.34**	**174.34**	**174.34**	**871.7**

The estimated coastal saline area 40314.84 ha proposed for the reclamation in different coastal taluka of the district. The total financial requirement for the reclamation is to be estimated as Rs. 2015.74 Lakh.

Table 4.11.17: Reclamation of coastal saline soils

Taluka	Geographical Area (ha.)	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Estimated Saline area, ha	(Rs in lakh)	Estimated Saline area, ha	(Rs in lakh)	Estimated Saline area, ha	(Rs in lakh)	Estimated Saline area, ha	(Rs in lakh)	Estimated Saline area, ha	(Rs in lakh)	Estimated Saline area, ha	Rs in lakh
Kodinar	53681	1288.34	64.42	1288.34	64.42	1288.34	64.42	1288.34	64.42	1288.34	64.42	6441.72	322.09
Mangrol (Ghed region)	55661	1335.86	66.79	1335.86	66.79	1335.86	66.79	1335.86	66.79	1335.86	66.79	6679.32	333.97
Sutrapada	32671	784.10	39.21	784.10	39.21	784.10	39.21	784.10	39.21	784.10	39.21	3920.52	196.03
Una	157847	3788.33	189.42	3788.33	189.42	3788.33	189.42	3788.33	189.42	3788.33	189.42	18941.64	947.08
Veraval	36097	866.33	43.32	866.33	43.32	866.33	43.32	866.33	43.32	866.33	43.32	4331.64	216.58
Total	**335957**	**8062.97**	**403.15**	**8062.97**	**403.15**	**8062.97**	**403.15**	**8062.97**	**403.15**	**8062.97**	**403.15**	**40314.84**	**2015.75**

Coconut

Agri Business service centres are 66, seed/fertiliser supply centres are 181 and the Veterinary Medicine (Animal Dispensary) centres are 198 in the district. The taluka wise details of these are presented in Tab. 4.11.18.

Table 4.11.18: Agro input dealer Service Centre in the district (Agriculture and Allied)

S.No	Taluka	No. of service centres (Agri Business)	Classification	
			Seed/fertiliser supply	Vety. Medicine (Animal Dispensary)
1	Bhesan	2	17	22
2	Junagadh	3	0	0
3	Keshod	3	14	22
4	Kodinar	8	25	17
5	Malia	5	16	27
6	Manavadar	5	0	0
7	Mangrol	6	0	0
8	Mendarda	2	4	14
9	Sutrapada	4	0	0
10	Talala	3	0	0
11	Una	11	47	39
12	Vanthli	3	16	10
13	Veraval	7	19	19
14	Visavadar	4	23	28
	Total	**66**	**181**	**198**

To establish the better marketing facilities, the strengthening of APMC and the creation of new APMC is necessary in the district. Therefore the planning and the financial requirement are presented in Tab. 4.11.19.

Table 4.11.19: Strengthening of APMC

(Phy – No. of units, Fin – Rs. in Lakh)

Particulars	Numbers and financial requirements (Rs. in lakhs)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Strengthening of APMC	2	20	2	20	2	20	2	20	-	-	8	80
New APMC	1	50	1	50	1	50	1	50	1	50	5	250
Total	3	70	3	70	3	70	3	70	1	50	13	330

The details of credit institutions in the district, Agricultural Insurance Status, Crop loan disbursement (Short term credit) and the Loan Disbursement for investment credit during XII Five year plan are presented in Tab. 4.11.20, Tab. 4.11.21, Tab. 4.11.22 and Tab. 4.11.23, respectively.

Table 4.11.20: Details of credit institutions in the district

Sr. No	Taluka	Number of institutions				
		Commercial Bank	RRBs	Cooperatives	Others (Cooperative/ Land dev. Bank)	Total
1	Bhesan	3	1	60	4	68
2	Junagadh	7		405	20	432
3	Keshod	7	1	186	4	198
4	Kodinar	4	1	165	18	188
5	Malia	4	2	136	3	145
6	Manavadar	0	0	146	0	146
7	Mangrol	0	0	177	0	177
8	Mendarda	3	1	59	6	69
9	Sutrapada	1	0	187	3	191
10	Talala,	1	0	122	12	135
11	Una	9	5	169	4	187
12	Vanthli,	3	2	80	2	87
13	Veraval,	1	2	356	12	371
14	Visavadar	5		75	1	81
	Total	48	15	2323	89	2475

Source: Taluka Ankdakiy Ruprekha, Junagadh district.

Table 4.11.21: Agricultural Insurance Status **(Phy- area in ha)**

Sr. No	Taluka	Actual coverage of farmers in 2011-12	Area coverage (ha) in 2011-12
1	Bhesan	4178	10223
2	Junagadh	2922	8830
3	Keshod	6378	14444
4	Kodinar	8	9
5	Malia	4500	24736
6	Manavadar	5094	11911
7	Mangrol	2675	6255
8	Mendarda	3050	6738
9	Sutrapada	3158	171
10	Talala	285	482
11	Una	1852	2910
12	Vanthli	3275	7763
13	Veraval	398	705
14	Visavadar	3667	9424
	Total	**41440**	**104601**

Source: SBI, Circle Chock, Junagadh

Table 4.11.22: Crop loan disbursement (Short term credit in Rs Lakh)

Sr. No	Taluka	Loan disbursed in 2011-12	
		Coop. Bank	
		No. of loans	Amount
1	Bhesan	8670	4435
2	Junagadh	3897	1030
3	Keshod	3636	1695
4	Kodinar	NA	NA
5	Malia	1117	615
6	Manavadar	5932	3355
7	Mangrol	1565	575
8	Mendarda	2779	823
9	Sutrapada	3665	1982
10	Talala	3603	4522
11	Una	8013	6322
12	Vanthli	3364	1000
13	Veraval	2058	1542
14	Visavadar	3515	2045
	Total	**51814**	**29941**

Source: JDCC, Junagadh and NABARD.

Table 4.11.23: Loan Disbursement for investment credit during XII Five year plan (Rs in Lakh)

Sr. No	Taluka	Loan disbursement target				
		2012-13	2013-14	2014-15	2015-16	2016-17
1	Bhesan	9507.84	9983.23	10482.39	11006.51	11556.84
2	Junagadh	20712.36	21747.98	22835.38	23977.15	25176.00
3	Keshod	17746.12	18633.43	19565.10	20543.35	21570.52
4	Kodinar	15101.96	15857.06	16649.91	17482.41	18356.53
5	Malia	11071.92	11625.52	12206.79	12817.13	13457.99
6	Manavadar	16214.61	17025.34	17876.61	18770.44	19708.96
7	Mangrol	28349.15	29766.61	31254.94	32817.68	34458.57
8	Mendarda	6153.75	6461.44	6784.51	7123.73	7479.92
9	Sutrapada	5191.99	5451.59	5724.17	6010.38	6310.90
10	Talala	16030.48	16832.00	17673.60	18557.28	19485.15
11	Una	18194.38	19104.10	20059.30	21062.27	22115.38
12	Vanthli	8680.11	9114.12	9569.82	10048.31	10550.73
13	Veraval	18707.99	19643.39	20625.56	21656.84	22739.68
14	Visavadar	8669.48	9102.95	9558.10	10036.01	10537.81
	Total	**200332.14**	**210348.75**	**220866.18**	**231909.49**	**243504.97**

4.12 Agricultural Engineering

Junagadh District is near to an industrial city Rajkot, which has resulted in the large scale migration of farm labourers. This has resulted in a great demand for agricultural labourers and the farmers in this district face a lot of problems in getting farm labourers. Therefore, there is a vast scope for mechanization of farm operations. To overcome the above problems, several soil and water conservation measures to recharge the ground water potential and mechanization of farm operations were being implemented in the district. Junagadh District is a Drought Prone District with erratic and less than normal rainfall recorded during the past several decades.

Most of the rivers in this district are dry for maximum time of the years and the major irrigation tanks are also dry for the most part of the year. This has resulted in over exploitation of ground water through open wells and deep bore wells. Hence it is essential to recharge the ground water table which has gone very deep during the recent years. Of the 14 Talukas in this district, one was over exploited, two were critical and two were semi critical in terms of ground water potential.

4.12.1 Farm Mechanization/Farm Equipments

The farmers are still using bullock drawn traditional implements and hand tools. The district is having 1681 tractors/ trailers, 194 threshers, 47 power tillers, and 1086 diesel pump sets, the Taluka wise availability of implements is presented in Table 4.12.1. Farm equipment and machinery in Junagadh district is presented in Table 4.12.2. The energy consumption (kW/ha) and the requirement of farm mechanization in the district for XII five year plan is given in Table 4.12.3a and Table 4.12.3b. There is an immense scope for farm mechanization in the district.

Table 4.12.1: Availability of improved farm equipment and machinery (*procured under government subsidy)

Sr. No.	Taluka	Tractor	Thresher	Power tiller	Diesel engine & pumpset
		No*	No*	No.*	No.*
1	Bhesan	307	1	4	76
2	Junagadh	173	30	1	86
3	Keshod	84	28	1	94
4	Kodinar	73	15	0	77
5	Malia	91	3	2	68
6	Manavadar	175	12	21	90
7	Mangrol	104	8	0	80
8	Mendarda	94	20	1	76
9	Sutrapada	38	10	0	62
10	Talala	56	6	1	70
11	Una	118	12	0	105
12	Vanthli	93	24	12	66
13	Veraval	36	7	0	63
14	Visavadar	239	18	4	73
	Total	**1681**	**194**	**47**	**1086**

Source: Agricensus - 2005-06, Gujarat state

Table 4.12.2: Farm equipment and machinery in Junagadh district

Sr.No.	District	Ploughs		Sugar-cane Crushers	No. of Tractors	No. of Carts	Oil Engines With Pumping sets	Electric Pump set
		Wooden	Iron					
1	**Junagadh**	**23233**	**67776**	**716**	**9773**	**72984**	**45303**	**68531**

Source: Statistical Abstract of Guj. State-2006, Directorate of Animal Husbandry, Gandhinagar.

Table 4.12.3a. Energy consumption (kW/ ha) in Junagadh district

Existing year 2010-11	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**
1.0	1.2	1.44	1.73	2.10	2.50


Rotavator


Seed Cum Fertilizer Drill


Tractor


Combine Harvester

Table 4.12.3b: Requirement of farm mechanization in the district

(Phy – No. of units, Fin – Rs. in Lakh)

Name of Equipment	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Tractor	500	2500	600	3000	720	3600	864	4320	1037	5185	3721	18605.00
Mini Tractor	500	1500	600	1800	720	2160	864	2592	1037	3111	3721	11163.00
Rotary weeder	20	7	24	8.4	29	10.2	35	12.3	42	14.7	150	52.60
Rotavator	1000	500	1200	600	1440	720	1728	864	2074	1037	7442	3721.00
Diesel Engine with pump	500	125	600	150	720	180	864	216	1037	259.3	3721	930.30
Threshers	50	20	60	24	72	28.8	86	34.4	103	41.2	371	148.40
Laser leveler	25	50	30	60	36	72	43	86	52	104	186	372.00
Cotton shredder	20	20	24	24	29	29	35	35	42	42	150	150.00
Sprayers	500	7.5	600	9	720	10.8	864	13	1037	15.6	3721	55.90
Duster	500	7.5	600	9	720	10.8	864	13	1037	15.6	3721	55.90
Automatic Tractor drawn seed drill	100	25	120	30	144	36	172	43	206	51.5	742	185.50
Automatic Bullock drawn seed drill	300	15	330	16.5	363	18.2	399	20	439	22	1831	91.70
Combine harvester	5	125	6	150	7	175	8	200	9	225	35	875.00
Plough	1000	250	1100	275	1210	302.5	1331	332.8	1464	366	6105	1526.30
Cultivator/ Harrows	1000	200	1100	220	1210	242	1331	266.2	1464	292.8	6105	1221.00
Power Tiller	250	625	275	687.5	303	757.5	333	832.5	366	915	1527	3817.50
Other implements	250	50	300	60	360	72	432	86.4	518	103.6	1860	372.00
TOTAL	**6520**	**6027**	**7569**	**7123.4**	**8803**	**8424.8**	**10253**	**9966.6**	**11964**	**11801.3**	**45109**	**43343.10**

4.12.2 Micro irrigation system

Drip and sprinkler is slowly getting popularity in the district and about 8918 farmers have adopted drip irrigation systems and covered 9512.939 ha of area, the sprinkler irrigation system is adopted by 27803 numbers of farmers and covered 36741.22 ha of area, the taluka wise details are given in Table 4.12.4. The physical and the financial requirement for the protective micro irrigation are presented in Table 4.12.5 and Table 4.12.6 respectively. For the micro irrigation total financial requirement is proposed as Rs. 57828.38 Lakh.

Table 4.12.4: Talukawise information on drip/sprinkler (From 2006-07 to 2011-12)

Sr. No.	Taluka	Drip irrigation		Sprinkler irrigation	
		No. of farmers	Area (Ha)	No. of farmers	Area (Ha)
1	Bhesan	608	697.69	1740	2415.26
2	Junagadh	613	776.02	1774	2070.46
3	Keshod	767	992.56	2787	3399.74
4	Kodinar	235	310.33	2710	4173.78
5	Malia	427	567.27	2121	3073.07
6	Manavadar	83	142.38	1898	2506.29
7	Mangrol	277	301.609	3377	4502.54
8	Mendarda	339	471.48	1920	2647.79
9	Sutrapada	444	490.05	574	595.16
10	Talala	2597	1886.65	1019	1507.84
11	Una	671	1123.31	1664	2002.96
12	Vanthli	144	183.04	1848	2396.68
13	Veraval	487	544.47	1295	1545.7
14	Visavadar	1226	1026.08	3076	3903.95
	Total	**8918**	**9512.939**	**27803**	**36741.22**

Source: www.ggrc.co.in

Table 4.12.5: Protective Micro Irrigation Plan for drip and sprinkler (Physical in ha)

Sr. No.	Taluka	Area Covered ain 2011-12	Area to be covered					Total
			2012-13	2013-14	2014-15	2015-16	2016-17	
1	Bhesan	621	776	970	1213	1516	1895	6371
2	Junagadh	685	856	1070	1338	1672	2090	7027
3	Keshod	697	871	1089	1361	1702	2127	7150
4	Kodinar	1594	1993	2491	3113	3892	4865	16353
5	Malia	800	1000	1250	1563	1953	2441	8207
6	Manavadar	600	750	938	1172	1465	1831	6155
7	Mangrol	1221	1526	1908	2385	2981	3726	12526
8	Mendarda	695	869	1086	1357	1697	2121	7130
9	Sutrapada	205	256	320	400	500	626	2103

Cont.

Sr. No.	Taluka	Area Covered ain 2011-12	Area to be covered					Total
			2012-13	2013-14	2014-15	2015-16	2016-17	
10	Talala	545	681	852	1064	1331	1663	5591
11	Una	557	696	870	1088	1360	1700	5714
12	Vanthli	500	625	781	977	1221	1526	5129
13	Veraval	411	514	642	803	1003	1254	4216
14	Visavadar	890	1113	1391	1738	2173	2716	9130
	Total	**10021**	**12526**	**15658**	**19572**	**24465**	**30582**	**102803**

Table 4.12.6: Protective Micro Irrigation Plan for drip and sprinkler

(Financial Rs in Lakh)

Sr. No.	Taluka	2012-13 (Rs in lakh)	2013-14 (Rs in lakh)	2014-15 (Rs in lakh)	2015-16 (Rs in lakh)	2016-17 (Rs in lakh)	Total, (Rs in lakh)
1	Bhesan	271.69	339.61	424.51	530.64	663.30	**2229.75**
2	Junagadh	299.69	374.61	468.26	585.33	731.66	**2459.54**
3	Keshod	304.94	381.17	476.46	595.58	744.48	**2502.63**
4	Kodinar	697.38	871.72	1089.65	1362.06	1702.58	**5723.38**
5	Malia	350.00	437.50	546.88	683.59	854.49	**2872.46**
6	Manavadar	262.50	328.13	410.16	512.70	640.87	**2154.35**
7	Mangrol	534.19	667.73	834.67	1043.33	1304.17	**4384.09**
8	Mendarda	304.06	380.08	475.10	593.87	742.34	**2495.45**
9	Sutrapada	89.69	112.11	140.14	175.17	218.96	**736.07**
10	Talala	238.44	298.05	372.56	465.70	582.12	**1956.86**
11	Una	243.69	304.61	380.76	475.95	594.94	**1999.95**
12	Vanthli	218.75	273.44	341.80	427.25	534.06	**1795.29**
13	Veraval	179.81	224.77	280.96	351.20	439.00	**1475.73**
14	Visavadar	389.38	486.72	608.40	760.50	950.62	**3195.61**
	Total	**4384.19**	**5480.23**	**6850.29**	**8562.87**	**10703.58**	**35981.16**

@ Rs. 0.35 lakh/ha.

4.12.3 Watershed management

The watershed development programme is implemented in the district by various agencies viz. DRDA, GSLDC Ltd., Jilla Panchayat, Department of Forest and NGOs. The planning of Soil Survey Programme (Topographical survey) and Protective (Community Tank) Irrigation Plan are presented in Table 4.12.7 and Table 4.12.8, respectively.

Table 4.12.7: Planning of Soil Survey Programme (Topographical survey)

Sr. No.	Name of Taluka	Geographical area of watershed		Area surveyed since beginning to 2011-12		Area to be deleted from survey area		Area to be surveyed in year 2012-13 to 2016-17		Amount Required for 5 years Rs. in lakh
		No. of villages	Area in ha	No. of villages	Area in ha	No. of villages	Area in ha	No. of villages	Area in ha	
1	Bhesan	46	36386	46	21831.6	46	3638.6	46	10915.8	32.75
2	Junagadh	71	68691	71	41214.6	71	6869.1	71	20607.3	61.82
3	Keshod	53	55661	53	33396.6	53	5566.1	53	16698.3	50.09
4	Kodinar	63	53681	63	32208.6	63	5368.1	63	16104.3	48.31
5	Malia	63	54000	63	32400	63	5400	63	16200	48.60
6	Manavadar	55	59170	55	35502	55	5917	55	17751	53.25
7	Mangrol	63	55661	63	33396.6	63	5566.1	63	16698.3	50.09
8	Mendarda	48	36386	48	21831.6	48	3638.6	48	10915.8	32.75
9	Sutrapada	46	32671	46	19602.6	46	3267.1	46	9801.3	29.40
10	Talala	99	95156	99	57093.6	99	9515.6	99	28546.8	85.64
11	Una	220	157847	220	94708.2	220	15784.7	220	47354.1	142.06
12	Vanthli	46	39315	46	23589	46	3931.5	46	11794.5	35.38
13	Veraval	55	36097	55	21658.2	55	3609.7	55	10829.1	32.49
14	Visavadar	102	90168	102	54100.8	102	9016.8	102	27050.4	81.15
	Total	**1030**	**870890**	**1030**	**522534**	**1030**	**87089**	**1030**	**261267**	**783.80**

Table 4.12.8: Protective (Community Tank) Irrigation Plan **(Phy- Area in ha, Fin- Rs. in lakh)**

Taluka	Irrigation community tanks (2011-12)		2012-13			2013-14			2014-15			2015-16			2016-17			Total		
	No	Area (Ha)	No	Area (Ha)	Fin	No	Area	Fin	No	Area	Fin	No	Area	Fin	No	Area	Fin	No	Area	Fin
Bhesan	0	0	1	50	25	1	25	15	1	25	15	1	25	15	1	25	15	5	150	85
Junagadh	1	100	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Keshod	0	0	1	50	25	1	25	15	1	25	15	1	25	15	1	25	15	5	150	85
Kodinar	1	150	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Malia	0	0	1	50	25	1	25	15	1	25	15	1	25	15	1	25	15	5	150	85
Manavadar	2	100	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Mangrol	4	400	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Mendarda	0	0	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Sutrapada	0	0	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Talala	2	120	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Una	0	0	1	50	25	1	25	15	1	25	15	1	25	15	1	25	15	5	150	85
Vanthli	0	0	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Veraval	0	0	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Visavadar	0	0	1	50	25	1	25	15	1	25	15	1	25	15	1	25	15	5	150	85
Total	**10**	**870**	**14**	**475**	**260**	**14**	**350**	**210**	**14**	**350**	**210**	**14**	**350**	**210**	**14**	**350**	**210**	**70**	**1875**	**1100**

The projected area available for watershed development and Technologies for in-situ moisture conservation plan are presented in Tab. 4.12.9 and Tab. 4.12.10, respectively. The year wise area proposed for watershed development is 17,300 ha with financial requirement of Rs. 865.00 Lakh.

Table 4.12.9: Area available for watershed development and plan.

(Phy- Area in ha, Fin- Rs. in lakh)

Taluka	Geographical area (ha)	Area in ha					
		2012-13	2013-14	2014-15	2015-16	2016-17	Total
Bhesan	36386	800	800	800	800	800	4000
Junagadh	68691	1300	1300	1300	1300	1300	6500
Keshod	55661	1100	1100	1100	1100	1100	5500
Kodinar	53681	1000	1000	1000	1000	1000	5000
Malia	54000	1100	1100	1100	1100	1100	5500
Manavadar	59170	1200	1200	1200	1200	1200	6000
Mangrol	55661	1100	1100	1100	1100	1100	5500
Mendarda	36386	750	750	750	750	750	3750
Sutrapada	32671	700	700	700	700	700	3500
Talala	95156	1900	1900	1900	1900	1900	9500
Una	157847	3000	3000	3000	3000	3000	15000
Vanthli	39315	800	800	800	800	800	4000
Veraval	36097	750	750	750	750	750	3750
Visavadar	90168	1800	1800	1800	1800	1800	9000
Total	**870890**	**17300**	**17300**	**17300**	**17300**	**17300**	**86500**
Amount Rs. in lakh	**-**	**865**	**865**	**865**	**865**	**865**	**4325**

Table 4.12.10: Technologies for In-situ Moisture conservation Plan

Name of activity	Total area covered (ha) up to 2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Contour cultivation	10000	15000	16500	18100	20000	22000	91600
Ridge and furrow	100000	120000	134000	145000	160000	175000	734000
Others	450000	460000	470000	480000	490000	500000	2400000

4.12.4 Food processing and storage

Value added agriculture refers most generally to manufacturing processes that increase the value of primary agricultural commodities. Value-added agriculture may also refer to increasing the economic value of a commodity through particular production processes, e.g. organic produce, or through regionally-branded products that increase consumer appeal and willingness to pay a premium over similar but undifferentiated products. Action needed for providing effective financial support, favourable government policies and laws and linkages among producers, industry, R&D institutions and other partners are needed. The basic Marketing Infrastructure for Agricultural produce (Post Harvest management), Agro-processing units in the district and Establishment of Rural godown are given in Tab. 4.12.11, Tab. 4.12.12 and Tab. 4.12.13, respectively.

Table 4.12.11: Basic Marketing Infrastructure for Agricultural produce (Post Harvest management) Capacity in tonnes. (Sub Market = Vegetable/Fruit market)

Sr. No.	Taluka	Storage structures				Market (No)	
		Rural godown		Cold storage		Main market	Sub-market
		Nos.	Capacity	Nos.	capacity		
1	Bhesan	8	4000	1	4000	1	1
2	Junagadh	6	3000	2	8000	1	1
3	Keshod	8	4000	1	4000	1	1
4	Kodinar	10	5000	1	4000	1	--
5	Malia Hatina	6	3000	1	4000	1	--
6	Manavadar	5	2500	1	4000	1	--
7	Mangrol	8	4000	1	4000	1	1
8	Mendarda	6	3000	1	4000	--	--
9	Sutrapada	6	3000	1	4000	--	--
10	Talala	8	4000	2	8000	1	1
11	Una	10	5000	2	8000	1	1
12	Vanthli	6	3000	1	4000	1	1
13	Veraval	9	4500	1	4000	1	1
14	Visavadar	10	5000	1	4000	1	1
	Total	**106**	**53000**	**17**	**68000**	**12**	**9**

Source: NABARD, Junagadh.

Table 4.12.12: Agro-processing units in the district (including sugar, milk etc related to agriculture only)

Taluka	Type of agro-processing unit		Number of processing units	Per day capacity of agro-processing unit (tonne)	Produce processed by Agro-processing unit during 2011-12 (tonnes)
	Milk	sugar			
Junagadh	Milk	--	1	100	36500
Kodinar	--	Sugar mill	1	3250	292500
Talala	--	Sugar mill	1	1250	112500
Total			3	4600	441500

Table 4.12.13: Establishment of Rural godown **(Fin. in lakh Rs)**

Sr. No.	Taluka	Existing (2011-12)		2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)		Total	
		No	Capacity(MT)	No	Fin.	No	Fin.	No	Fin.	No	Fin.	No	Fin.	No	Fin.
1	Bhesan	8	4000	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
2	Junagadh	6	3000	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
3	Keshod	8	4000	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
4	Kodinar	10	5000	20	14	22	15.4	22	15.4	22	15.4	24	16.8	110	77
5	Malia	6	3000	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
6	Manavadar	5	2500	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
7	Mangrol	8	4000	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
8	Mendarda	6	3000	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
9	Sutrapada	6	3000	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
10	Talala,	8	4000	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
11	Una	10	5000	25	17.5	28	19.6	28	19.6	28	19.6	31	21.7	140	98
12	Vanthli	6	3000	10	7	11	7.7	11	7.7	11	7.7	12	8.4	55	38.5
13	Veraval	9	4500	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
14	Visavadar	10	5000	15	10.5	17	11.9	17	11.9	17	11.9	19	13.3	85	59.5
	Total	**106**	**53000**	**195**	**136.5**	**218**	**152.6**	**218**	**152.6**	**218**	**152.6**	**241**	**168.7**	**1090**	**763**

The planning of processing units and its financial requirements are presented in Tab. 4.12.14. The Dal mill, Groundnut oil mill and Agro & Food processing units (Mango pulp, pickle making, Fruit juice etc.) are proposed in different talukas of the district with the total financial requirement of Rs. 160.00 Lakh.

Table 4.12.14: Number of processing units and financial requirements

(Phy – No. of units, Fin – Rs. in Lakh)

Particulars	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Dal mill	2	5	2	5	2	5	2	5	2	5	10	25
Groundnut oil mill	2	10	2	10	3	15	3	15	2	10	12	60
Agro & Food processing units (Mango pulp, pickle making, Fruit juice etc.)	1	15	1	15	1	15	1	15	1	15	5	75
Total	5	30	5	30	6	35	6	35	5	30	27	160

Note:

Dal mill in Bhesan, Junagadh, Keshod, Malia, Manavadar, Mendarda, Una, Vanthli, Visavadar and Mangrol taluka

Groundnut oil mill in Bhesan, Junagadh, Keshod, Malia, Manavadar, Mangrol, Mendarda, Sutrapada, Talala, Una, Vanthli and Visavadar taluka

Agro & Food processing units (Mango pulp, pickle making, Fruit juice etc.) in Talala, Vanthli, Junagadh, Medarda, Visavadar taluka.

4.12.5 Renewable Energy Programmes

The future of humanity lies in harnessing solar energy; 1% of sunlight received by the earth can meet humanity's demand for power for another 20 years. Recognition by markets and policy makers that the only way to achieve sustainability is to speed up innovations and investments in R&D especially for solar technology. This will fuel the capital markets and pay itself many times over by creating a world which is not only prosperous but much more equitable, greener, cleaner and sustainable. The proposed number of renewable energy units and its financial requirements are presented in Tab. 4.12.15.

Table 4.12.15: Number of renewable energy units and financial requirements per year

(Phy – No. of units, Fin – Rs. in Lakh)

Taluka	Community biogas plant		Solar cooker		Solar Street light		Solar cum wind submersible pump		**Total Amount per year**
	No.	Amount Rs per year	No.	Amount Rs per year	No.	Amount Rs per year	No.	Amount Rs per year	
Bhesan	10	70.00	220	3.30	88	22	1	4.0	99.00
Junagadh	10	70.00	345	5.18	138	34.5	1	4.0	114.00
Keshod	8	56.00	265	3.98	106	26.5	1	4.0	90.00
Kodinar	10	70.00	315	4.73	126	31.5	1	4.0	110.00
Malia	10	70.00	315	4.73	126	31.5	1	4.0	110.00
Manavadar	8	56.00	275	4.13	110	27.5	1	4.0	92.00
Mangrol	10	70.00	315	4.73	126	31.5	1	4.0	110.00
Mendarda	7	49.00	225	3.38	90	22.5	1	4.0	79.00
Sutrapada	7	49.00	230	3.45	92	23	1	4.0	79.00
Talala	12	84.00	340	5.10	136	34	1	4.0	127.00
Una	25	175.00	795	11.93	318	79.5	1	4.0	270.00
Vanthli	7	49.00	230	3.45	92	23	1	4.0	79.00
Veraval	9	63.00	275	4.13	110	27.5	1	4.0	99.00
Visavadar	12	84.00	430	6.45	172	43	1	4.0	137.00
Total	**145**	**1015.00**	**4575.00**	**68.63**	**1830**	**457.5**	**14**	**56.0**	**1595.00**

4.12.6 Establishment of Special Production Zone

It is proposed to establish the special production zone for agricultural implements, equipments, machinery and irrigation equipments at Junagadh district for the production of different machineries, equipments etc. at local level. The special production zone for the district with financial outlay of Rs. 100.00 Lakh is proposed for the XII five year plan and it is presented in Tab. 4.12.16.

Table 4.12.16: Proposal for establishment of special production zone for agricultural implements, equipments, machinery and irrigation equipments at Junagadh district.

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Special production zone for agril. implements, equipments, machinery, irrigation equipments	0	0	1	25	0	25	0	25	0	25	1	100

4.12.7 Establishment of training centre for repair and maintenance of farm implement & machinery and irrigation equipments

The training centre for repair and maintenance of farm implement & machinery and irrigation equipment is proposed to train the local artisans and technicians and maintenance of machineries. Its physical and financial plan is presented in Tab. 4.12.17.

Table 4.12.17: Proposal for Establishment of training centre for repair and maintenance of farm implement & machinery and irrigation equipment

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Establishment of training centre for repair and maintenance of farm implement & machinery and irrigation equipment	1	500	-	100	-	100	-	100	-	100	1	900

4.12.8. Establishment of Smart Farming with Information Technology Unit

The technology along with the field sensors to collect information of soil moisture and temperature through radiometric remote sensing and received on a ground station from where internet clouds were generated to supply the information to any destination of the globe at any time for decision support to enhance agricultural production. This will help demonstrate the technology among the farmers of the district.

Table 4.12.18: Establishment of Smart Farming with Information Technology unit at district level.

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Establishment of training centre for repair and maintenance of farm implement & machinery and irrigation equipment	1	500	-	100	-	100	-	100	-	100	1	900

CHAPTER V

DEVELOPMENT OF ALLIED SECTOR

5.1 Introduction:

Development of allied agricultural sectors has been incorporated as a component of District Agriculture Plan so as to ensure a holistic development of Junagadh district. In this chapter, various schemes and technological interventions required for the development of agriculture allied sectors like horticulture, animal husbandry, fisheries, agricultural marketing and agri-business management for Junagadh district are discussed.

Allied agricultural sectors i.e., Horticulture, Animal Husbandry, Fisheries development, Co-operation, Vermi-composting, etc. may perform active role in the sustainable development of agriculture and rural economy. These sectors offer good alternatives/opportunities for livelihood of rural people as well as employment generation. Farmers of Junagadh district are actively engaged in cultivation of allied enterprises to meet their own home requirements and subsequently for the market. The thrust in the district has been on dairy and horticulture (especially fruit and vegetable crops).

5.2 Horticulture:

The importance of fruits and vegetable crops in improving the nutritional status and farm economy needs no elaboration. It offers excellent alternative for diversification in agriculture by ensuring balanced use of land, water and other resources for promoting sustainable agriculture besides increasing income of the farmers. Agro-climatic conditions, soil and water availability make it suitable for growing a wide variety of fruits, vegetable, spice, medicinal and aromatic plants. The horticulture in the district is poor mainly due to lack of awareness about its importance and the marketing facilities. However, the marketing problem is due to the scattered production of the produce. Mango, which is the most important fruit crop grown in the Bhesan, Junagadh, Mendarda, Talala, Vanthali, Una, Kodinar and Visavadar Talukas is not facing any marketing problem locally, but export is still not done in organized way. The climate of the district is highly suitable for spices production. There is immense potential exists for growing spice crops in rabi season in area having irrigation facility. At present commercial floriculture is not adopted by the farmers, with increase in transport and other infrastructure facilities, the scope for its cultivation and marketing will also be increased. Cultivation of medicinal and aromatic plant in forest area may provide an important livelihood option for the people. There is immense potential to bring more area under vegetable crops by using drip irrigation in area having limited irrigation facility to provide nutritional food security to farmers.

The area, production and productivity of various fruits and vegetables in Junagadh district and Gujarat state (Year 2010-11) are shown in Table 5.2.1 and Table 5.2.2 respectively. The crop wise area expansion plan of Junagadh district is shown in Table 5.2.3. For 12th five year plan the highest amount of Area Expansion Plan in Junagadh is given to the mango crop because more area is covered by mango especially in Bhesan, Junagadh, Mendarda, Talala and Vanthali Talukas. The sustainability issues and gap analysis of productivity of different crops and resources is presented in Table 5.2.4. The Table 5.2.5 shows the steps to be taken for bridging the gaps for realizing the Vision in Horticulture sector.

Table 5.2.1. Area, Production and Productivity of various fruit in Junagadh district and Gujarat state (Year 2010-11)

Area in ha, Production in MT, Productivity in MT/ha

Sr. No.	Fruit	Junagadh District			Gujarat State		
		Area	Prod	Productivity	Area	Prod	Productivity
1	Mango	19784	157700	7.97	130019	911302	7.01
2	Chiku	4815	44538	9.25	28800	287989	10.00
3	Citrus	563	3446	6.12	39189	409134	10.44
4	Ber	285	1140	4.00	12261	128533	10.48
5	Banana	1800	81000	45.00	64680	3978023	61.50
6	Guava	232	1230	5.30	10222	150741	14.75
7	Pomegranate	72	226	3.14	5795	60338	10.41
8	Papaya	369	18450	50.00	17796	973973	54.73
9	Custardapple	330	2020	6.12	5381	55621	10.34
10	Aonla	115	699	6.08	12481	121514	9.74
11	Cashew nut	6	2	0.33	7163	21348	2.98
12	Coconut	10309	113914	11.05	20099	206780	10.29
13	Others	380	1572	4.14	6298	42913	6.81
	Total	**39060**	**425937**	**10.90**	**360184**	**7348209**	**20.40**

Source: http://agri.gujarat.gov.in/hods/dire_horticulture/stat_area_prod.htm

Table 5.2.2. Area, Production, Productivity of various vegetables in Junagadh district and Gujarat state (Year 2010-11)

Area in ha, Production in MT, Productivity in MT/ha

Sr. No.	Vegetables	Junagadh District			Gujrat State		
		Area	Prod.	Productivity	Area	Prod.	Productivity
1	Onion	3610	108300	30.00	62010	1514091	24.42
2	Brinjal	10520	124662	11.85	72008	1236265	17.17
3	Cabbage	2507	45452	18.13	28204	553559	19.63
4	Okra	3860	67550	17.50	54458	592512	10.88
5	Tomato	3090	65940	21.34	38802	978438	25.22
6	Cauliflower	390	6708	17.20	21104	387413	18.36
7	Clusterbean	3865	59600	15.42	30962	283466	9.16
8	Cowpea	2950	44829	15.20	23954	247862	10.35
9	Cucurbits	3133	17388	5.55	52809	766361	14.51
10	Others	6832	58388	8.55	66288	937700	14.15
	Total	**40757**	**598817**	**14.69**	**450599**	**7497667**	**16.64**

Source: http://agri.gujarat.gov.in/hods/dire_horticulture/stat_area_prod.htm

Table 5.2.3 Area expansion plan for horticultural crops

Existing cropping pattern (2011-12)		2012- 13	2013- 14	2014-15	2015- 16	2016- 17	Total
Crop	Area (ha.)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
Mango	19784	19950	20150	20500	20700	21000	102300
Sapota	4815	4900	5100	5200	5250	5400	25850
Citrus	563	580	600	620	630	650	3080
Ber	285	290	300	310	315	320	1535
Banana	1800	1830	1845	1860	1890	1900	9325
Guava	232	240	245	250	252	255	1242
Papaya	369	370	375	380	385	390	1900
Custard Apple	330	332	335	340	342	345	1694
Aonla	115	117	120	122	125	128	612
Cashew nut	6	7	8	9	10	11	45
Pomegranate	72	75	78	80	85	90	408
Coconut	10309	10500	10700	10800	10900	11000	53900
Other	380	385	390	395	400	410	1980
Total	**39060**	**39576**	**40246**	**40866**	**41284**	**41899**	203871

Source: Deputy Director of Horticulture, State Department, Junagadh

Table 5.2.4: Sustainability issues and gap analysis of productivity of different crops and resources

Sr. No.	Factors/Constrains leading to gap	Strategies	Approach and methodology	Performance indicators	Sustainability outputs
1	**Vegetables**				
	Less area under hybrid vegetable crops and high-tech vegetables due to Lack of irrigation facilities and proper marketing	Popularize water harvesting techniques, drip irrigation and establishing collection centres on co-operative bases and linkage with suitable markets	Creating awareness about importance of hybrid and high-tech vegetable crops, drip irrigation, establishing collection centres provided with cold chain linked vehicles	Increased area under hybrid and high-tech vegetable crops	Increase the income of the farmers and secure the livelihoods
2	**Mango**				
	Problems of insect pests and diseases	Popularize IPM and IDM technologies	Creating awareness and adoption of IPM and IDM technology through demonstrations, training, shibir, literature etc	Reduction in insect pests and disease incidence	Reduction in pesticide load and increase in yield

Sr. No.	Factors/Constrains leading to gap	Strategies	Approach and methodology	Performance indicators	Sustainability outputs
	Low post harvest management in banana due to Lack of awareness and high cost of the processing plant	Establishment of ripening chamber and pack house unit	Establishment of ripening chamber and pack house unit on co-operative basis	Increase in keeping quality, quality improvement for foreign market	Increase income of the farmers.
3	**Banana**				
	Problems of insect pests and diseases like Incidence of sigatoka disease and thrips infestation	Popularize IPM and IDM technologies	Creating awareness and adoption of IPM and IDM technology through demonstrations, training, shibir, literature etc	Reduction in insect pests and disease incidence	Reduction in pesticide load and increase in yield
	Management of crop residue due to high cost of labour and problem of disposal	Popularize the use of banana pseudo stem shredder and converting in compost	Creating awareness about the importance of shredder and converting it in compost through demonstrations, training, shibir, literature etc	Proper use of crop residue	Improvement in soil health
	Non adoption of value added product from banana due to lack of awareness and high cost of the processing plant	1. Popularize banana fiber and other value added product from banana pseudo stem 2. Popularize the preparation of value added products (wafers) from fruits	Motivate and provide incentives to the farmers for establishing banana fibre unit and other value added products	Proper utilization of crop residue and increase income of the farmers	Remunerative price and employment generation
	Low post harvest management in banana due to lack of awareness and high cost of the processing plant	Establishment of ripening chamber and pack house unit	Establishment of ripening chamber and pack house unit on co-operative basis	Increase in keeping quality, Quality improvement for foreign market	Increase income of the farmers.
4	**Sapota**				
	Low post harvest management in sapota due to lack of awareness and high cost of the processing plant	Establishment of sapota chips production unit.	Establishment of ripening chamber and pack house unit on co-operative basis	Increase in keeping quality, Quality improvement for foreign market	Increase income of the farmers.

Sr. No.	Factors/Constrains leading to gap	Strategies	Approach and methodology	Performance indicators	Sustainability outputs
5	**Plantation crops**				
	Less area under fruit crops due to lack of awareness, small land holdings, limited irrigation facility	Popularize importance of fruit trees i.e. coconut for sustainable income	Creating awareness and adoption of fruit crops through training, demonstrations and literature	Increase income of the farmers	Sustainability of farmers income
6	**Floriculture**				
	Meager area under flower crops due to lack of awareness, small land holdings, limited irrigation facility and marketing of the produce	Popularize importance of flower crops for sustainable income in identified area and market linking with suitable markets	Creating awareness and adoption of flower crops through training, demonstrations and literature & establishment of collection centre and refrigerated van	Increase income of the farmers	Sustainability of farmers income
6	**Medicinal aromatic and spice crops plants**				
	Meager area under medicinal, aromatic and spices crops due to lack of awareness, small land holdings, limited irrigation facility and marketing of the produce	Popularize importance of medicinal aromatic and spices crops for sustainable income in identified area and market linking with suitable markets	Creating awareness and adoption of medicinal and aromatic plants through training, demonstrations and literature	Provide subsidiary income to the farmers	Sustainability of farmers income

Protected Cultivation of Flowers

Table 5.2.5: Bridging the gaps for realizing the Vision- Horticulture sector

No.	Program	Activities
1.	**Thrust Areas/ Issues: Vegetable production**	
	Quality seed production	Educate the farmers for quality seed production of vegetable crops.
	Establishment of small scale nursery	Educate the farmers for raising nursery for preparing seedlings
	Increase area under hybrid and high-tech vegetable crops	Educating the farmers for importance of hybrid vegetable cultivations through demonstrations on vegetable cultivation, Low cost net/green houses and kitchen terrace/ gardening, hydroponic vegetables.
	IPM	Educating the farmers about various insect pest and diseases of vegetables and their IPM through demonstration and training
	Integrated Nutrient Management	Educating farmers about the use of balance fertilizers
	Mechanization in vegetable crops	Educating the farmers about the mechanization in vegetable crops.
	Cold storage	Establishment of cold storage at taluka level
	Market linkages	Strengthening market linkages through AGMARK net
	Collection centres	Establishment of collection centres
	Refrigerated van	Providing refrigerated van at cluster level
	Soil health and organic farming	Educating the farmers about the organic farming in vegetable crops
2.	**Thrust Areas/ Issues: Fruit crops**	
	Increase area under fruit crops	Establishment of nurseries for quality saplings, grafting, capacity building and demonstrations
	IPM	Educating the farmers about various insect pest and diseases of fruit crops and their IPM through demonstration and training
	Proper use of plant protection equipment	Educate the farmers about proper use of plant protection equipments
	Ripening chambers	Establishment of banana ripening chamber
	Banana pack house	Establishment of banana pack house
	Value addition	Establishment of banana fiber production units, Establishment of wafer production units
	Recycling of banana residue	Converting of banana residue in small pieces through shredders and using it for composting
	Coco-peat and kernel water unit	Establishment of Coco-peat and kernel water unit
3.	**Thrust Areas/ Issues: Floriculture**	
	Introduction of floriculture	Educating farmers through demonstration and training in cluster approach
4.	**Thrust Areas/ Issues: Spices**	
	Introduction of spice crops	Educating farmers through demonstration and training in cluster approach
5.	**Thrust Areas/ Issues: Conservation of bio-diversity**	
	Organic farming	Educating farmers through demonstration and training in cluster approach
	Medicinal and aromatic plants	Educating farmers through demonstration and training in cluster approach

The Junagadh district has horticultural crops since long back and the plants became old, which needs rejuvenation. The rejuvenation plan for horticultural crops is shown in Tab. 5.2.6.

This table shows the area brought to be under rejuvenation for XII five year plan. The majority area is covered for mango crop and sapota.

Table 5.2.6 Rejuvenation plan for horticultural crops (area in ha)

Sr. No.	Area brought under rejuvenation (2011-12)		2012-13	2013-14	2014-15	2015-16	2016-17
	Crop	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)
1	Mango	10	5	6	8	10	15
2	Sapota	-	2	4	6	12	14
	Total	**10**	**7**	**10**	**14**	**22**	**29**

Junagadh district is poor in tuber vegetable production and there is a need to increase the production and productivity of the tuber vegetable crops in the district. For growing the vegetable crops with modern scientific techniques needs to train the farmers to increase their knowhow. The broad planning has been proposed for supply of nursery, growing of nursery in green houses, quality seed production, IPM, INM practices and their trainings to farmers is proposed for XII five year plan in the district. The table 5.2.7 shows the Training needs in vegetables crops which includes the different technology like vegetable cultivation, nursery raising, IPM/INM, soil health management (soil testing/ bio-fertilizers/ green manuring, organic farming, Value addition, processing, marketing/ co-operative societies. For 12th five year plan the total estimated amount for training of farmers in vegetables crops is Rs 159.00 lakhs.

Table 5.2.7: Training needs in vegetables crops (Rs. in lakhs)

Name of Technology	Year-wise number of farmers to be trained (3 days)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Vegetable cultivation	600	7.20	600	7.20	600	7.20	600	7.20	600	7.20	3000	36
Nursery raising	250	3.00	250	3.00	250	3.00	250	3.00	250	3.00	1250	15
IPM/INM	500	6.00	500	6.00	500	6.00	500	6.00	500	6.00	2500	30
Soil health management (bio-fertilizers/ green manuring	500	6.00	500	6.00	500	6.00	500	6.00	500	6.00	2500	30
Organic farming	500	6.00	500	6.00	500	6.00	500	6.00	500	6.00	2500	30
Value addition processing	200	2.40	200	2.40	200	2.40	200	2.40	200	2.40	1000	12
Marketing/ co-operative societies	100	1.20	100	1.20	100	1.20	100	1.20	100	1.20	500	6
Total	**6550**	**31.80**	**2650**	**31.80**	**2650**	**31.80**	**2650**	**31.80**	**2650**	**31.80**	**13250**	**159**

(Rs. 400 per trainee per day.)

The table 5.2.8 shows the proposal for establishment of small scale nurseries in Junagadh district. The number of units is equally proposed in each Taluka and the cost per unit is Rs. 3 lakhs. The total estimated cost for establishment of small scale nurseries is Rs. 216 lakhs.

Table 5.2.8: Establishment of nurseries **(Rs. in lakhs)**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Nursery small scale	15	15	15	15	12	**72**
Total **(Rs. in lakhs)** (Cost @Rs 3.00 lakhs/unit)	45	45	45	45	36	**216**

Junagadh Kodinar Mangrol Talala Una Vanthli - 8 per taluka, remaining in other talukas, 3 in each.

The table 5.2.9 shows the proposal for establishment of Poly houses in Junagadh district for 12th five year plan. The number of units is proposed equally in each Taluka. The total estimated cost for establishment of Poly houses is Rs 5250 lakhs.

Table 5.2.9: Establishment of Poly houses

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Poly houses	70	70	70	70	70	**350**
Total Cost @Rs 15.00 lakhs/unit (1500 sq.m) **(Rs. in lakhs)**	1050	1050	1050	1050	1050	**5250**

The proposal for demonstrations on vegetables for area expansion in Junagadh district is shown in table 5.2.10. The table shows the area (ha) and cost per unit. The demonstrations proposed equally in each Taluka. The total estimated cost for demonstrations on vegetables for area expansion is Rs 60 lakhs for 12th five year plan.

Table 5.2.10: Demonstrations on vegetables for area expansion **(Rs. in lakhs)**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Area expansion in vegetable crops (ha.)	100	110	120	130	140	**600**
Cost @Rs 10,000/unit **(Rs. in lakhs)**	10.00	11.00	12.00	13.00	14.00	**60**

The table 5.2.11 shows the proposal for demonstrations on integrated pest management in vegetable crops in Junagadh district. The number of demonstrations on integrated pest management for different horticultural crops is equally proposed in each taluka. The total estimated cost for demonstrations on integrated pest management in horticultural crops is Rs 5.00 lakhs for 12th five year plan.

Table 5.2.11: Integrated pest management in Horticultural crops **(Rs in lakhs)**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Mango	50	55	60	65	70	**300**
Coconut	10	15	20	25	30	**100**
Chilli	5	6	7	8	9	**35**
Brinjal	4	5	6	7	8	**30**
Other vegetables	5	6	7	8	9	**35**
Total demonstrations	74	87	100	113	126	**500**
Total cost @Rs. 1000 /demon. **(Rs. in Lakhs)**	**0.74**	**0.87**	**1.00**	**1.13**	**1.26**	**5.00**

(Demonstration of 0.4 ha)

The proposal for establishment of units for integrated nutrient management in fruit crops in Junagadh district is shown in table 5.2.12. The number of units on integrated nutrient management for different fruit crops is equally proposed in each taluka and the cost per unit is Rs 2000. The total estimated cost for establishment number of on integrated nutrient management in fruit crops is Rs 5 lakhs for 12th five year plan.`

Table 5.2.12: Integrated nutrient management in fruit crops

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units (each 0.4 ha)	50	50	50	50	50	**250**
Cost @ Rs 2,000 **(Rs. in lakhs)**	1	1	1	1	1	**5**

The proposal for demonstrations on integrated nutrient management in vegetable crops in Junagadh district is presented in table 5.2.13. The number of demonstrations on integrated nutrient management for different vegetable crops is equally proposed in each taluka and the cost per demonstration is Rs. 1000. The total estimated cost for number of demonstrations on integrated nutrient management in vegetables crops is Rs 7.5 lakhs for 12th five year plan.

Table 5.2.13: Integrated nutrient management in vegetables crops **(Rs. in lakhs)**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of demon. each 0.4 ha	150	150	150	150	150	**750**
Total cost @Rs.1000/ demon.	1.5	1.5	1.5	1.5	1.5	**7.5**

The table 5.2.14 shows the proposal for establishment of low cost net house in Junagadh district. The cost for establishment is Rs 60000 per unit. The number of unit is proposed equally in each Taluka. The total cost for establishment of net houses in Junagadh district is Rs. 300 lakhs for the 12th five year plan.

Table 5.2.14: Project proposal for low cost net house **(Rs. in lakh)**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units each 100 sq. m.	100	100	100	100	100	**500**
Cost @ Rs 60,000/unit (Rs in lakhs)	60	60	60	60	60	**300**

The proposal for establishment of kitchen gardening with low energy drip in Junagadh district is shown in table 5.2.15. The cost for establishment is Rs. 3000 per unit and the number of units proposed equally in each Taluka. The total cost for establishment of kitchen gardening with low energy drip in Junagadh district is Rs. 30 lakhs for the 12th five year plan.

Table 5.2.15: Project proposal for kitchen gardening with low energy drip

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	200	200	200	200	200	**1000**
Cost @ Rs 3,000/unit of 50 sq. m. area **(Rs. in lakhs)**	6.00	6.00	6.00	6.00	6.00	**30.00**

The table 5.2.16 shows the proposal for establishment of High tech vegetable farming in Junagadh district. The number of units are proposed equally in each Taluka. The total cost for establishment of high tech vegetable farming is Rs. 375 lakhs for the 12th five year plan.

Table 5.2.16: High tech vegetable farming including all components

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	5	5	5	5	5	**25**
Cost @ Rs 15 lakh/unit (1000 sq.m) **(Rs. in lakhs)**	75	75	75	75	75	**375**

The proposal for establishment of pre cooling units and cold storage units in Junagadh district is presented in table 5.2.17 and 5.2.18. The total cost for establishment of pre cooling units and cold storage units in Junagadh district are Rs 375 lakhs and 600 lakhs respectively for the 12th five year plan.

Table 5.2.17: Proposal for establishment of pre cooling units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	5	5	5	5	5	**25**
Cost @ Rs 15 Lakhs for 6 tonne capacity (Rs. in lakhs)	**75**	**75**	**75**	**75**	**75**	**375**

Table 5.2.18: Proposal for establishment of cold storage units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	-	1	1	-	-	**2**
Cost @ Rs 300 Lakhs for 5000 MT capacity (Rs. in lakhs)	**-**	**300**	**300**	**-**	**-**	**600**

The proposal for establishment of godown units in Junagadh district is presented in table 5.2.19. The total cost for establishment of godown units in Junagadh district is Rs 1500 lakhs for the 12th five year plan. The proposal for establishment of Controlled Atmospheric units for perishable produce in Junagadh district is presented in table 5.2.20. The total cost for establishment is Rs 1600 lakhs for the 12th five year plan.

Table 5.2.19: Proposal for establishment of godown units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	6	6	6	6	6	**30**
Cost @ Rs 15000/sq.m. Rs. 50 Lakh/unit (Rs. in lakh)	**300**	**300**	**300**	**300**	**300**	**1500**

Table 5.2.20: Proposal for establishment of Controlled Atmospheric units for perishable produce

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	0	1	0	0	0	**1**
Cost @ Rs 32000/MT, Capacity:5000 MT/unit (Rs. in lakh)	**0**	**1600**	**0**	**0**	**0**	**1600**

The proposal for establishment of collection centres including sorting, grading and packing in Junagadh district is presented in table 5.2.21. The total estimated cost for establishment of collection centres is Rs 150 lakhs for the 12th five year plan.

Table 5.2.21: Proposal for establishment of collection centres including sorting, grading and packing (Rs. in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of centres	2	2	2	2	2	**10**
Cost @ Rs 15.00 lakhs **(Rs. in lakhs)**	**30**	**30**	**30**	**30**	**30**	**150**

The proposal for Mobile pre cooling unit/vans in Junagadh district is shown in table 5.2.22. The total cost for providing refrigerated vans is Rs. 240 lakhs for the 12th five year plan.

Table 5.2.22: Proposal for Mobile pre cooling unit/vans

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units/vans	2	2	2	2	2	**10**
Cost @ Rs 24.00 Lakhs for 5 tons capacity **(Rs. in lakhs)**	**48**	**48**	**48**	**48**	**48**	**240**

The proposal for providing training to farmers for fruit crops in Junagadh district is shown in table 5.2.23. The table includes the different technology such as fruit cultivation, nursery raising, IPM/INM and value addition processing. For 12th five year plan the total estimated amount for providing training to the farmers for fruit crops is Rs 60 lakhs.

Table 5.2.23: Training needs of farmers for fruit crops

(Phy. No. , Fin. Rs. in lakhs)

Name of Technology	Year-wise number of farmers to be trained (3 days)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Fruit cultivation	500	6.0	500	6.0	500	6.0	500	6.0	500	6.0	**2500**	**30.0**
Nursery raising	200	2.4	200	2.4	200	2.4	200	2.4	200	2.4	**1000**	**12.0**
IPM/INM	200	2.4	200	2.4	200	2.4	200	2.4	200	2.4	**1000**	**12.0**
Value addition Processing	100	1.2	100	1.2	100	1.2	100	1.2	100	1.2	**500**	**6.0**
Total	**1000**	**12.0**	**1000**	**12.0**	**1000**	**12.0**	**1000**	**12.0**	**1000**	**12.0**	**5000**	**60.0**

Note: Rs. 400 per trainee per day.

The proposal for providing demonstrations on fruit crops (vadi model) is shown in 5.2.24. The expenditure is Rs. 4000 per demonstration and the demonstrations proposed equally in each taluka. The total estimated cost for demonstrations on fruit crops is Rs 30 lakhs for 12th five year plan.

Table 5.2.24: Demonstrations on fruit crops (vadi model)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units each 0.4 ha	100	125	150	175	200	**750**
Cost @ Rs 4,000 per unit **(Rs. in lakhs)**	4.0	5.0	6.0	7.0	8.0	**30.0**

The proposal for introducing new crop in Junagadh district is shown in table 5.2.25. The pomegranate introduced as a new crop in Junagadh district and number of units proposed equally in each taluka. The total estimated cost for new crop is Rs 6.40 lakhs for 12th five year plan.

Table 5.2.25: Introduction of pomegranate

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units (each 0.4 ha)	10	20	30	50	50	**160**
Cost @ Rs 4,000 **(Rs. in lakhs)**	**0.40**	**0.80**	**1.20**	**2.00**	**2.00**	**6.40**

The proposal for Supply of plant protection equipment (Foot sprayer) in Junagadh district shown in table 5.2.26. Plant protection equipments are proposed equally in each taluka and cost per unit is Rs 4000. The total estimated cost for Supply of plant protection equipment (Foot sprayer) in Junagadh district is Rs 40 lakhs for the 12th five year plan.

Table 5.2.26: Supply of plant protection equipment (Foot sprayer)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	200	200	200	200	200	**1000**
Cost @ Rs 4,000 **(Rs. in lakhs)**	**8.00**	**8.00**	**8.00**	**8.00**	**8.00**	**40.00**

The proposal for establishment of mango ripening chamber in Junagadh district is shown in table 5.2.27. The Mango ripening units are proposed two in each Junagadh, Talala, Vanthali, Visavadar and Una talukas where the mango plantation covers more area. The cost per unit is Rs 85 lakhs and the total estimated cost for establishment of mango ripening chambers in Junagadh district is Rs 850 lakhs for the 12th five year plan.

Table 5.2.27 Proposal for establishment of mango ripening chamber

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	2	2	2	2	2	**10**
Cost @ Rs. 85 Lakhs **(Rs. in lakhs)**	**170**	**170**	**170**	**170**	**170**	**850**

Note: Two in each taluka Junagadh, Talala, Vanthali,Visavadar, Una.

The table 5.2.28 shows the proposal for establishment of banana ripening chamber in Junagadh district for 12th five year plan. The Banana ripening units are proposed in Veraval and Mangrol taluka where the banana plantation covers more area. The total cost for establishment of banana ripening chamber in Junagadh district is Rs 300 lakhs for the 12th five year plan.

Table 5.2.28 Proposal for establishment of banana ripening chamber

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	--	--	--	**2**
Cost @ Rs 150 lakhs **(Rs. in lakhs)**	**150**	**150**	**--**	**--**	**--**	**300**

The proposal for establishment of mango pack house in Junagadh district is shown in table 5.2.29. The cost of establishment of one unit of mango pack house is 3 lakhs and two mango pack houses are proposed in each taluka. The total estimated cost for establishment of mango pack houses in Junagadh district is Rs 120 lakhs for the 12th five year plan.

Table 5.2.29: Establishment of mango pack house

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	2	2	2	3	3	12
Cost @ Rs 3 lakh (9m x 6m) **(Rs. in lakhs)**	**6**	**6**	**6**	**9**	**9**	**36**

Note: Junagadh, Talala, Vanthli, Una, Mendarada and Visavadar taluka

The proposal for establishment of banana pack house in Junagadh district shown in table 5.2.30. The banana pack houses are proposed equally in Mangrol and Veraval taluka where banana covers more area. The cost of establishment of one unit is Rs 3 lakh and the total estimated cost for establishment of banana pack house in Junagadh district is Rs 45 lakhs for the 12th five year plan.

Table 5.2.30 Establishment of banana pack house

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	3	3	3	3	3	15
Cost @ Rs 3 lakh (9m x 6m) **(Rs. in lakhs)**	**9**	**9**	**9**	**9**	**9**	**45**

Note: Mangrol and Veraval taluka

The proposal for establishment of banana fiber and paper production unit is shown in table 5.2.31. The total cost for establishment of banana fiber and paper production unit in Junagadh district is Rs 50 lakhs for the 12th five year plan.

Table 5.2.31 Establishment of banana fiber and paper production unit

Particulars	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Mangrol, Veraval	1	1	0	0	0	**2**
Cost @ Rs 25 **(Rs. in lakhs)**		**25**	**25**	**0**	**0**	**0**	**50**

The proposal for establishment of sapota chips production units is shown in table 5.2.32. Three Sapota chips production units are proposed in Junagadh and Vanthli taluka. The cost of establishment is Rs 30 lakh per unit and the total estimated cost for establishment of Sapota chips production units in Junagadh district is Rs 90 lakhs for the 12th five year plan.

Table 5.2.32 Establishment of sapota chips production units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	1	0	0	**3**
Cost Rs 30 lakhs per unit	**30**	**30**	**30**	**0**	**0**	**90**

Note: Junagadh and Vanthli taluka.

The proposal for establishment of banana wafer production units is shown in table 5.2.33. One banana wafer production unit is proposed for Mangrol and Veraval taluka in Junagadh district. The total estimated cost for establishment of banana wafer production units in Junagadh district is Rs 60 lakhs for the 12th five year plan.

Table 5.2.33 Establishment of banana wafer production units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	0	0	0	**2**
Cost Rs 30 lakhs per unit	**30**	**30**	**0**	**0**	**0**	**60**

The table 5.2.34 shows the proposal for establishment of units for recycling of banana waste through shredder and Vermi-composting in Junagadh district. One unit each for recycling of banana waste through shredder and vermin-composting is proposed for Mangrol and Veraval taluka and cost per unit is Rs 2 lakhs. The total estimated cost for establishment of banana wafer production units in Junagadh district is Rs 4.00 lakhs for the 12th five year plan.

Table 5.2.34: Recycling of banana waste through shredder and vermi-composting

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	0	0	0	**2**
Cost Rs 2.00 lakhs per unit	**2**	**2**	**0**	**0**	**0**	**4**

The proposal for establishment of coco-pit and fiber unit, coconut kernel water packaging unit and Model floriculture centres are shown in Table 5.2.35, 5.2.36 and 5.2.37 respectively.

Table 5.2.35: Establishment of coco-pit and fiber unit

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	1	1	1	**5**
Cost Rs 10 lakhs per unit	**10**	**10**	**10**	**10**	**10**	**50**

Table 5.2.36: Establishment of coconut kernel water packaging unit

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	1	1	1	**5**
Cost Rs 20 lakhs per unit	**20**	**20**	**20**	**20**	**20**	**100**

Table 5.2.37: Model floriculture centres cluster based

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	5	5	6	6	6	**28**
Cost Rs 8.00 lakhs per unit	**40**	**40**	**48**	**48**	**48**	**224**

The proposal for establishment of units on Cluster based Demonstrations on spice, medicinal and aromatic plants in Junagadh district is shown in table 5.2.38. The number of demonstrations is equally proposed in each taluka and expenditure is Rs 25000 per demonstration. The total estimated expenditure for this is Rs 7 lakhs for 12th five year plan in Junagadh district.

Table 5.2.38: Cluster based Demonstrations on spices, medicinal and aromatic plants

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Demonstration each of 5 ha	5	5	6	6	6	**28**
Cost @ Rs 0.25 lakh **(Rs. in lakhs)**	**1.25**	**1.25**	**1.5**	**1.5**	**1.5**	**7**

Table 5.2.39: Establishment of high density planting unit for mango (1 ha)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of orchard	12	12	12	12	12	**60**
Cost @Rs 3 Lakh per ha	**36**	**36**	**36**	**36**	**36**	**180**

6 talukas Junagadh Kodinar Mangrol Talala Una Vanthli, 2 in each taluka per year.

The proposal for providing training in small scale fruit and vegetable processing is shown in table 5.2.40. The table includes the number of training, number of trainees and expenditure. Each training is of one week and expenditure per trainee per three days is Rs 800 and total estimated cost is Rs 14 lakhs for 12th five year plan in Junagadh district.

Table 5.2.40 Proposal for small scale fruit and vegetable processing trainings

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Trainings for three days. No. of Trainees (50/ training)	7	7	7	7	7	35
Cost (Rs in Lakhs)/ training Rs. 800/trainees / 3 days(Rs.in lakhs)	**2.8**	**2.8**	**2.8**	**2.8**	**2.8**	**14.0**

The proposal for establishment of small scale Fruit and vegetable processing unit is shown in table 5.2.41. Table includes the number of units and cost per unit. The expenditure per unit is Rs 30000 and equal number of units is proposed in each taluka. The total estimated cost is Rs 22.5 lakhs for 12th five year plan in Junagadh district.

Table 5.2.41 Proposal for small scale Fruit and vegetable processing units to be established

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number	15	15	15	15	15	75
Cost (Rs in Lakhs)/ @ 0.30/unit **(Rs. in lakhs)**	**4.5**	**4.5**	**4.5**	**4.5**	**4.5**	**22.5**

5.3 Animal Husbandry

The Animal husbandry Sector plays an important and vital role in GDP of Gujarat State, which is to the tune of nearly about 5.0 %. This sector also contributes to product nutritive food, rich in animal protein, to the general public and good supplementary income to the economically weaker section of society like S.T., S.C., small farmers, marginal farmers and agricultural labourers . In addition, it offers a good employment generation opportunity, if adopted on a large commercial basis.

Central to the challenge of ensuring improved livelihood and environmental sustainability is the ruminant livestock-particularly buffalo, cattle and goats- that are an integral part of the district's farming system. The expanding market with rise in demand for diverse animal products and easy access to marketing are added opportunities for further strengthening of this sector in the district with wide network of infrastructural and support services.

Livestock enterprise is an important complementary activity to the crop activities. Basic information about cattle and poultry population (2007) in Junagadh District is given in Table 5.3.1 below. The table5.3.1 shows the taluka wise availability of none descripts and draft animals. The total number of non descript and draft animals in Junagadh district are 2,68,795 and 7,197 respectively.

Table 5.3.1 Taluka wise non descript and draft animals

Taluka	No. of non descript animals	No. of draft animals
Bhesan	16049	129
Junagadh	20673	240
Keshod	24615	378
Kodinar	-	1033
Malia	26397	669
Manavadar	15810	106
Mangrol	29576	359
Mendarda	12762	207
Sutrapada	26836	1262
Talala	25950	383
Una	58355	1324
Vanthli	11648	139
Veraval	33568	2171
Visavadar	27893	577
Total	**268795**	**7197**

Source: Taluka Statistical information (2010-11), District Panchayat, Junagadh

The taluka wise information about breeding animals (age wise) is shown in table 5.3.2. The breeding animals are categories in below 3 years and above 3 years.

Table 5.3.2 Taluka wise breeding animals (age wise)

Taluka	Cow		Buffalo	
	Below 3 years	Above 3 years	Below 3 years	Above 3 years
Bhesan	3019	1076	8664	3060
Junagadh	8317	2584	17881	5659
Keshod	6607	1778	15149	4649
Kodinar	15120	8968	10677	5770
Malia	10358	3350	14369	5910
Manavadar	3841	1525	12269	5000
Mangrol	8134	3301	19522	7546
Mendarda	3552	1436	7480	3149
Sutrapada	13403	4869	11157	3944
Talala	11993	5357	13811	6486
Una	27780	12107	29536	12220
Vanthli	2102	849	11614	4868
Veraval	12708	6145	13195	6460
Visavadar	9015	3383	15743	6130
Total	135949	56728	201067	80851

Source: Taluka Statistical information(2010-11),District Panchayat, Junagadh

The Taluka wise fodder availability is shown in table 5.3.3. This table includes the area under fodder crop in hectare and quantity available from this area in tones. The total area under fodder crop in Junagadh district is 53,747 ha and the total quantity available from this area is 1,61,301 tones. The highest area under fodder crop is in Una taluka with the highest fodder production of 19,725 tones.

Table 5.3.3 Taluka wise fodder availability

Taluka	Area under fodder crop (ha)	Quantity available (tonnes)
Bhesan	3571	10713
Junagadh	3577	10731
Keshod	4013	12039
Kodinar	4389	13167
Malia	3705	11115
Manavadar	4849	14547
Mangrol	4387	13161
Mendarda	2420	7260
Sutrapada	2140	6420
Talala	3002	9066
Una	6575	19725
Vanthli	3151	9453
Veraval	2509	7527
Visavadar	5459	16377
Total	**53,747**	**1,61,301**

The taluka wise availability of gobargas plant is shown in table 5.3.4. There are only10 gobargas plants available in Junagadh district two in Bhesan, six in Junagadh and two in Visavadar.

Table 5.3.4 Taluka wise Gobargas Plant

Taluka	No. of gobargas Plant
Bhesan	2
Junagadh	6
Visavadar	2
Total	**10**

Source: Stakeholder's meeting

The occurrence of prominent disease in animals in Junagadh is shown in table 5.3.5.

Table 5.3.5 Talukawise prominent disease occurrence in animals

Taluka	Disease
Talala	FMD
Una	-
Vanthli	-
Veraval	-
Visavadar	PPR

Table 5.3.6. Taluka-wise existing veterinary institutions

Talukas	GPs	Institutions (No)						
		VH	VD	Mobile veterinary centre	A.I Centres	FAVC	Total	GPs without any VI
Bhesan	**37**	**0**	**2**	**0**	**1**	**1**	**4**	**33**
Junagadh	57	**1**	4	**0**	3	1	**9**	48
Keshod	54	**0**	3+1BVD	**0**	2	0	**6**	48
Kodinar	53	**0**	3	**1**	1	1	**6**	47
Malia	63	**0**	2	**0**	2	2	**6**	57
Manavadar	55	**0**	3+1BVD	**0**	1	1	**6**	49
Mangrol	60	**0**	3	**0**	2	1	**6**	54
Mendarda	39	**0**	2	**0**	1	0	**3**	36
Sutrapada	46	**0**	3	**0**	1	0	**4**	42
Talala	47	**0**	2	**0**	2	2	**6**	41
Una	131	**0**	6	**0**	2	1	**9**	122
Vanthli	46	**0**	2+1BVD	**0**	1		**4**	42
Veraval	55	**0**	4	**0**	2	1	**7**	48
Visavadar	77	**0**	3	**0**	1	1	**5**	72
TOTAL	820	1	45	1	22	12	**81**	739

Source: Animal Husbandry Department, Jilla Panchayat, Junagadh

Table 5.3.7 Talukawise affected area (ha.) by rodent, monkey, wild cow, pig

Taluka	Area (ha.) affected		
	Rodent	Stray cattle/ herd	Pig/ wild boar
Bhesan	200	3071	325
Junagadh	210	3077	400
Keshod	400	3425	325
Kodinar	346	3313	350
Malia Hatina	475	3025	195
Manavadar	490	4020	280
Mangrol	600	2100	400
Mendarda	200	1800	300
Sutrapada	200	1600	250
Talala,	150	2700	250
Una	450	4800	350
Vanthli,	250	2600	300
Veraval,	450	1000	550
Visavadar	350	4180	250
Total	**4771**	**40711**	**4525**

Source: Information received in stakeholders' meeting

Table. 5.3.8 Production plan of livestock during the next five years

Name of commodity	Baseline 2011-12			2012-13			2013-14		
	No. (lakhs)	Production	Productivity	No. (lakhs)	Production	Productivity	No. (lakhs)	Production	Productivity
1	2	3	4	5	6	7	8	9	10
Milk	815000	3586000	4.4	855750	3936450	4.6	896500	4303200	4.8
Egg	0.27	4739000 (nos)	176	0.28	5180000 (nos)	185	0.30	5820000 (nos)	194
Broiler	4.0	440	1.1	4.2	504	1.2	4.4	528	1.2
Meat	0.43	395	9.2	0.45	437	9.7	0.47	475	10.1

Table. 5.3.8: Contd.

Name of commodity	2014-15			2015-16			2016-17		
	No. (lakhs)	Production	Productivity	No (lakhs)	Production	Productivity	No (lakhs)	Production	Productivity
1	11	12	13	14	15	16	17	18	19
Milk	937250	4733113	5.05	978000	5183400	5.3	1018750	5603125	5.5
Egg	0.31	6262000 (nos)	202	0.32	6752000 (nos)	211	0.34	7480000 (nos.)	220
Broiler	4.6	598	1.3	4.8	624	1.3	5.0	700	1.4
Meat	0.49	519	10.6	0.52	572	11.0	0.54	621	11.5

(Production: Milk = Tonne, Egg = numbers, Broiler= Tonne, Meat= tone,
Productivity: Milk = Lit/day/ animal, Egg = numbers/bird, Broiler = kg/bird, Meat = kg/animal)

Source: 28th Survey report Directorate of Animal Husbandry, Govt. Gujarat.

5.3.1 Strength / Gaps

(a) Dairy Cattle

i) Strength

- Strong presence of cooperative dairy sector
- Enhanced marketing potential in the neighbourhoods
- Large scale participation of private players

ii) Weakness

- Green fodder scarcity
- Inadequate health care
- Endemic for Anthrax and Foot & Mouth Disease.
- Unavailability of barren lands for conversion it into grazing area

(b) Sheep and Goat

i) Strength

- Nomadic rearing – Vast uncultivable land – Rainfed area
- Sizeable number of breedable population
- Consumer's preference – By-product (leather) is efficiently utilized

ii) Weakness

- Non-availability of superior Rams and Bucks
- Unorganized marketing resulting in wild price fluctuations
- Absence of mechanism to promote the sector (Financial assistance)

(c) Poultry

i) Strength

- Availability of dry land – conducive atmosphere (Layer)
- Contract farming (Broiler)
- More scope for backyard poultry

ii) Weakness

- Depopulation of layers
- Increase in the input (feed) cost
- Bird flu threat due to unregulated farms

Interventions Required Areas

- Green fodder development
- Financial Assistance for Animal component
- Incentive to farmers through cards
- Improved livestock health care
- Hygienic utilization of offal
- Capacity building protocols
- Cattle feed production

5.3.2 Dairy Development

Dairy is an essential component of the district. There is a long tradition of rearing dairy animals by the farmers in the district. Large numbers of landless families are also engaged in dairy animal rearing. There are 4,81,060 numbers of cattle and 3,77,757 numbers of buffaloes in the district as per latest livestock census (2007). The numbers of cross bred cows are 14,073 which are almost 3 per cent of total cows. As per the bulletin of animal husbandry and dairying statistics 2009-2010 total milk production of Junagadh district is 3,28,500 ton.

There exists wide gap between the average yield and attainable yield and/or potential yield which offers scope for improvement in productivity. The existing gaps in germplasm, low reproductive efficiency, shortage of quality feed and fodder (even quality), inadequate disease management etc. are to be addressed through a shift towards technology driven livestock production and management. Enhanced farmers' interest and thrust of animal husbandry and other government departments and agencies are required in increasing milk yield of the district.

The stock/germplasm gap can be tackled through A.I. services and supply of known pedigree bulls. The gap of milk yield can be bridged through availability of green fodder and popularizing hay and silage making. The macro and micro-nutrient deficiency in fodder/soil is also affecting the productivity of these animals through poor quality fodder supplement addressing the mineral deficiency in diet. The majority of farmers feeding poor quality fodder to animals. To aware the farmers on this important aspect, quality fodder production through varietal and INM demonstrations are recommended. The high calf mortality and other disease threat would effectively be checked by starting extensive campaigns related to calf rearing and management. For effective disease control the veterinary services are to be strengthened by providing different improved diagnostic kits for mastitis, FMD etc. and providing mobile hospital vans for door step services to the farmers. The existing schemes and programmes for improvement of health of animals and enhancing milk productions are planned to be supplemented under RKVY.

In addition to the proposed extension activities of capacity building and skill upgradation, the entrepreneurship development programmes are also included in the plan.

Table 5.3.9: Sustainability issues and gap analysis of productivity in Dairy industry

Sr. No.	Particular	Factors/Constrains leading to gap	Strategies	Approach and methodology	Performance indicators	Sustainability outputs
a	Breed of Animals	Natural mating with non-descript bull	Strengthening A.I. facility, Community Bulls	Extension and development agencies A.H deptt and co-operatives should jointly approach in a farmers participatory approach	Strengthening AI by establishing new AI centres, Mobile AI centres and semen storage facilities	Improvement in livestock breed which increase the milk production.
b	Poor Housing management	Lack of awareness and poor economic condition of the farmers	Proper housing management	Creating awareness and increase adoption of proper housing management through training, demonstrations and literature	Increase the health, hygiene and milk production	Increase milk production
c	Imbalanced feeding	Lack of green fodder	Cultivation of green fodders and establishing fodder bank	Demonstration, Trainings, supply of seed of fodder crops and establishing fodder bank at block level	Improve animal health and increase in milk production	Increase milk production

		Shortage and high cost of concentrate feed	Providing concentrate feed at cheaper rate by producing at co-operative levels	Supply of concentrate feed to the buffalo /cattle farmers establishment of concentrate production unit at co-operative level	Improve animal health and milk production	Increase income of the farmers
		Poor nutrient /micronutrient status of soil as well as feeds leads to mineral deficiency in Animals	Mineral mixture supplementation of the animal feed	Supply of mineral mixture to the buffalo /cattle farmers	Correction of mineral status and Improvement of animal health and milk production	Increase income of the farmers
d	Poor Health of animal	Poor feed and fodder availability and poor body conditions	Popularize health package (deworming, mineral mixture and concentrate feeding)	Creating awareness and increase adoption popularize health package through training, demonstrations and literature	Improve health and milk production	Increase income of the farmers
e	High calf mortality and delayed age of first calving	Lack of awareness about scientific calf rearing	Popularize scientific calf rearing	Creating awareness and increase adoption of scientific calf rearing through training, demonstrations and literature	Reduce calf mortality and production elite future herds	Increase income of the farmers
f	Goat rearing	Lack of knowledge about rearing	Popularize scientific goat rearing	Creating awareness and increase adoption of scientific goat rearing through training, demonstrations and literature	Increase milk and meat production Provide household nutrition to poor family	Increase income and health of the farmers
g	Poultry	Lack of knowledge about rearing	Popularize scientific poultry rearing	Creating awareness and increase adoption of scientific poultry rearing through training, demonstrations and literature	Increase egg and meat production Provide household nutrition to poor family	Increase income and health of the farmers


Gir Cow

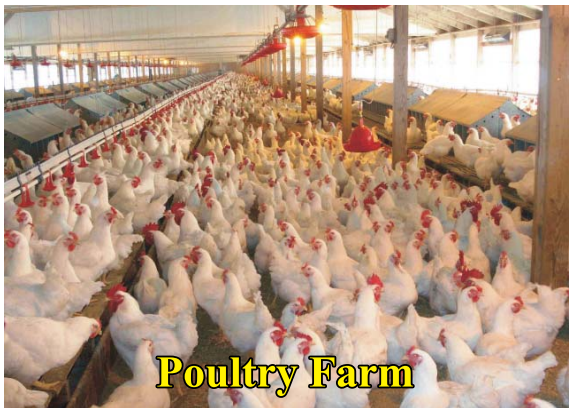
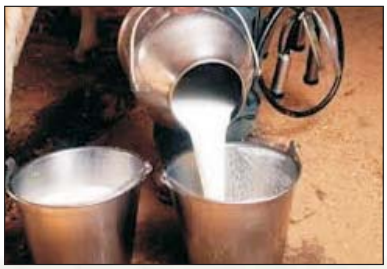

Poultry Farm

Table 5.3.10: Bridging the gaps for realizing the Vision- Dairy sector

Issue	Programme	Activities
Dairy Development	Fertility Improvement Programme	Arrangement of clinical camps for treatment of infertile animals and also awareness programme
	Supplementation of Mineral Mixture to Milch Animals	to supplement mineral mixture to overcome the reproductive problems
	Supply of balanced concentrate ration to animals	To improve the animals productive efficiency by providing balanced concentrate ration. Awareness about concentrate feeding and easy availability at cheaper rate with in district.
	Provision of shed for livestock	To protect animals against environmental stress, flies and fleas etc. which helps in improving milk production
	Rearing of female cattle/buffalo calf	To provide genetically superior livestock at doorstep and to produce superior herd stock for future.
	Providing Life Insurance to Livestock	To protect the livestock farmers from vagaries of nature by insuring animals against death.
	Supply of milch animals and dairy utensils to farmers.	To supply economically productive animals Improving production and quality of milk in district
	Supply of health packages for livestock of landless farmers.	Culling out of rearing unproductive animals with no acceptable results
	Fodder production and preservation	Demonstration on fodder production and preservation
	Provision of Artificial Insemination/Community Bulls facilities	Breed improvement through AI and breeding bulls
	Commercial Dairy Farming	To establish model for others and to motivate others for dairying
Poultry Development	Promotion of back yard poultry	This form of rural poultry is important source of assured nutritional supply and a sizeable return with no or little extra cost to the farm family.
Sheep and Goat Development	Goat/Sheep farming	Income and employment generation for weaker section of society

AH-Animal Husbandry Department, KVK-Krishi Vigyan Kendra, Co-operatives-Dairy



5.4 Activities for development of Animal Husbandry and Dairy in the district.

5.4.1. Proposal for capacity building of livestock farmers

The objective of the project is to create awareness regarding scientific management of livestock for gaining maximum production with minimum inputs. The detail knowledge regarding housing, feeding, health management of livestock and first aid in animals will be explained to the farmers under training programme. The farmer, who wants to startup his own livestock enterprise for the first time will also be most benefitted with this programme. Total of 14 group will be trained twice in a year, so the total number of trainings will come up to 28. The Rs. 300 per trainee will be utilized, which may account for the literature, tea, breakfast, lunch, travelling expense for the trainee. The tentative project proposal is shown below in the table.

The proposal for capacity building of livestock farmers is shown in table 5.4.1. This table shows the number of training to be allotted and expenditure per trainee per day in Junagadh district. The number of training equally proposed in each taluka. The total estimated cost for providing the training is Rs 42 lakhs in the 12th five year plan.

Table 5.4.1: Proposal for capacity building of livestock farmers

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Training (100 Trainees /training)	28	28	28	28	28	140
Total expense (Lakh) for trainings @ Rs.0.003 lakh /trainee/day **(Rs. in lakhs)**	8.4	8.4	8.4	8.4	8.4	**42.0**

5.4.2 Fertility Improvement Programme

The main objective of this project is to change the fertility state of animals from infertile to fertile. So, the animals which are not conceiving (Repeat breeding), showing irregular cyclicity or not showing signs of heat (anoestrus) can be treated very well and brought to the normal reproductive state, which may lead to increase in milk production of district. It is fact that infertile animals put an extra burden on milk producers and gives an un-satisfaction in dairy animal rearing so it is necessary to organize a series of infertility camps at village level and treat such infertile animals. Simultaneously awareness programme pertaining to animal reproduction should also be organized. This project will help in reducing inter-calving period, increasing number of milch animals and increase in milk production of district, In addition to this there will be awareness in milk producers about scientific rearing of dairy animals in the district.

The proposal for fertility improvement programme is shown table 5.4.2. This programme includes the number of villages to be covered, number of animals to be covered, number of fertility camps to be organized, total expenditure, number of awareness programme, expenditure per Awareness programme, Audio-Visual aids for awareness programme etc. In this plan number of village, number of animals, number of fertility camps organization is equally proposed in each taluka. The total estimated cost for this programme is Rs 1256.20 for this 12th five year plan.

Table 5.4.2 Proposal for fertility improvement programme

Sr. No.	Particulars	Years					Total
		2012-13	2013-14	2014-15	2015-16	2016-17	
1	No. of Villages to be covered	200	200	200	200	200	1000
2	No. of Animals to be covered	10000	10000	10000	10000	10000	50000
3	No. of fertility camps to be organized	500	500	500	500	500	2500
4	Total Expenditure (Rs. 0.40 lakh per camp) (Rs. in lakhs)	200.00	200.00	200.00	200.00	200.00	1000.00
5	No. of Awareness programme	500	500	500	500	500	2500
6	Expenditure per Awareness programme (Rs. 0.10 Lakh)	50.00	50.00	50.00	50.00	50.00	250.00
7	Audio-Visual aids (lakh)	5.00	-	-	-	-	5.00
8	Maintenance of Audio-Visual aids (lakh)	-	0.30	0.30	0.30	0.30	1.20
	Total Expenditure(Rs in lakhs)	**255.00**	**250.30**	**250.30**	**250.30**	**250.30**	**1256.20**

5.4.3 Supplementation of Mineral Mixture to Milch Animals

Due to over exploitation of land under extensive cultivation and poor recycling of farm wastes, the soils have become deficient in nutrients. Deficiency of Ca, P and micro nutrients has severely affected the health, productive and breeding efficiency of dairy animals. Reproductive problems viz., age at first heat, age at first calving, calving interval, conception rate, abortion, vaginal prolapsed and other deficiency syndromes have severely affected the breeding ability of dairy animals. Retarded calf growth and poor animal health are another severe threats associated with mineral deficiency in feeding straw, fodder and other food-stuffs. Encouraging results have been obtained by supplementing 40-50 grams of quality mineral mixture per day per lactating animal in the ration. Since, milk is one of the main constituents of human diet the deficiency of mineral in milk obtained by feeding deficient fodder has become a great concern to human health.

Table 5.4.3 - Proposal for mineral mixture (MM) feed supplement

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of animal to be covered under MM	15000	15000	15000	15000	15000	75000
MM req. in Kg (@50g/day/animal for 300days)	225000	225000	225000	225000	225000	1125000
Total Cost (Rs. 0.0015 lakh/Kg) (Lakhs)	**337.50**	**337.50**	**337.50**	**337.50**	**337.50**	**1687.50**

5.4.4 Supply of balanced concentrate ration to Animals

Feeding cost accounts for more than 70% of total cost of milk production. The profitability of any milk production programme and health of animals depend upon the feeding management of animals. The problems associated with feeding are, under feeding, over feeding, imbalanced feeding and mineral deficiency. Young, heifers and non lactating animals are generally ignored and only milch animals are properly looked after. Such practice is not desirable. The care ignored at young age and during dry period has worse effects on the milk production and health of the animals in subsequent lactation. Balanced feeding improves the body weight gain, reduces the age at first calving, overcomes the problems of mineral deficiency and helps in better milk production and body condition.

At present there is no direct source of procuring balanced animal feed within the district, hence, milk producer are forced to pay higher prices for animal feed which is not made for this district or of poor quality. Considering geography, rainfall and poor economic condition of milk producers the feed manufacturing unit is of prime need in the district. This project will full fill following objectives.

- To improve the animals productive efficiency by providing balanced concentrate ration.
- To ensure regular supply of economical balanced cattle feed at "No profit no loss" basis, throughout year.
- To improve the existing animal feeding practices in the district.
- To improve the general health of the animals by incorporating some of the important minerals, vitamins and medicines during preparation of balanced cattle feed.
- To uplift rural economy by encouraging animal husbandry practices.
- To bring out the awareness and perception about the use and benefits of cattle feed among the milk producers.
- To promote the cattle feed marketing at large scale to rural milk producers, so, they will gain more income through animal husbandry.

The project will be under the supervision of a committee including N.D.D.B. representative, District Development Officer, Project Administrator – TAPS, representative from DRDA *etc.*

Table 5.4.4: Proposal for feed factory plant 100MT per day

Sr.No.	Description	Total (lakh)
A	**Overall Civil construction expenditure**	
1	Civil works & land development	100.00
2	Storage building facilities	100.00
3	Non- industrial buildings	60.00
4	Compound wall and other	20.00
5	Roads & pavements	40.00
6	Electrification	10.00
7	Water supply & drainage	10.00
8	Architect/ Engineer consultancy service	10.00
9	Civil contingency	10.00
Sub Total		**360.00**
B	**Process and production equipment**	
1	Raw materials and intake equipments	30.00
2	Grinding equipments	20.00
3	Batching and mixing	100.00
4	Molassing equipments	75.00
5	Pelleting equipments	50.00
6	Bagging equipments	40.00
7	Housing steel structure	150.00
8	Product piping and fitting	20.00
9	Driving equipments	50.00
Sub Total		**535.00**
C	**Service equipments**	
1	Steam generating system	50.00
2	Fuel handling system	40.00
3	Compress air handling system	5.00
4	Water handling system	5.00
5	Industrial electrical high tension	12.00
6	Industrial electrical low tension	25.00
7	Service equipment contingency	5.00
Sub total		**142.00**
D	Laboratory equipments	**20.00**
E	Workshop tools and equipments	**5.00**
F	Fire fighting system	**5.00**
G	Weighting equipments	**15.00**
H	Miscellaneous equipments	**20.00**
Total		**1102.00**
I	Installation & commission of Process and production equipment (15 %)	**165.00**
J	Technical service fee of Process and production equipment (5 %)	**55.00**
K	Contingency of Process and production equipment (5 %)	**55.00**
Grand Total (Rs in lakhs)		**1377.00**

5.4.5 Provision of shed for livestock

As stated earlier animal husbandry is poor in Junagadh district, animals are kept by the livestock owners at inconvenient place under stressful conditions. The livestock owners generally tie their animals under trees in front of their houses, kaccha/ thatched shed with unleveled flooring with or without manger and no drinking water facility at place. Hence, under this housing facility, these animals are not comfortable and are under stress condition. Animals are harassed by flies, fleas, mosquitoes *etc*. in such housing which also adds to stress level of animals. These livestock stands in this housing system during hot summer, cold winter and monsoon. They aren't well protected under this situation thereby the production level of animals is badly hampered. Therefore, by providing the shelter to animals they will be protected against all above problems and there will be improvement in production performance of these animals. The detail of proposed project for provision of shed for livestock is as under.

The proposal for provision of shed for livestock is shown in table 5.4.5. The table shows the number of animal husbandry farmers to be covered and financial requirement per farmer. The total financial requirement for provision of shed for livestock in Junagadh district is Rs 7500.00 lakhs for 12th five year plan.

Table 5.4.5: Proposal for provision of shed for livestock in Junagadh District

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. AH Farmers to be covered	5000	5000	5000	5000	5000	25000
Financial Requirement (0. 30 lakh/farmer) **(Rs. in lakhs)**	1500.00	1500.00	1500.00	1500.00	1500.00	**7500.00**

5.4.6 Rearing of female cattle/buffalo calf

Healthy cows/buffaloes are the basic factors involved in success of dairying and calves are the livestock industry of the future. Calf rearing is one of the most neglected aspects in dairying. Calf management plays an important role in the development of the dairy sector of the country. Young calves reared scientifically will help to improve the socio- economic status of farmers through better growth rate and they could become potential milk yielders in future. Calf care is not only essential to sustain the dairy industry but is also essential for the wake of preserving and maintaining our good quality germplasm. Important aspects in the calf rearing are the health management and proper nutrition to the calves. Adoption of scientific practices could effectively control calf mortality. Non adoption of proven practices could be due to lack of awareness.

In Junagadh district the peoples are not aware of scientific calf rearing. People don't rear the calf in proper scientific way so that it can be the part of their future herd. Hence, it is an urgent requirement for people of this area to learn the way of scientific dairying and calf rearing as a future herd. The future of any herd depends upon how the calves are raised. One has to raise one's own calves to make a good potential herd. So the calf rearing should be taken upon scientific lines and it should be achieved cost-effectively.

The following is the proposed project for calf rearing. One unit comprising of 10 female calves will be reared for three years and afterwards the matured heifers will be inseminated with proven bull semen and these pregnant animals will be sold by the farmer. In following table 5.4.6 shows approximate calculation of expenditure per unit of 10 calves is shown while, table 5.4.7 showing total expenditure on five calf rearing units in each taluka.

Table 5.4.6: Details of expenditure per year (Rs. In Lakh) per female cattle/buffalo calf rearing unit of 10 calves.

Year	Concentrate	Fodder	Mineral Mixture	Medicines	Housing	Total
First	0.70	0.15	0.10	0.05	1.00	2.00
Second	0.67	0.165	0.11	0.055	0.00	1.00
Third	0.70	0.15	0.12	0.03	0.00	1.00
Cumulative	2.04	0.465	0.33	0.135	1.00	4.00

Table 5.4.7: Proposal for female cattle/buffalo calf rearing unit

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of Female calf rearing unit (10 female calf per unit)	14	14	14	14	14	70
Expenditure (Rs. 4.00 Lakh) per unit	**56**	**56**	**56**	**56**	**56**	**280**

5.4.7 Providing Life Insurance to Livestock

In Junagadh district, the socio-economic status of farmer is poor. The livestock owners keep animals to uplift their economics. They take their animals for grazing during day time where animals have the risk of snake bite, food poisoning by eating poisoning plants or any other accidental risk on life. In addition to this there may occur death of animals due to life threatening diseases. Therefore, to protect the livestock farmers from vagaries of nature by insuring animals against death. Protecting livestock farmers from sudden death of dairy animals and sustaining their livelihood.

The proposal for providing life insurance to live stock table shown in the table 5.4.8. This table includes the number of animals proposed from each taluka. The amount of insurance per animal is Rs 0.015 lakh and the equal number of animals proposed from each taluka. The estimated total amount of insurance for livestock is Rs 1125 lakhs for 12th five year plan.

Table 5.4.8: Proposal for providing Life Insurance to Livestock

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of Animals to be covered	15000	15000	15000	15000	15000	75000
Amount of insurance Rs. 0.015/animal **(Rs. lakhs)**	225	225	225	225	225	**1125.0**

5.4.8 Supply of dairy utensils to AH farmers.

The farmers of Junagadh district cannot afford to purchase dairy utensils (steel bucket, milking vessel, feeding vessel, tieing iron chain, *etc*.) and therefore, milks the animal in house hold pots, which may deteriorate the quality of milk. In consideration of above facts it is needed in the district to supply good quality dairy utensils.

The proposal for supply of dairy utensils to AH farmers is shown in table 5.4.9. The table shows the number of farmers to be proposed and amount required per farmer. Equal number of farmers proposed from each taluka. The total estimated amount required for supply of milch animals and dairy utensils to AH farmers is 250 lakh for the 12th five year plan.

Table 5.4.9: Proposal for supply of dairy utensils to AH farmers

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of farmers to be covered	5000	5000	5000	5000	5000	25000
Amount Required Rs.0.01 lakh/farmer for dairy utensils **(Rs. lakhs)**	50	50	50	50	50	**250**

5.4.9 Supply of health packages for animals to landless AH farmers.

The main occupation for landless families of this area is to rear livestock and labour work in others' farm field or under government projects, *viz*., MNAREGA. With this they grow sufficient income for their family but can't manage to pay for feed and fodder of their animals. This turns in unproductive rearing of animals with no acceptable results, which motivates farmers to go away from animal husbandry to other non-agricultural work as a livelihood tool for family. To overcome this problem of poor landless livestock owners, they should be supplied with health package for their animals. With the help of this package livestock owner will have feed and fodder supplements, dewormer, ectoparasiticidal and liver corrector for sustainable livestock rearing.

The proposal for supply of health packages for animals to landless AH farmers are shown in table 5.4.10. The table shows the number of farmers to be proposed and amount required per farmer. Equal number of farmers proposed` from each taluka. The total estimated amount required for supply of health packages or animals to landless AH farmers is Rs 2500 lakh for the 12th five year plan.

Table 5.4.10: Proposal for health packages for animals to landless AH farmers.

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of farmers to be covered	5000	5000	5000	5000	5000	25000
Amount Required Rs.0.10 lakh/farmer/year **(Rs. lakhs)**	500	500	500	500	500	**2500**

5.4.10 Fodder production and preservation

Feed and fodder accounts for about 70% of the total cost of milk production. Profitability and viability of any dairy production programme depends on feed and fodder availability and feeding management of dairy animals. Feed and fodder availability is continuously decreasing for the livestock due to heavy demands for grain production and urbanization. The palatable fodder crops like maize, lucern, oats and cowpea have almost become extinct from the scene in groundnut, wheat and cotton crop area. Decreased area under fodder crops leading to poor availability of green fodder for dairy animals.

The limiting availability of green fodder is the biggest concern in dairy production system. Adequate availability of green fodder round the year not only improves the health of animals but also reduces the cost of production considerably. For overcoming this problem viable assignment is to launch a big campaign for growing green fodder in larger area is to be implemented.

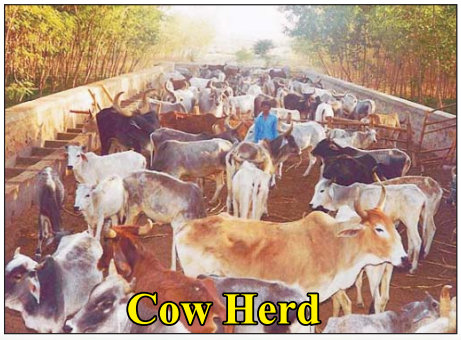
Proposal for fodder production and preservation is shown in table 5.4.11. This table shows the number of farmers to be proposed, amount required for fodder production and amount required for fodder preservation for Junagadh district. The total expenditure both for fodder production and preservation during the 12th five year plan is Rs 100 lahks. The equal number of farmers is to be covered from each taluka.

Table 5.4.11: Proposal for fodder production and preservation

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of farmers to be covered	500	500	500	500	500	2500
Amount required Rs.0.02 lakh/farmer for fodder production	10.0	10.0	10.0	10.0	10.0	**50.0**
Amount required Rs.0.02 lakh/farmer for fodder preservation	10.0	10.0	10.0	10.0	10.0	**50.0**
Total Expenditure	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**100.00**

5.4.11 Provision of Artificial Insemination

Main object of this project is to produce genetically improve breed by artificial insemination of bride local breed of cattle / buffalo**es.** Project of establishing new A.I. centres in Junagadh district will help farmer to get A.I. facilities at door step level to produce a good quality animal and generate self employment at village level.


Cow Herd

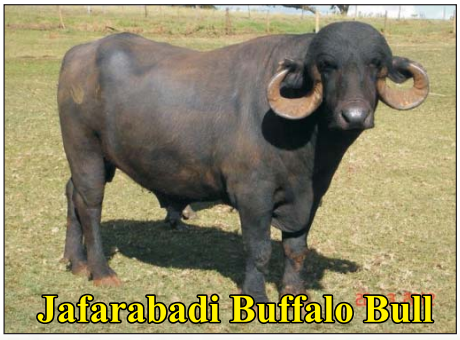

Jafarabadi Buffalo Bull

Table 5.4.12: Proposal for Provision of Artificial Insemination facilities

	Particular	2012-13			2013-14		2014-15		2015-16		2016-17	
		Unit	Unit Cost	Total Cost (Rs in lakhs)	Unit	cost(Rs in lakhs)	Unit	cost(Rs in lakhs)	Unit	cost(Rs in lakhs)	Unit	cost(Rs in lakhs)
1	No of A.1. Centre	70			70		-		-		-	
2	LN2 Container Require											
	55 liters for Transportation	7	0.30	21.00	7	21.00						
	35 Liters	70	0.24	16.80	70	16.80						
	3 Liters	70	.090	6.30	70	6.30						
3	A.I. Equipments with Furniture	70	.15	10.50	70	10.50						
4	Vehicle for Ln2 Transportation	1	7.00	7.00	1	7.00						
5	Trevis	70	.060	4.20	70	4.20						
	Sub Total A			**65.8**		**65.8**						
6	LN2 Gas											
	400 liters/year/Centre	28000	0.00012	3.36	28000	3.36		3.36		3.36		3.36
	Sub Total B			**3.36**		**3.36**		**3.36**		**3.36**		**3.36**
7	Training											
	A.I.Worker	70	0.30	21.00	140	42.00		42.00		42.00		42.00
	A.I.Officer	4	0.60	2.40	8	4.8		4.8		4.8		4.8
8	Vehicle for A.1. officer	4	0.55	2.20	3	1.65						
	Sub Total C			**25.6**		**48.45**		**46.8**		**46.8**		**46.8**
9	Semen Doses Required											
	5000 Semen dose req./ centre/year	350000	0.00015	52.5	700000	105.0	700000	105.0	700000	105.0	700000	105.0
10	Multi media with Computer	1	1.50	1.50	0	0	0	0	0	0	0	0
11	Phase Contrast Microscope	1	0.60	0.60	0	0	0	0	0	0	0	0
	Sub Total D			**54.6**		**105**		**105**		**105**		**105**
	Total (A+B+C+D)			**146.0**		**219.25**		**151.8**		**151.8**		**151.8**

Grand total Rs. 820.65 lakh.

5.4.12 Proposal for Supply of breeding bulls and castration of roaming bulls in villages

In the absence of A.I. facilities, the farmers are using nondescript animals for breeding their animals. This has resulted in decline in productivity of dairy animals. For increasing the milk production and income from milch animals, an efficient and practical animal breeding system is of immense importance. The success rate of A.I. in the buffaloes is very low and the reasons for this are manifolds. Therefore, it is proposed that bulls of proven breeding ability may be provided in villages with maintenance allowance. The duty of maintaining bulls can be assigned to a good and reputed person or committee in the village itself. The one of the reason of the reduction in the weight of cattle is roaming bulls, so it is necessary to castrate these roaming bulls in villages. The proposal for supply of breeding bulls and the castration of roaming bulls in villages of different taluka of Junagadh district is shown in table 5.4.13. total estimated expenditure for this task is Rs 675 lakhs for 12th five year plan.

Table 5.4.13: Proposal for Supply of breeding bulls and castration of roaming bulls in villages

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of villages to be covered	150	150	150	150	150	750
Cost of two bulls/village @ Rs.0.40lakh/bull/village	60.00	60.00	60.00	60.00	60.00	**300.00**
Maintenance cost @ Rs. 0.40 lakh/two bulls	60.00	60.00	60.00	60.00	60.00	**300.00**
No of roaming schrub bulls for castration	750	750	750	750	750	3750
Cost @ 0.02 lakh/bull	15	15	15	15	15	**75**
Total Expenditure **(Rs. lakhs)**	**135.0**	**135.0**	**135.0**	**135.0**	**135.0**	**675.0**

5.4.13 Commercial Dairy Farming

In Junagadh district, there are 1,67,557 (70.0%) farm families of various land holding sizes engaged in the livestock farming. More and more number of farmers is falling into the category of marginal and small farmers due to division of land holdings involved in livestock enterprise. Buffalo is the main milch animal in the district and crossbred cows are now a day also being reared on small scale. The cost of one good animal is more than Rs. 40,000. Milk being an important component of diet is becoming a scarce commodity for the low and middle class families in both the urban and rural areas of Junagadh district. The reasons stated above have demanded the introduction of large commercial dairy farms, which can be run on economy of scale. The automation of this enterprise can bring down the cost of milk production, thereby making a good scope for commercially viable large sized dairy farms. The progressive and needy farmers from the district will be selected and will be granted with the fund to start the commercial dairy unit. The supervision of the farm will be under government veterinary doctor and scientist from Krishi Vigyan Kendra of the district.

The proposal for commercial dairy farming is shown in the table 5.4.14. The table shows the number of commercial dairy farms and amount required per farm. Each unit of dairy farm contains 10

animals and equal number of units proposed in each taluka of Junagadh district. The total estimated cost for this task is Rs 70 lakhs for 12th five year plan.

Table 5.4.14: Proposal for commercial dairy farming in district

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of commercial dairy farms (10 animals per unit)	4	4	2	2	2	**14**
Amount required Rs.5.00 lakh/farm **(Rs. lakhs)**	20.00	20.00	10.00	10.00	10.00	**70.00**

5.4.14 Poultry Development (Promotion of back yard poultry)

Poultry farming has established itself as one of the important independent commercial activity in the State. Climate, infrastructural facilities, easy finance and availability of ready market may contribute favourably towards development of this activity. Over years there has been an increase in number of poultry birds (layers and broilers) however uncertainty in markets has hindered its growth.

A number of farmers especially the landless and other farmers are having a few birds as back yard poultry. This form of poultry farming needs institutional support for its success as the productivity is quite low in these cases. The improved strains for this type of farming together with their production packages are required to be delivered to the farmer doorstep. There exists a sizeable market for the product i.e. eggs and meat of these birds in local areas. The extension services, training and marketing needs for poultry farming are to be effectively addressed in the plan. The growing urbanization, increasing demand for poultry, meat and eggs and expanding poultry units would get a boost if a marketing/poultry hub can be developed particularly in this region of state as of now there is no marketing centre of these products in the area.

Table: 5.4.15 Losses in Livestock/ poultry production

Sectors	Losses due to				Total output			
	Breeding problem	Disease (specify)	Feed unava-ilability	Insufficient management	Eggs	Meat ton/ year	Others milk lit/ year	Wool ton/ year
Poultry	1%	2%, HS, BQ, PPR, FMD	2%	3%	188100	1	-	-
Dairy					1000	754	36500000	-
Goatery					-	1335	-	-
Sheepery					-	6.7	-	48.7
					-	-	-	-

The proposal for low input bird/Back yard poultry in district is shown in the table 5.4.16. The table shows the number of units proposed per year and expenditure per unit per year. The expenditure per unit is Rs 3000 per unit per year. Equal number of units are proposed from each taluka and the total estimated expenditure is Rs 30 lakhs in Junagadh district for 12th five year plan.

Table 5.4.16: Proposal for Low input bird /Back yard poultry in district

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of Units	200	200	200	200	200	1000
Expenditure in Rs 0.03 Lakh /unit of 25 birds	6.0	6.0	6.0	6.0	6.0	**30.00**

5.4.15: Sheep and Goat Development

Sheep and goat have an important role in the sustenance and livelihood security of farmers and land less rural. The rearing of these animals is having potential for poverty alleviation with low risk. With the availability of open pastures in the district, sheep and goat rearing is feasible in a big way. However, promoting small units as subsidiary to the agriculture by landless labourers and those traditionally engaged in such activities is quite feasible. The strains of goat and sheep with semi-intensive feeding system, parasitic control measures and promotion of good management practices can ensure healthy economic return to the farmer.

This will be low cost, no risk moderately income generating activity with nutritional security for the family. Just like back yard poultry, this activity can be under taken on a limited scale which has un exploited market potential in and around the village itself.

A unit of five sheep/goat one male and four female animals costing approx. Rs. 5000/- can be given to each farmer. The proposal for goat rearing is shown in table 5.4.17. This table shows the number of units per year and expenditure per unit. Each unit contains 50 animals and equal number of units proposed in each taluka. The cost of one unit is Rs 50,000 and total estimated cost is Rs 125 lakh for the 12th five year plan in Junagadh district.

Table 5.4.17: Proposal for goat rearing unit in district

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of Units/(50 animals per unit)	50	50	50	50	50	**250**
Expenditure in Rs. 0.50 Lakh /unit **(Rs. lakhs)**	25.0	25.0	25.0	25.0	25.0	**125.0**

5.4.16 Fodder production

Main Fodder Crops for green fodder production: Jowar, S.S.G, Oar-Kent, Rajak Bajari, Paragrass, Sweet Sudan, Maize and Lucern.

Table 5.4.18: Estimated cost for Fodder Seed production units for green fodder (Rs Lakhs)

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Seed production farm	One unit in each Taluka of 50 ha area	10.00	12.00	12.00	14.00	14.00	62.0
Total		**10.00**	**12.00**	**12.00**	**14.00**	**14.00**	**62.0**

Main Fodder Crops for dry fodder production: Jowar, S.S.G, Sweet Sudan, Juwar, Gundari, Dry Grass Jowar SRF-286 & GSF, Cenchrus varieties

Table 5.4.19: Fodder Seed production units for Dry fodder **(Rs Lakhs)**

Description	Taluka	Area (Ha)	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Seed production farm	One unit in each in each Taluka	50.00	10.00	12.00	12.00	14.00	14.00	62.0
Total			**10.00**	**12.00**	**12.00**	**14.00**	**14.00**	**62.0**

Table 5.4.20: Fodder Banks for storage dry grasses from forest **(Rs Lakhs)**

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Construction of Dutch Barn/Godowns for storage of dry grasses. Each having storage capacity 10.00 Lakh kg	One in each Taluka, two in Junagadh	3	3	3	3	3	15
Cost Rs. In lakh (@ Rs. 25 lakh/godown)		**75**	**75**	**75**	**75**	**75**	**375.0**

5.5 Fisheries Development

In Junagadh district, there could be both inland fisheries development as well as scope for marine fisheries development. The details about the fisheries development in the district are given below:

- Inland Fishermen Cooperative Societies
- Active inland fishermen
- Active inland fisherwomen
- In the inland sector, the fish seed rearing centres owned by private sector
- Lot of scope for developing inland fish farming
- In the inland side, major carps such as Catla, Rohu, Mrigal, Common Carp and fresh water prawns are harvested.
- Need of fish, prawn and shrimp seed production units.
- Fish Feed production units are required.
- Marine fish catching may be improved by increasing the number of fishing boats and their technology.
- Marine fish (catch) needs processing industry with canning units.
- Marine fish Cage farming for lobster, shrimp, oysters and see weeds in coastal belt.
- Remote sensing for better fish catch.
- Establishment of fish feed manufacturing units.

5.5.1. Gaps Identified

- Unpredictable monsoon leads to water scarcity at times.
- Many water bodies receive water during monsoon only.
- Mismatch of major carp breeding season and water availability in tanks.
- Lack of proper infrastructure facilities for seed rearing, fish landing and marketing
- Low average unit fish production of long season tanks
- Lack of post harvest facility like cold storage/ fish processing unit

5.5.2. Intervention Required Areas

- Infrastructure development to attain self sufficiency in fish seed production through private, public and government participation.
- Expansion of fish culture in maximum water bodies
- Fish processing units for marine fish.
- Infrastructure development to modernize the existing marketing facilities in key areas and
- Capacity building training to the fish farmers and fishermen.

The taluka wise fisheries information is shown in fig 5.5.1. This information include the number of farmers in inland and marine fishing, number of reservoirs, number of boats (mechanized and nonmechanized), area of cage fish farming (ha), number of refrigerated vans for transportation, fish feed availability (kg) and fish processing units in different taluka.

Table 5.5.1 Fisheries Information (Talukawise)

Taluka	No. of fisherman Inland	Marine	No. of reservoirs	Boats mechanized	Refrigerated van for transportation	Fish processing units
Bhesan	0	0	4	0	0	0
Junagadh	318	0	13	0	0	0
Keshod	0	0	0	0	0	0
Kodinar	1521	14024	5	1064	0	0
Malia	323	2278	6	450	0	0
Manavadar	0	0	1	0	0	0
Mangrol	0	10620	1	2227	10	5
Mendarda	0	0	2	0	0	0
Sutrapada	51	1378	1	1285	0	0
Talala	0	0	0	0	0	0
Una	367	6268	4	722	0	0
Vanthli	0	0	2	0	0	0
Veraval	0	30178	0	4143	60	54
Visavadar	0	0	4	0	0	0
TOTAL	**2580**	**64746**	**43**	**9891**	**70**	**59**

Note: There is no cage fish farming in the district.
Source: Gujarat Fisheries Statistics State Department of Fisheries, Veraval

Table 5.5.2 Proposed physical and financial programmes of fishery activities

Name of activity	Unit cost (Rs)	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy (no)	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Fishery													
Fish/Shrimp Culture Farm	8	0	0	2	16	1	8	1	8	1	8	5	40
Sea Cage Farming	4	0	0	1	4	1	4	2	8	2	8	6	24
Fish Hatchery	11	1	11	0	0	0	0	1	11	0	0	2	22
Shrimp Hatchery	11	0	0	1	11	0	0	2	22	0	0	3	33
Fish Feed Manufacturing Unit	500	0	0	1	500	1	500	0	0	0	0	2	1000
Training for fish farmers	2.5	200	2.5	200	2.5	250	3	250	3	300	3.5	1200	14.5
Total		**201**	**13.5**	**205**	**533.5**	**253**	**515**	**256**	**52**	**303**	**19.5**	**1218**	**1133.5**

Source: Sea food Exporters Association, Veraval

The district has much to offer in fisheries sector as there is a long seashore available in the district. Under inland fisheries, aquaculture is possible in ponds, reservoirs and rivers. This activity has not yet picked up in the district. The chances of inland fisheries in the villages having perennial pond is much higher. The district is having 790 non mechanized boats for fishing in reservoir. The district is having about 2580 fisherman working in 43 reservoirs in inland fishing business. In marine fisheries (capture fisheries) about 64,000 fishermen with 9891 mechanized boats (vessels) and 257 non mechanized boats are involved. In marine fisheries (capture fisheries) about 59 fish processing units are operative mainly in Veraval and Mangrol Talukas with about 70 insulated refrigeration Van facilities.

Table 5.5.3: Bridging the gaps for realizing the Vision- Fisheries sector

No.	Thrust Areas/ Issues	Program	Activities
1	Inland aquaculture development	Establishment of inland fish/ prawn/ shrimp farms at village level	Providing technical and financial assistance

The proposal for training for inland fish farming is shown in the table 5.5.4. The table includes the number of training, number of trainees per training and expenditure per trainee for 5 days. The number of training are equally proposed in Junagadh, Veraval, Mangrol, Una, Sutrapada and Kodinar talukas. The total estimated expenditure for training for inland fish farming is Rs 21 lakhs for 12th five year plan.

Table 5.5.4: Training needs for Inland fish farming

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Trainings for five days. (No. of Trainees 50/ training)	Junagadh,Veraval, Mangrol , Una, Sutrapada, Kodinar, Malia	7	7	7	7	7	**35**
Cost (Rs in Lakh)/ training @Rs.1200/ trainee/5day **(Rs. in Lakh)**		4.2	4.2	4.2	4.2	4.2	**21.0**

The proposal for fisheries/prawn production units (ponds) at village level is shown in table 5.5.5. The table includes the number of fisheries and prawn production units and expenditure per unit is Rs 5 lakh. The number of units are equally proposed in Junagadh, Veraval, Mangrol, Una, Sutrapada, Malia and Kodinar talukas. The total estimated expenditure for establishment of **fisheries**/prawn production units (ponds) at village level in different talukas of Junagadh district is Rs 175 lakhs for 12th five year plan of Junagadh district.

Table 5.5.5: Proposal for providing fisheries/prawn production units (ponds) at village level

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Veraval,Mangrol, Una, Sutrapada, Kodinar, Malia, Junagadh	7	7	7	7	7	**35**
Total Cost Rs in Lakhs @ Rs.5.00 lakh/unit **(Rs. in Lakh)**		35.0	35.0	35.0	35.0	35.0	**175.0**

The proposal for providing training for marine fishermen is shown in table 5.5.6. The table includes the number of training, number of trainees and expenditure per training. Each training is of five days and expenditure per training per day is Rs 1200. The total estimated expenditure for providing the training to marine fishermen is Rs 30 lakhs for 12th five year plan of Junagadh district.

Table 5.5.6: Training needs for marine fishermen

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Trainings for five days. No. of Trainees (50/ training)	10	10	10	10	10	**50**
Total cost of training @Rs.1200/ trainee/5day **(Rs. in Lakh)**	6.0	6.0	6.0	6.0	6.0	**30.0**

The proposal for providing mechanized boats for marine fishermen is shown in the table 5.5.7. The table includes the number of units and cost per unit. The cost per unit is Rs 15 lakhs and number of units is equally proposed in talukas mentioned in table. The total estimated expenditure is Rs 3750 lakh for Junagadh district for 12th five year plan.

Table 5.5.7: Proposal for providing mechanized boats for Marine fishermen

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Veraval, Mangrol, Una, Sutrapada, Kodinar	50	50	50	50	50	**250**
Total Cost Rs in Lakhs @ Rs.15.00 lakh/unit		750.0	750.0	750.0	750.0	750.0	**3750.0**

The proposal for providing fish processing units (including insulated refrigeration van) for marine fisheries is shown in the table 5.5.8. The cost per unit is Rs 800 lakhs and the total estimated cost is Rs 4000 lakhs. The units are equally proposed in mentioned talukas.

Table 5.5.8: Proposal for providing fish processing units (including insulated refrigeration van) for Marine fisheries

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Veraval, Mangrol, Una, Sutrapada, Kodinar	0	1	1	2	1	**5**
Total Cost Rs in Lakhs @ Rs.800.00 lakh/unit		0.0	800.0	800.0	1600.0	800.0	**4000.0**

5.6 Forestry

In Junagadh 6% of the district land is forest land. Looking at the degradation of the forest, land resources the district has been granted with watershed programme through different Govt. department agencies. There is a need for massive time bound programme in aforestation of wasteland. With more forestation it will help in supplementing income generation with minor forest based collection.

Table 5.6.1: Bridging the gaps for realizing the Vision- Forestry sector

No	Thrust Areas/ Issues	Program	Activities	Approach
1	Forestry	Agro-forestry	Educating farmers through demonstration and training and providing units	Training and Demonstrations
		Minor forest products	Educating farmers through demonstration and training and providing units	Training and Demonstrations

		Bamboo cultivation	Providing nursery and planting material	Providing units
		Tree cover improvement	Providing tree covers	Providing tree covers
2	Fisheries	Establishment of fisheries/ prawn production units at village level	Providing units (ponds) at cooperative base	Providing units

Table 5.6.2 Action Plan for social forestry for XII Five Year Plan

Activity	Year-wise target (Fin in Lakhs)											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Nursery	05 Nos.	15	07 Nos.	21	10 Nos.	30	12 Nos.	36	15 Nos.	45	49 Nos.	147
Planting materials	50000	1	50000	2	50000	2.5	50000	3	50000	4	250000	12.5
Land development	5 ha	2	10 ha	4	15 ha	8	20 ha	16	25 ha	32	75 ha	62
Horti-silvi pasture	2 ha	2	5 ha	4	7 ha	8	10 ha	16	12 ha	32	36 ha	62
Rejuvenation	2 ha	3	5 ha	7	7 ha	10	10 ha	18	12 ha	20	36 ha	58
Total		**23**		**37**		**58.5**		**88**		**128**		**334.5**

The proposal for establishment of capacity building of forest staff is shown in table 5.6.3. The table includes the number of trainees per training and expenditure of training. Each training is of 6 days and expenditure per trainee per day is Rs 500 and total estimated expenditure is Rs 10.50 lakhs for 12th five year plan in Junagadh district.

Table 5.6.3: Proposal for capacity building of forest staff

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Training of Forest staff (No.) for 6 days (50Trainees /training)	One between two Taluka	1	1	1	2	2	**7**
Cost of training @ Rs.0.005/ trainee/ day **(Rs. in Lakh)**		**1.5**	**1.5**	**1.5**	**3**	**3**	**10.50**

The proposal for establishment of capacity building of forest farmers is shown in table 5.6.4. The table includes the number of training, number of farmers per training and expenditure of training. Each training is of 3 days and expenditure per farmer per day is Rs 300 and total estimated expenditure is Rs 31.5 lakh for 12th five year plan in Junagadh district.

Table 5.6.4: Proposal for capacity building of forestry farmers

Description	2012-13	2013- 14	2014- 15	2015- 16	2016- 17	Total
No. of Training (50 farmers/training) 3 days	14	14	14	14	14	70
Cost of training @ Rs.0.003/trainee/ day **(Rs. in Lakh)**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**31.5**

The proposal for demonstrations on Agro forestry is shown in table 5.6.5 in Junagadh district for 12th five year plan. The table includes the number of demonstrations to be held and expenditure per demonstration. The number of demonstrations is equally proposed in each taluka and expenditure per demonstration is Rs 10000. The total estimated expenditure is Rs 100 lakhs for demonstrations on Agro forestry for Junagadh district for 12th five year plan.

Table 5.6.5: Proposal for demonstrations on Agro forestry

Description	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**Total**
Number	200	200	200	200	200	1000
Cost/ demo @ Rs. 0.1 lakh **(Rs. in Lakh)**	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**	**100.00**

The Table 5.6.6 shows the Proposal for supply of tree cover improvement. The table includes the number of covers in lakhs and expenditure per tree is Rs 50. The covers are equally proposed in each taluka and the total estimated expenditure is Rs 250 lakhs for demonstrations on Agro forestry for Junagadh district for 12th five year plan.

Table 5.6.6: Proposal for supply of tree cover improvement

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number in lakhs	1000000	100000	100000	100000	100000	500000
Cost @ Rs. 50 Lakh/ unit	**50.00**	**50.00**	**50.00**	**50.00**	**50.00**	**250.00**

5.7 Agricultural Marketing and Agri-Business

The success of agricultural enterprises would depend not only on efficient production but also on the efficient marketing infrastructure which would ensure remunerative prices to farmers. The regulated markets functioning are one main market and one sub-market in each Taluka of the district.

5.8 Employment generation activities:

Table 5.8.1: Bridging the gaps for realizing the Vision for employment generation activities.

No.	Thrust Areas/ Issues	Program	Activities	Approach
1.	Employment generation activities	Vermi-composting	Educating farmers through demonstration and training in cluster approaches and providing units	Training and demonstrations, providing units
		Nursery	Educating farmers through demonstration and training and providing units	Training and demonstrations, providing units
		Bakery	Educating the rural youth by training and providing units	Training and providing units
		Bamboo craft	Training and providing materials	Training and providing materials
		Fruits and vegetable preservation	Educating rural youth by providing training	Training

5.8.1. Vermi-composting

Animal and plant wastes are rich sources of all plant nutrients which are required for the improvement of soil health and sustainability of crops and animals production. Unfortunately recycling of these nutrients is not done in a justified way. Most of plant nutrients are either burnt or put at undesired places leading to soil and water pollution on one hand and loss of plant nutrients on other hand in terms of worth billion of rupees Vermi-composting is an excellent method for recycling the farm wastes into valuable plant nutrients.

The proposal for providing training to farmers for vermi-composting is shown in the table 5.8.2. Table includes the number of farmers proposed for training and expenditure per training. The expenditure per trainee is Rs 600 and the total estimated cost for providing training to farmers for vermin-composting is Rs 6 lakhs for 12th five year plan in Junagadh district.

Table 5.8.2: Training needs for vermi-composting

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of farmers	200	200	200	200	200	**1000**
Cost (Rs. 0.006 in lakhs/trainee)	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**6.0**

The proposal for providing vermi-compost units is shown in table 5.8.3. Table includes the number of units and cost per unit. The expenditure per unit is Rs 25000 and equal number of units is proposed in each taluka. The total estimated cost is Rs 87.5 lakh for 12th five year plan in Junagadh district.

Table 5.8.3: Proposal for providing Vermi-compost units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	70	70	70	70	70	**350**
Cost @ Rs 0.25 Lakhs **(Rs. in lakhs)**	**17.5**	**17.5**	**17.5**	**17.5**	**17.5**	**87.5**

5.8.2 Bakery unit

A small scale bakery unit can provide employment to the rural youth. The training on the bakery will be provided by Bakery Unit of Junagadh Agricultural University, Junagadh.

The proposal for providing training is shown in 5.8.4. Table includes the number of trainees for training and expenditure per trainee per training. The total expenditure per trainee is Rs 800 per three days. Each training includes 25 trainees and trainings are equally proposed in each talukas. The total estimated cost for providing training to the trainee is Rs 10 lakhs for 12th five year plan for Junagadh district.

Table 5.8.4: Proposal for bakery trainings

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Trainings for three days. No. of Trainees (25/ training)	10	10	10	10	10	50
Cost @Rs.800/ trainee/3day **(Rs. in lakhs)**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**10.0**

The proposal for providing bakery mini Units is shown in table 5.8.5. Table includes the number of units and cost per unit. The expenditure per unit is Rs 1 lakh and equal number of units is proposed in each taluka of Junagadh district. The total estimated cost is Rs 35 lakh for 12th five year plan in Junagadh district.

Table 5.8.5: Proposal for bakery mini Units to be established

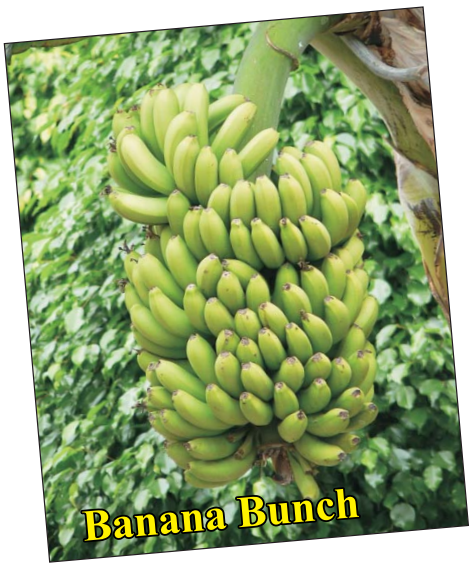
Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number	7	7	7	7	7	35
Cost **(Rs in Lakh)** @ 1.00 **(Rs. in lakhs)**	**7**	**7**	**7**	**7**	**7**	**35**

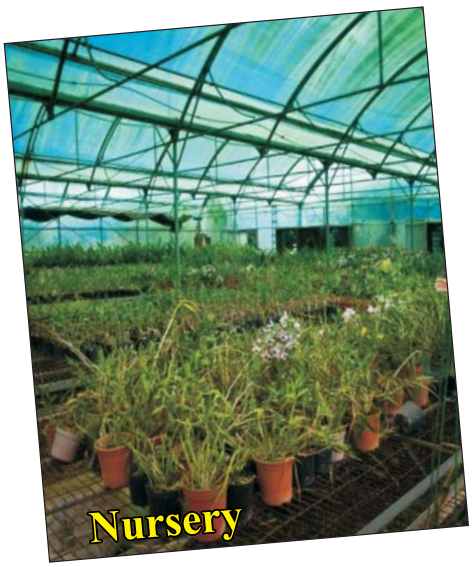

Protected Cultivation


Tomato


Banana


Mango


Banana Bunch


Nursery

CHAPTER VI

DISTRICT PLAN

6.1 Introduction

District planning is the process of preparing an integrated plan for the local government sector in a district taking into account the resources (natural, agricultural, human and financial) available and covering the sectoral activities and schemes assigned to the district level as well as below up to Taluka and village level and those implemented through governments, non government and private organizations. District plan has been prepared for Junagadh district for the XII five year plan period between 2012-13 to 2017-18 and this plan includes the proposals of various line departments like agriculture, horticulture, animal husbandry, fisheries, agricultural engineering, agricultural marketing and agri-business and water resources.

6.2 Growth drivers

The targets will achieved using different growth drivers in agriculture and allied Sectors as follows:

6.2.1 Agriculture

a) Crop diversification for more remunerative crops.
b) Development of high yielding varieties & hybrids.
c) Developing short duration varieties suitable for intercropping.
d) Increase area under hybrids and improved varieties in crops.
e) Resource conservation technologies for sustaining and improving the productivity levels.
f) Mechanization for increasing water use efficiency.
g) Seed grading, treatment and enhancing seed replacement rate.
h) IPM, INM and IWM.
i) Demonstrations and capacity building of field functionaries and the farmers.
j) Human resource development.

6.2.2 Soil Health Card

a) Research on soils to make it suitable for growing quality crops.
b) Prevention of degradation of soil fertility & care of soil health.
c) Reclamation of problematic soils.
d) Proper facilities of Soil & Water testing laboratory (Micronutrients & Ground water quality) in the district.
e) Use of waste biomass available from livestock, crop & farm for managing residues to maintain proper soil health.
f) Popularization of organic farming.

6.2.3 Agricultural Engineering

a) Improvement in farm mechanization.
b) Increase area under micro irrigation systems.

c) Development and recharge of ground water resources and implementation of watershed management programmes.

d) Establishment of storage structures and food processing units.

e) Implementation of renewable energy programmes.

6.2.4 Horticulture

a) Increasing area under fruits and vegetable crops.

b) Providing improved planting material of fruit crops.

c) IPM and INM.

d) Encouraging income and employment generating vocations through agro based vocations *viz.* vermi composting and food preservation etc.

e) Demonstrations and trainings for farmers and field officials

6.2.5 Forestry:

a) Increase area under agro forestry.

b) Ensuring livelihood of rural people by collection, processing and marketing of minor forest products.

c) Demonstrations and trainings for farmers & field officials.

6.2.6 Animal Husbandry:

a) Breed improvement through community bulls and A.I.

b) Mineral mixture feeding.

c) Deworming.

d) Fodder production and preservation.

e) Balanced feeding.

f) Demonstrations and capacity building of field functionary and farmers.

6.2.7 Fishery:

a) Utilization of village/Panchayat ponds for inland fisheries.

b) Technical inputs for increasing fish processing and its supply chain.

6.3 New Innovative Project Proposals

In Junagadh district, Agriculture, Horticulture, Animal Husbandry and Fisheries are the major enterprises practiced by the farming community. The major agricultural crops grown are groundnut, cotton, bajra, wheat, pulses and sugarcane. Due to monsoon failures, the agricultural activities in terms of return are reducing gradually, leading to low income of the farmers. To combat this and to make the farm activities sustainable, an innovative and integrated approach comprising of agriculture, agricultural engineering, horticulture, animal husbandry, fisheries and other allied activities is the need of the hour, which can improve the income of the farmers.

In this connection, the potentiality of Junagadh district could be explored and exploited to benefit the farming community. Special projects could be designed to optimally exploit the

natural and human resources in order to generate more income and employment. Towards this direction, a few income generating but small enterprises have been proposed as discussed under:

The activities to be focused are:

- Formation of commodity interest groups.
- Training on grading, post harvest technologies, value addition and market intelligence.
- Establishment of rural godown with drying yards.
- Providing cold storage facility.
- Encouraging contract farming.
- Food park with basic infrastructure facilities.

i) Goal and objectives

- To generate additional income for farming community.
- To develop entrepreneurship among farmers.
- To generate employment opportunities.
- To promote value addition to agricultural products.

ii) Project Strategy

- Formation of commodity groups.
- Training programme to create awareness about market intelligence among farmers.
- Encouraging contract farming in groundnut and value addition (setting up of cattle feed mixing unit).
- Training programme and exposure visit to farmers on grading and post harvest technology.
- Setting up of agro based industries with basic infrastructure facilities - Food park (Groundnut candy making, desiccated coconut production, packed tender coconut water production,coconut shell powder, spray dried coconut powder production).
- Providing storage facilities in rural area.

iii) Project Components

- Formation and strengthening of commodity based groups.
- Training to farmers on market intelligence.
- Facilitation to contact farming.
- Setting up of Mini cattle feed mixing unit maintained by Commodity group.
- Exposure visit on grading, post harvest technology and value addition.
- Establishment of Food Park with basic infrastructure facility.
- Establishment of rural godown with drying yards.
- Providing cold storage facilities.

6.3.1. Establishment of Multi Facility Testing Laboratory

For finding a solution of the problem, its testing in the laboratory, is of immense importance. Once the cause of problem is diagnosed, its cure becomes easy and less expensive. In the absence of testing facilities related to agriculture and animal husbandry, lot of expenditure is incurred for treatment without getting desired results. Soil and water testing, seed germination testing, seed and fodder testing, fertilizer and pesticide testing are the facilities required for supplying quality inputs and solving problems related to agriculture and animal production. In the absence of adequate testing facilities farmers move from here and there and incur lot of time and money for getting solutions of their problems. Therefore, it is proposed that a central multi testing facility laboratory for conducting the following tests may be established at Keshod and a tissue culture laboratory at Mangrol Taluka at Fruit Research Station, JAU, Mangrol for benefiting the farmers in solving their day to day problems. Outsourcing help can be sought for fulfilling the objectives.

i. Seed germination test.
ii. Soil and water testing.
iii. Cattle feed and mineral mixture testing.
iv. Milk testing.
v. Dung, urine and blood testing of animals.
vi. Fertilizers and other chemicals testing.
vii. Semen quality evaluation

Table 6.3.1 : Proposal for establishment of multi-facility and tissue culture laboratory in Junagadh district. **Phy-No., Fin. – Rs in Lakh)**

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Multi testing facility laboratory	1	100	0	0	0	0	0	0	0	0	1	100
Establishment of tissue culture laboratory	1	75	0	0	0	0	0	0	0	0	1	75
Total	**2**	**175**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**175**

6.3.2 Weather Watch and Forecasting System

The farmers of the district are prone to vagaries of nature. The crop damage due to hailstorms, chilling temperature, high temperature, stormy winds has become a common feature in the recent past. The crop insurance schemes are unrealistic and compensation on damage is taxing on the state. To avoid the financial loss and decrease in production, there is a strong need for Weather Watch and Forecasting System, so that farmers can save their crops or minimize the loss by manipulating /

modifying the farm operations as per need. It is therefore proposed to establish a Weather Watch and Forecasting System at Veraval Taluka in Fisheries College, JAU, Veraval. The weather station will be usefull for farmers as well as marine fishermen.

Table 6.3.2 : Establishment of Weather Watch and Forecasting System in Veraval Taluka

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Establishment of Weather Watch and Forecasting System	-	-	1	100	-	-	-	-	-	-	1	100.0

6.3.3 Agril. Informatics and training halls at Taluka level

Several projects are running simultaneously for the development of agriculture, animal husbandry, horticulture, agro forestry and fishery in the district. The farmers of remote area could not easily approach KVK or head quarters of line departments for getting information or solving their problems. Further inviting all the farmers at district headquarters or at KVK for conducting small trainings is neither desirable nor possible. It not only wastes the time and money of the farmers but field functionaries also face a lot of problems. Therefore, to train the farmers of all line departments, construction of a training hall along with agro informatics service equipped with computer and e–connectivity and linking them with head quarters of line departments, KVK and the SAUs is proposed in this plan. The Junagadh and Kodinar Taluka have already the training facilities, therefore the training facilities are proposed for remaining Talukas of the District.

Table 6.3.3: Fund requirement for establishing agril. informatics and training centres at Taluka level

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Establishing agril. informatics and training centres at Taluka level.	3	75	3	75	2	50	2	50	2	50	12	300

Note: 12 Talukas viz. Bhesan, Keshod, Malia, Manavadar, Mangrol, Mendarda, Sutrapada, Talala, Una, Vanthli, Veraval and Visavadar

6.3.4 Establishment of Food processing College, Renewable Energy college and Polytechnic in Agriculture.

6.3.4.1 Food Processing College:

The College of Food Processing Technology is proposed to fulfill the needs of the trained manpower for better utilization and value addition of agricultural produce for enhancement of income of farmers, minimizing wastage at all stages in the food processing chain by the development of infrastructure for storage, transportation and processing of agro-food produce, Induction of modern technology into the food processing industries, to encourage R&D in food processing for product and process development and improved packaging.

6.3.4.2 Renewable Energy College:

Renewable energy is energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable (naturally replenished). Agriculture is the sole provider of human food. Most farm machines are driven by fossil fuels, which accelerate climate change. Such environmental damage can be mitigated by the promotion of renewable resources such as solar, wind, biomass, tidal, geo-thermal, small-scale hydro, biofuels and wave-generated power. Hence, there is a need for generating the knowledge centre to promote use of renewable energy in agriculture through establishment of college of renewable energy.

6.3.4.3 Establishment of Polytechnic in Agriculture

There are polytechnics in agro-processing and horticulture under JAU-Junagadh. It is highly needed to prepare young workforce in agriculture through establishment of polytechnic in agriculture.

Table 6.3.4: Fund requirement for establishing New Colleges/ Polytechnic

(Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Establishment of Food processing College	One at district level	1	1000	-	200	-	200	-	200	-	200	1	1800
Establishment of Renewable Energy college.	One at district level	1	1000	-	200	-	200	-	200	-	200	1	1800
Establishment of Polytechnic in Agriculture	One at district level	1	500	-	50	-	50	-	50	-	50	1	700
Total		**3**	**2500**	**-**	**450**	**-**	**450**	**-**	**450**	**-**	**450**	**3**	**4300**

6.3.5 Establishment of High Tech Agro Park:

The demonstration of tissue culture, bio fertilizer green house, GM crops and aquaculture, food processing and value addition, renewable energy, automated drip fertigation system, etc.

Table 6.3.5: Proposal for establishment of High Tech Agro Park

(Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Establishment of High tech agro park	One at district level	1	500	-	250	-	250	-	250	-	250	1	1500

6.3.6 Establishment of Remote Sensing and GIS centre at Veraval taluka:

Monitoring of the changes and selection of suitable sustainable sites for aquaculture development is important in order to save the coastal ecosystems. This requires (i) detailed survey and monitoring of the present situation, (ii) exhaustive database creation, and (iii) modelling for sustainable development for brackish water aquaculture, agriculture, etc. Satellite remote sensing technique is being used as a tool to know location, extent and spatial and temporal changes of coastal fisheries. Therefore, there is an urgent need to establish the centre of Remote Sensing and GIS for sustainable development of the coastal resources, both for aquaculture/fisheries and agriculture.

Table 6.3.6 : Proposal for establishment of Remote Sensing and GIS centre at Veraval taluka

(Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Establishment of Remote Sensing and GIS centre	Veraval taluka	1	200	-	50	-	50	-	50	-	50	1	400

6.3.7 Establishment of Krushi Vigyan Kendra at district level:

Krishi Vigyan Kendra is one of the important institution, which involved in transfer of technology related to agriculture and related occupations. At present Junagadh KVK is under the NGO Ambuja cement foundation at Kodinar, there are 14 talukas in the district and one KVK is not able to cater the need of the farmers of the district. Therefore, it is necessary to establish another KVK at district head quarter.

Table 6.3.7 : Proposal for establishment of Krushi Vigyan Kendra at district level

(Phy-No., Fin. – Rs in Lakh)

Description	Year-wise financial requirement											
	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin.	Phy	Fin.	Phy	Fin
Establishment of Krushi Vigyan Kendra at district level	1	140	-	140	-	90	-	100	-	110	1	580

6.4 Miscellaneous activities:

6.4.1 Kisan Mela

Keeping in view, the innovative idea of the Hon'ble chief minister shri Narendra Modi of mass campaigning for agricultural technologies at farmers' doorstep, the Kisan Melas are proposed once in a year at each Taluka. These melas provide a common platform to the farmers to exchange their views with the expert/scientists. In the Kisan Mela, the season based crop production, animal husbandry and fisheries technologies will be demonstrated. The farmers visiting the melas themselves judge the performance of different technologies exhibited and adopt in their farming system. The buzz sessions help the farmers in highlighting their problems to the experts. Participation of agro-industrial input suppliers for demonstrating their latest technologies is an additional advantage in these events. Therefore, provision of one Kisan mela per taluka is proposed in the district with a financial requirement of Rs. 5,00,000/- per mela.

Table 6.4.1 : Fund requirement for conducting Krishi Mela

(Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Krishi Mela	One in each taluka	3	15	3	15	3	15	3	15	2	10	14	70

6.4.2 Clinical Camps

Animal husbandry plays an important role in income and employment generation in the rural areas. There are several innovative technologies which can prove to be useful to the farmers for improving the health and productivity of animals can be demonstrated in clinical camps. Operating up on a diseased animal through surgery is a troublesome problem. Sometimes, the cost of treatment exceeds the paying capacity of the farmers. The clinical camps provide an opportunity to the farmers to exhibit the cows and cattle in the melas for motivation of other farmers. The message delivered by the scientists in such events help the farmers a lot. Therefore, one clinical camp is proposed in each Taluka

in five years with a grant of Rs. 50,000/- per camp. Interaction of farmers with field officers of department and other farmers, motivate the farmers for improving the health and productivity of their livestock.

Table 6.4.2: Fund requirement for clinical camps

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Cattle mela / clinical camp	One in each taluka	3	1.5	3	1.5	3	1.5	3	1.5	2	1.0	14	7.0

6.4.3 Farmer Puraskar:

Advance farmers spent a lot of time and money for creating new innovations in the agricultural production system. By adoption of these innovations, a large number of farmers are benefited. Keeping in view, the innovative ideas of the Hon'ble chief minister shri Narendra Modi for motivating the innovative farmers, if such farmers are encouraged with little awards, the other farmers will also be motivated for new innovations. Therefore, provision of five awards per year for best innovation one in each field of agriculture, horticulture, agricultural engineering, animal husbandry and fisheries have been proposed in this plan

Table 6.4.3: Fund requirement for giving award to progressive farmers

(Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Incentive award to progressive farmers	One in each field per year	5	1.5	5	1.5	5	1.5	5	1.5	5	1.5	25	7.5

6.4.4 Disease Diagnostic Kits

The field officers of animal husbandry departments have to attend the problems of animals at the doorsteps of farmers. There are no facilities available for disease diagnosis in the veterinary hospitals and centres. In the absence of these facilities, animals are not treated properly leading to unproductive farmers' expenditure. In the market disease diagnostic kits are available through which lot of help is available for proper diagnosis and treatment of animals. Therefore a budget provision of Rs. 50,000 per diagnostic kit is required in each taluka of the district in the 12th Five Year Plan.

Table 6.4.4: Fund requirement for Disease Diagnostic Kits

Phy-No., Fin. – Rs in Lakh)

Description	Taluka	Year-wise financial requirement											
		2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Disease Diagnostic Kits	One in each Taluka	3	1.5	3	1.5	3	1.5	3	1.5	2	1.0	14	7.0

6.5. Monitoring, Evaluation and Consolidated Budget Proposal:

Both monitoring and evaluation are the keys to success for any developmental Programme. Monitoring of the programme suggests the ways and means to add strong points and delete the undesired. Continuous monitoring and evaluation are also required for further extension of the project to achieve the desired goals. Therefore, it is suggested that year wise monitoring of progress may be made and evaluation of the goal achieved is done. A lot of expenditure (on POL, TA and other office expenses) will be incurred on monitoring and evaluation of the project for submitting the desired reports to the concerned departments. Therefore, an outlay of Rs. 10.0 lakh will be required for this task as per the details given below.

Table 6.5.1: Proposed Expenditure on monitoring and evaluation **(Rs in Lakh)**

Description	Year-wise financial requirement					
	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Expenditure on TA,DA, POL and hiring of vehicles and office expenses	2.0	2.0	2.0	2.0	2.0	10.0

6.6. Consolidated Budget Proposal of the Junagadh District for XII five year plan

Table 6.6.1: Consolidated Budget Proposal of the Junagadh District for XII five year plan

(Rs. in Lakh)

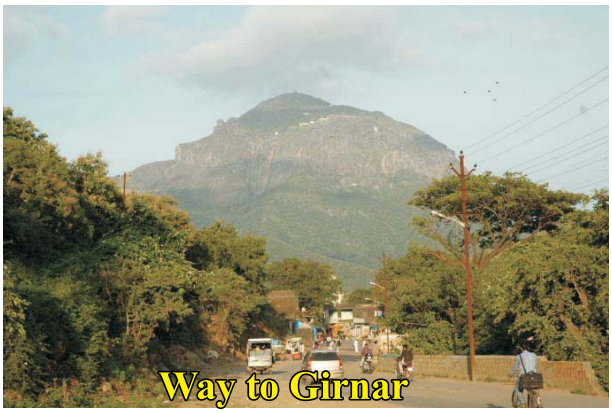
Budget proposal head wise	2012- 13	2013- 14	2014- 15	2015- 16	2016- 17	Total
I Agriculture						
Training Proposal for Capacity Building of Agriculture Staff	26.60	5.60	5.60	5.60	5.60	49.00
Training Proposal for Capacity Building of Farmers at district level on different technologies.	44.25	44.25	44.25	44.25	44.25	221.25
Varietal Demonstration in Next Five Years	81.00	101.00	101.00	101.00	118.00	502.00
Demonstrations on Plant health management to be conducted including seed treatment with bio-pest	36.00	37.80	40.50	43.20	45.00	202.50

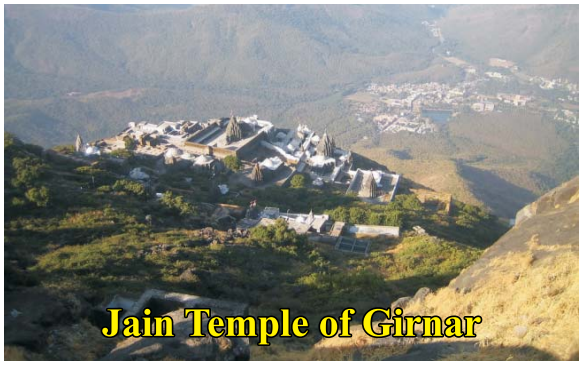
Cont.

Budget proposal head wise	2012- 13	2013- 14	2014- 15	2015- 16	2016- 17	Total
Demonstrations on Soil health management to be conducted including use of bio fertilizers and bio compost.	29.00	30.50	32.60	34.80	36.20	163.10
Demonstrations on IWM to be conducted during plan period	21.00	22.10	23.60	25.20	26.30	118.20
Production of organic input	19.00	0.00	0.00	0.00	0.00	19.00
IPM Demonstration	20.75	21.16	21.57	22.16	22.59	108.23
INM Demonstrations	10.10	10.10	10.10	10.10	10.10	50.50
Seed planning/ Seed village programme (Seed production enhancement)	14.00	14.00	14.00	15.30	15.30	72.60
Seed storage at University /Panchayat level and Taluka level	325.00	310.00	310.00	310.00	310.00	1565.00
Establishment of soil and water testing laboratory and mobile plant health clinic	175.00	175.00	175.00	175.00	175.00	875.00
Planning for soil testing	174.34	174.34	174.34	174.34	174.34	871.70
Reclamation of coastal saline soils	403.15	403.15	403.15	403.15	403.15	2015.75
Strengthening of APMC	70.00	70.00	70.00	70.00	50.00	330.00
Requirement of farm mechanization in the district	6027.00	7123.40	8424.80	9966.60	11801.30	43343.10
Protective Micro Irrigation Plan for drip and sprinkler	4384.19	5480.23	6850.29	8562.87	10703.58	35981.16
Planning of Soil Survey Programme (Topographical survey)	156.76	156.76	156.76	156.76	156.76	783.80
Protective (Community Tank) Irrigation	260.00	210.00	210.00	210.00	210.00	1100.00
Watershed development	865.0	865.00	865.00	865.00	865.00	4325.00
Establishment of Rural godown	136.50	152.60	152.60	152.60	168.70	763.00
Number of processing units and financial requirements	30.00	30.00	35.00	35.00	30.00	160.00

Cont.

Budget proposal head wise	2012- 13	2013- 14	2014- 15	2015- 16	2016- 17	Total
Number of renewable energy units and financial requirements	1595.00	1595.00	1595.00	1595.00	1595.00	7975.00
Special production zone for agricultural implements, equipments, machinery and irrigation equipments at district level	0.00	25.00	25.00	25.00	25.00	100.00
Establishment of training center for repair and maintenance of farm implement & machinery and irrigation equipment	500.00	100.00	100.00	100.00	100.00	900.00
Establishment of Smart Farming with Information Technology unit at district level.	25.00	10.00	5.00	5.00	5.00	50.00
Total- I: Agriculture	**15428.64**	**17166.99**	**19845.16**	**23107.93**	**27096.17**	**102644.89**


Way to Girnar


Jain Temple of Girnar

Cont.

Budget proposal head wise	2012 - 13	2013 - 14	2014 - 15	2015 - 16	2016 - 17	Total
II. Horticulture						
Training needs in vegetables crops	31.80	31.80	31.80	31.80	31.80	159.00
Establishment of nurseries	45.00	45.00	45.00	45.00	36.00	216.00
Establishment of poly houses	1050.00	1050.00	1050.00	1050.00	1050.00	5250.00
Demonstrations on vegetables for area expansion	10.00	11.00	12.00	13.00	14.00	60.00
Integrated pest management in Horticultural crops	0.74	0.87	1.00	1.13	1.26	5.00
Integrated nutrient management in fruit crops:	1.00	1.00	1.00	1.00	1.00	5.00
Integrated nutrient management in Vegetables crops	1.50	1.50	1.50	1.50	1.50	7.50
Project proposal for low cost net house	60.00	60.00	60.00	60.00	60.00	300.00
Project proposal for kitchen gardening with low energy drip	6.00	6.00	6.00	6.00	6.00	30.00
High tech vegetable farming including all components	75.00	75.00	75.00	75.00	75.00	375.00
Proposal for establishment of pre cooling units	75.00	75.00	75.00	75.00	75.00	375.00
Proposal for establishment of cold storage units	0.00	300.00	300.00	0.00	0.00	600.00
Proposal for establishment of godown units	300.00	300.00	300.00	300.00	300.00	1500.00
Proposal for establishment of Controlled Atmospheric units for perishable produce	0.00	1600.00	0.00	0.00	0.00	1600.00
Proposal for establishment of collection centers including shorting, grading and packing	30.00	30.00	30.00	30.00	30.00	150.00
Proposal for Mobile pre cooling unit/vans	48.00	48.00	48.00	48.00	48.00	240.00
Training need of farmers for fruit crops	12.00	12.00	12.00	12.00	12.00	60.00
Demonstration on fruit crops (Vadi model)	4.00	5.00	6.00	7.00	8.00	30.00
Introduction of new crop: pomegranate	0.40	0.80	1.20	2.00	2.00	6.40

Cont.

Budget proposal head wise	2012 - 13	2013 - 14	2014 - 15	2015 - 16	2016 - 17	Total
Supply of plant protection equipment (Foot sprayer)	8.00	8.00	8.00	8.00	8.00	40.00
Establishment of mango ripening chamber	170.00	170.00	170.00	170.00	170.00	850.00
Establishment of banana ripening chamber	150.00	150.00	0.00	0.00	0.00	300.00
Establishment of mango pack house	6.00	6.00	6.00	9.00	9.00	36.00
Establishment of banana pack house	9.00	9.00	9.00	9.00	9.00	45.00
Establishment of banana fibre and paper production unit	25.00	25.00	0.00	0.00	0.00	50.00
Establishment of sapota chips production units	30.00	30.00	30.00	0.00	0.00	90.00
Establishment of banana wafer production units	30.00	30.00	0.00	0.00	0.00	60.00
Recycling of banana waste through shredder and vermi-composting	2.00	2.00	0.00	0.00	0.00	4.00
Establishment of cocopit and fibre unit	10.00	10.00	10.00	10.00	10.00	50.00
Establishment of coconut kernel water packaging unit	20.00	20.00	20.00	20.00	20.00	100.00
Model floriculture centers cluster based	40.00	40.00	48.00	48.00	48.00	224.00
Cluster based Demonstrations on Spice and medicinal and aromatic plants	1.25	1.25	1.50	1.50	1.50	7.00
Establishment of high density planting in mango	36.00	36.00	36.00	36.00	36.00	180.00
Proposal for small scale fruit and vegetable processing trainings	2.80	2.80	2.80	2.80	2.80	14.00
Proposal for small scale Fruit and vegetable processing units to be established	4.50	4.50	4.50	4.50	4.50	22.50
Total-II : Horticulture	**2294.99**	**4197.52**	**2401.30**	**2077.23**	**2070.36**	**13041.40**

Cont.

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
III Animal Husbandry						
Proposal for capacity building of livestock farmers	8.40	8.40	8.40	8.40	8.40	42.00
Proposal for fertility improvement programme	255.00	250.30	250.30	250.30	250.30	1256.20
Proposal for mineral mixture (MM) feed supplement	337.50	337.50	337.50	337.50	337.50	1687.50
Proposal for feed factory plant	0.00	1377.00	0.00	0.00	0.00	1377.00
Proposal for provision of shed for livestock in Junagadh District	1500.00	1500.00	1500.00	1500.00	1500.00	7500.00
Proposal for female cattle/buffalo calf rearing unit	56.00	56.00	56.00	56.00	56.00	280.00
Providing Life Insurance to Livestock	225.00	225.00	225.00	225.00	225.00	1125.00
Proposal for supply of dairy utensils to AH farmers.	50.00	50.00	50.00	50.00	50.00	250.00
Supply of health packages for animals to landless AH farmers.	500.00	500.00	500.00	500.00	500.00	2500.00
Fodder production and preservation	20.00	20.00	20.00	20.00	20.00	100.00
Provision of Artificial Insemination facilities	146.00	219.25	151.80	151.80	151.80	820.65
Proposal for Supply of breeding bulls and castration of roaming bulls in villages	135.00	135.00	135.00	135.00	135.00	675.00
Proposal for commercial dairy farming	20.00	20.00	10.00	10.00	10.00	70.00
Proposal for Low input bird/Back yard poultry	6.00	6.00	6.00	6.00	6.00	30.00
Proposal for Goat rearing unit	25.00	25.00	25.00	25.00	25.00	125.00
Estimated cost for Fodder Seed production units for green fodder	10.00	12.00	12.00	14.00	14.00	62.00
Fodder Seed production units for Dry fodder	10.00	12.00	12.00	14.00	14.00	62.00
Fodder Banks for storage dry grasses from forest	75.00	75.00	75.00	75.00	75.00	375.00
Total III: Animal Husbandry	**3378.90**	**4828.45**	**3374.00**	**3378.00**	**3378.00**	**18337.35**

Cont.

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
IV. Fisheries						
Proposed physical and financial programmes of fishery activities	13.50	533.5	515.0	52.00	19.50	1133.50
Training needs for Inland fish farming	4.20	4.20	4.20	4.20	4.20	21.00
Providing fisheries/prawn production units (ponds) at village level	35.00	35.00	35.00	35.00	35.00	175.00
Training needs for Marine fishermen	6.00	6.00	6.00	6.00	6.00	30.00
Proposal for providing mechanized boats for Marine fishermen	750.00	750.00	750.00	750.00	750.00	3750.00
Proposal for providing fish processing units (including insulated refrigeration van) for Marine fisheries	0.00	800.00	800.00	1600.00	800.00	4000.00
Total-IV: Fisheries	**808.7**	**2128.7**	**2110.2**	**2447.2**	**1614.7**	**9109.5**

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
V Forestry						
Action Plan for social forestry for XII Five Year Plan	23.00	37.00	58.50	88.00	128.00	334.50
Proposal for capacity building of forest staff	1.50	1.50	1.50	3.00	3.00	10.50
Proposal for capacity building of forestry farmers	6.30	6.30	6.30	6.30	6.30	31.50
Demonstrations on Agro forestry	20.00	20.00	20.00	20.00	20.00	100.00
Proposal for supply of tree cover improvement:	50.00	50.00	50.00	50.00	50.00	250.00
Total-V: Forestry	**100.80**	**114.80**	**136.30**	**167.30**	**207.30**	**726.50**

VI: Employment generation activities						
Budget proposal head wise	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**Total**
Training needs for vermi-composting	1.20	1.20	1.20	1.20	1.20	6.00
Proposal for providing Vermi-compost units	17.50	17.50	17.50	17.50	17.50	87.50
Proposal for bakery trainings	2.00	2.00	2.00	2.00	2.00	10.00
Establishment of bakery mini Units to be established	7.00	7.00	7.00	7.00	7.00	35.00
Total-VI: Employment Generation Activities	**27.70**	**27.70**	**27.70**	**27.70**	**27.70**	**138.50**

Cont.

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
VII. New Innovative projects						
Proposal for establishment of multi-facility and tissue culture laboratory in Junagadh district.	175.00	0.00	0.00	0.00	0.00	175.00
Establishment of Weather Watch and Forecasting System in Veraval Taluka	0.00	100.00	0.00	0.00	0.00	100.00
Establishment of agril. informatics and training centers	75.00	75.00	50.00	50.00	50.00	300.00
Fund requirement for establishing New Colleges/ Polytechnic	2500.00	450.00	450.00	450.00	450.00	4300.00
Establishment of High tech agro park	500.00	250.00	250.00	250.00	250.00	1500.00
Establishment of Remote Sensing and GIS center at Veraval taluka	200.00	50.00	50.00	50.00	50.00	400.00
Proposal for establishment of Krushi Vigyan Kendra at district level	140.00	140.00	90.00	100.00	110.00	580.00
Fund requirement for conducting Krishi Mela	15.00	15.00	15.00	15.00	10.00	70.00
Fund requirement for clinical camps	1.50	1.50	1.50	1.50	1.00	7.00
Incentive award to progressive farmers	1.50	1.50	1.50	1.50	1.50	7.50
Fund requirement for Disease Diagnostic Kits	1.50	1.50	1.50	1.50	1.00	7.00
Proposed Expenditure on monitoring and evaluation	2.00	2.00	2.00	2.00	2.00	10.00
Total-VII:New Innovative projects	**3611.50**	**1086.50**	**911.50**	**921.50**	**925.50**	**7456.50**

Table 6.6.2: Sector wise budget Proposal of the Junagadh District for XII five year plan

(Rs. in lakh)

Budget proposal head-wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Agriculture	15428.64	17166.99	19845.16	23107.93	27096.17	**102644.89**
Horticulture	2294.99	4197.52	2401.30	2077.23	2070.36	**13041.40**
Animal Husbandry	3378.90	4828.45	3374.00	3378.00	3378.00	**18337.35**
Fisheries	808.7	2128.7	2110.2	2447.2	1614.7	**9109.50**
Forestry	100.80	114.80	136.30	167.30	207.30	**726.50**
Employment Generation Activities	27.70	27.70	27.70	27.70	27.70	**138.50**
New Innovative Projects	3611.50	1086.50	911.50	921.50	925.50	**7456.50**
Grand Total (Rs in Lakh)	**25651.23**	**29550.66**	**28806.16**	**32126.86**	**35319.73**	**151454.64**

ANNEXURE-I

Preparation of Draft Action Plan and Discussion with Stakeholders in Taluka Meetings

Proceedings of the Meetings

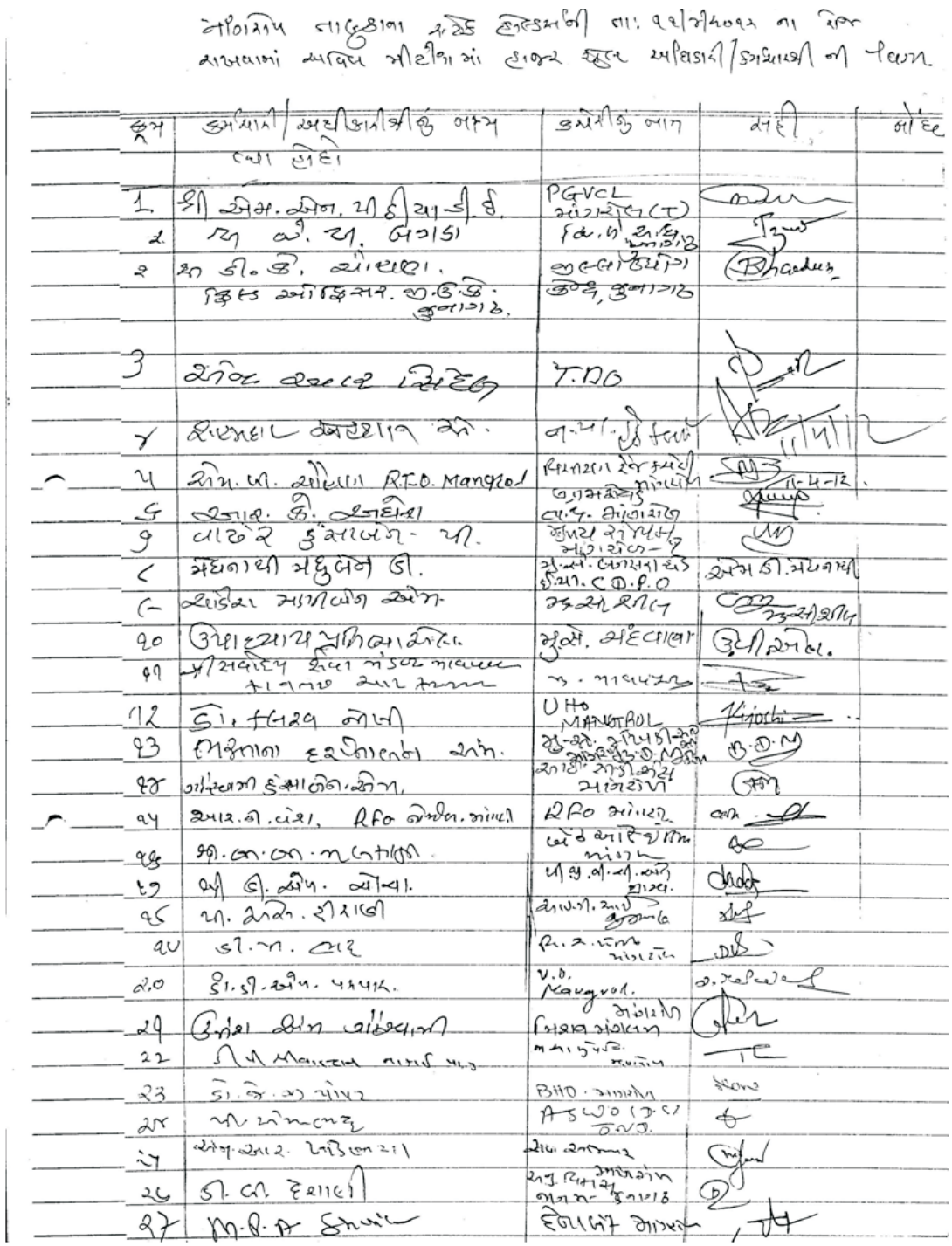
Based on the baseline information and proposals, the stakeholders meeting were organized at Taluka levels to discuss the plan. The details of the meetings organized are mentioned below. These meetings were attended by the TDOs' of concerned Taluka, scientists from JAU, officials from line departments, the representatives of local bodies and progressive farmers of the region.

Stakeholders meeting of Mangrol Taluka

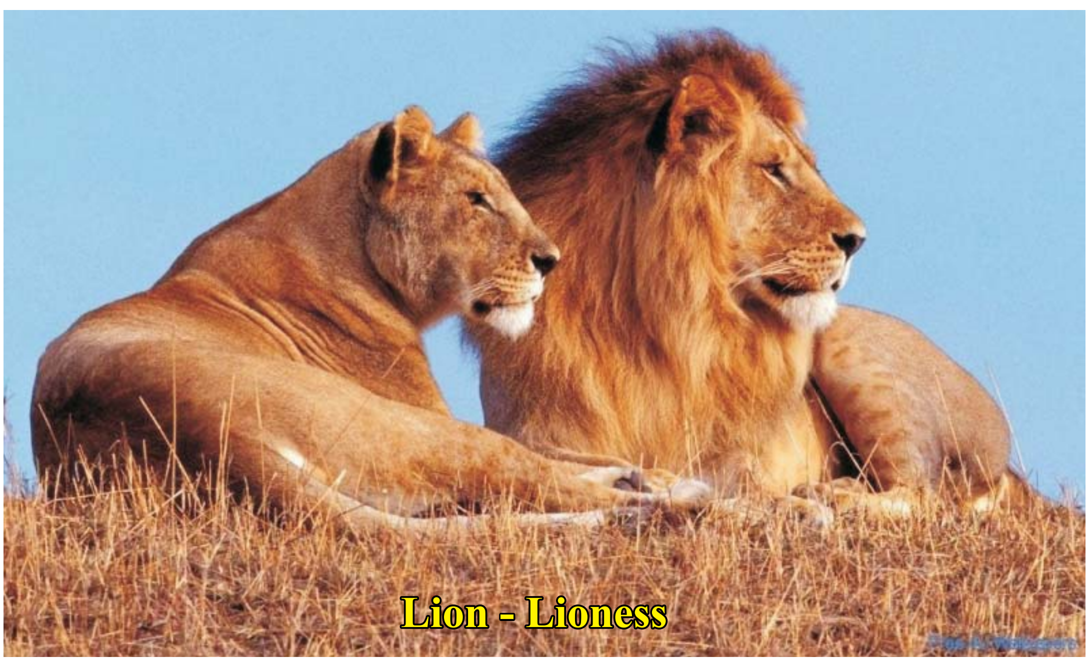
Stakeholders meeting of Mangrol Taluka

Stakeholders meeting of Keshod Taluka

Annexure II
Proceedings of the Meetings



ક્રમ	નામ	હોદ્દો	સહી	નોંધ
૧.	પ્રા. ડી. કે. પરીખ	[illegible]	[illegible]	[illegible]
૨	એમ. કે. સતાણીયા	[illegible] માંગરોળ	[illegible]	
૩.	[illegible]	[illegible]	[illegible]	
૪	डी. आर. [illegible]	म. खे. वे., मांगरोल	[illegible]	
૫.	એસ. આર. બારડ	ખેતી. અધી. માંગરોળ	[illegible]	



Lion - Lioness

આજરોજ તા.: ૩૦/૦૭/૨૦૧૨ ના કેશોદ તાલુકાના CDAP પ્રોગ્રામ અંતર્ગત સ્ટેક હોલ્ડર્સની મિટીંગ નાયબ કલેક્ટરશ્રીની કચેરી ખાતે યોજવામાં આવી હતી. જેમાં અધ્યક્ષસ્થાને શ્રી નાયબ કલેક્ટરશ્રી (કેશોદ તાલુકા), મામલતદારશ્રી (કેશોદ), તાલુકા વિકાસ અધિકારીશ્રી વિસ્તરણ અધિકારી, કાર્યપાલક ઇજનેરશ્રી, નાયબ ખેતી નિયામકશ્રી (જુનાગઢ) મદદ. સંશોધન વૈજ્ઞાનિકશ્રી (માંગરોળ), ખેતી. અધી. (કૃષિ, [illegible]) વગેરે હાજર રહ્યા હતા.

મીટીંગની શરૂઆત. મદદ. સંશોધન વૈજ્ઞાનિકશ્રી, ફળ સંશોધન કેન્દ્ર, માંગરોળ દ્વારા ટુંકમાં પરીચય આપી અને CDAP પ્રોગ્રામ અંગેની સમજ આપવામાં આવી. CDAP પ્રોગ્રામમાં કઇ-કઇ માહિતીની જરૂરીયાત રહેશે જેમ કે પરીવારોની સામાજીક, શૈક્ષણીક તેમજ આર્થિક પરિસ્થિતી, જમીનની જમીનો પ્રકાર, વર્ગો, સિંચાઇ અંગેની માહિતી, મુખ્ય પાકો અને તેનું ઉત્પાદન અને ઉત્પાદકતા, રાસાયણીક ખાતરની માહિતી, દવા ઓજારો અંગેની માહિતી, પશુપાલન, બાગાયત તેમજ અન્ય કૃષિ સમસ્યાઓ અને તેના નિવારણ માટેના ઉપાયો. તાલુકામાં ઉપલબ્ધ સુવિધાઓ જેવી કે બજારો, લેબોરેટરી, એગ્રો સેન્ટર વગેરે અને આગામી પાંચ વર્ષ માટે તાલીમ અને અન્ય કામગીરી કૃષિ વિકાસ માટે નાણાકીય તેમજ ભૌતિક જરૂરીયાત, વગેરે બાબતો ની CDAP અંતર્ગત માહિતીની જરૂરીયાત રહેશે.

આમ આ રીતે સમગ્ર CDAP પ્લાન તૈયાર કરવા માટે સંપૂર્ણ માહિતીગાર કરવામાં આવ્યા અને બધા જ હાજર રહેલ સ્ટેક હોલ્ડર્સ દ્વારા સહયોગ આપી માહિતી પૂરી પાડવામાં આવશે તેવી ખાત્રી આપવામાં આવી. ત્યારબાદ મીટીંગ પૂર્ણ જાહેર કરવામાં આવી.

તા:- ૩૦/૫/૨૦૧૨ ના રોજ કેશોદ તાલુકાની શાળામાં આવેલી મીટીંગમાં હાજર રહેલ અધીકારીઓ ની યાદી :-

ક્રમ	અધીકારીશ્રી / કર્મચારીઓનું નામ તથા હોદો	કચેરીનું નામ	સહી	નોંધ.
૧.	પી.બી. ગજેરા ના.કા.ઈ.	પં. મા.મ. પેટા વિ. કેશોદ	[illegible]	
૨	એમ.યુ. ડોડીયા ના.વિ.અ.	તા.પં. કેશોદ	[illegible]	
૩	ડી. પી. જાદવ ખેતીવાડી અધિકારી	ના.ખે.નિ. વિ. જુનાગઢ	[illegible]	
૪	આર. બી. ગામી	[illegible] કેશોદ	[illegible]	
૫	બી. ડી. પેથાણી	વિ. અધિ. ખેતી. [illegible]	[illegible]	
૬	કે. બી. ડાંગરમારુ	BIECO કેશોદ	[illegible]	
૭	એ. આર. કરંગીયા ના.ઈ. [illegible] કેશોદ	BIECO કેશોદ [illegible] કેશોદ	[illegible] 30/5/12	
૮	બી. યુ. પાનસુરીયા I/C DC	[illegible] FRTI ER(C)	[illegible] 30/5/12	
૯	[illegible]	[illegible]	[illegible]	
૧૦	એમ.જે. ગોરડ. ક્લાર્ક	ર. સે. સો. કેશોદ	[illegible]	
૧૧	M. G. Dodeja Ak. Assi. (NREGA)	TALUKA PANCHAYAT	[illegible]	
૧૨	[illegible]	[illegible] કેશોદ	[illegible]	
૧૩	[illegible]	[illegible]	[illegible]	
૧૪	ડો. [illegible]	V.O. [illegible]	[illegible]	
૧૫	શ્રી Piyush મહેતા, [illegible]	કેશોદ [illegible]		
૧૬.	શ્રી ડી. આર [illegible]	[illegible]	[illegible]	
૧૭.	શ્રી [illegible] GIDS, [illegible]	-"-	[illegible]	

આજરોજ તા: ૧૧/૭/૨૦૧૨ ના રોજ મામલતદાર કચેરી, માંગરોળ ખાતે ૧૨મી પંચવર્ષીય યોજના માટે ડીસ્ટ્રીક્ટ લેવલ તાલુકાં એગ્રીકલ્ચર પ્લાન તૈયાર કરવા માટેની મીટીંગનું આયોજન કરવામાં આવ્યું. જેમાં મીટીંગના અધ્યક્ષશ્રી મામલતદાર સાહેબશ્રી માંગરોળ, તાલુકા વિકાસ અધિકારીશ્રી, વિસ્તરણ અધિ. (ખેતી), મદદનીશ ખેતીવાડી અધિકારીશ્રી, મુખ્ય સેવિકાશ્રી, મુખ્યસેવિકાશ્રી, મદદનીશ [illegible], ના.યુ., મદદનીશ ઇજનેર, ઉદ્યોગ, [illegible], પશુ ડોક્ટરશ્રી, અને જુદા જુદા ખાતાના અધિકારીશ્રી / પદાધિકારીશ્રી હાજર રહ્યા હતા.

મીટીંગ ની શરૂઆત માં મામલતદારશ્રી દ્વારા ટૂંકમાં સૌએ ની ઇન્ટ્રો ના મ.સં.દે.શ્રી નો પરીચય આપી અને મીટીંગ માં વિષય સૌઓની માહિતી આપવા માં આવી. ત્યારબાદ મ.સ.દ. શ્રી ડી.આર.ઠે દ્વારા CDAP અંગેની વિસ્તૃત માહિતી આપવા માં આવી. જેમાં કઇ-કઇ માહિતી ની જરૂરીયાત રહેશે. જેવા કે. પરીસ્થીતીની સામાજીક, આર્થિક રૂપરેખા, ભૌગોલિક અને આબોહવા તાલુકા મુજબના જમીનનો પ્રકાર અને વપરાશ, સિંચાઇ સ્રોત અને પ્રકાર, મુખ્ય પાકો પૈકીના ઉત્પાદકતા તથા ખાતર, બિયારણ, દવા અને ટ્રેક્ટર માં આવતી મુખ્ય સમસ્યા અને તેને દૂર કરવાના ઉપાયો તેમજ ખેતી પશુપાલન સાથે તાલુકા ની પરિસ્થિતી, માછીમારી ઉદ્યોગ, તાલુકા પંચાયત માં ઉપલબ્ધ સુવીધા અને, આસપાસ ગામોની માહિતી, [illegible] અંગે વિસ્તૃત માહિતી, સંસ્થાઓ, ડીલરો, સ્વયં સહાયતા જૂથો, [illegible] નું [illegible] અને પંચાયત ની પરિસ્થિતી સહિત તેની વિકાસ માટે ના જરૂરી સુધારા અને સૂચનો.

આમ આ રીતે સમગ્ર પ્લાન તૈયાર કરવા માટે જરૂરી માહિતી ની ચર્ચા કરવામાં આવી અને તેમાં દરેક ડીપાર્ટમેન્ટ અને દરેક જુદા અધિકારી શ્રી ઓ દ્વારા માહીતી પુરી પાડવા માં સંપૂર્ણ સહયોગ આપવાની ખાતરી આપવા માં આવી. ત્યારબાદ આ-ભારવિધિ કરી અને મીટીંગ પૂર્ણ જાહેર કરવામાં આવી.

Annexure III
Approval of the C-DAP Draft

જા.નં. : જિપં/ખેતી/ટેક/૫૪૭-૭૮ /૧૩

જિલ્લા પંચાયત કાર્યાલય
ખેતીવાડી શાખા,
જૂનાગઢ. તા.૧૮/૨/૨૦૧૩

પ્રતિ
પ્રાધ્યાપક અને વડા
જમીન અને જળ ઈજનેરી વિભાગ,
કૃષિ ઈજનેરી અને ટેકનો. કોલેજ,
જુ.કૃ.યુ., જૂનાગઢ.

વિષય :– જૂનાગઢ જિલ્લાનો સી.ડી.એ.પી. (કોમ્પ્રીહેન્સીવ ડીસ્ટ્રીકટ એગ્રીકલ્ચર પ્લાન) મંજુર કરવા બાબત.

સંદર્ભ :– (૧) અત્રેની કચેરીના જા.નં. : જિપં/ખેતી/ટેક–૬/સીડેપ/મંજુરી/૩૬૩–૮૧ તા.૭–૨–૧૩
(૨) આપની કચેરીના જા.નં. : જુકૃયુ/કૃઈટેકઓ/સોવોએ/૮૯૮–૯૦૦/૧૩ તા.૧૬–૨–૧૩

ઉપરોકત વિષય પરત્વે જણાવવાનું કે, સંદર્ભ–૧ વાળા પત્રથી કોમ્પ્રીહેન્સીવ ડીસ્ટ્રીકટ એગ્રીકલ્ચર પ્લાન અંગે મળેલ મીટીંગમાં થયેલ ચર્ચાની કાર્યવાહી નોંધ તૈયાર કરી મોકલી આપવામાં આવેલ. જેમાં સદર પ્લાનમાં અમુક સુધારાઓ સુચવવામાં આવેલ સંદર્ભ–૨ વાળા પત્રથી આ સુધારા સાથેનો સી.ડી.એ.પી. રજુ કરવામાં આવેલ છે. જેને આથી મંજુર કરવામાં આવે છે.

જિલ્લા ખેતીવાડી અધિકારી
જિ.પં., જૂનાગઢ.

જિલ્લા વિકાસ અધિકારી
જિ.પં., જૂનાગઢ.

નકલ જાણ અર્થે રવાના :–
(૧) ખેતી નિયામકશ્રી, કૃષિ ભવન, સેકટર–૧૦/એ, ગુ.રા., ગાંધીનગર.
(૨) સંયુકત ખેતી નિયામકશ્રી (વિ.), જૂનાગઢ વિભાગ, સરદાર બાગ, જૂનાગઢ.

HVP
1/3/13

Soil & Water Engg. Dept.
Inward No. 488 Dt. 1/3/2013

D:\Take-6\RKVY\CDAP\CDAP Ltr_02-13.doc

તા. ૯–૧–૨૦૧૩ ના રોજ માન. જિલ્લા વિકાસ અધિકારીશ્રીની અધ્યક્ષતા હેઠળ C-DAP મંજુર કરવા અંગે મળેલ બેઠકની કાર્યવાહી નોંધ

સૌપ્રથમ મીટીંગની શરૂઆતમાં ખેતીવાડી અધિકારી દવારા સર્વેનું સ્વાગત કરવામાં આવ્યુ. માન. જિલ્લા વિકાસ અધિકારીશ્રીની અધ્યક્ષતા હેઠળ તેઓની પરવાનગીથી C-DAP મંજુર કરવા અંગે મદદનિશ પ્રાધ્યાપકશ્રી પરમાર દવારા પ્રેઝન્ટેશન કરવામાં આવેલ.

તેમના દવારા જુદા જુદા વિભાગો તરફથી માહીતી તૈયાર કરી તેની વિગતવાર માહીતી આપવામાં આવેલ.

દરેક તાલુકાવાર SWOT એનાલીસીસ ની માહીતી આપવામાં આવી. ભવિષ્યમાં રોજગારીની તકો પુરી પાડવામાં આવે એવી રીતે આયોજન કરવામાં આવેલ. દરેક તાલુકા લેવલ પર સ્ટોક હોલ્ડર્સની મીટીંગ કરવામાં આવેલ. પ્રગતિશીલ ખેડુતોની માહીતી સંકલન કરવામાં આવી. ખેતીની અલગ અલગ પેટર્ન તેને સબંધીત વિભાગ અને હવામાનની પરિસ્થિતી પ્રમાણે આયોજન કરવામાં આવેલ. જૂનાગઢ જિલ્લામાં મગફળી મુખ્ય પાક હોઈ રાજયમાં તેને આનુસાંગીક આયોજન કરવા માન. જિલ્લા વિકાસ અધિકારીશ્રી દવારા સુચન કરવામાં આવેલ.

સિંચાઈ સુવિધા :–

જૂનાગઢ જિલ્લામાં સિંચાઈ ૨,૦૧,૯૯૨ હેકટર છે જેમાં સિંચાઈ હેઠળ અને બિન સિંચાઈ હેઠળ વિસ્તાર પ્રમાણે કામગીરીનું આયોજન કરવું.

SWOT એનાલીસીસ :–

દરિયાઈ કાંઠાના વિસ્તારોમાં ક્રોપીંગ ઈન્ટેન્સીટી વધારી શકાય, તેવો વિસ્તાર સંશોધીત કરવો અને તેના પર કામગીરી કરવી.

ખાતરનો વપરાશ :–

ખાતરનો વપરાશ વધતો જાય છે જેથી ઓર્ગેનીક મેટર પુરી મળતી નથી. યુરીયા / ડી.એ.પી. ના વપરાશમાં વધારો થાય છે. C-DAP ના અંતમાં શું વસ્તુઓ કરવાપાત્ર છે અને શું કરવાપાત્ર નથી એ દર્શાવવું.

યીલ્ડ ગેપ એનાલીસીસ :–

આગામી પાંચ વર્ષનું આયોજન રજુ કરવામાં આવેલ. આવા ગેપને પહોંચી વળવા નીચેના પગલા લેવા જોઈએ તેવું સુચન કરવામાં આવેલ.

– તાલુકાવાર તાલીમનું આયોજન કરવું.
– ખેડુતો માટેની તાલીમ ગોઠવવી.
– નિદર્શનો ગોઠવવા.

D:\Take-6\RKVY\CDAP\Karyavahi Nondh_02-13.doc

Soil & Water Engg. Dept.
Inward No. 336 Dt. 9/1/2013

~~ESP~~ HVP

11-2-13

– બીજની ગુણવતા સુધારવી અને SRR (સીડ રીપ્લેસમેન્ટ રેસીયો) જળવાઈ તે જોવું.
– સંકલીત નિંદણ વ્યવસ્થાપન અપનાવવું.
– આગામી પાંચ વર્ષમાં સજીવ ખેતી હેઠળનો વિસ્તાર વધારવો.
– આઈ.પી.એમ. અને આઈ.એન.એમ. નિદર્શનો ગોઠવવા.
– સોઈલ ટેસ્ટીંગ કાર્યક્રમો ગોઠવવા.
– સલાઈન સોઈલ ને આધારીત કામગીરી કરાવવી.
– જીલ્લાના એગ્રો ઈનપુટ ડીલરના સર્વિસ સેન્ટરની તાલુકાવાર ચોકકસ માહીતી તૈયાર કરવી.
– ટપક અને ફુવારા પધ્ધતી અપનાવેલ છે જેમાં ચોકકસ અભ્યાસ કરવો.
– વેલ્યુએડીશન માટે અત્રેના જિલ્લામાં શું કામગીરી થઈ શકે ? તે સહકારી સંસ્થા મળીને અને સબંધીત આયોજન કરવું.
– કોલ્ડ સ્ટોરેજ જેવા આયામો ખેડુતો અપનાવતા થાય તેવા પ્રયત્નો કરવા.
– અન્ય ક્ષેત્રોની જેમ એગ્રો ટુરીઝમનો વિકાસ થાય તેવા પ્રયત્નો કરવા.
– લો–કોસ્ટ ગ્રીન હાઉસ ખેડુતો અપનાવતા થાય અને કેળનો વિસ્તાર વધે તેવું કૃષિ લક્ષી આયોજન કરવું.
– બેંકના ધિરાણ ક્ષેત્રે અને કીસાન ક્રેડીટ કાર્ડની તેમજ નાબાર્ડ મારફત કામગીરીનું સુચારુ આયોજન થાય તે જોવું.

પશુપાલન :–

પશુની ઓલાદોનું વજન ઘટતું જાય છે, જેના પર સંશોધન કરવાની જરૂર જણાય છે. નેવું સુચન કરવામાં આવેલ. વધુમાં મત્સ્ય ક્ષેત્રે ખેતીવાડી સાથે તેના અવકાશો વધતા જાય છે તે પણ દરીયાકીનારાના વિસ્તારોમાં જોવું.
– વર્મીકમ્પોસ્ટ અને બેકરી યુનીટ ક્ષેત્રે પણ કામગીરીનું આયોજન કરવું.
– સોઈલ હેલ્થકાર્ડ દવારા ખેડુતોને સારી સમજણ આપી શકાય તેવા પ્રયત્નો થાય તે પણ જોવું.

આમ સમગ્ર જિલ્લાના C-DAP માં સુક્ષ્મ લેવલે આયોજન કરી ખેતીવાડી અને તેને સબંધીત વિભાગોને લગતી યોજનાઓની કામગીરી સારી થઈ શકે અને ખેડુતો પશુ, પશુપાલકો અને મત્સ્યઉધોગક્ષેત્રે સંકળાયેલ લાભાર્થીઓને ફાયદો થાય તેવું આયોજન કરવું.

જિલ્લા ખેતીવાડી અધિકારી
જિ.પં., જૂનાગઢ.

જા.નં. : જિપં/ખેતી/ટેક–૬/સી–ડેપ મંજુરી/૪૬૩-૮૫/૧૩ તા.૭–૨–૨૦૧૩

પ્રતિ
(૧) સંશોધન નિયામકશ્રી, કોલેજ ઓફ એગ્રીકલ્ચર એન્ડ એન્જીનીયરીંગ ટેકનોલોજી, જૂ.કૃ.યુ., જૂનાગઢ.
(૨) પ્રાધ્યાપક અને વડા, જમીન અને જળ ઈજનેરી વિભાગ, કૃષિ ઈજનેરી અને ટેકનો. કોલેજ, જુ.કૃ.યુ., જૂનાગઢ.
(૩) નિયામકશ્રી, જિલ્લા ગ્રામ વિકાસ એજન્સી, સરદાર બાગ, જૂનાગઢ.
(૪) જિલ્લા આયોજન અધિકારીશ્રી, આયોજન શાખા, કલેકટર કચેરી, જૂનાગઢ.

D:\Take-6\RKVY\CDAP\Karyavahi Nondh_02-13.doc

(૫) નાયબ બાગાયત નિયામકશ્રી, લઘુ કૃષિ ભવન, જૂનાગઢ.
(૬) નાયબ ખેતી નિયામકશ્રી (વિ.), લઘુ કૃષિ ભવન, જૂનાગઢ.
(૭) નાયબ ખેતી નિયામકશ્રી (તા.) અને પ્રોજેકટ ડાયરેકટર આત્મા પ્રોજેકટ, ખેડુત તાલીમ કેન્દ્ર, જૂનાગઢ.
(૮) નાયબ પશુપાલન નિયામકશ્રી, પશુપાલન શાખા, જિ.પં., જૂનાગઢ.
(૯) જિલ્લા રજીસ્ટ્રારશ્રી, સહકારી મંડળીઓ, જૂનાગઢ.
(૧૦) ડી.ડી.એમ., નાબાર્ડ, જૂનાગઢ.
(૧૧) બ્રાંચ મેનેજરશ્રી, ગુ.રા.બી.ની., જૂનાગઢ.
(૧૨) ક્ષેત્રીય પ્રતિનિધી, જી.જી.આર.સી., જૂનાગઢ.
(૧૩) મદદનિશ નિયામકશ્રી, જમીન વિકાસ નિગમ લિ., જૂનાગઢ.
(૧૪) મદદનિશ મત્સ્યોધોગ નિયામકશ્રી, બહુમાળી ભવન, જૂનાગઢ.
(૧૫) પ્રોજેકટ ડાયરેકટરશ્રી, જિલ્લા જળસ્ત્રાવ વિકાસ એકમ, જૂનાગઢ.
(૧૬) મદદનિશ ખેતી નિયામકશ્રી, પેટા વિભાગીય કચેરી, જૂનાગઢ / વેરાવળ.
(૧૭) અંગત મદદનિશશ્રી, જિલ્લા વિકાસ અધિકારીશ્રી, જિ.પં., જૂનાગઢ.

નકલ સવિનય રવાના :–
(૧) ખેતી નિયામકશ્રી, કૃષિ ભવન, સેકટર–૧૦/એ, ગુ.રા., ગાંધીનગર.
(૨) સંયુકત ખેતી નિયામકશ્રી (વિ.), જૂનાગઢ વિભાગ, સરદાર બાગ, જૂનાગઢ.


Welington Dam

કોમ્પ્રીહેન્સીવ ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાન અંગેની (સી.ડી.એ.પી.)

બેઠકમાં હાજર રહેનાર અધિકારીશ્રી / કર્મચારીશ્રીઓની વિગત દર્શાવતું પત્રક.

તારીખ / વાર : ૦૯/૦૨/૨૦૧૩ - બુધવાર   સ્થળ : સભાખંડ જીલ્લા પંચાયત

ક્રમ	અધિકારીશ્રી / કર્મચારીશ્રીનું નામ	હોદો / હેડકવાર્ટર	સહી
૧	શ્રી. દિલીપ રાણા સાહેબ	માં. જીલ્લા વિકાસ અધિકારીશ્રી જુનાગઢ	[illegible]
૨	ડો. પ્રમોદ મોહનોત	સહ સંશોધન નિયામક જુ.કૃ.યુ. જુનાગઢ	[illegible]
૩	[illegible]	[illegible] જુનાગઢ	[illegible]
૪	વી. ડી. ધોરાજીયા	નાયબ ખેતી નિયામક	[illegible]
૫	ડૉ. એસ. ડી. [illegible]	પ્રાધ્યાપક અને વડાશ્રી, કૃ. યુ. - જુનાગઢ	[illegible]
૬	શ્રી. એસ. બી. પરમાર	મદદ. પ્રાધ્યાપક, કૃ. યુ. જુનાગઢ	[illegible]
૭	શ્રી ડી. બી. રાઠોડ	મદદનીશ ખેતી નિયામક વિ. વિ. - વિસાવદર	[illegible]
૮	[illegible]	[illegible]	[illegible]
૯	ડો. પી. બી. વઘાસીયા	પ્રમુખ - નાયબ પશુપાલન નિયામક, જી.પં. જુનાગઢ	[illegible]
૧૦	[illegible]	DDM, NABARD Junagadh	[illegible]
૧૧	આર. એસ. ગોહિલ	પ્રતિનિધિ - ના. બા. નિ. (વિ.) જુનાગઢ	[illegible]
૧૨	[illegible]	પ્રતિનિધિ. જીલ્લા આયોજન કચેરી	[illegible]
૧૩	શ્રી. કે. એમ. ડોબરિયા	મદદનીશ નિયામક (ક. સં) ગુ.રા.બી. નિ. જુનાગઢ	[illegible]
૧૪	એસ. બી. [illegible]	પ્રતિનિધિ, પ્રોજેક્ટ ડાયરેક્ટર ([illegible])	[illegible]
૧૫	બી. જી. રાઠોડ	[illegible] જુનાગઢ	Rathod

→ P.T.O.

D:\Take-6\Mitting Patrak_11-12.doc

૧૬.	Balapariya Munaf J.	APM (Agri) Mission Manglam	
૧૭	Smt. D.J. Tank ASt - JND	Rp/of A.D. Veraval V.K. [illegible]	
૧૮	N.B. Chauhan	ADir [illegible] D.P. Jnd	
૧૯	N.D. Babariya	Asst. Director of Agri D.P. - Junagadh	
૨૦	એચ. એલ. [illegible]	પ્ર. અધિ. (ઝોન) જી.પં. જૂનાગઢ	
૨૧.	[illegible]	[illegible]	
૨૨.	સી. કે. દવે	[illegible] જુનાગઢ	
૨૩			
૨૪			

Presetation of Comprehensive District Agriculture Plan (C-DAP) to District Level planning Committee

Presetation of Comprehensive District Agriculture Plan (C-DAP) to District Level planning Committee