

**COMPREHENSIVE
DISTRICT AGRICULTURE PLAN
(C-DAP)
DISTRICT PORBANDAR**



सत्यमेव जयते

**Department of Agriculture & Co-operation
Government of Gujarat
Gandhinagar**



**COMPREHENSIVE
DISTRICT AGRICULTURE PLAN
PORBANDAR DISTRICT**



**JUNAGADH AGRICULTURAL UNIVERSITY
JUNAGADH-362 001**

AUGUST, 2012

PROJECT TEAM

Overall Coordination

Dr. C. J. Dangaria
Director of Research,
JAU, Junagadh

Nodal Officer

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

Convener

Dr. K.H.Dabhi
Research Scientist(Wheat),
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
3. Dr. B. B. Ramani,
Assistant Research Scientist, DR Office

Co-Convener

Dr. R.K.Odedara,
I/C Programme Coordinator, KVK, JAU, Khapat

Members

1. Shri P.J.Gohil (Porbandar Taluka)
Training Associate (Agronomy)
KVK, JAU, Khapat
2. Shri H.R.Vadar
Training Associate (Kutiyana Taluka)
KVK, JAU, Khapat
3. Dr. R.B.Thanki (Ranavav Taluka)
Assistant Research Scientist
Cotton Research Scheme, JAU, Khapat

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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



Dileep Sanghani



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

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 strove 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 to 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 focused on integrated development of major food crops, cereals, oilseeds, fiber 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 Porbandar 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. Dangaria, Director of Research and Dean, P.G. Studies, Dr. I. U. Dhruj, Dr. K. H. Dabhi, Dr. P. Mohnot, members of the committee and all the concerned scientists for their contribution in preparing the Comprehensive District Agriculture Plan (C-DAP) of Porbandar 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. C. Patel)



Dr. C. J. Dangaria

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

FOREWORD

The District Agriculture Plan identifies 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. Kamlesh H. Dabhi, 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 Porbandar 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.

(C. J. Dangaria)

Junagadh
August 29, 2012

PREFACE

The Comprehensive District Agriculture Plan (C-DAP) of Porbandar 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 District Collector, Porbandar, who has been instrumental in providing the felt needs of the farmers and other stakeholders. The help and full cooperation rendered by the District Development Officer, Porbandar, District Agriculture Officer, Porbandar, Zilla Panchayat Porbandar, Director, District Watershed Development Unit, Porbandar, 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, Assistant Research Scientist, DR Office 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 Dr. R.K.Odedara, Co-Convenor, committee members of C-DAP district Porbandar Er. H.R.Vadar, Dr. R.B.Thanki and Shri P.J.Gohil, Shri A.G. Pansuria, Dr L.G.Vanparia and staff of Wheat Research Station, Junagadh for their sustained support in the preparation and documentation of the taluka and district plans.

Date: 29.08.2012

Place: Junagadh



(Kamlesh H. Dabhi)
Convener, C-DAP, Porbandar District and
Research Scientist (Wheat)
Wheat Research Station
JAU, 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 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 Porbandar district, the major areas of focus were integrated development of major crops like Groundnut, wheat, Sesame, cotton, chickpea, coarse cereals, millets, other 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 Porbandar district to discuss the various components of the 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 Porbandar District

The district is bound on the north by Jamnagar district, on the south by Junagadh district and on the east and west by Arabian Sea. It falls under the South Saurashtra Agro-Climatic Zone of Gujarat. There are three talukas in the district. Average annual rainfall in Porbandar district is 876 mm. In this District, total area is 2.272 lakh ha among it the net sown area is 59 % (1.34 lakh ha) and 0.24 lakh ha of land is covered by forest which is known as Barda forest. In forest region mainly wood like sag and acacia sp. (for building construction), bidi leaves and 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 5.7 per cent (0.13 lakh ha) of the total geographical area have to be reclaimed so that the net sown area could be increased. The 10.5 % area (0.24 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 11 % of area.

C-DAP

Strategies to Achieve the Objectives of DAP for Porbandar 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 of *Ghed* area.
- 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 *Ghed* area by construction of 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 scheme, 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 Porbandar district.

Porbandar 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. Porbandar district has average annual rainfall of 876 mm. The area under the waste and fallow lands in the district also was around 5.7% of the total geographical area. 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 also being transported daily to Junagadh Mother Dairy and then to Rajasthan from Junagadh dairy unit.

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 Porbandar district and the total financial outlay of the C-DAP of Junagadh district is Rs. 28077.88 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 Porbandar District for 12th plan
(Rs. in lakh)

Budget proposal head-wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Agriculture	401.92	326.92	316.97	292.02	292.07	1629.90
Agricultural Engineering	2339.45	2370.15	2409.70	2434.90	2487.50	12041.70
Horticulture	430.40	377.93	315.46	210.99	211.52	1546.30
Animal Husbandry	1872.12	482.04	457.94	417.94	417.94	3647.98
Fisheries	502.30	302.30	272.80	272.80	223.30	1573.50
Forestry	34.50	37.25	45.50	60.25	92.50	270.00
Employment Generation Activities	6.50	6.50	6.50	4.50	4.50	28.50
New Innovative Projects	3538.20	1063.20	913.20	906.70	918.70	7340.00
Grand Total (Rs in Lakh)	9125.39	4966.29	4738.07	4600.1	4648.03	28077.88

A brief account of SWOT of agricultural sector is discussed below:

Porbandar 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 Porbandar, located on the National Highway connecting Rajkot. A vast area (52 % 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 Identification. All the major crops have higher productivity than national average. Porbandar city and Barda mountain has historical and religious importance. There is abundance of wind energy round the year and availability of solar 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 Porbandar Taluka.

In Porbandar district the over exploitation of ground water through open wells and deep bore wells, created the threat of sea water intrusion in coastal talukas and resulted in poor quality of groundwater and ultimately hampered the crops in the region. Out of three talukas in the district one is over exploited and two are semi- critical 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

C-DAP

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 Porbandar, Kutiyana and Ranavav as there is a National Highway and rail track connectivity linking these towns with Ahmedabad (except rail track in Kutiyana). Porbandar has soda ash plant while Ranavav has cement plants. Surplus milk produced in Porbandar district is also being transported daily to Rajasthan from Mother dairy, Junagadh. Kirti Mandir, a birth place of Mahatma Gandhiji and number of sea beaches at Porbandar 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 in *Ghed* area, 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.

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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 stand 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 backdrop 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 constraints 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,

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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 Mahotsav* for dissemination of agricultural and allied field technology to the farmers in Gujarat. In a month long *Krishi Mahotsav*, 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 km² living in 4767 villages

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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.

1.4.1 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.

1.5 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.

1.5.1 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.

1.5.2 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.

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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
13	22-12-12	Presentation of report in presence of District Level Planning Committee at KVK, Khapat farm

1.5.3 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.



Birth Place of Mahatma Gandhiji-Kirti Mandir

CHAPTER II

GENERAL DESCRIPTION OF BHAVNAGAR DISTRICT

2.1 Brief History of Porbandar:

Porbandar District came in existence from dated 02-10-97. Earlier it was a part of Junagadh district. The area of Porbandar is 2272 Sq.km. The district as per administrative view is distributed in Porbandar, Kutiyana and Ranavav talukas. This district has 2 major rivers Viz. Bhadar, Minsar. Porbandar, Ranavav, Kutiyana talukas certain area is located in saline area which is known as “Ghed” area. This land is Salty, fruitful and filled with water. In monsoon, contact with this area is lost many a times. The name Porbandar itself conjures a picture of massive port, a city connected with the two names – **Sudama**, the childhood friend of Lord Krishna and **Mahatma Gandhi**, the father of Nation. Porbandar district has a strong infrastructure with a road length of 990 kms. The district has a railway net work with a route length of 33 kms and approximately 110 kms sea coast.

2.2 Porbandar District at a Glance:

Porbandar district is located at 21° 15' to 21° 50' North latitudes and 69° 55' to 70° 25' East longitudes in Gujarat State on an interactive map. The location of Porbandar district is depicted in the maps (Fig. 2.1). The district is bound on the north by Jamnagar district, on the south by Junagadh district and on the east and west by Arabian Sea. It falls under the South Saurashtra Agro-Climatic Zone of Gujarat.

The Porbandar District has geographical area of 2,272 sq. km. There are total 3 talukas. Barda jungle (forest) Barda mountains and rivers flowing through the district beautified by waterfalls is world famous for its medicinal plants sources. This remains a different attraction for foreign tourists. The location of Porbandar district is depicted in the Fig. 2.2.1.



Fig. 2.2.1 Location map of Porbandar district

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2.3 Demographic Profile:

The Directorate of Census Operations in Gujarat has released the Census 2011 details of Porbandar district. Porbandar had population of 586062 of which male and female were 300967 and 285095 respectively. There was increase of 9.17 per cent in the population compared to 2001. In the previous census of India 2001, Porbandar District recorded increase of 14.35 per cent to its population compared to 1991. The initial provisional data suggest a density of 255 in 2011 compared to 234 of 2001. Average literacy rate of Porbandar in 2011 was 76.63 compared to 68.62 of 2001; gender wise, male and female literacy were 84.56 and 68.32 per cent respectively. With regards to Sex Ratio in Porbandar, it stood at 947 female per 1000 male compared to 2001 census figure of 946. The average national sex ratio in India is 940 as per the latest reports of Census 2011. The General information of the Porbandar District is shown in Tab 2.3.1.

Table: 2.3.1: Area, population density, habitat, in habitat villages of Porbandar district

Sr.	Name of Taluka	Area in ha	Population Density/ Sq.km.	Total Villages			No. of Gram Panch.
				Habitat	Un-inhabited	Total	
1.	Porbandar	111760	313	75	-	75	75
2.	Kutiyana	56630	176	46	1	47	46
3.	Ranavav	58810	146	61	1	62	30
	Total	227200	236	182	2	184	151

Source : District statistic Report 2010-11, Porbandar

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

Description	2001	2011
Actual Population	5,36,835	5,86,062
Male	275821	300967
Female	261014	285095
Population Growth	14.35	9.17
Area Sq. km.	2272	2272
Density/sq.km	234	255
Proportion to Gujarat Population	1.06	0.97
Sex Ratio (Per 1000)	946	947
Child Sex Ratio (0-6 Age)	894	898
Average Literacy	68.62	76.63
Male Literacy	78.36	84.56
Female Literacy	58.42	68.32
Total Child Population (0-6 Age)	75157	63820
Male Population (0-6 Age)	41373	33687
Female Population (0-6 Age)	36542	30133
Literates	316172	400196
Male Literates	184717	226004
Female Literates	131455	174192
Child Proportion (0-6 Age)	0.14	0.11
Boys Proportion (0-6 Age)	0.15	0.11
Girls Proportion (0-6 Age)	0.14	0.11

Source: Census 2011 from Website

2.4 Educational Facilities:

District is covered by Saurashtra University, Rajkot for general streams with all major faculty & branches of education including one engineering college covered by Gujarat Technology University. The KVK, Cotton Research and Dry farming research centre are also situated at Khapat and Ratia 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
Porbandar	1342	38	29
Kutiyana	521	10	3
Ranavav	439	11	8
Total	2302	59	40

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

2.4.1 Junagadh Agricultural University

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. Porbandar district is covered under University's jurisdiction. 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 Agricultural and allied sectors:

Agriculture sector is the main occupation in the district. The Taluka wise Land Utilisation Statistics is presented in Table 2.5.1; it shows thaata 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 Talukaa wise land capability classification of Junagadh district is presented in Table 2.5.2.



Fig. 2.5.1: Land use map of Porbandar district

Table 2.5.1: Taluka wise Land Utilisation Statistics (Area in ha)

Taluka	Geographical area	Forest Area	Non- agril. Use	Cultivable waste	Permanent pastures
1	2	3	4	5	6
Porbandar	111760	4665	12228	9486	12670
Kutiyana	56630	4739	1994	1925	6904
Ranavav	58810	15018	9796	1644	5939
Total	227200	24422	24218	13055	25513

Continue...

Taluka	Current Fallows	Other Fallows (Barren)	Net sown area	Gross cropped area	Cropping intensity (%)
1	7	8	9	10	11
Porbandar	15349	0	58321	65579	112.45
Kutiyana	2659	0	38177	41260	108.07
Ranavav	3528	0	22587	27166	120.27
Total	21536	0	119373	134005	112.26

Source: District Ankadakiya Ruprekha 2010-11, District Panchayat, Porbandar.

2.5.1 Agriculture

The Porbandar is agriculture and fisheries dominated district. About 70% of population is engaged in agriculture and allied activities. Out of total Geographical area of 227200 ha., forest area is 24422 ha, Non- agricultural use is 24218 ha, cultivable waste is 13055 ha, permanent pasture is 25513 ha, current fallow is 21536 ha, other fallow (barren) is 0 ha, net sown area is 119373 ha and the gross cropped area is 134005 ha. The Taluka wise land holding of the district is shown in tab 2.5.3. Groundnut, cotton, wheat, sesame, chickpea, cumin and sorghum are the major field crops grown in the district. The major horticultural crops are mango, coconut, sapota, 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, green gram, cotton and sesame. Porbandar district is the major producer of groundnut not only in the state, but also in the country. Wheat, chickpea, sorghum, cumin, 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

Taluka	Marginal Farmers		Small Farmers		Semi-med. Farmers		Medium farmers		Large farmers		Total	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Porbandar	6756	4350	10555	15439	2240	9194	5601	22985	3361	13791	28513	65759
Kutiyana	2867	2099	6908	9857	1334	5607	3335	14018	2001	8411	16445	39992
Ranavav	2014	1467	4505	6517	861	3501	2153	8753	1292	5206	10825	25444
Total	11637	7916	21968	31813	4435	18302	11089	45756	6654	27408	55783	131195

Note: Less than 1 ha-marginalfarmers,1-2ha-smallfarmers,2-4-hasemi-med.Farmers,4-10ha-medium farmers and more than10ha-large farmers

Source: Strategic Research and Extension Plan – 2009 (ATMA) Dist.: Porbandar

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 Porbandar. Processed fishes from Porbandar are exported to Singapore, China, Hongkong, Japan, Dubai and other parts of the world. About 32639 fishermen population in the district engaged in fishing activity. A fleet of 4638 mechanized boats and 133 non-mechanized boats and about 40,000 fishing nets are at the service of the fishermen whose catch is registered at 87035 M tones in 2010-11. There are 64 Primary Fisherman Co-operative Societies with a membership of 5759 are functioning in the district. Porbandar has large fishermen population. There are 88 ice plants, 11 freezing plants, 7 fish pulverizing units, 1 fish meal plant, 5 net making plant, 26 marine service station and 1 ice box unit connecting with fish 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 Barda mountain and dense forest of Barda hills. The larger coastal area comprising Porbandar taluka of district has much potential for fisheries business. Fishing is an important component of rural economy in coastal area. The Porbandar is known for the hub-centre for the fisherman. This district has two major rivers Viz. Bhadar, Minsar and others. In general, the water flows in most of the rivers for about 50-70 per cent time during the year.

2.6.1 Soil Type:

Being agriculture oriented district, large portion of population is engaged in agriculture and animal rearing. Most of clayey to clayey loam soil predominant in the district is derived from basalt, lime stone and alluvium material. In *Kutiyana* taluka, clay to clay loam type soil is observed while in *Ranavav* taluka sandy clay to sandy clay loam type of soils are also observed in some parts of taluka. Medium black type and medium red type of soil are observed in some of the part of district. The soil fertility and micro nutrient status of different talukas are presented in Table. 2.6.1 and Table 2.6.2.

Table 2.6.1 Soil Fertility Indices

Sr. No.	Taluka	pH		EC (dS/m)			Organic carbon (%)		
		Neutral	Alkaline	Low	Medium	High	Low	Medium	High
1	Porbandar	0	100	0	0	100	0	100	0
2	Kutiyana	0	100	0	0	100	0	100	0
3	Ranavav	0	100	0	0	100	0	100	0
4	Av	0	100	0	0	100	0	100	0

Continue... (Table 2.6.1)

Sl. No.	Taluka	Available Nitrogen (kg/ha)			Available Phosphorus (kg/ha)			Available Potash (kg/ha)		
		Low	Medium	High	Low	Medium	High	Low	Medium	High
1	Porbandar	83	17	0	45	31	24	0	5	95
2	Kutiyana	75	25	0	25	35	40	0	5	95
3	Ranavav	100	0	0	27	46	27	0	0	100
4	Av									

Note: For each taluka, 20 samples were analysed

Source : Hadiyal S.T. (2005) "Evaluation of Soil Fertility and Quality of Underground Water of Porbandar District of Gujarat", M.Sc. (Agri) Thesis (Unpublished)

Table 2.6.2: Micronutrient Status

Taluka	Copper (Cu)		Iron (Fe)		Manganese (Mn)		Zinc (Zn)	
	S	D	S	D	S	D	S	D
Porbandar	65	35	85	15	95	5	40	60
Kutiyana	95	5	90	10	90	10	40	60
Ranavav	80	20	95	5	100	0	75	25
Total	100	0	80	20	95	5	40	60

Note: S : Sufficient, D: Deficient, (Total 20 samples were analysed from each taluka)

Source: Department of Soil Science and Chemistry, JAU, Junagadh

2.6.2 Agro Climate Characteristics:

Climate of *Porbandar* district is semi arid to sub humid type characterized by three well defined seasons viz; monsoon, winter and summer. Normally monsoon starts from second week of June. The rainfall data recorded from panchayat of *Porbandar* district. The average annual rainfall is recorded nearly 876 mm. The winter starts from November and lasts up to February. The normal summer season is from March to end of the May. In past maximum temperature was observed 40 °C and minimum temperature was observed 9.2 °C. The summer season is slight hot. The climate of the *Ghed* area is subtropical and semi arid and rainfall received between June to September due to north west monsoon. The rainfall is very scanty. The temperature ranges from 10 °C in winter to 40 °C in summer.

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2.6.3 Water Resources:

“*Bhadar*” is the main river of the *Ranavav* taluka and this river passes from *Porbandar* taluka and one more river “*Vartu*” also passes from east to west, then finally both the rivers meet to Arabian Sea. The two rivers “*Bileshwari*” and “*Sorathi*” pass from north to south of *Kutiyana* taluka. The rainfall is uneven and scanty in *Porbandar* therefore, irrigation done by well. So, for intensive agriculture conserving the rain water by well, tanks, farm ponds are necessary.

The water table remains within the capillary fringe (50 cm to 200 cm) for most of the period of the year in *Ghed* area. The ground water is also not suitable for irrigation purpose. Some soils are suitable for growing dry wheat and dual purpose sorghum (variety Gundari) after standing water recedes. However, in some upland parts, cotton (local var. Dhumad) is also grown in kharif season and Gram in rabi season.

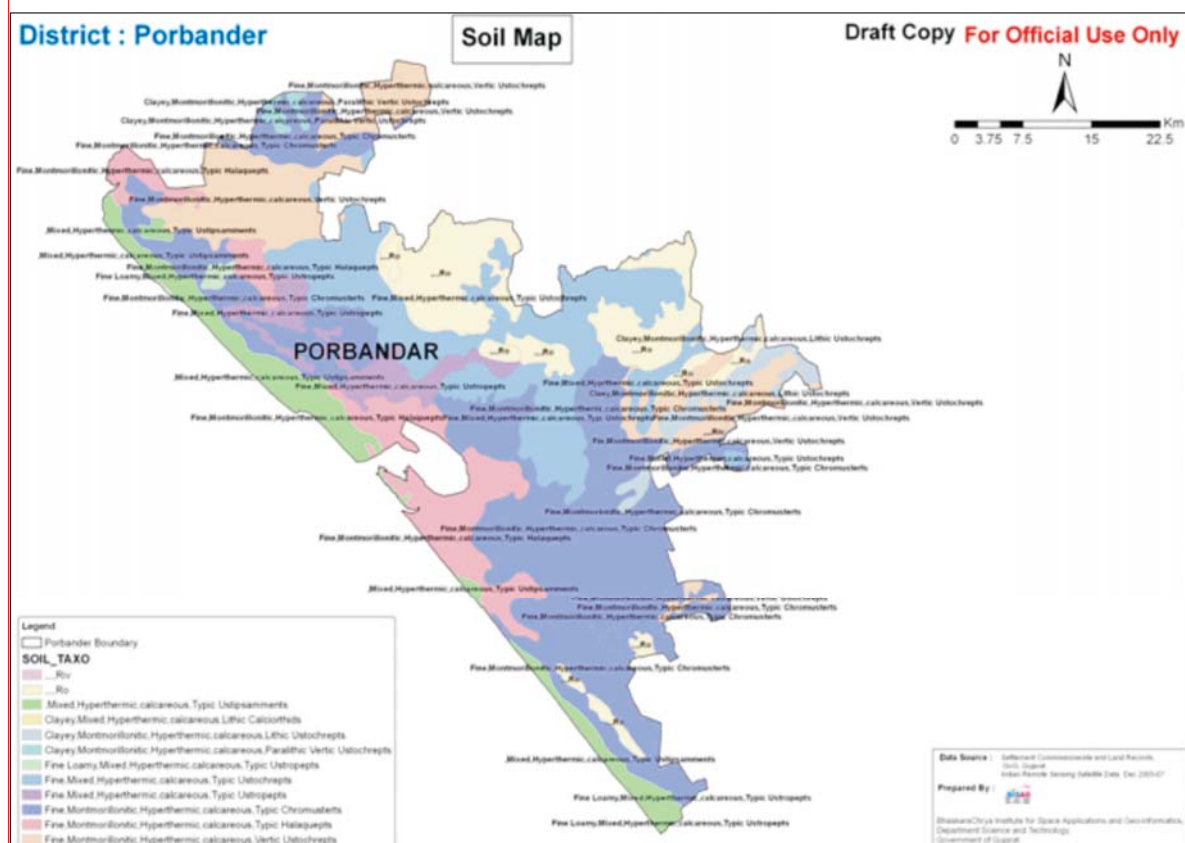


Fig. 2.6.1 Soil map of Porbandar district

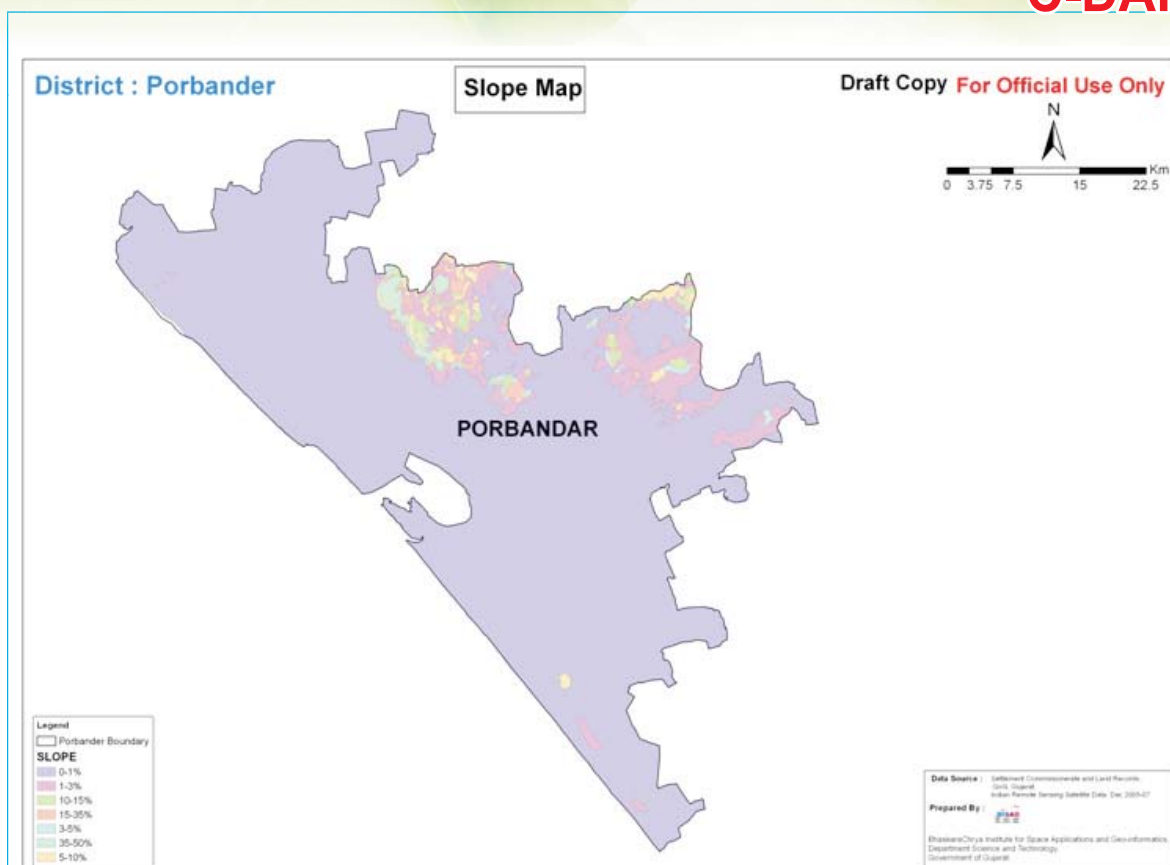


Fig. 2.6.2 Slope map of Porbandar district

Table 2.6.3 : Taluka wise Rain fall (mm) detail of Porbandar District (2001-2010)

Sr. No.	Taluka	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average, mm
1.	Porbandar	623	271	661	489	903	803	1383	557	1497	970	815.7
2.	Kutiyaana	545	285	623	760	844	1008	1216	797	1219	1486	878.3
3.	Ranavav	787	270	897	596	735	1100	1380	614	1699	1272	935
4.	Av	652	275	727	615	827	970	1,326	656	1,472	1,243	876

Source: District A.O., Porbandar

2.6.3.1 Irrigation Facilities:

Out of three talukas Porbandar is classified in dark zone category. (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 after ground level work done by NABARD and Lead Bank i.e. State Bank of India and NGOs. Total irrigated land is 19597 ha and the length of canals is 8 km. in the district.

Sprinkler and drip irrigation aided by liberal subsidy scheme of the State Government, are gaining acceptance. However, the Irrigation facility in the district seems limited and Agricultural sector continues to depend on monsoon.

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Table 2.6.5: Source wise Area Irrigated (Area in hectares)

Taluka	Canal (Area)	Pond		Well		Tube well	Check Dams/Other Sources dams	Total
		Nos.	Area	Nos.	Area			
Porbandar	8	0	0	11056	11056	0	0	11064
Kutiyana	0	0	0	3733	3733	0	0	3733
Ranavav	0	0	0	4798	4800	0	0	4800
Total	8	0	0	19587	19589	0	0	19597

Source: District Ankadakiya Ruprekha 2010-11, District Panchayat, Porbandar

Table 2.6.6: Quality of Water as per Analysis Report

Taluka	Permissible C – 1	Moderately Safe C – 2	Moderately unsafe C – 3	Unsafe C – 4
Porbandar	0	0	100	0
Kutiyana	0	0	100	0
Ranavav	0	0	100	0
Total	0	0	100	0

(For each taluka, 20 samples were analysed)

Source : Hadiyal S.T. (2005) "Evaluation of Soil Fertility and Quality of Underground Water of Porbandar District of Gujarat", M.Sc. (Agri) Thesis (Unpublished)

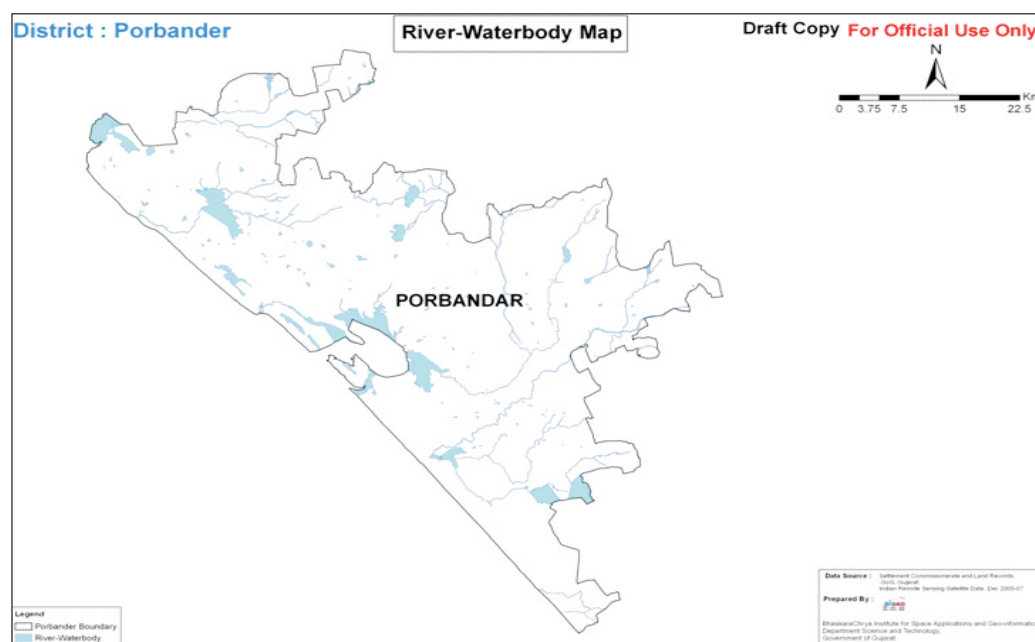


Fig. 2.6.3 River and water body map of Porbandar district

2.6.4 Coastal area in Porbandar district:

The Porbandar district has three talukas of which Porbandar taluka is the coastal taluka. The one coastal talukas cover geographical area of 111760 ha which forms 49 % of the whole district. The coastal line of the district constitutes 6.8 % of the total coastal line of the state. Porbandar district continues to occupy second position for fishing activities. The district has only marine fishing activities. There are 64 Fisheries co-operative societies with a membership of 5759 are functioning in the district. There is scope for pond and brackish water fish culture in *Ghed* area where low-lying and degraded soils are available. During 2008-09 marine fish production was 56387 M.T. which was increased to 87035 M.T. in the year of 2010-11. There are 4638 mechanized boats and 133 non-mechanized boats, 88 ice plants, 11 freezing plants, 7 fish pulverizing units, 1 fish meal plant, 5 net making plant, 26 marine service station and 1 ice box unit connecting with fish activities.

2.6.5 Forest:

In this District, total area is 227200 ha among it 24422 ha under forest land. From the forest area, building (construction) wood like saag (teak) and bamboo and bidi leaves similarly fruits like custard apple (sitafal) ryan, timbru, karmada etc. are obtained.

2.7 Infrastructure:

2.7.1 Railways:

There is 33 kms. railway track connecting Porbandar with other important centers, towns of Saurashtra & Ahmedabad. Kutiyana taluka is not connected with railway service.

2.7.2 Roads :

The district has 58 km national highway connecting to major centers of the state. The State Transport Bus services covers most of the villages.

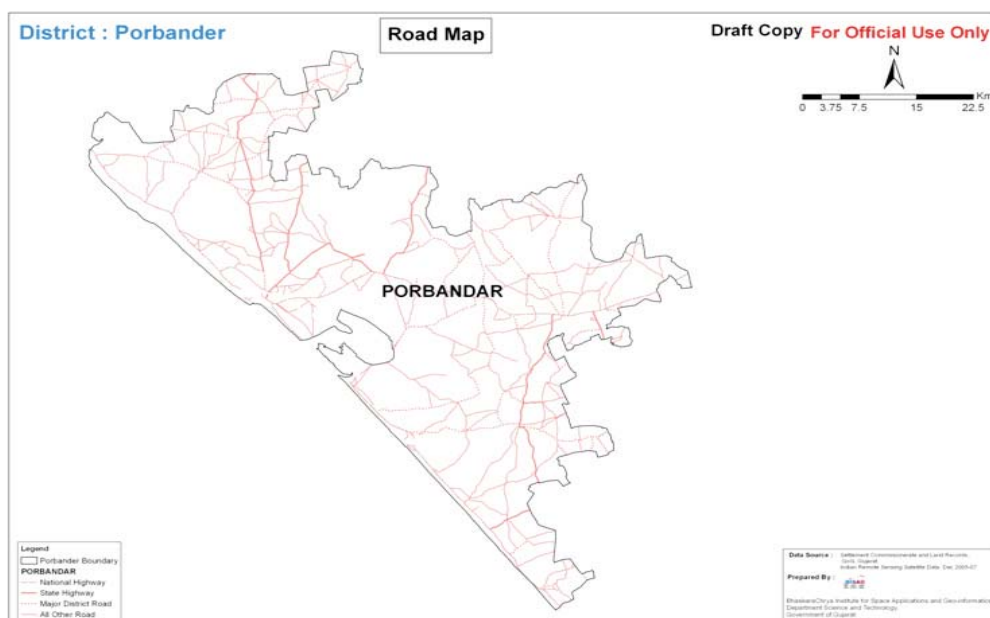


Fig. 2.7.1 Road map of Porbandar district

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2.7.3 Post And Telegraph Facilities :

There are 81 post and sub-post offices and one telegraph offices covering most of the villages. The STD facility is available in all talukas, This has made the communication faster and easier.

2.7.4 Airport:

There is one air port situated at Porbandar.

2.7.5 Marine Transport :

The bulk of the marine transport is handled by Porbandar port. Urea Fertilizer etc. had been handled from Porbunder Port. There is further scope for financing new trawlers/ boats.

2.7.6 Milk Routes:

There are total 9654 members of the 145 Milk Mandalies. Annual average of daily milk production of the district is 25512 liters.

2.7.7 Power:

Out of 4 towns and 182 inhabitant villages in the district all villages and towns have been electrified officially.

2.7.8 Industries:

There are three industrial estates, 757 small scale industries, 12 medium and large scale industries and 105 industrial co-operative societies in the district.

2.7.9 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 is only one district level APMCs in the Porbandar. 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. Banks need to support investment.

2.8 Bank Net Work and Co-Operatives:

2.8.1 Bank Net Work:

The State Bank of India is the lead bank of the district, having its one Regional offices at Porbandar, provides quality and efficient service to the people in the district. There are total 55 Branches of Commercial Banks, 7 RRBs and 9 Co-op. Banks operating in the District.

2.8.2 Co-Operatives:

The given statistics shows that 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.a

Table 2.9.1. Co-operative societies functioning in the district

Sr No	Nature of Co-operative Society Ltd	Number
1	Seva sahkari mandali	20
2	Agricultural co-operative	78
3	Milk co-operatives	6
4	Oilseeds growers co-operative	3
5	Irrigation co-operative	5
6	Transport co-operative	2
7	Housing co-operative	100
8	Fisherman co-operative	64
9	Money lenders	30
10	Labourers co-operative	119
11	Nagrik bank	2
12	Cotton co-operative	4
13	Plants developments	2
14	Vegetable seeds	13
15	Sahkari sangh (Taluka+ District)	4 (3+1)
	TOTAL	453

Source: District Statistical Report- 2010-11, Porbandar

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

Sr. No.	Industrial Co-operative Societies Registered In DIC	Number
1	Weaving Co-operative	63
2	Leather Tanning co-operative	21
3	Women Co-operative	13
4	Handicrafts Co-operative	2
5	Printing Press Co-operative	1
6	TOTAL	100

Source: District Statistical Report- 2010-11, Porbandar

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 Porbandar District (With focus separately on the Agricultural and Allied Sectors)**3.2.1 Strength:**

Porbandar, the head-quarters of Porbandar 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 Porbandar, located on the National Highway connecting Porbandar and Rajkot. The major strengths of the district are:

- A vast area (52.5 % of geographical area) is under cultivation with a large number of field crop species and horticultural crops. Typical medium black type of soil suitable for groundnut, cotton and mango plantation.
- Summer green chilies cultivated in the district in some parts.
- All the major crops have higher productivity than state average. Though scope exists to reach up to maximum potentiality. 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 Mother dairy Junaadh and than to Rajasthan from, Porbandar.
- Being 110 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 Porbandar and exported.
- Forest area is 10.75 % with a large number of tree species in Barda forest and hills. Porbandar city has historical and Barda mountain has rich biodiversity in medicinal plants.
- Availability of wind energy and solar energy round the year.
- Porbandar only has APMC (Agricultural Produce Marketing Committee) and its marketing yard.
- There are large scale industries present in Porbandar district, involved in sectors such as, Cement plants, Soda ash, and fish processing units.

3.2.2 Weakness:

Porbandar District has average annual rainfall of 876 mm and varies from 615 mm to 1472 mm. 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 region of Porbandar taluka 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 3 Talukas in the district one is over exploited (Porbandar; covers district area of 49.2 %) and semi- critical are two (Kutiyana and Ranavav; covers district area of 50.8 %) 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 16.4% area is under irrigation.
- Cropping intensity is only 112.26 per cent.
- 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.
- Average of annual rainfall is 876 mm. Ground water is saline and water table is deep in Kutiyana taluka.
- Lacking in scientific rearing of cattle particularly milch animals.
- Apathy towards poultry and inland fisheries.
- Lack of well organized cooperative sector in the district.

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 as there is a National Highway and rail track connectivity except Kutiyana, linking these towns with Ahmedabad. Porbandar has cement and soda ash plants while in Ranavav there is cement factory. Porbandar has number of sea beaches, Kirti Mandir-birth place of Mahatma Gandhiji, and Sudaama temple 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 2 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 20%.
- Protected cultivation in green house and shed net (low cost) for off season vegetable cultivation.
- Linking of local rivers with *crick* channel for sustaining irrigation potential.
- Export quality of Groundnut and cumin.

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- Value added products from agriculture waste. Mango and sapota processing industries. Coconut water packaging industry.
- Groundnut HPS industry.
- Pack houses for vegetables and establishment of vegetables markets.
- Scope for dairy enterprises.
- Expansion of inland fisheries in saline and degraded land of *Ghed* area and brackish water aquaculture.
- Introduction of datepalm plantation and crops like Ajowain in *Ghed* area.
- 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.
- Cultivation of seaweed.

3.2.4 Threats:

Porbandar 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 all talukas.

- Sea water intrusion in aquifers of coastal talukas resulted due to over exploitation of groundwater.
- Climate change is a threat for horticultural crops like Mango, Cumin 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.
- Porbandar district is prone to Cyclone and drought condition.

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**A. Cropping Pattern : Groundnut**

Strength <ul style="list-style-type: none"> Traditional knowledge for cultivation of crop in semi –arid region, where rain is the limiting factor. Good yield potentiality of groundnut under the soil & climate. Fodder quality also very nutritive for milch animals. 	Weakness <ul style="list-style-type: none"> Poor quality of water in coastal area. Monocropping creates soil health problems. Shortage of quality seed.
Opportunities <ul style="list-style-type: none"> Short duration salt resistant Cash crop. Better suitability under the soil, water and climate of district. Healthy available market, as it is the very important crop of this area. High quality of groundnut suitable for HPS 	Threats <ul style="list-style-type: none"> Drought and erratic rainfall restricts the yield. Lowering ground water table. Pest and diseases problems. Fluctuating in market price may affect the sustainability. Labour intensive harvesting, labour problem during peak seasons.

B Cropping Pattern : Groundnut + Wheat

Strength <ul style="list-style-type: none"> Groundnut–Wheat is the best cropping sequence in all AES. Congenial atmosphere of soil and climate for this sequence. Traditional knowledge of cultivation of these crops. Wheat yield potentiality / day is very high. 	Weakness <ul style="list-style-type: none"> Irrigation is for 16 % area only, restricts yield potentiality. Traditional practices are followed. Fluctuating in market price may affect the sustainability. Labour intensive harvesting, labour problem during peak seasons.
Opportunities <ul style="list-style-type: none"> Groundnut–Wheat is the best Legume-cereal sequence provides better soil health condition and provides maximum opportunities to explore the yield potentiality in the region. Very good quality of Groundnut kernels and Wheat grains under this situation. 	Threats <ul style="list-style-type: none"> Erratic and uncertainty of rain restricts the yield. Fluctuating in market price may affect the sustainability. Pest and diseases especially in groundnut that affects the soil health and ultimately the entire sequence.

C. Cropping Pattern : Bt Cotton

Strength <ul style="list-style-type: none"> • Bt Cotton is highly remunerative cash crop as it minimizes plant protection measures. • Knowledge for cultivation of the crop. • Organic farming. • Bio-control of pest. 	Weakness <ul style="list-style-type: none"> • Lack of high yielding & diseases, pest resistant varieties from JAU and Govt. Institutes. • Erratic and uncertainty of rain restricts the yield. • Irrigation is for 16% area only, restricts yield potentiality.
Opportunities <ul style="list-style-type: none"> • Congenial atmosphere for this crop. • One of the best cash crops for higher income. • Providing fuel for cooking. • Composting of cotton stalks can be done after shredding. • Providing fuel for boilers in form of Briquettes made from cotton stalk 	Threats <ul style="list-style-type: none"> • Comparatively longer duration crop, it requires soil moisture for the longer time. • Irregular rain restricts the crop growth and yield. • Problems of sucking pests. • Fluctuating market price. • High rainfall causes failure of the crop.

Table 3.3.2 Farming System: Agriculture + Animal husbandry

Strength <ul style="list-style-type: none"> • Experience in management of animal husbandry and dairy. • Knowledge of agriculture farming and feed and fodder management. • Higher remunerative farming system as compared to only agriculture or animal husbandry. • Co-operative activities certainly encourage this system. 	Weakness <ul style="list-style-type: none"> • Negligence towards maintenance of cattle. • Less availability of green fodder.
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Opportunity	Threats
<ul style="list-style-type: none"> • Availability of pure breed of cows (Gir cow) and buffalos (Jafarabadi) are very famous for higher milk yield. • Risk is minimizing under this farming system. • Finance can be easily available through bank. • All Members of family may be involved. • Increased availability of FYM and biogas. 	<ul style="list-style-type: none"> • Proneness to diseases infections as limited utilization of veterinary facilities. • Unavailability of good quality drinking water during the summer. • Rapid decrease in the pasture/ grazing lands.

Table 3.3.3 Farming System: Agriculture + Horticulture + Animal husbandry

Strength	Weakness
<ul style="list-style-type: none"> • Soil and climate suitable to this farming system. Knowledge and skills are available. • Minimum risk is involved. All family members are involved for the entire year. • Income available throughout the year. • Good variety of Mango (Kesar) is very famous over the country. • Available technical personals. 	<ul style="list-style-type: none"> • Pest and disease problems in fruit crops. Negligence towards maintenance of cattle. • Less availability of feed and fodder.
Opportunity	Threats
<ul style="list-style-type: none"> • Improved seed / pure breed of milch animals and pure varieties of mango and coconut. • Transport facility is good. • Healthy market available. 	<ul style="list-style-type: none"> • Irregular rainfall. • Proneness to diseases infections as limited utilization of veterinary facilities. • Unavailability of good quality drinking water during the summer. • Rapid decrease in the pasture/ grazing lands.

Table 3.3.4 Farming System: Fisheries

<p>Strength</p> <ul style="list-style-type: none"> • Longer coast line provide good production of sea food • Good scope for cage culture of fin fish/ shell fish • Sea coast provides very well facilities for fishing. • Good qualities of fishes are available at the west coast. • Very good environment for aquaculture. 	<p>Weakness</p> <ul style="list-style-type: none"> • No risk bearing ability in fishery business. • Socio-economic status is poor. • Technical know-how is very low. • Not well established market for small fishermen.
<p>Opportunities</p> <ul style="list-style-type: none"> • Sea water is very near to this area. • Demand of fish is very high. • Technical support is available from KVK, Khapat and the fisheries department. 	<p>Threats</p> <ul style="list-style-type: none"> • Low market price. • People are mostly vegetarian. • Poor financial capacity.

3.4 Sectoral / Regional Growth Drivers of the District

A. Agriculture:

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

B. Soil Health:

- Prevention of degradation of soil fertility using waste biomass available from livestock, crop & farm.
- Reclamation of salinity and sodicity in coastal area.
Adoption of crop rotation
- Judicious use of poor quality ground water by adoption of MIS.

C. Horticulture:

- Increasing area under fruits and vegetable crops by providing improved planting material.
- Implementation of IPM and INM.
- Demonstrations and trainings including farmers and field official.
- High-tech green house for floriculture development.
- Export oriented unit for horticulture crop (Keshar Mango)
- Introduction of custard apple plantation.
- High density plantation for mango.
- Harvesting and post harvesting techniques for fruit crops.
- Improvement in the processing and transportation technologies.

D. Forestry:

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

E. Animal Husbandry

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

F. Fisheries:

- Renovation of village/town ponds for fisheries and making availability of good quality fish seed (Rearing unit/hatcheries)
- Capacity building of fish farmers and field functionary.
- Processing plants for marine fish, fish oil and powder.
- Utilization of waste / degraded land of coastal region for inland fisheries.

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 to agriculture sector are discussed. The district is covered under South Saurashtra Agro-Climatic Zone. The soil topography, resource availability is varying in all the 3 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 2.29 lakh ha among it the net sown area is 52 % (1.19 lakh ha) and 10.5 % (0.24 lakh ha) of land is covered by forest which is known as Barda forest. The Ranavav taluka covers more than 50% of the total forest area of the district. In forest region mainly woody tree like bamboo, fruits tree like, custard apple (sitafal), rayan, timbru, karmada etc. are obtained.

The Cultivable waste & current fallow which are present in the district to the tune of 0.35 lakh ha that can be brought under cultivation so that the net sown area could be increased. There is a need to improve the pastures in the district, which occupies about 0.26 lakh ha.

Table 4.2.1: Net and gross cropped area with cropping intensity

Taluka	Geographical area	Forest Area	Land Under Non-agril. Use	Cultivable waste	Permanent pastures	Current Fallows	Net sown area	Gross cropped area	Cropping intensity (%)
Porbandar	111760	4665	12228	9486	12670	15349	58321	7258	119.00
Ranavav	56630	15018	9796	1644	5939	3528	22587	4291	119.00
Kutiyana	58810	4739	1994	1925	6904	2659	38177	3083	119.00
Total	227200	24422	24218	13055	25513	21536	119373	14632	-

Source: Taluka Ankdakiy Ruprekha Year 2010-11

4.3 Soil type and Soil Health Management:

The soils of Porbandar District are medium black, shallow black, saline/alkaline, hilly and costal alluvial. Medium black and deep black (saline-alkaline soil of *Ghed* area) soils are predominantly seen in the district. However, due to injudicious use of chemical fertilizers and pesticides, the soil of the district going to be ill day by day. Irrigation water of high EC is adding salt in the soil in some of the talukas, causing deterioration of the soil. There is a need to increase soil health by checking chemical fertilizers and pesticides use and by using soil amendments.

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

Taluka	Major soils	Area ('000 ha)	Percent of total area of Taluka
Porbandar	Medium to Shallow Black	79.90	70
	Deep Black (Ghed Area)	34.24	30
Ranavav	Medium to Shallow Black	58.8	100
Kutiyana	Medium to Shallow Black	33.96	60
	Deep Black (Ghed Area)	22.64	40

Source: Taluka contingency plan -2011.

4.4 Water Resources

The district is having total irrigated area of 19209 hectares. Among different sources of irrigation, the major source is open well (19209 ha). The district is receiving fairly good amount of rainfall (650-1100 mm) and due to increase in ground water potential, the area under irrigation is gradually increasing. Even though the scarcity of irrigation water in all the Talukas is one of the major hurdles 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 drip and sprinkler irrigation system. Large number of farmers has adopted sprinkler irrigation system, which covered 9266 hectare area of land under irrigation. Specific extension activities are being proposed on these important aspects in the plan.

4.5 Major crops and varieties in the district

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 Porbandar 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.	Gram	Gujarat Gram -1, Gujarat Gram - 2, Gujarat J Gram - 3
5.	Green gram	Guj. Mug-4, K-851
6.	Sesame	GT-2, GT-3, GT-10
7.	Castor	GAU-CH-1, GCH-6, GCH-7

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Cont.

8.	Sorghum	GFS-4, GFS-5, Gundhari, S-1049 (Fodder)
9.	Onion	Junagadh Local (Pilipatti), Gujarat White Onion-1, AFLR, AFDR
10.	Tomato	G.Tomato-1, Junagadh Tomato-3, Junagadh Ruby, Pvt. Hybrids.
11.	Brinjal	GBL-1, GBGR-1, GJB-2, GJB-3, Pvt.Hybrids.
12.	Fenugreek	Gujarat Methi-2
13.	Cumin	GC-4
14.	Coriander	GC-2
15.	Coconut	D x T, T x D, Dwarf green, West coast tall, Orange
16.	Mango	Kesar
17.	Sapota(Chiku)	Kalipatti, Cricket ball
18.	Papaya	Madhu Bindu, Taiwan-786

4.5.2 Cropping pattern

Major Cropping sequences invogue in the district are given below:

- Groundnut- Wheat–Green gram
- Groundnut- Wheat -Sesame
- Groundnut- Wheat– Summer Fodder
- Groundnut- Wheat
- Groundnut-Cumin/coriander-sesame
- Groundnut-Onion/chilly
- Gram
- Castor
- Cotton
- Cotton–Summer Groundnut
- Cotton– Summer Fodder
- Cotton– 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, but the demand usually falls short of supply. Unfortunately, the district has no seed farm. The only way is to produce certified seeds through seed village programme. Further, due to lack of knowledge regarding importance of improved seeds, the farmers are still using inferior quality seeds of local varieties especially in chickpea, pigeon pea, sorghum and maize. 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 Porbandar district is presented in the Table 4.6.1. The requirement of fertilizers increased with the increasing awareness about use of fertilizers and availability in the market.

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. 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 131501kg or liter. Table 4.6.2 shows the planning of plant protection chemical requirements.

Table 4.6.1: NPK consumption (2011-12)

Season	Fertilizers (in Tonnes)			
	Nitrogenous (N)	Phosphoric (P)	Potassium (K)	Total (NPK)
Kharif	5113	2534	1716	9363
Rabi	2306	1757	242	4305
Total	7419	4291	1958	13668

Source: Deputy Director of Agriculture, Porbandar

Table 4.6.2: Planning of plant protection chemical requirements (in q. or lit.)

Taluka	Pesticides used	Used in 2011-12	2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)
Porbandar	Granule(q)	61	62	63	65	66	67
	Dust (q)	1028	1049	1070	1091	1113	1135
	Liquid (L)	64153	65436	66745	68080	69441	70830
Ranavav	G	24	24	25	25	26	26
	D	403	411	419	428	436	445
	L	25353	25860	26377	26905	27443	27992
Kutiyana	G	40	41	42	42	43	44
	D	673	686	700	714	728	743
	L	41995	42835	43692	44565	45457	46366
Total	G	125	127	130	132	135	137
	D	2104	2146	2189	2233	2277	2323
	L	131501	134131	136814	139550	142341	145188

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

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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.

4.8.1 Krishi Vigyan Kendra

- i. Conducting the “On farm testing” for identifying technologies in terms of location specific sustainable land use systems.
- ii. Organize training to update the extension personnel with emerging advances in agricultural research on regular basis.
- iii. 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.
- iv. Organize the front line demonstration on various crops for generating production data and feedback information.
- v. KVK should work as Knowledge resource 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 farmer. The schemes are composed of component like adding of organic manures and bio-fertilizers, seed supply, pesticides and its appliances, distribution of improve implements, creation of irrigation facilities, harvesting etc., are included to help individual farmers at subsidize rates. The efficacy of those 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 programmes are as below:

- i. Swarnajayanti gram SwarojgarYojana (SGSY)
- ii. Prime Ministers Employment Generation Progarmmme (PMEGP)
- iii. DIC bankable credit schemes
- iv. Swarna Jayanti Shaheri Rojgar Yojna (SJSRY)
- v. Gujarat Schedule Caste Development Corporation (GSCDC)
- vi. Gujarat Backward Caste Development Corporation (GBCDC)
- vii. Gujarat Woman Economic Development Corporation (GWEDC)
- viii. Jyoti Gram Yojna
- ix. Mission Mangalam Project
- x. MGNAREGA project
- xi. ATMA project
- xii. Gujarat State Watershed Development Agency



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Schemes:

Department of Agriculture (DAO)		District Rural Development Agency	
SN	Name of scheme	SN	Name of scheme
1	AGR-1 : Agri. Development	1	SwarnJayanti Gram SwarozgarYojana (S.G.S.Y.)
2	AGR-2 : Marginal farmers	2	Indira AwaasYojana (IAY) (New Awaas)
3	AGR-3 Schedule Tribe farmers		
4	AGR-4 : Schedule Caste farmers	3	National Rural Employment Guarantee Act. (N.R.E.G.A.)
5	AGR-5: Intensive Cotton Dev. Project (Mini mission)	4	Indira AwaasYojana (IAY) (Up-gradation)
6	AGR-6 :ISOPOM (Oil seeds)	5	Total Sanitation Components Yojana (T.S.C.)
7	NFSM: National food security mission	6	Gokul Gram Yojana (G.G.Y.)
8	AGR-50 : Tractor help scheme	7	SakhiMandalYojana
9	RKVY-Farm mechanization	8	Hariyali (DWDU)
10	RKVY special scheme	9	IWDP (DWDU)
11	Farmers accident insurance scheme	Department of Animal Husbandry	
12	AGR-9 Work Plan	1	ANH-2 : Veterinary Dispensary
13	Seed Village		Organization of animal health camps
14	Rodent Control	2	ANH-5 : a. Supply of liquid nitrogen & semen
15	RKVY Productivity enhancement of wheat & Gram		b. Infertility camp
	Department of Horticulture	3	ANH-8 : a. Health package for milk animals of SC b. Subsidy for milch unit : NABARD patterns
1	HRT-1- Normal	4	ANH-9 : Integrated fodder & gauchar devel. Scheme (SC) Distribution of fodder minikits, subsidy for chaff cutter etc.
2	HRT-2- Integrated Horticulture Development Programme		
3	HRT-4- Schedule cast	5	ANH-12 : a. Subsidy for goat (10-1) SC b. Subsidy for goat (100-1)
4	HRT – 7 – Promotion of medicinal & aromatic plant and floriculture in the district		
5	HRT – 8 – Horticulture development in the state	6	DSM-1 (Naw) : Cattle insurance for SC
7	Department of Fishery		DSM-1 (001) : Health package (Gen.)
1	Matsya vechan sahay	7	Instrument for clean milk production
2	boat -Net	8	Chaff Cutter Scheme
3	Plastic crate, Aqu.hatchery		Chaff cutter (Round wheel)
4	Reservoir stocking Training		Chaff Cutter (Manually operated) Chaff cutter (Round wheel) - SC
5	Modern Eqp.sahay, Cycle Net sahay		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. 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 hereunder.

- 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 are presented in Table 4.10.1 and resources and bridging the gaps for realizing the vision- agriculture sector is presented in Tab. 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 in soil 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, <i>shibir</i> , 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%)

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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, <i>shibir</i> , 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, <i>shibir</i> , 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, <i>shibir</i> , 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, <i>shibir</i> , 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.	Chickpea			
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 (13-15%)
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, <i>shibirs</i> 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.	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, <i>shibir</i>	Increased production of pulses
6.	Sesame			
a	Low germination due to improper placement of seed and lack of knowledge about proper placement of seed	To popularize scientific package of practices	Creating awareness through demonstrations, training, <i>shibir</i> , 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, <i>shibir</i> , 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, <i>shibir</i> , 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, <i>shibir</i> , literature etc	Increase in yield (2-5%)

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7.	Cumin			
a	Low adoption of improved package of practices	Lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices through demonstrations, training, field days, <i>shibir</i> , literature etc
b	Insect pest and disease problem	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, <i>shibir</i> , literature etc.
c	Germination 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, <i>shibir</i> , literature
a	Low adoption of improved package of practices	Lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices through demonstrations, training, field days, <i>shibir</i> , literature etc
8.	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, <i>shibir</i> , literature etc.	Reduction in weed menace and increase in productivity (5-7%)

Table 4.10.2: Bridging the gaps for realizing the Vision- Agriculture sector

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

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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



Front Line Demonstration on Cumin

As per table no. 4.10.3, district average yield (kg/ha) of all the crops is higher than the state average yield but when compared to potentiality of yield, the district level yield is lower. Hence, to fill up the gap various approaches need to be adopted as suggested.

Table 4.10.3: Yield gap analysis of Porbandar district

Crop	Three Year (2008-10) Average Yield in kg/ha	
	District	State
Groundnut-Kharif	1556	1382
Wheat	3181	2799
Cotton (Lint)	720	554
Sesame	520	387
Gram	1304	1038
Sorghum	1172	1119
Cumin	754	556

Source: District-wise Area, Production and Yield of Important Food & Non-food Crops in Gujarat State, Year: 2008-09 and 2009-10, 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 83100 ha followed by cotton as 71,000 ha. In rabi season major area was under wheat crop (34,600 ha) followed by cumin (20,600 ha.) and chickpea (11,400 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.



Breeder Seed Production Plot - GG-11

Table 4.10.4: Projection of Area, Production and Yield of Agricultural Crops in Porbandar 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	35.0	122.5	3500.0	35.0	126.2	3605.0	36.0	133.7	3713.2	37.0	141.5	3824.5	38.0	149.7	3939.3
2	Jowar	13.4	17.4	1300.0	4.0	5.4	1339.0	4.0	5.5	1379.2	4.0	5.7	1420.5	4.0	5.9	1463.2
	Total Cereals	48.4	139.9	-	39.0	131.5	-	40.0	139.2	-	41.0	147.2	-	42.0	155.5	-
PULSES																
3	Moong	3.0	1.4	475.0	3.0	1.5	511.0	3.0	1.7	550.0	3.0	1.8	592.0	3.0	1.9	637.0
4	Gram	12.0	16.2	1350.0	12.0	16.7	1390.5	12.0	17.2	1432.2	12.0	17.7	1475.2	12.0	18.2	1519.4
	Total Pulses	15.0	17.6	-	15.0	18.2	-	15.0	18.8	-	15.0	19.5	-	15.0	20.1	-
	Total Food Grain	63.4	157.5	-	54.0	149.8	-	55.0	158.0	-	56.0	166.7	-	57.0	175.7	-
OILSEED																
5	Groundnut	85.0	127.5	1500.0	86.0	135.5	1575.0	86.0	142.2	1653.8	87.0	151.1	1736.4	456.0	88.0	1823.3
6	Sesamum	4.0	2.0	500.0	4.0	2.1	525.0	4.0	2.2	551.3	4.0	2.3	578.8	4.0	2.4	607.8
	Total Oilseeds	89.0	129.5	-	90.0	137.6	-	90.0	144.4	-	91.0	153.4	-	460.0	90.4	-
COMMERCIAL CROP																
7	Cotton	7.0	5.3	760.0	6.0	4.8	798.0	6.0	5.0	837.9	6.0	5.3	879.8	6.0	5.5	923.8
8	Cumin	20.0	12.5	625.0	21.0	13.4	637.5	21.0	13.7	650.3	22.0	14.6	663.3	23.0	15.6	676.5
9	Onion	1.2	32.4	27000.0	1.2	33.0	27540.0	1.2	33.7	28090.8	1.2	34.4	28652.6	1.2	35.1	29225.7
	Total of Commercial crops	28.2	50.2	-	28.2	51.2	-	28.2	52.4	-	29.2	54.3	-	30.2	56.2	-

Table 4.10.5: Crop Diversification Plan in next 5 years

Existing cropping pattern 2011-12		Crop Diversification proposed (Area in ha)									
		2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)	
Crop group	Area	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 (+/-)
Oilseeds	93970	95000	+1030	94000	+30	93400	-570	95000	+1030	92000	-1970
Cereals	34475	34000	-475	30000	-4475	28000	-6475	29760	-4715	33000	-1475
Pulses	29565	27600	-1965	29760	+195	31000	+1435	30000	+435	28000	-1565
Spices	29160	28500	-660	29900	+740	30500	+1340	28000	-1160	28760	-400
Commercial (Cotton)	12335	13060	+725	14000	+1665	14300	+1965	14000	+1665	14600	+2265
Vegetable*	3655	5000	+1345	5500	+1845	5960	+2305	6400	+2745	6800	+3145
Total	203160	203160		203160		203160		203160		203160	

Source: District Agriculture Officer, Porbandar
*Onion

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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 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)
Oil seeds	Imp. Var	27970	28000	27800	25400	25900	25100
	Seed treatment	28000	27000	27000	25400	26200	25500
	Biofertiliser	9000	8800	8800	8700	8600	8400
	IPM	5000	6100	5300	5000	5000	5000
	INM	24000	25100	25100	28900	29300	28000
		93970	95000	94000	93400	95000	92000
Pulses	Imp. Var	5000	4000	5000	6440	5000	5300
	Gypsum	1200	1100	1200	1200	1200	1200
	Biofertiliser	6000	5500	6000	6000	6000	6500
	INM	8365	8000	8360	8360	8800	8000
	IPM	9000	9000	9200	9000	9000	7000

Source: District Agriculture Officer, Porbandar

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 wast 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 year plan. Capacity Building of Agriculture Staff (at District level) was proposed with financial requirement of Rs. 1.20 lakh per year under recurring fund and Rs. 3.0 lakh under non-recurring fund as presented in Tab. 4.11.1. Farmers field School Projection in next 5 years with 20numbers of FFS and 33 villages to be cover in one year (Tab. 4.11.2).

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			
Porbandar	50	50	50	50	50	1	0.40	1.0
Ranavav	50	50	50	50	50	1	0.40	1.0
Kutiyana	50	50	50	50	50	1	0.40	1.0
Total	150	150	150	150	150	3	1.2	3.0

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

Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Training Proposal for Capacity Building of Agriculture Staff	4.2	1.2	1.2	1.2	1.2	9.0

Note: Name of Department: Agriculture, Cooperative & NGOs, PRI staff & others, One FTC and One FIAC/ATMA available in Porbandar.

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

Taluka	2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)	
	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
Porbandar	1	2	1	2	2	3	2	3	2	3
Ranavav	1	2	1	2	1	2	1	2	1	2
Kutiyana	1	2	1	2	1	2	2	2	2	2
Total	3	6	3	6	4	7	5	7	5	7

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. 45.0 lakh under different technologies like seed production, seed treatment, IPM, IWM, etc.

Table 4.11.3: Training Proposal for Capacity Building of Farmers at district level on different technologies.
(Phy- No. , Fin. – Rs in lakhs)

Name of Technology to be transferred	Projections (financial target in Lakh Rupees)										Total	
	2012-13		2013-14		2014-15		2015-16		2016-17			
	phy	fin	phy	fin	phy	fin	phy	fin	phy	fin	phy	fin
Soil health management	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Seed production technology	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Plant health management	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Post harvest technology	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Organic farming	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Installation and maintenance of MIS	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Production technology of Kharif crops	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Production technology of Rabi crops	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Biological control Pest and disease	250	1.0	250	1.0	250	1.0	250	1.0	250	1.0	1250	5.0
Total	2250	9.0	2250	9.0	2250	9.0	2250	9.0	2250	9.0	11250	45.0

Varietal Demonstrations in next five years are presented in Tab. 4.11. 4. Total 3300 demonstration of different crops in each taluk with 0.4 hectare per demonstration is proposed with financial requirement of Rs. 66.00 Lakh.

Table: 4.11.4: Varietal Demonstration in Next Five Years

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

Sr. No	Name of Crop	Area Covered (ha)	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	48	120	2.4	120	2.4	120	2.4	120	2.4	120	2.4	600	12.0
2	Wheat	48	120	2.4	120	2.4	120	2.4	120	2.4	120	2.4	600	12.0
3	Gram	48	120	2.4	120	2.4	120	2.4	120	2.4	120	2.4	600	12.0
4	Sesame	24	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
5	Castor	24	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
6	Cumin	48	120	2.4	120	2.4	120	2.4	120	2.4	120	2.4	600	12.0
7	Coriander	24	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
	Total	264	660	13.2	660	13.2	660	13.2	660	13.2	660	13.2	3300	66.0

Note: Area of Demonstration is 0.40 ha, Cost Rs./Demo. is Rs. 2000.00

The demonstrations on plant health management like seed treatment with bio-pesticide are proposed to create the awareness among the farmers are presented in Tab.4.11.5. The total number of demonstrations in all taluka of the district is proposed as 3300 with total financial requirement of Rs. 49.50 lakh for the major crops of the district.

Table 4.11.5: 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	Area covered in ha	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	48	120	1.8	120	1.8	120	1.8	120	1.8	120	1.8	600	9.0
Gram	48	120	1.8	120	1.8	120	1.8	120	1.8	120	1.8	600	9.0
Groundnut	48	120	1.8	120	1.8	120	1.8	120	1.8	120	1.8	600	9.0
Sesame	24	60	0.9	60	0.9	60	0.9	60	0.9	60	0.9	300	4.5
Castor	24	60	0.9	60	0.9	60	0.9	60	0.9	60	0.9	300	4.5
Cotton	48	120	1.8	120	1.8	120	1.8	120	1.8	120	1.8	600	9.0
Cumin	24	60	0.9	60	0.9	60	0.9	60	0.9	60	0.9	300	4.5
Total	264	660	9.9	660	9.9	660	9.9	660	9.9	660	9.9	3300	49.5

Note: Area of demonstration is 0.4 ha. Cost Rs./Demo. is Rs. 1500.00

The demonstrations on soil health management like use of bio fertilizers and bio compost are 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 3120 with total financial requirement of Rs. 124.8 lakh for the major crops of the district

Table 4.11.6: 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	Area covered in ha	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	24	60	2.4	60	2.4	60	2.4	60	2.4	60	2.4	300	12
Gram	48	120	4.8	120	4.8	120	4.8	120	4.8	120	4.8	600	24
Groundnut	72	180	7.2	180	7.2	180	7.2	180	7.2	180	7.2	900	36
Castor	24	60	2.4	60	2.4	60	2.4	60	2.4	60	2.4	300	12
Cotton	24	60	2.4	60	2.4	60	2.4	60	2.4	60	2.4	300	12
Cumin	48	120	4.8	120	4.8	120	4.8	120	4.8	120	4.8	600	24
Crop diversification	9.6	24	0.96	24	0.96	24	0.96	24	0.96	24	0.96	120	4.8
Total	249.6	624	24.96	624	24.96	624	24.96	624	24.96	624	24.96	3120	124.8

Note: Area of demonstration is 0.4 ha. Cost Rs./Demo. is Rs. 4000.00

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The demonstrations on IWM to be conducted during XII five year plan are presented in Tab. 4.11.7. The total number of proposed demonstrations is 3120 with the total financial requirement of Rs. 124.80 lakh for different crops with 0.4 ha demonstration area.

Table 4.11.7: Demonstrations on IWM to be conducted during plan period
(Phy – Number of demonstrations, Fin – Rs. in Lakh)

Name of Crop	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	120	4.8	120	4.8	120	4.8	120	4.8	120	4.8	600	24.0
Cotton	120	4.8	120	4.8	120	4.8	120	4.8	120	4.8	600	24.0
Groundnut	240	9.6	240	9.6	240	9.6	240	9.6	240	9.6	1200	48.0
Castor	60	2.4	60	2.4	60	2.4	60	2.4	60	2.4	300	12.0
Cumin	60	2.4	60	2.4	60	2.4	60	2.4	60	2.4	300	12.0
Gram	24	0.96	24	0.96	24	0.96	24	0.96	24	0.96	120	4.8
Total	624	24.96	624	24.96	624	24.96	624	24.96	624	24.96	3120	124.8

Note: Area of demonstration is 0.4 ha. Cost Rs./Demo. is Rs. 4000.00

The taluka wise production of organic input and formation of organic groups (Table 4.11.8) and Additional area to be brought under organic farming (Table 4.11.9) 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. 7Lakh. The additional area of 49 ha is proposed under organic farming in next five years

Table 4.11.8: Production of organic input during plan period.

Taluka	Production of organic inputs (q)				Other activities			
	Bio fertiliser	Vermi compost	Biodynamic compost/ Trichodarma	Bio-pesticide	Organic farming groups	Organic certification group	District level activities (No)	Required amount in Lakh Rs.
Porbandar	50	25	500	10	1	1	1	5.0
Ranavav	0	58	0	2	1	0	1	1.0
Kutiyana	0	19	0	0	1	0	1	1.0
Total	50	102	500	12	3	1	3	7.0

Table 4.11.9: 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 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)	Total
1	Porbandar	2	4	6	5	7	24
2	Ranavav	1	2	2	4	4	13
3	Kutiyana	1	1	2	3	5	12
	Total	4	7	10	12	16	49

IPM Demonstration and INM Demonstrations in next 5 years are presented in Tab. 4.11.10 and Tab. 4.11.11 respectively. The total of demonstrations on IPM as 1050 and on INM as 1560 with the financial requirement of Rs. 21.0Lakh and Rs. 30.00 Lakh respectively.

Table 4.11.10: IPM Demonstration in next 5 years

(Phy- No., Fin- Lakh Rs)

Crop	IPM Demo. in 2011-12		IPM Demonstration projections(financial target in lakh rupees)											
	Demo. conducted	Area covered	2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)		Total	
			Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
G.nut	60	24	90	1.8	90	1.8	90	1.8	90	1.8	90	1.8	450	9.0
Cotton	50	20	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
Gram	50	20	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
Total	160	64	210	4.2	210	4.2	210	4.2	210	4.2	210	4.2	1050	21.0

Note: Area of demonstration is 0.4 ha. **Cost Rs./Demo. is Rs. 2000.00**

Table 4.11.11: INM Demonstrations in next 5 years

(Phy-No., Fin- Lakh Rs)

crop	INM Demonstration projections											
	2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)		Total	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Groundnut	90	1.8	90	1.8	90	1.8	90	1.8	90	1.8	450	9.0
Cotton	90	1.8	90	1.8	90	1.8	90	1.8	90	1.8	450	9.0
Wheat	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
Gram	60	1.2	60	1.2	60	1.2	60	1.2	60	1.2	300	6.0
Total	300	6.0	300	6.0	300	6.0	300	6.0	300	6.0	1500	30.0

Note: Area of demonstration is 0.4 ha. **Cost Rs./Demo. is Rs. 2000.00**

Seed planning/ Seed village programme (Seed production enhancement) and the seed storage at University /Panchayat level and taluka level are proposed as per Table 4.11.12 &Table 4.11.13. Total number of villages for the seed production enhancement in different crops is suggested as 14 with the total financial requirement of Rs. 61.5Lakh which will cover 850 ha area. The seed storage at university farms, Panchayat level and Taluka level are proposed as 87 with total requirement of Rs. 360.00 Lakh.

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Table 4.11.12 : Seed planning/ Seed village programme (Seed production enhancement)
(Phy – Area in ha, Fin – Rs. in Lakh)

Name of Crop	No of villages/year	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	3	120	30	1.5	30	1.5	30	1.5	30	1.5	30	1.5	150	7.5
Groundnut	6	120	60	6	60	6	60	6	60	6	60	6	300	30
Gram	3	20	60	3	60	3	60	3	60	3	60	3	300	15
Cumin	2	15	20	0.8	20	0.8	20	0.8	20	0.8	20	0.8	100	4
Monitoring	-		--	1.0	--	1.0	--	1.0	--	1.0	--	1.0	--	5.0
Total	14	275	170	12.3	170	12.3	170	12.3	170	12.3	170	12.3	850	61.5

Table 4.11.13: 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	25.0	1	10.0	-	-	-	-	-	-	2	35.0
Panchayat level	15	45.0	15	45.0	15	45.0	15	45.0	15	45.0	75	225.0
Taluka level	2	20.0	2	20.0	2	20.0	2	20.0	2	20.0	10	100.0
Total	18	90.0	18	75.0	17	65.0	17	65.0	17	65.0	87	360.0

The soil and water testing laboratory and mobile plant health clinic and strengthening of existing university / government laboratory are proposed in Table 4.11.14 with the total financial requirement of Rs.205.00 Lakh. The taluka wise soil testing programme to test the general soil samples (1, 00,000 samples), micronutrient soil samples (1,235 samples) and water samples (1060 samples) are planned with Rs. 165.00 Lakh.

Table 4.11.14: 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	1	25.0	1	25.0	1	25.0	-	-	-	-	3	75.0
Strengthening & up gradation of existing univ./ govt. lab	1	20.0	1	20.0	-	-	-	-	-	-	2	40.0
Mobile soil testing and plant health clinic van	-	-	-	-	1	30.0	1	30.0	1	30.0	3	90.0
Total	2	45.0	2	45.0	2	55.0	1	30.0	1	30.0	8	205.0

Table 4.11.15: 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	Porbandar	General soil sample	60	45000	67.50
		Micronutrient soil sample		620	6.20
		Water sample		440	1.10
2	Ranavav	General soil sample	30	25000	37.50
		Micronutrient soil sample		245	2.45
		Water sample		290	0.725
3	Kutiyana	General soil sample	30	30000	45
		Micronutrient soil sample		370	3.70
		Water sample		330	0.825
	Total	General soil sample	120	100000	150
		Micronutrient soil sample		1235	12.35
		Water sample		1060	2.65
		Grand Total of all samples		102295	165.00

Remark: Total amount required Rs. 165 and Rs. 33.0 lakh per year.

	Year wise soil testing programme (Rs. in lakhs)					
	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Amount Rs. in lakh	33.0	33.0	33.0	33.0	33.0	165.0

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The estimated coastal saline area 5826 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. 291.30 Lakh.

Table 4.11.16: Reclamation of coastal saline soils including Ghed area

(Rs in lakh)

Taluka	Affected Area (ha.)	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.	Phy	Fin.
Porbandar	4231	846	42.3	846	42.3	846	42.3	846	42.3	847	42.35	4231	211.55
Kutiyana	673	134	6.70	134	6.70	135	6.75	135	6.75	135	6.75	673	33.65
Ranavav	922	184	9.20	184	9.20	184	9.20	185	9.25	185	9.25	922	46.10
Total	5826	1164	58.20	1164	58.20	1165	58.25	1166	58.30	1167	58.35	5826	291.30

Physical: Estimated Saline area to be reclaimed, ha

Agri Business Service centres are 123, seed/fertiliser supply centres are 106 and the Veterinary Medicine (Animal Dispensary) centres are 12 in the district. The taluka wise details are presented in Tab. 4.11.17.

Table 4.11.17: Agro input dealer Service Centre in the district (Agriculture and Allied)

S.No	Taluka	No. of service centres	Classification		
			Seed/fertiliser supply	Vety. Medicine (Animal Dispensary)	Irrig. Syst.
1	Porbandar	99	93	4	2
2	Kutiyana	8	3	3	2
3	Ranavav	16	10	5	1
	Total	123	106	12	5

Source: Deputy Director of Agriculture, Porbandar

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. 4.11.18.

Table 4.11.18: 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	1	10.0	1	10.0	-	-	-	-	-	-	2	20.0
New APMC	1	50.0	-	-	-	-	-	-	-	-	1	50.0
Total	2	60.0	1	10.0	-	-	-	-	-	-	3	70.0

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. 4.11.19, Tab. 4.11.20, Tab. 4.11.21 and Tab. 4.11.22, respectively.

Table 4.11.19: Details of credit institutions in the district

Sr. No	Taluka	Number of institutions					
		Commercial Bank	RRBs	Cooperatives	PACSS	Others	Total
1	Porbandar	44	7	5	-	-	56
2	Kutiyana	5	0	2	-	-	7
3	Ranavav	6	0	2	-	-	8
	Total	55	7	9	-	-	71

Source: Lead District Bank, Porbandar

Table 4.11.20: Agricultural Insurance Status

(Phy- ha area)

S.No	Taluka	Actual coverage of farmers 2011-12	Area coverage (ha) in 2011-12
1	Porbandar	8372	18524
2	Ranavav	7967	19571
3	Kutiyana	13358	29713
	Total	29697	67807

Source: : Lead District Bank, Porbandar

Table 4.11.21: Crop loan disbursement

(Short term credit in Rs Lakh)

S.No	Taluka	Loan disbursed in 2011-12	
		No.of loans	Amount
1	Porbandar	8372	4753.58
2	Ranavav	7967	4550.08
3	Kutiyana	13358	6960.17
	Total	29697	16263.82

Source: :Lead District Bank, Porbandar

Table 4.11.22: Loan Disbursement for investment credit during XII Five year plan

(Rs in Lakh)

S.No	Taluka	Loan disbursement target				
		2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)
1	Porbandar	5419.08	6231.94	7166.73	8241.74	9478.01
2	Ranavav	5187.09	5965.15	6859.92	7888.91	9072.25
3	Kutiyana	7934.59	9124.78	10493.49	12067.52	13877.64
	Total	18540.75	21321.87	24520.15	28198.17	32427.90

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4.12 Agricultural Engineering

Large scale migration of farm labourers to the industries and urbanization 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. Porbandar 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.

4.12.1 Farm Mechanization/Farm Equipments

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. Farm equipment and machinery in Porbandar district is presented in Tab. 4.12.1. The requirement of farm mechanization in the district for XII five year plan is given in Tab. 4.12.2. There is an immense scope for farm mechanization in the district.

Table 4.12.1: Farm equipment and machinery in Porbandar district

Sr.No.	Ploughs		Sugar-cane Crushers	No. of Tractors	No. of Carts	Oil Engines With Pumping sets	Electric Pump set
	Wooden	Iron					
1	4240	15196	-	1397	14806	9287	8335

Source: District AnkdakiyaRuprekha -2010-11 (Porbandar) and Strategic Research and Extension Plan – 2009 (ATMA) Dist.: Porbandar



Micro Irrigation Systems-Drip and Sprinkler

Table 4.12.2: Requirement of farm mechanization in the district

Sr No	Name of Equipment	Unit Cost	(Phy – No. of units, Fin – Rs. in Lakh)											
			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
1	Tractor	5	30	150	30	150	30	150	30	150	30	150	150	750
2	Mini Tractor	3	30	90	30	90	30	90	30	90	30	90	150	450
3	Rotary weeder	0.35	30	10.5	30	10.5	30	10.5	30	10.5	30	10.5	150	52.5
4	Rotavator	0.5	30	15	30	15	30	15	30	15	30	15	150	75
5	Diesel Engine with pump	0.25	300	75	300	75	300	75	300	75	300	75	1500	375
6	Threshers	0.4	300	120	300	120	300	120	300	120	300	120	1500	600
7	Laser leveler	2	60	120	60	120	60	120	60	120	60	120	300	600
8	Cotton shredder	1	30	30	30	30	30	30	30	30	30	30	150	150
9	Sprayers	0.015	300	4.5	300	4.5	300	4.5	300	4.5	300	4.5	1500	22.5
10	Duster	0.015	300	4.5	300	4.5	300	4.5	300	4.5	300	4.5	1500	22.5
11	Automatic Tractor drawn seed drill	0.25	300	75	300	75	300	75	300	75	300	75	1500	375
12	Automatic Bullock drawn seed drill	0.05	300	15	300	15	300	15	300	15	300	15	1500	75
13	Combine harvester	25	15	375	15	375	15	375	15	375	15	375	75	1875
14	Plough	0.25	300	75	300	75	300	75	300	75	300	75	1500	375
15	Cultivator/ Harrows	0.2	300	60	300	60	300	60	300	60	300	60	1500	300
16	Power Tiller	2.5	30	75	30	75	30	75	30	75	30	75	150	375
17	Other implements	0.2	300	60	300	60	300	60	300	60	300	60	1500	300
18	TOTAL		2955	1354.5	2955	1354.5	2955	1354.5	2955	1354.5	2955	1354.5	14775	6772.5

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4.12.2 Micro irrigation system

Drip and sprinkler is slowly getting popularity in the district and about 5921 farmers have adopted drip irrigation systems and covered 9757.0 ha of area. The sprinkler irrigation system is adopted by 5507 numbers of farmers and covered 9266.0 ha of area. The details are given in Tab 4.12.3. The physical and the financial requirement for the protective micro irrigation are presented in Tab. 4.12.4 and Tab. 4.12.5 respectively. For the micro irrigation total financial requirement is proposed as Rs. 2179.45 Lakh.

Table 4.12.3: Information on drip/sprinkler (From 2006-07 to 2011-12)

Drip irrigation		Sprinkler irrigation	
No. of farmers	Area (Ha)	No. of farmers	Area (Ha)
414	491	5507	9266

Source: www.ggrc.co.in

Table 4.12.4: Protective Micro Irrigation Plan for drip and sprinkler (Physical in ha)

Taluka	Area covered in 2011-12	2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)	Total
Porbandar	643	650	715	787	865	952	3969
Ranavav	65	70	77	85	93	102	427
Kutiyana	283	300	330	363	399	439	1831
Total	991	1020	1122	1235	1357	1493	6227

Source: www.ggrc.co.in

Table 4.12.5: Protective Micro Irrigation Plan for drip and sprinkler (Financial in Lakh)

Rs. 0.35 lakh/ha

Taluka	2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)	Total
Porbandar	227.50	250.25	275.45	302.75	333.20	1389.15
Ranavav	24.50	26.95	29.75	32.55	35.70	149.45
Kutiyana	105.00	115.50	127.05	139.65	153.65	640.85
Total	357.00	392.70	432.25	474.95	522.55	2179.45

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 protective (Community Tank) Irrigation Plan is presented in Table 4.12.6A. Programme proposed by DWDU watershed department, Porbandar is also given in Table 4.12.6B

Table 4.12.6A: Protective (Community Tank) Irrigation Plan (Phy- Area in ha, Fin- Rs. in lakh)

Taluka	2012-13			2013-14			2014-15			2015-16			2016-17			Total		
	No	Area (ha)	Fin	No	Area (ha)	Fin	No	Area (ha)	Fin	No	Area (ha)	Fin	No	Area (ha)	Fin	No	Area (ha)	Fin
Porbandar	2	50	25	1	25	15	1	25	15	1	25	15	1	25	15	6	150	85
Ranavav	1	25	15	1	25	15	1	25	15	1	25	15	1	25	15	5	125	75
Kutiyana	2	50	25	1	25	15	1	25	15	1	25	15	1	25	15	6	150	85
Total	5	125	65	3	75	45	3	75	45	3	75	45	3	75	45	17	425	245

Table 4.12.6B. Programme proposed by DWDU watershed department, Porbandar

	2012-13	2013-14	2014-15	2015-16	Total
Entry Point activity	161.59	-	-	-	161.59
Soil & Moisture conservation	803.1	1670	1734	957	5164.10
Production, Livelihood & Micro Enterprise	267.7	557	578	319	1721.70
					7047.39
Note: All amounts are in lakhs.					
Total villages are 68 of 15 projects.					

Source: DWDU watershed department, Porbandar

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The projected area available for watershed development and Technologies for in-situ moisture conservation plan is presented in Tab. 4.12.7 and Tab. 4.12.8, respectively. The year wise area proposed for watershed development is 10,500 ha with financial requirement of Rs. 525.00 Lakh.

Table 4.12.7: Area available for watershed development and plan

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

Taluka	Geographical area (ha)	2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)	Total
Porbandar	114137	1000	1000	1000	1000	1000	5000
Ranavav	56598	500	500	500	500	500	2500
Kutiyana	58800	600	600	600	600	600	3000
Total area	229535	2100	2100	2100	2100	2100	10500
Amount Rs. in lakh	-	105.0	105.0	105.0	105.0	105.0	525.0

Table 4.12.8: Technologies for In-situ Moisture conservation Plan incuding Ghed area

(Area in ha)

Name of activity	2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)	Total
Contour cultivation	3000	3150	3308	3473	3647	16578
Ridge and furrow in Ghed area	20000	21000	22050	23153	24310	110513
Others: Marginal bunds, Peripheral bunds etc	8000	8400	8820	9261	9724	44205
Amount Rs.in lakh	20.00	25.0	30.0	35.0	40.0	150.0

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, favorable 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. 4.12.9 and Tab. 4.12.10A respectively. PLP Projections by NABARD for the year 2012-13 to 2016-17 for Establishment of Storage godown and Market yards is given in Tab. 4.12.10B

Table 4.12.9: 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 godawn		Cold storage		Main market	Sub-market
		Nos.	Capacity	Nos.	capacity		
1	Porbandar	6	324	1	15	1	1
2	Ranavav	5	270	1	40	-	1
3	Kutiyana	-	-	-	-	-	1
	Total	11	594	1	55	1	3



Storage Structure

(Fin. in lakh Rs)

Table 4.12.10A: Establishment of Rural godown

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	Porbandar	6	324	3	4.5	3	4.5	3	4.5	3	4.5	3	4.5	15	22.5
2	Ranavav	5	270	1	1.5	1	1.5	1	1.5	1	1.5	1	1.5	5	7.5
3	Kutiyana	-	-	2	3.0	2	3.0	2	3.0	2	3.0	2	3.0	10	15.0
	Total	11	594	7	9.0	7	9.0	7	9.0	7	9.0	7	9.0	30	45.0

(Fin. in lakh Rs)

Table 4.12.10B: Establishment of Storage godown and Market yards
PLP Projections for the year 2012-13 to 2016-17

Activity	2012-13			2013-14			2014-15			2015-16			2016-17		
	Phy. Unit	Unit cost	TFO	Phy. Unit	Unit cost	TFO	Phy. Unit	Unit cost	TFO	Phy. Unit	Unit cost	TFO	Phy. Unit	Unit cost	TFO
All structures	5	100.00	500.00	4	110.00	440.00	6	110.00	660.00	8	110.00	880.00	9	110.00	990.00
Rural Godown (with 150 MT capacity)	100	3.75	375.00	175	4.13	721.88	160	4.13	660.00	160	4.13	660.00	170	4.13	701.25
Onion Godown (with 150 MT capacity)	40	4.50	180.00	60	4.95	297.00	58	4.95	287.10	47	4.95	232.65	52	4.95	257.40
			1055.00			1458.88			1607.10			1772.65			1948.65
			791.25			1094.15						1329.49			1461.49

Source: NABARD

The planning of processing units and its financial requirements are presented in Tab. 4.12.11. 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. 67.5Lakh.

Table 4.12.11: 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 mills	1	2.5	1	2.5	1	2.5	-	-	-	-	3	7.5
Groundnut oil mill	1	10.0	1	10.0	1	10.0	-	-	-	-	3	30.0
Agro & Food processing units (Mango pulp, pickle making, Fruit juice etc.)	1	15	1	15	1	15	-	-	-	-	3	45.0
Total	3	22.5	3	22.5	3	22.5	-	-	-	-	9	67.5

Note: One in each 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. Biofuels, such as agricultural waste, is another area of importance. 600 million tonnes of agricultural waste in India can produce cellulosic ethanol equivalent to 80,000 mega watts of power, which is 60% of India's installed capacity.

The only way to achieve sustainability is to speed up innovations and investments in R & D especially for solar technology as recognized by markets and policy makers. 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. 4.12.12.

Table 4.12.12: Number of renewable energy units and financial requirements

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

Taluka	Community biogas plant		Solar cooker		Solar Street light		Solar cum wind submersible pump		Total Amount Rs per year
	No.	Amount Rs per year	No.	Amount Rs per year	No.	Amount Rs per year	No.	Amount Rs per year	
Porbandar	10	70.00	400	6.80	160	40.0	15	60.0	176.80
Ranavav	8	56.00	150	2.55	80	20.0	5	20.0	98.55
Kutiyana	8	56.00	300	5.10	100	25.0	5	20.0	106.10
Total	26	182.00	850	14.45	340	85.0	25	100.0	381.45

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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 Porbandar district for the production of different machineries, equipments etc. at local level with. The special production zone for the district with financial outlay of Rs. 100.00 Lakh is proposed for the XII year plan and it is presented in Tab. 4.12.13.

Table 4.12.13: Proposal for establishment of special production zone for agricultural implements, equipments, machinery and irrigation equipments at Porbandar 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 agricultural implements, equipments, machinery and irrigation equipments at district level	0	0	1	25.0	0	25.0	0	25.0	0	25.0	1	100.0

4.12.7 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.. The establishment of smart farming with information technology unit for the district with financial outlay of Rs. 50.00 Lakh is proposed for the XII year plan and it is presented in Tab. 4.12.14.

Table 4.12.14: Establishment of Smart Farming with Information Technology unit.

(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 Smart Farming with Information Technology	1 unit of 100 ha at district level	1	25.0	-	10.0	-	5.0	-	5.0	-	5.0	1	50.0

CHAPTER V

DEVELOPMENT OF ALLIED SECTOR

5.1 Introduction:

Development of allied agricultural sectors has been incorporated as a component of District Agricultural Plan so as to ensure a holistic development of Porbandar 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 and water resources for Porbandar district are discussed.

Allied agricultural sectors i.e., Horticulture, Animal Husbandry, Fisheries development, Forestry 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 which is also relevant to landless people of the district. Farmers of Porbandar 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. In mango, which is the most important fruit crop grown in the Ranavav Taluka 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. 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 Taluka wise Area Expansion Plan of Porbandar district is shown in Table 5.2.1. The Area Expansion Plan includes crops and area (ha). For 12th five year plan the highest amount of Area Expansion Plan in Porbandar is given to the mango crop. The sustainability issues and gap analysis of productivity of different crops and resources is presented in Table 5.2.2. The Table 5.2.3 shows the steps to be taken for bridging the gaps for realizing the Vision in Horticulture sector.

Table 5.2.1 Area expansion plan for horticultural crops

Existing cropping pattern (2011-12)		2012-13 (Projected)	2013-14 (Projected)	2014-15 (Projected)	2015-16 (Projected)	2016-17 (Projected)
Crop	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)	Area (ha.)
Mango	243	253	263	278	298	318
Coconut	670	690	710	730	750	770
Sapota	188	193	198	205	212	220
Jamun	67	70	73	76	80	85
Cumin	22760	22960	23160	23360	23560	23760
Coriander	3530	3560	3590	3620	3650	3680
Total	27458	27726	27994	28269	28550	28833

Source: Deputy Director of Horticulture, State Department, Porbandar

Table 5.2.2: Sustainability issues and gap analysis of productivity of different crops and resources

Sr. No.	Crop	Factors/Constraints leading to gap	Strategies	Approach and methodology	Performance indicators	Sustainability outputs
1	Vegetables					
	Less area under vegetable crops	Lack of irrigation facilities and proper marketing	Popularize water harvesting techniques, drip irrigation and establishing collection centers on co-operative bases and linkage with suitable markets	Creating awareness about importance of vegetable crops, water harvesting structure, drip irrigation, establishing collection centers provided with cold chain linked vehicles	Increased area under vegetable crop	Increase the income of the farmers and secure the livelihoods.
2	Mango					
	Problems of insect pests and diseases	Incidence of disease, thrips and mango hopper 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
	Low post harvest management in banana	Lack of awareness and high cost of the processing plant	Establishment of ripening chamber and packaging unit	Establishment of ripening chamber and packaging unit on co-operative basis	Increase in keeping quality, quality improvement for foreign market	Increase income of the farmers.

3	Plantation crops					
	Less area under fruit crops	Lack of awareness, small land holdings, limited irrigation facility	Popularize importance of fruit trees for sustainable income	Creating awareness and adoption of fruit crops through training, demonstrations and literature	Increase income of the farmers	Sustainability of farmers income
4	Floriculture					
	Meager area under flower crops	Lack of awareness, small land holdings, limited irrigation facility and marketing of the produce	Popularize importance of flower trees for sustainable income in identified area and market linking with suitable markets	Creating awareness and adoption of flower crops through training, demonstrations and literature	Increase income of the farmers	Sustainability of farmers income

Table 5.2.3: 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

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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 Porbandar 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.5.2.4. This table shows the area brought to be under rejuvenation for XII five year plan. The majority area is covered for mango crop.

Table 5.2.4 Rejuvenation plan for horticultural crops (area in ha)

Area brought under rejuvenation (2011-12)		2012-13 (projected)	2013-14 (projected)	2014-15 (projected)	2015-16 (projected)	2016-17 (projected)
Crop	Area	Area	Area	Area	Area	Area
Mango	2	2	2	4	5	5

Source: Dy. Director of Horticulture, Porbandar

Porbandar district is poor in vegetable production and there is a need to increase the production and productivity of the 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, IPM, INM practices and their trainings to farmers is proposed for XII five year plan in the district. The table 5.2.5 shows the Training

needs in vegetables crops which includes the different technology as such as 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 112.50 lakhs.

The table 5.2.6 shows the proposal for establishment of small scale nurseries in Porbandar 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. 18.0 lakhs.

Table 5.2.5: 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	300	3.6	300	3.6	300	3.6	300	3.6	300	3.6	1500	18
Nursery raising	300	3.6	300	3.6	300	3.6	300	3.6	300	3.6	1500	18
IPM/INM	300	3.6	300	3.6	300	3.6	300	3.6	300	3.6	1500	18
Soil health management (bio-fertilizers/ green manuring)	225	2.7	225	2.7	225	2.7	225	2.7	225	2.7	1125	13.5
Organic farming	300	3.6	300	3.6	300	3.6	300	3.6	300	3.6	1500	18
Value addition processing	225	2.7	225	2.7	225	2.7	225	2.7	225	2.7	1125	13.5
Marketing/ co-operative societies	225	2.7	225	2.7	225	2.7	225	2.7	225	2.7	1125	13.5
Total	1875	22.5	1875	22.5	1875	22.5	1875	22.5	1875	22.5	9375	112.5

(Rs.400 per trainee per day)

Table 5.2.6: Establishment of nurseries: (Rs. in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Nursery small scale	2	1	1	1	1	6
Total (Rs. in lakhs) (Cost @Rs 3.00 lakhs/unit)	6	3	3	3	3	18

The table 5.2.7 shows the proposal for establishment of Poly houses in Porbandar district for 12th five year plan. The number of units is proposed equally in each Taluka. The total estimated cost for establishment of Polyhouses is Rs 225 lakhs.

Table 5.2.7: Establishment of Poly houses:

Particulars	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Poly houses	One in each Taluka	3	3	3	3	3	15
Total Cost @Rs 15.00 lakhs/unit (Rs. in lakhs) 1500 sq. m.		45	45	45	45	45	225

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The proposal for demonstrations on vegetables for area expansion in Porbandar district is shown in table 5.2.8. 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 18.0 lakhs for 12th five year plan.

Table 5.2.8: Demonstrations on vegetables for area expansion (Rs. in lakhs)

Particulars	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Area expansion in vegetable crops (ha.)	Equal in each Taluka	30	33	36	39	42	180
Cost @Rs 10,000/unit (Rs. in lakhs)		3.0	3.3	3.6	3.9	4.2	18.0

The table 5.2.9 shows the proposal for demonstrations on integrated pest management in vegetable crops in Porbandar district. The number of demonstrations on integrated pest management for different vegetable crops is proposed as per requirement of taluka. The total estimated cost for demonstrations on integrated pest management in vegetable crops is Rs 6.6 lakhs for 165 demonstrations in 12th five year plan.

Table 5.2.9: Integrated pest management in Horticultural crops (Rs in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Mango	5	6	7	8	9	35
Coconut	4	5	6	7	8	30
Chilli	5	6	7	8	9	35
Tomato	4	5	6	7	8	30
Other vegetables	5	6	7	8	9	35
Total demonstrations	23	28	33	38	43	165
Total cost @Rs. 4000 /demon.(Rs. in Lakhs)	0.92	1.12	1.32	1.52	1.72	6.6

(Demonstration of 0.4 ha)

The proposal for demonstrations on integrated nutrient management in vegetable crops in Porbandar district is presented in table 5.2.10. 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 1.2 lakhs for 12th five year plan.

Table 5.2.10: 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	18	21	24	27	30	120
Total cost @Rs. 1000/ demon.	0.18	0.21	0.24	0.27	0.30	1.20

The table 5.2.11 shows the proposal for establishment low cost net house in Porbandar 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 Porbandar district is Rs.36 lakhs for the 12th five year plan.

Table 5.2.11: 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(ha.) each 100 sq. mt area	12	12	12	12	12	60
Cost @ Rs 60,000/unit (Rs in lakhs)	7.2	7.2	7.2	7.2	7.2	36.0

The table 5.2.12 shows the proposal for establishment of High tech vegetable farming in Porbandar district. The number of units are proposed equally in each Taluka. The total cost for establishment of high tech vegetable farming is Rs. 225 lakhs for the 12th five year plan.

Table 5.2.12: High tech vegetable farming including all components:

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	3	3	3	3	3	15
Cost @ Rs15.0 lakh/unit(Rs. in lakhs)	45	45	45	45	45	225.0

The proposal for establishment of cold storage units in Porbandar district is presented in table 5.2.13. The cost of establishment is Rs. 75 lakhs per unit and one unit is proposed in each taluka. The total cost for establishment of cold storage units in Porbandar district is Rs 225 lakhs for the 12th five year plan.

Table 5.2.13: Proposal for establishment of pre cooling cum cold storage units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	1	-	-	3
Cost @ Rs 75 Lakhs for 25 tonne capacity (Rs. in lakhs)	75.00	75.00	75.00	-	-	225

The proposal for establishment of godown units in Porbandar district is presented in table 5.2.14. The total cost for establishment of godown units in Porbandar district is Rs300.0 lakhs for the 12th five year plan.

Table 5.2.14: Proposal for establishment of godown units

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	2	1	1	1	1	6
Cost @ Rs 15000/sq.m. Rs. 50 Lakh/unit (Rs. in lakh)	100.0	50.0	50.0	50.0	50.0	300.0

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The proposal for establishment of collection centers including sorting, grading and packing in Porbandar district is presented in table 5.2.15. Two units are proposed in each taluka. The total estimated cost for establishment of collection centers is Rs 90.0 lakhs for the 12th five year plan

Table 5.2.15: Proposal for establishment of collection centers including sorting, grading and packing (Rs. in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	2	2	2	-	-	6
Cost @ Rs 15.00 lakhs (Rs. in lakhs)	30.0	30.0	30.0	-	-	90.0

The proposal for providing refrigerated vans in Porbandar district is shown in table 5.2.16. Two vans Porbandar and Kutiyana talukas and one van in Ranavav Taluka is proposed. The total cost for providing refrigerated vans is Rs. 120 lakhs for the 12th five year plan.

Table 5.2.16: Proposal for providing refrigerated vans (Rs. in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	1	1	1	5
Cost @ Rs 24.00 Lakhs	24.0	24.0	24.0	24.0	24.0	120.0

The proposal for providing training to farmers for fruit crops in Porbandar district is shown in table 5.2.17. 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 36.0 lakhs.

Table 5.2.17: 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 day training)											
	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	150	1.8	150	1.8	150	1.8	150	1.8	150	1.8	750	9.0
Nursery raising	150	1.8	150	1.8	150	1.8	150	1.8	150	1.8	750	9.0
IPM/INM	150	1.8	150	1.8	150	1.8	150	1.8	150	1.8	750	9.0
Value addition Processing	150	1.8	150	1.8	150	1.8	150	1.8	150	1.8	750	9.0
Total	600	7.2	600	7.2	600	7.2	600	7.2	600	7.2	3000	36.0

(Rs. 400 per trainee per day)

The proposal for introducing new crop in Porbandar district is shown in table 5.2.18. The custard apple introduced as a new crop in Porbandar district. The total estimated cost for establishment of units is Rs 1.20 lakhs for 12th five year plan.

Table 5.2.18: Introduction of custard apple

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units (each 0.4 ha)	6	6	6	6	6	30
Cost @ Rs 4,000 (Rs. in lakhs)	0.24	0.24	0.24	0.24	0.24	1.2

The proposal for establishment of units for integrated pest management in fruit crops in Porbandar district is shown in table 5.2.19. The number of units on integrated pest 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 pest management in fruit crops is Rs 0.90 lakhs for 12th five year plan.

Table 5.2.19: Integrated pest management in fruit crops (Rs. in lakhs)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units (each 0.4 ha)	9	9	9	9	9	45
Cost @ Rs 2,000	0.18	0.18	0.18	0.18	0.18	0.90

This proposal for supply of plant protection equipment (Foot sprayer) in Porbandar district is shown in table 5.2.20. 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 Porbandar district is Rs 2.40 lakhs for the 12th five year plan.

Table 5.2.20: Supply of plant protection equipment (Foot sprayer)

Particulars	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Distributed in all Taluka	12	12	12	12	12	60
Cost @ Rs 4,000 (Rs. in lakhs)		0.48	0.48	0.48	0.48	0.48	2.40

The Proposal for establishment of mango pack house in Porbandar district is shown in table 5.2.21. The cost of establishment of one unit of mango pack house is 3lakh. The total estimated cost for establishment of mango pack houses in Porbandar district is Rs 6.00 lakhs for the 12th five year plan.

Table 5.2.21: Establishment of mango pack house

Particulars	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	Porbandar and Ranavav	1	1	-	-	-	2
Cost @ Rs 3 lakh (9m x 6m) (Rs. in lakhs)		3.0	3.0	-	-	-	6.0

The Proposal for establishment of sapota chips production units is shown in table 5.2.22. The cost of establishment is Rs 30.00 lakh per unit and the total estimated cost for establishment of Sapota chips production units in Porbandar district is Rs 60.00 lakhs for the 12th five year plan.

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Table 5.2.22 Establishment of sapota chips 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

Note: Porbandar and Ranavav

The proposal for establishment of coco-pit and fiber unit and coconut kernel water packaging unit are shown in Table 5.2.23 and 5.2.24, respectively.

Table 5.2.23: Establishment of cocopit and fiber unit

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	-	-	-	2
Cost Rs 10 lakhs per unit	10	10	-	-	-	20

Table 5.2.24: Establishment of coconut kernel water packaging unit

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	1	1	-	-	-	2
Cost Rs 20 lakhs per unit	20.0	20.0	-	-	-	40.0

The Proposal for establishment of units on Cluster based Demonstrations on Spice plants in Porbandar district is shown in table 5.2.25. The total estimated expenditure for this purpose is Rs2.5 lakhs for 12th five year plan in Porbandar district.

Table 5.2.25: Cluster based Demonstrations on Spice plants

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Demon each 5 ha	2	2	2	2	2	10
Cost @ Rs 0.25 lakh (Rs. in lakhs)	0.5	0.5	0.5	0.5	0.5	2.5

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 markets 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.

The taluka wise information about the animals is shown in table 5.3.1.

Table 5.3.1 Taluka wise animals

Taluka	Cattle (no.)	Buffaloes (No)	Sheep (No)	Goats (No)
Porbandar	47015	51595	13060	12418
Ranavav	17732	22293	6012	6046
Kutiyana	18361	31458	3577	3861
Total	83108	105346	22649	22325

Source :District Statistical Report 2010-11

The Taluka wise fodder availability is shown in table 5.3.2. This table includes the area under fodder crop in hectare and quantity available from this area in tones. The total area in under fodder crop in Porbandar district is 16,130 ha and the total quantity available from this area is 1,93,560 tones.

Table 5.3.2 Taluka wise fodder availability.

Taluka	Area (ha) under fodder crop	Quantity available (tonnes)
Porbandar	10015	120180
Ranavav	2035	24420
Kutiyana	4080	48960
Total	16130	193560

Source: (1) TalukaAnkadakiyaRuprekha Porbandar-2008-09
 (2) TalukaAnkadakiyaRuprekha, Kutiyana -2010-11
 (3) TalukaAnkadakiyaRuprekha, Ranavav-2010-11

The occurrence of prominent disease in animals in Porbandar is shown in table 5.3.3.

Table 5.3.3 Talukawise prominent disease occurrence in animals.

Taluka	Disease
Porbandar	FMD
Ranavav	PPR
Kutiyana	FMD

Table 5.3.4 Taluka-wise existing veterinary institutions

Talukas	GPs	Institutions (No)						GPs without Any veterinary institutions
		VH	VD	Mobile veterinary centre	A.I Centers	FAVC	Total	
Porbandar	75	19	5	1	5	4	34	41
Ranavav	30	6	3	0	1	2	12	18
Kutiyana	46	4	2	0	1	1	8	38
Total	151	29	10	1	7	7	54	97

Source: District Ankadakiya Ruprekha Porbandar district 2010-11

Table.5.3.5 Production plan of livestock during the next five years (No. In lakh, P in '000 ton milk/meat, egg in lakh no.)
 (Production: Milk = Tonne, Egg = numbers, Broiler= Tonne, Meat= tone,
 Productivity: Milk = Lit/day/ animal, Egg = numbers/bird, Broiler = kg/bird, Meat = kg/animal).

Name of commodity	Baseline 2011-12			2012-13 (projected)			2013-14 (projected)		
	No.	Production	Productivity (Kg/day/ animal)	No.	Production	Productivity (Kg/day/ animal)	No.	Production	Productivity (Kg/day/ animal)
1	2	3	4	5	6	7	8	9	10
Milk, kg	99847	111990	1.12	101844	116514	1.14	103881	121222	1.17
Egg, No.	15600	1958000	0.34	15912	2037103	0.35	16230	2119402	0.36
Wool, kg	29600	33490	1.13	30192	34843	1.15	30796	36251	1.18
Meat, kg	11910	15495	1.30	12148	16121	1.33	12391	16772	1.35

Table.5.3.5: Contd.

Name of commodity	2014-15 (projected)			2015-16 (projected)			2016-17 (projected)		
	No.	Production	Productivity (Kg/day/ animal)	No.	Production	Productivity (Kg/day/ animal)	No.	Production	Productivity (Kg/day/ animal)
1	11	12	13	14	15	16	17	18	19
Milk, kg	105958	126119	1.19	108078	131214	1.21	110239	136515	1.24
Egg, No.	16555	2205026	0.36	16886	2294109	0.37	17224	2386791	0.38
Wool, kg	31412	37715	1.20	32040	39239	1.22	32681	40824	1.25
Meat, kg	12639	17450	1.38	12892	18155	1.41	13150	18888	1.44

Source: 26th 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 neighbor hoods
- Large scale participation of private players

ii) Weakness

- Green fodder scarcity
- Inadequate healthcare
- 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

- De population 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 healthcare
- Hygienic utilization of offal
- Capacity building protocols
- Cattle feed production

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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 83108 numbers of cattle and 105346 numbers of buffaloes in the district as per latest livestock census (2007). The numbers of cross bred cows are 447 which are almost negligible number of total cows. As per the 26th survey report on livestock production- 2009 total milk production of Porbandar district is 111.99 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 are 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. 6: 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 increased 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

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Table 5. 3. 7: 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- KrishiVigyan Kendra, Co-operatives-Dairy

5.4 Activities for development of Animal Husbandry in the district.

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 and 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 three groups will be trained twice in a year, so the total number of trainings will come up to six. 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 Porbandar district. The number of training equally proposed in each taluka. The total estimated cost for providing the training is Rs2.25 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 Trainings (25 Trainees /training)	6	6	6	6	6	30
Total expense (Lakh) for trainings @ Rs.0.003 lakh /trainee/day (Rs. in lakhs)	0.45	0.45	0.45	0.45	0.45	2.25

5.4.1 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 5.3.9. 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 campus organization is equally proposed in each taluka. The total estimated cost for this programme is Rs 96.4 for this 12th five year plan.

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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	30	30	30	30	30	150
2	No. of Animals to be covered	1500	1500	1500	1500	1500	7500
3	No. of fertility camps to be organized	30	30	30	30	30	150
4	Total Expenditure (Rs. 0.40 lakh per camp) (Rs. in lakhs)	12.0	12.0	12.0	12.0	12.0	60.0
5	No. of Awareness programme	60	60	60	60	60	300
6	Expenditure per Awareness programme (Rs. 0.10 Lakh)	6.0	6.0	6.0	6.0	6.0	30.0
7	Audio-Visual aids (lakh)	6	0	0	0	0	6
8	Maintenance of Audio-Visual aids (lakh)	0	0.1	0.1	0.1	0.1	0.4
	Total Expenditure (Rs in lakhs)	24.0	18.1	18.1	18.1	18.1	96.4

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. Hence, fodder deficient in 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 and 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. The total estimated cost for this programme is Rs 168.75 lakh for this 12th five year plan.

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	1500	1500	1500	1500	1500	7500
MM req. in Kg (@50g/day/animal for 300days)	22500	22500	22500	22500	22500	112500
Total Cost (Rs. 0.0015 lakh/Kg) (Lakhs)	33.75	33.75	33.75	33.75	33.75	168.75

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.*



Balanced Concentrate Ration to Animals

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Table 5.4.4 Proposal for feed factory plant 100MT per day at district level

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 A		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	Molassingequipments	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 B		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 C		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 A...H		1102.00
I	Installation and 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 Porbandar 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 unlevelled 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.

Table 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 for 12th five year plan. The total financial requirement for provision of shed for livestock in Porbandar district is Rs 900.00 lakhs for 12th five year plan.

Table 5.4.5 Proposal for provision of shed for livestock in Porbandar District

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. AH Farmers to be covered	600	600	600	600	600	3000
Financial Requirement (0.30 lakh/farmer) (Rs. in lakhs)	180.0	180.0	180.0	180.0	180.0	900.0

5.4.6 Rearing of female cattle/buffalo calf

Healthy cows/buffaloes are the basic factors involved in success of dairying and 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 Porbandar district, the people 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 showing total expenditure on five calf rearing units, while, table 5.4.7 shows approximate calculation of expenditure per unit of 10 calves is shown.

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Table 5.4.6 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)	3	3	3	3	3	15
Expenditure (Rs. 4.00 Lakh) per unit	12	12	12	12	12	60

Table 5.4.7 Details of expenditure per year (Rs. In Lakh) per female cattle/buffalo calf rearing unit

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

5.4.7 Providing Life Insurance to Livestock

In Porbandar 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. It is there fore necessary, to protect the livestock farmers from vagaries of nature by insuring animals against death and sustaining their livelihood.

The proposal for providing life insurance to live stock is 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 to livestock is Rs 112.5 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	1500	1500	1500	1500	1500	7500
Amount of insurance Rs. 0.015/animal (Rs. lakhs)	22.5	22.5	22.5	22.5	22.5	112.50

5.4.8 Supply of dairy utensils to AH farmers.

The farmers of Porbandar district cannot afford to purchase dairy utensils (steel bucket, milking vessel, feeding vessel, tie-ing 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 (steel bucket, milking vessel, feeding vessel, tying iron chain, etc.).

The proposal for supply of milch animals and 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 Rs 30.00 lakh for the 12th five year plan.

Table 5.4.9 Proposal for supply of dairy utensils to AH farmers having milch animals.

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of farmers to be covered	600	600	600	600	600	3000
Amount Required Rs.0.01 lakh/farmer for dairy utensils (Rs. lakhs)	6.0	6.0	6.0	6.0	6.0	30.0

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., MGNAREGA. 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, ectoparasiticide 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 Rs300 lakh for the 12th five year plan.

Table 5.4.10: Proposal for Supply of 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	600	600	600	600	600	3000
Amount Required Rs.0.10 lakh/farmer/year(Rs. lakhs)	60	60	60	60	60	300.0

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 growing area. Decreased area under fodder crops leads 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.

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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 Porbandar district. The total expenditure both for fodder production and preservation during the 12th five year plan is Rs 60.00lakhs. 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	300	300	300	300	300	1500
Amount required Rs.0.02 lakh/farmer for fodder production	6.0	6.0	6.0	6.0	6.0	30.0
Amount required Rs.0.02 lakh/farmer for fodder preservation	6.0	6.0	6.0	6.0	6.0	30.0
Total Expenditure	12.0	12.0	12.0	12.0	12.0	60.00

5.4.11 Provision of Artificial Insemination

Main object of this project is to produce genetically improve breed by artificial insemination of bride localbreed of cattle / buffaloes. Project of establishing new A.I. centers in Porbandar district will help farmer to get A.I. facilities at door step level to produce a good quality animal and generate self-employment. Grand Total of sub totals A+B+C+D for the proposal is 229.58 lakhs.



Artificial Insemination

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.I. Centre	15			15		-		-		-	
LN2 Container Require											
2 55 liters for Transportation	3	3.0	9.0	3	9.0	-	-	-	-	-	-
35 Liters	15	0.24	3.6	0.24	3.6	-	-	-	-	-	-
3 Liters	15	0.09	1.35	0.09	1.35	-	-	-	-	-	-
3 A.I. Equipments with Furniture	15	0.15	2.25	0.15	2.25	-	-	-	-	-	-
4 Vehicle for Ln2 Transportation	1	7	7	1	7	-	-	-	-	-	-
5 Trevis	15	0.06	0.9	0.06	0.9	-	-	-	-	-	-
Sub Total A			24.1		24.1	-	-	-	-	-	-
LN2 Gas											
6 400 liters/year/Centre	6000	0.00012	0.72	12000	1.44	-	1.44	-	1.44	-	1.44
Sub Total B			0.72		1.44	-	1.44	-	1.44	-	1.44
Training											
7 A. I. Worker	15	0.3	4.5	30	9	-	9	-	9	-	9
A. I. Officer	3	0.6	1.8	6	3.6	-	3.6	-	3.6	-	3.6
8 Vehicle for A.I. officer	3	0.55	1.65	6	3.3	-	3.3	-	3.3	-	3.3
Sub Total C			7.95		15.9	-	15.9	-	15.9	-	15.9
Semen Doses Required											
9 5000 Semen dose req./ centre/year	75000	0.00015	11.25	150000	22.5	150000	22.5	150000	22.5	150000	22.5
10 Multi media with Computer	1	1.5	1.5	0	0	0	0	0	0	0	0
11 Phase Contrast Microscope	1	0.6	0.6	0	0	0	0	0	0	0	0
Sub Total D			13.35		22.5		22.5		22.5		22.5
Total (A+B+C+D)			46.12	0	63.94	0	39.84	0	39.84	0	39.84

5.4.12 Proposal for Supply of breeding 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

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immense importance. The success rate of A.I. in the buffaloes is very low and the reasons for this are manifold. 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 maintenance cost will be given for the one year only, thereafter, the maintenance will be done from the fees procured by use of bulls.

The proposal for supply of breeding bulls in villages of different taluka of Porbandar district is shown in table 5.3.20. This table includes number of villages to be proposed, cost of two bulls per village, its maintenance cost and total expenditure in Porbandar district for 12th five year plan. Equal number of villages proposed from each taluka and total estimated expenditure for this task is Rs 112.50 lakhs for 12th five year plan.

Table 5.4.13 Proposal for Supply of breeding bulls in villages

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of villages to be covered	25	25	25	25	25	125
Cost of two bulls/village @ Rs.0.40lakh/bull/village	10.00	10.00	10.00	10.00	10.00	50.00
Maintenance cost @ Rs. 0.50 lakh/two bulls	12.50	12.50	12.50	12.50	12.50	62.50
Total Expenditure (Rs. lakhs)	22.50	22.50	22.50	22.50	22.50	112.50

5.4.13 Commercial Dairy Farming

In Porbandar district, there are many 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. Due to the small land holdings and the high cost of animal, it has become very difficult to maintain dairy animals. The demand for milk is continuously increasing by the urban areas. The price of milk in the area reaches up to Rs. 30/- per liter particularly during the lean periods or the summer. 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 Porbandar 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 Porbandar district for 12th five year plan. The total estimated cost for this task is Rs 45.00 lakhs for 12th five year plan.

Table 5.4.14: Proposal for commercial dairy farming in the district

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of commercial dairy farms (10 animals per unit)	3	3	3	-	-	9
Amount required Rs.5.00lakh/farm(Rs. lakhs)	15.0	15.0	15.0	-	-	45.0

5.4.14 Poultry Development (Promotion of backyard 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 favorably 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. 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. 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 center of these products in the area.

The proposal for low input bird/Back yard poultry in district is shown in the table 5.4.15. 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 is proposed from each taluka and the total estimated expenditure is Rs9.0 lakhs in Porbandar district for 12th five year plan.

Table 5.4.15 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/Year	60	60	60	60	60	300
Expenditure in Rs 0.03/unit (Lakh)/Year	1.8	1.8	1.8	1.8	1.8	9.0

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.

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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 unexploited 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 5.4.16. 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 Rs15.00 lakh for the 12th five year plan in Porbandar district.

Table 5.4.16 Proposal for goat rearing in district

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
No. of Units/Year (50 animals per unit)	6	6	6	6	6	30
Expenditure in Rs. 0.50/unit (Lakh)/Year(Rs. lakhs)	3.0	3.0	3.0	3.0	3.0	15.0

5.4.16 Fodder production

Main Fodder Crops for green fodder production: Jowar, Gundhari, Oat-Kent, RajkaBajari, Paragrass, Sweet Sudan, Maize and Lucern

Table 5.4.17 Estimated cost for Fodder Seed production units for green fodder (Rs Lakhs)

Description	Taluka	2012-13	2013-14	2014-15	2015-16	2016-17
Seed production farm	One unit in each Taluka of 50 ha area	3	3	3	3	3
	Total Rs (Lakhs)	3.0	3.0	3.0	3.0	3.0

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

Table 5.4.18 Fodder Seed production units for Dry fodder (Rs Lakhs)

Description	Taluka	Area (Ha)	2012-13	2013-14	2014-15	2015-16	2016-17
Seed production farm	One unit in each in each Taluka	50.00	3	3	3	3	3
	Total Rs (Lakhs)		3.0	3.0	3.0	3.0	3.0

Table 5.4.19 Fodder Banks for storage dry grasses from forest (Rs Lakhs)

Description	Taluka	Capacity	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Construction of Dutch Barn/Godowns for storage of dry grasses	One in each Taluka, two in Porbandar	Each having storage capacity 10.00 Lakh kg	2	1	1	-	-	4
Cost Rs. In lakh (@ Rs. 25 lakh/godown)			50	25	25	-	-	100

5.5 Fisheries Development

In Porbandar 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 sea 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 postharvest facility like cold storage /fish processing unit

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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 non mechanized), 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		No. of reser voirs	Boats		Cage fish farmi ng (ha)	Refrigera ted van for transport ation	Fish feed availabi lity (kg)	Fish process ing units
	Inl an d	Marine		mechan ized	Non mecha nized				
Porbanda r	-	32859	10	4732	133	-	26	-	27
Ranavav	-	31	3	-	-	-	-	-	2
Kutiyana	-	145	3	-	-	-	-	-	-
Total	-	33035	16	4732	133	-	26	-	29

Source: 1. Strategic Research and Extension Plan – 2009 (ATMA) Dist.: Porbandar
 2. District Ankadakiya Ruprekha Porbandar district 2010-11
 3. State Department of Fisheries, Porbandar

Note: There is no cage fish farming in the district.



Fish Farming

Table 5.5.2 Proposed physical and financial programmes of fishery activities

Name of activity	Unit cost (Rs)	2012-13 (P)		2013-14 (P)		2014-15 (P)		2015-16 (P)		2016-17 (P)		Total	
		Phy (no)	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Fish Hatchery	30	1	30	0	0	0	0	0	0	0	0	1	30
Shrimp Hatchery	30	0	0	1	30	0	0	0	0	0	0	1	30
Fish processing	800	0	0	1	800	1	800	0	0	0	0	2	1600
Training of hatchery Farmers	2.5	200	2.5	200	2.5	250	3	250	3	300	3.5	1200	14.5
Supply of mopeds fitted with Icebox to retails fish venders	0.5	10	5	10	5	10	5	10	5	10	5	50	25
Dredging of back water areas, canals, ponds etc	50	1	50	1	50	1	50	1	50	0	0	4	200
Water Testing Kits	1.2	1	1.2	1	1.2	1	1.2	1	1.2	1	1.2	5	6
Total			88.7		888.7		859.2		59.2		9.7		1905.5

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. In marine fisheries (capture fisheries) about 33035 fishermen with 4732 mechanized boats (vessels) and 133 non mechanized boats are involved. In marine fisheries (capture fisheries) about 29 fish processing units are operative mainly in Pornabdar taluka with about 26 refrigerated van facilities.

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

No.	Thrust Areas/ Issues	Program	Activities
1	Fisheries	Establishment of fisheries/ prawn production units at village level	Providing units (ponds) at cooperative base

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 numbers of training are equally proposed in Porbandar taluka. The total estimated expenditure for training for inland fish farming is Rs 3.00 lakhs for 12th five year plan.

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Table 5.5.4: Training needs for Inland fish farming

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of Trainings for five days. No. of Trainees (25/ training)	2	2	2	2	2	10
Cost (Rs in Lakh)/ training @Rs.1200/ trainee/5day (Rs. in Lakh)	0.6	0.6	0.6	0.6	0.6	3.0

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 is equally proposed in Porbandar taluka. The total estimated expenditure for establishment of fisheries/prawn production units (ponds) at village level in different talukas of Junagadh district is Rs 175.00 lakhs for 12th five year plan of Porbandar district.

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

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	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 30.00 lakhs for 12th five year plan of Porbandar 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 and fibre glass boat 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 for mechanized boats and fibre glass boat is Rs 40 lakhs and Rs. 4.0 lakhs and number of units is 20 and 15, respectively proposed in Porbandar taluka as mentioned in Table5.5.7. The total estimated expenditure is Rs 860 lakh for Porbandar district for 12th five year plan.

Table 5.5.7: Proposal for providing mechanized boats and Fibre glass boat for Marine fishermen

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of mechanized boats units	4	4	4	4	4	20
Total Cost Rs in Lakhs @ Rs.40.00 lakh/unit	160.0	160.0	160.0	160.0	160.0	800.0
Number of Fibre glass boat units	3	3	3	3	3	15
Total Cost Rs in Lakhs @ Rs.4.00 lakh/unit	12.00	12.00	12.00	12.00	12.00	60.00

The proposal for providing fish **cold storage** units for marine fisheries is shown in the Table 5.5.8. Table includes the number of units and cost per unit. The cost per unit is Rs 40 lakhs and the total estimated cost is Rs 200.00 lakhs for 12th five year plan in Porbandar district. The units are proposed for all district.

Table 5.5.8: Proposal for providing fish cold storage units for Marine fisheries

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Number of units	5	-	-	-	-	1
Total Cost Rs in Lakhs @ Rs.40.00 lakh/unit	200.0	-	-	-	-	200.0

5.6 Forestry:

Forest in Gujarat constitutes 9.66% of the total geographical area. In Porbandar 10.06 % of the district land is under 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 afforestation of wasteland. With more afforestation it will help in supplementing income generation activities with minor forest based collection. However, arrangement for due price realization has to be ensured.

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

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

Activity	Year-wise target (Fin in Lakhs)									
	2012-13 (projected)		2013-14 (projected)		2014-15 (projected)		2015-16 (projected)		2016-17 (projected)	
	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Nursery	03 Nos.	9.0	03 Nos.	9.0	03 Nos.	9.0	03 Nos.	9.0	03 Nos.	9.0
Planting materials	50000	1.0	50000	1.25	50000	1.50	50000	1.75	50000	2.0
Land development	5 ha	2	10 ha	4.0	15 ha	8.0	20 ha	16.0	25 ha	32.0
Horti-silvi pasture	2 ha	2	5 ha	4.0	7 ha	8.0	10 ha	16.0	12 ha	32.0
Rejuvenation	2 ha	3.0	2 ha	3.0	2 ha	3.0	2 ha	3.0	2 ha	3.0
Total		17		21.25		29.5		45.75		78

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 6.00 lakhs for 12th five year plan in district.

Table 5.6.3: Proposal for capacity building of forest staff (Two in Ranavav and one each in remaining talukas)

Description	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Training of Forest staff (No.) 6 days (50 Trainees /training) for	2	1	1	-	-	4
Cost of training @ Rs.0.005/trainee/day (Rs. in Lakh)	3.0	1.5	1.5			6.00

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 13.5lakh for 12th five year plan in 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	6	6	6	6	6	30
Cost of training @ Rs.0.003/ trainee/day (Rs. In Lakh)	2.70	2.70	2.70	2.70	2.70	13.5

The proposal for demonstrations on Agro forestry is shown in table 5.6.5 shown the in Porbandar 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 9.0 lakhs for demonstrations on Agro forestry for Porbandar 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	18	18	18	18	18	90
Cost/ demo @ Rs. 0.1 lakh (Rs. in Lakh)	1.8	1.8	1.8	1.8	1.8	9.0

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 50 lakhs for demonstrations on Agro forestry for 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 of covers (in lakhs)	0.20	0.20	0.20	0.20	0.20	1.0
Cost @ Rs. 0.0005 lakhs (Rs. in Lakh)	10.00	10.00	10.00	10.00	10.00	50.00

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 details of regulated markets functioning in Porbandar district are given in Table 5.7.1

Table 5.7.1 Marketing Infrastructure

Taluka	Existing marketing facilities (2011-12)	
	Main(no)	Sub-market (no)
Porbandar	1	3
Ranavav	0	1
Kutiyana	1	1
Total	2	5

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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
		Bakery	Educating the rural youth by training and providing units	Training and providing units

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 4.5 lakhs for 12th five year plan in Porbandar 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	150	150	150	150	150	750
Cost (Rs. 0.006 in lakhs/trainee)	0.9	0.9	0.9	0.9	0.9	4.5

The proposal for providing vermi-compos 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 Rs15.0 lakh for 12th five year plan in the 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	12	12	12	12	12	60
Cost @ Rs 0.25 Lakhs(Rs. in lakhs)	3.0	3.0	3.0	3.0	3.0	15.0

5.8.2 Bakery unit:

Proposal for providing Training to the trainees is shown in 5.10.4. Table includes the number of trainees for training and expenditure per trainee per training. The total expenditure per trainee is Rs 800 for 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 3.0 lakhs for 12th five year plan for the 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)	3	3	3	3	3	15
Cost (Rs in Lakh)/ training @Rs.800/ trainee/3day (Rs. in lakhs)	0.6	0.6	0.6	0.6	0.6	3.0

The proposal for providing bakery mini Units is shown in table 5.10.5. Table includes the number of units and cost per unit. The expenditure per unit is Rs 2 lakh and equal number of units is proposed in each taluka of the district. The total estimated cost is Rs 6.0 lakh for 12th five year plan in Porbandar 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	1	1	1	-	-	3
Cost (Rs in Lakh) @ 2.00 (Rs. in lakhs)	2.0	2.0	2.0	-	-	6.0



Bakery Unit

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 Porbandar 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 be 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 maintaining residues to maintaining 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 including 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 including 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**6.3.1 Background/ProblemFocus**

In Porbandar district, Agriculture, Horticulture, Animal Husbandry and Fisheries are the major enterprises practiced by the farming community. The major agricultural crops grown here are groundnut, cotton, gram, cumin, wheat, pulses and castor. 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

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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 the 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.
- Food park with basic infrastructure facilities.
- Encouraging contract farming

A. Goal and objectives

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

B. 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.

C. Project Components

- Formation and strengthening of commodity based groups.
- Training to farmers on market intelligence.
- Facilitation to contract 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.

6.3.2 Establishment of Multi Facility Testing Laboratory

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 Porbandar and a tissue culture laboratory 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
- viii. To provide disease free uniform planting material to the farmers

Table 6.3.1 : Proposal for establishment of multi-facility and tissue culture laboratory in Porbandar 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	0	1	100.0
Establishment of tissue culture laboratory	1	75.0	0	0	0	0	0	0	0	0	1	75.0
Total	2	175.0	0	0	0	0	0	0	0	0	2	175.0

6.3.3 Weather Watch and Forecasting System

The farmers of the district are prone to vagaries of nature. The crop damage due to hailstorms, 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 Porbandar Taluka. The weather station will be useful for farmers as well as marine fishermen.

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

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	100.0	-	-	-	-	-	-	1	100.0

6.3.4 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 Porbandar Talukahas 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 centers at Taluka level.

(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.
Establishing agril. informatics and training centers at Taluka level.	One in each Taluka except Porbandar	-	-	2	50.0	-	-	-	-	-	-	2	50.0

6.3.5 Establishment of Food processing collage, Polytechnic in Agriculture and Renewable Energy College.

6.3.5.1 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.

6.3.5.2 Renewable Energy College:

Renewable energy is energy which comes from natural resources such as , 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.

6.3.5.3. 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 at Porbandar.

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

6.3.6 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.

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Table 6.3.5: Fund requirement for establishing 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

6.3.7 Establishment of Remote Sensing and GIS center at Porbandar 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) modeling 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 for to establish the center 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 center at Porbandar 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 center	At Porbandar Taluka	1	200	-	50	-	50	-	50	-	50	1	400

6.3.8 Integrated development of Ghed area of the Porbandar district

Ghed area of Porbandar district is geographically characterized by many problems like saline/alkaline (problematic) soils, salinity ingress, flooding/water logging during rainy season & post rainy season due to low laying area and low hydraulic conductivity of soil, resource poorness, lack of awareness etc. Farmers generally cultivate chickpea on conserved soil moisture in Rabi season. Kharif crops either cannot be sown or failed on sowing due to flooding. Chick pea and Sorghum (Gundhari) are the main crops. There is immense scope for processing unit of chick pea and sorghum. There is an urgent need of reclamation of the problematic soil to boost up the agricultural production. Introduction of new crops like date palm, ajwain, dill seed, safflower has great potentiality for the *Ghed* area.

Table 6.3.7: Proposal for integrated development of Ghed area of the Porbandar district
(Phy-No., Fin. – Rs in Lakh)

Name of activity	Unit cost (Rs lakh)	2012-13		2013-14		2014-15		2015-16		2016-17		Total	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
Farm ponds in Ghed area	3.0	10	30	10	30	10	30	10	30	10	30	50	150
Soil Reclamation (unit of 1.0 ha area)	0.04	150	6.0	150	6.0	150	6.0	150	6.0	150	6.0	750	30.0
New fruit crop Date palm plantation (unit of 1.0 ha area)	4.50	2	9.0	2	9.0	2	9.0	2	9.0	2	9.0	10	45.0
Chickpea processing unit(Roasting, dal and flour making etc.)	8.0	1	8.0	1	8.0	1	8.0	1	8.0	-	-	4	32.0
Sorghum grain processing unit (Roasting and making pops)	6.0	1	6.0	1	6.0	1	6.0	-	-	-	-	3	18.0
New crop Demonstration (0.4 ha Ajwain, safflower, Dill seed)	0.02	45	1.8	45	1.8	45	1.8	45	1.8	45	1.8	225	9.0
Solar photo- voltaic pumps	5	5	15	5	15	5	15	5	15	5	15	25	75.0
Total			75.8		75.8		75.8		69.8		61.8	1067	359.0

6.3.9 Fisheries development in the Porbandar district

The district is endowed with huge natural resources in marine, brackish and fresh water areas living behind tremendous scope of development. The focus is limited to marine capture fisheries all along 105 km long coastal line only. The production is static / fluctuating around 65000-70000 MT only. The oceanic capture fisheries of valuable fishes, Crustacean, Cephalopods etc. is still remained untapped, living behind lots of scope of development in this field. The focus on aquaculture (capture based fisheries) in the all areas is negligible. It has tremendous scope of development in marine, brackish and freshwater aquaculture. The aquaculture of valuable varieties of shrimps, fishes, prawns etc. is yet to take steps in the district. The strategic focus in the new areas like seaweed culture and its industry, shrimp & fish culture, fish/prawn hatcheries, pearl culture, post harvesting and processing technologies is required.

Table 6.3.8: Proposal for integrated fisheries development in the Porbandar district

(Phy-No., Fin. – Rs in Lakh)

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
Fish/Shrimp Culture Farm	8	5	40	5	40	5	40	5	40	5	40	25	200
Establishment of Chill Room Facility	15	1	15	1	15	1	15	1	15	1	15	5	75
Fish drying instruments (Solar)	4	5	20	5	20	5	20	5	20	5	20	25	100
Establishment of ornamental fish hatchery	2	1	2	1	2	1	2	1	2	1	2	5	10
Seaweed based industry	20	0	0	0	0	0	0	0	0	1	20	1	20
Implementation of Seaweed cultivation	0.015	100	1.5	100	1.5	100	1.5	100	1.5	100	1.5	500	7.5
Total			78.5		78.5		78.5		78.5		98.5		412.5

6.4 Miscellaneous activities:

6.4.1 Kisan Mela

Keeping in view, the innovative idea of the Hon'ble Chief Minister, Gujarat State 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 farmers and the expert/scientists. In the KisanMela, 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 year 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	1	5	1	5	1	5	1	5	1	5	5	25

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 surgical operations 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 motivates the farmers for improving the health and productivity of their livestock.

Table 6.4.2: Fund requirement for clinical camps

(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.
Cattle mela / clinical camp	One in each taluka	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	5	2.5

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, Gujarat State 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 taluka	3	0.9	3	0.9	3	0.9	3	0.9	3	0.9	15	4.5

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 centers. 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

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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

Description	Taluka	Phy-No., Fin. – Rs in Lakh)											
		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	1	0.5	1	0.5	1	0.5	-	-	-	-	3	1.5

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 Porbandar District 12th plan

Table 6.6.1: Consolidated Budget Proposal of the Porbandar District 12th 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	4.20	1.20	1.20	1.20	1.20	9.00
Training Proposal for Capacity Building of Farmers	9.00	9.00	9.00	9.00	9.00	45.00
Varietal Demonstration in Next Five Years	13.20	13.20	13.20	13.20	13.20	66.00
Demonstrations on Plant health management to be conducted including seed treatment with bio-pest	9.90	9.90	9.90	9.90	9.90	49.50
Demonstrations on Soil health management	24.96	24.96	24.96	24.96	24.96	124.80
Demonstrations on IWM	24.96	24.96	24.96	24.96	24.96	124.80
Production of organic input	7.00	-	-	-	-	7.00
IPM Demonstration	4.20	4.20	4.20	4.20	4.20	21.00
INM Demonstrations	6.00	6.00	6.00	6.00	6.00	30.00
Seed production enhancement	12.30	12.30	12.30	12.30	12.30	61.50
Seed storage at University /Panchayat level and Taluka level	90.00	75.00	65.00	65.00	65.00	360.00
Establishment of soil and water testing laboratory and mobile plant health clinic	45.00	45.00	55.00	30.00	30.00	205.00
Planning for soil testing	33.00	33.00	33.00	33.00	33.00	165.00
Reclamation of coastal saline soils	58.20	58.20	58.25	58.30	58.35	291.30
Strengthening of APMC	60.00	10.00	-	-	-	70.00
Total I. Agriculture	401.92	326.92	316.97	292.02	292.07	1629.90

II Agricultural Engineering						
Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Farm mechanization	1354.5	1354.5	1354.5	1354.5	1354.5	6772.5
Protective Micro Irrigation	357.00	392.70	432.25	474.95	522.55	2179.45
Protective (Community Tank) Irrigation	65.00	45.00	45.00	45.00	45.00	245.00
Watershed development	105.00	105.00	105.00	105.00	105.00	525.00
In situ Moisture conservation	20.00	25.00	30.00	35.00	40.00	150.00
Establishment of Rural godown	9.00	9.00	9.00	9.00	9.00	45.00
Number of processing units and financial requirements	22.50	22.50	22.50	-	-	67.5
Number of renewable energy units and financial requirements	381.45	381.45	381.45	381.45	381.45	1907.25

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						Cont.
Special production zone for agricultural implements, equipments, machinery and irrigation equipments at district level	-	25.00	25.00	25.00	25.00	100.00
Establishment of Smart Farming with Information Technology Unit	25.00	10.00	5.00	5.00	5.00	50.00
Total (II. Agricultural Engineering)	2339.45	2370.15	2409.70	2434.90	2487.50	12041.70

III. Horticulture						
Budget proposal head wise	2012 -13	2013 -14	2014 -15	2015 -16	2016 -17	Total
Training needs in vegetables crops	22.50	22.50	22.50	22.50	22.50	112.50
Establishment of nurseries	6.00	3.00	3.00	3.00	3.00	18.00
Establishment of poly houses	45.00	45.00	45.00	45.00	45.00	225.00
Demonstrations on vegetables for area expansion	3.00	3.30	3.60	3.90	4.20	18.00
Integrated pest management in Horticultural crops	0.92	1.12	1.32	1.52	1.72	6.60
Integrated nutrient management in Vegetables crops	0.18	0.21	0.24	0.27	0.30	1.20
Project proposal for low cost net house	7.20	7.20	7.20	7.20	7.20	36.00
High tech vegetable farming including all components	45.00	45.00	45.00	45.00	45.00	225.00
Proposal for establishment of pre cooling cum cold storage units	75.00	75.00	75.00	0.00	0.00	225.00
Proposal for establishment of godown units	100.00	50.00	50.00	50.00	50.00	300.00
Establishment of collection centers	30.00	30.00	30.00	-	-	90.00
Refrigerated vans	24.00	24.00	24.00	24.00	24.00	120.00
Training need of farmers for fruit crops	7.20	7.20	7.20	7.20	7.20	36.00
Introduction of new crop: custard apple	0.24	0.24	0.24	0.24	0.24	1.20
Integrated pest management in fruit crops	0.18	0.18	0.18	0.18	0.18	0.90
Supply of plant protection equipment (Foot sprayer)	0.48	0.48	0.48	0.48	0.48	2.40
Establishment of mango pack house	3.00	3.00	-	-	-	6.00
Establishment of sapota chips production units	30.00	30.00	-	-	-	60.00
Establishment of cocopit and fiber unit	10.00	10.00	0.00	0.00	0.00	20.00
Establishment of coconut kernel water packaging unit	20.00	20.00	0.00	0.00	0.00	40.00
Cluster based Demonstrations on Spice	0.50	0.50	0.50	0.50	0.50	2.50
Total III Horticulture	430.40	377.93	315.46	210.99	211.52	1546.30

IV Animal Husbandry						
Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Proposal for capacity building of livestock farmers	0.45	0.45	0.45	0.45	0.45	2.25
Proposal for fertility improvement programme	24.00	18.10	18.10	18.10	18.10	96.40
Supplement mineral mixture feeding supplementation	33.75	33.75	33.75	33.75	33.75	168.75
Establishment of feed factory	1377.00	0.00	0.00	0.00	0.00	1377.00
Provision of shed for livestock	180.00	180.00	180.00	180.00	180.00	900.00
Rearing of female cattle/buffalo calf	12.00	12.00	12.00	12.00	12.00	60.00
Providing Life Insurance to Livestock	22.50	22.50	22.50	22.50	22.50	112.50
Supply of milch animals and dairy utensils to AH farmers.	6.00	6.00	6.00	6.00	6.00	30.00
Supply of health packages for animals to landless AH farmers.	60.00	60.00	60.00	60.00	60.00	300.00
Fodder production and preservation	12.00	12.00	12.00	12.00	12.00	60.00
Provision of Artificial Insemination facilities	46.12	63.94	39.84	39.84	39.84	229.58
Proposal for Supply of breeding bulls in villages	22.50	22.50	22.50	22.50	22.50	112.50
Proposal for commercial dairy farming	15.00	15.00	15.00	0.00	0.00	45.00
Proposal for Low input bird/Back yard poultry	1.80	1.80	1.80	1.80	1.80	9.00
Goat rearing	3.00	3.00	3.00	3.00	3.00	15.00
Estimated cost for Fodder Seed production units for green fodder	3.00	3.00	3.00	3.00	3.00	15.00
Fodder Seed production units for Dry fodder	3.00	3.00	3.00	3.00	3.00	15.00
Fodder Banks for storage dry grasses from forest	50.00	25.00	25.00	-	-	100.00
Total IV: Animal Husbandry	1872.12	482.04	457.94	417.94	417.94	3647.98

IV Fisheries						
Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Hatchery management	88.70	88.70	59.20	59.20	9.70	305.50
Training needs for Inland fish farming	0.60	0.60	0.60	0.60	0.60	3.00
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
Providing mechanized boats for Marine fishermen	172.00	172.00	172.00	172.00	172.00	860.00
cold storage unit	200.00	0.00	0.00	0.00	0.00	200.00
Total IV. Fisheries	502.3	302.3	272.8	272.8	223.3	1573.5

V Forestry							
Action Plan for different activity like Nursery, planting materials, land development, horticulture, silvipasture and rejuvenation of social forestry	17.00	21.25	29.50	45.75	78.00	191.50	
Proposal for capacity building of forest staff	3.00	1.50	1.50	-	-	6.00	
Proposal for capacity building of forestry farmers	2.70	2.70	2.70	2.70	2.70	13.50	
demonstrations on Agro forestry	1.80	1.80	1.80	1.80	1.80	9.00	
Proposal for supply of tree cover improvement:	10.00	10.00	10.00	10.00	10.00	50.00	
Total V: Forestry	34.50	37.25	45.50	60.25	92.50	270.00	

VI: Employment generation activities						
Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Training needs for vermi-composting	0.90	0.90	0.90	0.90	0.90	4.50
Proposal for providing Vermi-compost units	3.00	3.00	3.00	3.00	3.00	15.00
Proposal for bakery trainings	0.60	0.60	0.60	0.60	0.60	3.00
Establishment of bakery mini Units	2.00	2.00	2.00	-	-	6.00
Total VI: Employment Generation Activities	6.50	6.50	6.50	4.50	4.50	28.50

VII. New Innovative projects						
Budget proposal head wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Establishment of multi-facility& tissue culture laboratory	175.00	-	-	-	-	175.00
Establishment of Weather Watch and Forecasting System in VeravalTaluka	-	100.00	-	-	-	100.00
Establishment of agril. informatics and training centers	0.00	50.00	0.00	0.00	0.00	50.00
Establishment of Renewable Energy College and Polytechnic in Agriculture at districts level	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 Veravaltaluka	200.00	50.00	50.00	50.00	50.00	400.00
Integrated development of Ghed area	75.80	75.80	75.80	69.80	61.80	359.00
Integrated fisheries development	78.50	78.50	78.50	78.50	98.50	412.50
KisanMela	5.00	5.00	5.00	5.00	5.00	25.00
Cattle mela / clinical camp	0.50	0.50	0.50	0.50	0.50	2.50
Incentive award to progressive farmers	0.90	0.90	0.90	0.90	0.90	4.50
Disease Diagnostic Kits	0.50	0.50	0.50	0.00	0.00	1.50
Proposed Expenditure on monitoring and evaluation	2.00	2.00	2.00	2.00	2.00	10.00
VII. Total New Innovative projects	3538.20	1063.20	913.20	906.70	918.70	7340.00

Table 6.6.2: Sector wise budget Proposal of the Porbandar District 12th plan

(Rs. in lakh)

Budget proposal head-wise	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Agriculture	401.92	326.92	316.97	292.02	292.07	1629.90
Agricultural Engineering	2339.45	2370.15	2409.70	2434.90	2487.50	12041.70
Horticulture	430.40	377.93	315.46	210.99	211.52	1546.30
Animal Husbandry	1872.12	482.04	457.94	417.94	417.94	3647.98
Fisheries	502.30	302.30	272.80	272.80	223.30	1573.50
Forestry	34.50	37.25	45.50	60.25	92.50	270.00
Employment Generation Activities	6.50	6.50	6.50	4.50	4.50	28.50
New Innovative Projects	3538.20	1063.20	913.20	906.70	918.70	7340.00
Grand Total (Rs in Lakh)	9125.39	4966.29	4738.07	4600.1	4648.03	28077.88

Annexure -I

Plan discussion at village level with farmers



Plan discussion at village level with farmers



C-DAP

Photogallery- Plan discussion at Taluka level and district level with line departments



DAO, Porbandar



DCF, Porbandar



DRDA, Porbandar



C-DAP

Executive Engineer – Salinity control, Porbandar



Fisheries Department, Porbandar



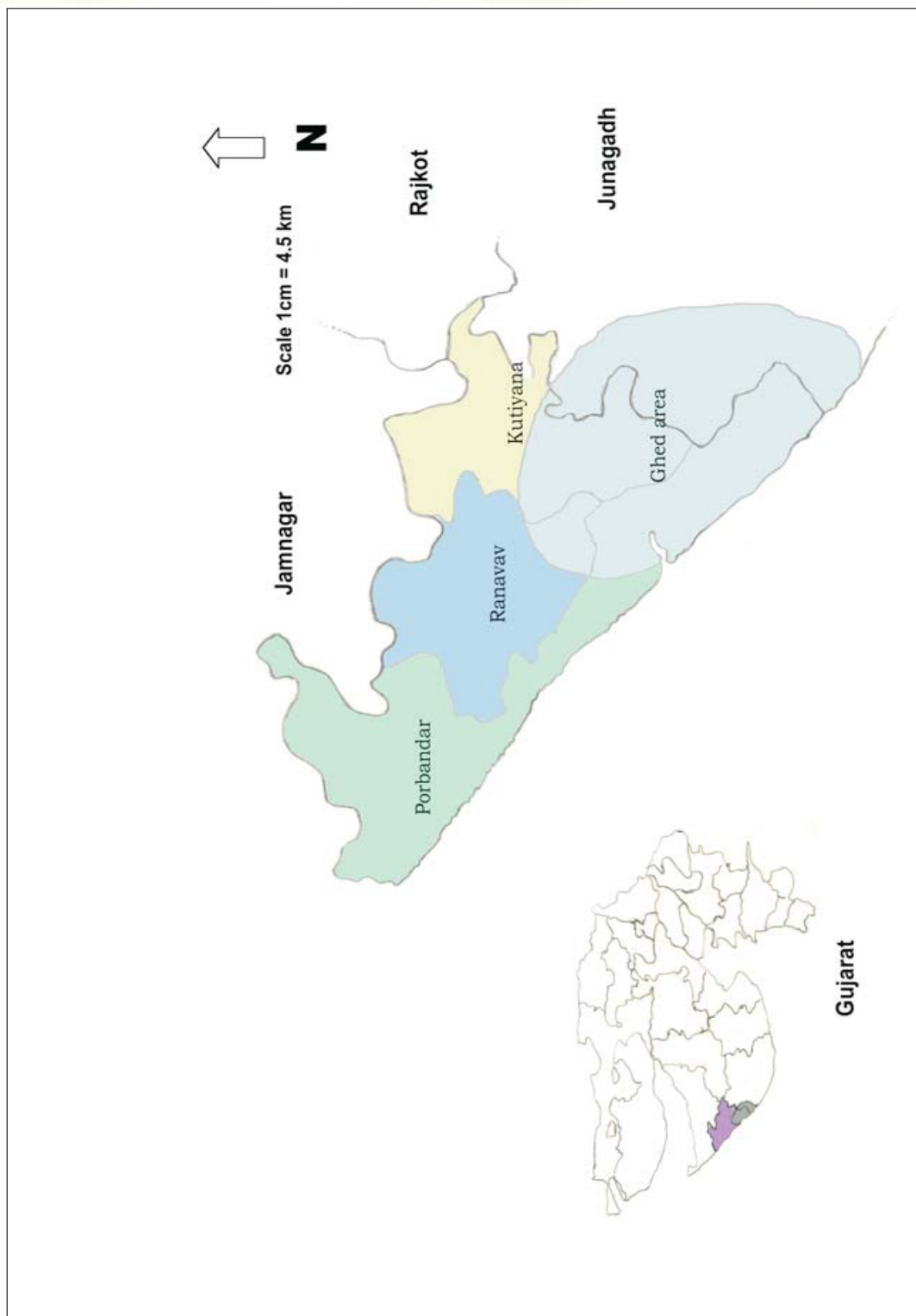
GLDC, Porbandar



Taluka Panchayat, Porbandar



C-DAP



Annexure -II

**C-DAP Presentation in presence of District Level Planning Committee
on 22nd December, 2012 at KVK, Khapat.**



C-DAP

તા.૨૨/૧૨/૨૦૧૨ ના રોજ પોરબંદર જિલ્લાના જિલ્લા વિકાસ અધિકારીશ્રી પટ્ટણી સાહેબના અધ્યક્ષ સ્થાને, કૃષિ વિજ્ઞાન કેન્દ્ર, જુનાગઢ કૃષિ યુનિવર્સિટી, ખાપટ-પોરબંદર ખાતે યોજવામાં આવેલ જિલ્લા કક્ષાની પ્લાનીંગ કમીટીના (આરકેવીવાય) સભ્યશ્રીઓ સાથેની પોરબંદર જિલ્લાના કોમ્પ્રીહેન્સીવ- ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાન (C-DAP) ની સમીક્ષા તથા મંજૂર કરી બહાલી આપવા માટેની બેઠકની કાર્યવાહી નોંધ :

સૌ પ્રથમ શ્રી સંકેત જોષી, સહ અધ્યક્ષ અને જિલ્લા ખેતીવાડી અધિકારી, પોરબંદર એ જિલ્લાના વિકાસ અધિકારીશ્રી, દરેક લાઈન ડીપાર્ટમેન્ટના અધિકારીશ્રીઓ અને પ્રગતિશીલ ખેડૂતો તથા દરેક સભ્યશ્રીઓને આવકાર્યા તથા કોમ્પ્રીહેન્સીવ ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાનના હેતુ તથા તેમાં ધ્યાનમાં રાખવામાં આવેલ તાંત્રિક મુદ્દાઓની પુર્વભૂમિકાથી માહિતગાર કર્યા.

ત્યારબાદ બેઠકના અધ્યક્ષ અને જિલ્લા વિકાસ અધિકારીશ્રીની મંજૂરી થી પોરબંદર જિલ્લાનો કોમ્પ્રીહેન્સીવ- ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાન (C-DAP) તૈયાર કરવાની સમિતીના કન્વીનર અને સંશોધન વૈજ્ઞાનિકશ્રી (ઘઉં), ઘઉં સંશોધન કેન્દ્ર, જુ.કૃ.યુ., જુનાગઢ ડો. કમલેશ એચ. ડાભી દ્વારા ભારત સરકારશ્રીની સુચના અને માર્ગદર્શન મુજબ તથા રાષ્ટ્રીય યોજના કમીટીની ભલામણ મુજબ રાષ્ટ્રનો કૃષિ વિકાસ દર ૧૨મી પંચવર્ષીય યોજનામાં (૨૦૧૨-૧૩ થી ૨૦૧૬-૧૭) ૪ ટકા કે તેથી વધુ હાંસલ કરવા દરેક જિલ્લાના કોમ્પ્રીહેન્સીવ-ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાન (C-DAP) તૈયાર કરવામાં આવે તે ખાસ જરૂરી હોવાથી જુનાગઢ કૃષિ યુનિવર્સિટી દ્વારા સૌરાષ્ટ્ર વિસ્તારના સાત જિલ્લાના C-DAP તૈયાર કરવાના હતા તે પૈકી પોરબંદર જિલ્લાના કોમ્પ્રીહેન્સીવ- ડીસ્ટ્રીક્ટ એગ્રીકલ્ચર પ્લાન (C-DAP) નું ચેપ્ટરવાઈઝ વિગતવાર પ્રેઝન્ટેશન કરવામાં આવ્યું અને તેની વિગતવાર ચર્ચા કરવામાં આવી. જેમાં મીટીંગના અધ્યક્ષશ્રી તથા સર્વે સભ્યોશ્રી તરફથી નીચે મુજબના સુચનો કરવામાં આવેલા છે.

૧. સહ અધ્યક્ષ અને જિલ્લા ખેતીવાડી અધિકારી શ્રી સંકેત જોષી દ્વારા જિલ્લામાં સહકારી માળખું ખૂબ જ નબળું હોવાની બાબત SWOT એનાલીસીસમાં Weakness તરીકે ઉમેરવાનું સૂચન કર્યું. ત્યારબાદ પાક પધ્ધતિ પ્રમાણેના SWOT ની પણ ચર્ચા કરવામાં આવી.
૨. ચેપ્ટર-૫ માં ટેબલ પ.૩.૪ માં વી.એચ. એટલે વેટરનરી હોસ્પિટલ થાય છે અને પોરબંદર જિલ્લામાં તે ન હોવાથી તે મુજબ ચેક કરી સુધારો કરવો.
૩. ચેપ્ટર-૫ માં ટેબલ પ.૫.૭.માં મશીનવાળી બોટની કિંમત રૂ.૧૫ લાખ ને બદલે પ્રવર્તમાન ભાવો મુજબ રૂ.૪૦ લાખ ગણવાનું સૂચન થયું.
૪. ચેપ્ટર -૬ ની ચર્ચા દરમિયાન , ફીશીરીઝમાં ઓર્નામેન્ટલ ફીશના તાલીમ વર્ગોના સમાવેશ અંગે સૂચન થયું તથા સ્માર્ટ ફાર્મીંગ વિશે પણ વિગતવાર ચર્ચા થઈ.
૫. શ્રી સામતભાઈ ઓડેદરા,સભ્ય દ્વારા અમુક ગામોમાં ગીર સાંઢ તથા કૃત્રિમ બીજદાનની જરૂરીયાત અંગે જણાવ્યું જે પાસાઓના સદર પ્લાનમાં સમાવેશ થયેલ હોવાનું કન્વીનરશ્રીએ જણાવ્યું.
૬. શ્રી પટ્ટણી સાહેબ જિલ્લા વિકાસ અધિકારી દ્વારા પોરબંદરના ઘેડ વિસ્તારની ખરાબ તથા ખરાબાની જમીનમાં ઝીંગા ઉછેરની શક્યતા દર્શાવી તથા લોબસ્ટરનો વજન વધારવા ફેટનીંગની માહિતી આપી જે અન્વયે શ્રી તોરણીયા, આસીસ્ટન્ટ સુપ્રી. ઓફ

- ફીશીરીઝ દ્વારા ગામ તળાવોમાં ફીશીરીઝની શક્યતા અને વિકાસ તથા લોકો દ્વારા અપનાવવા પ્રત્યેના અણગમા તથા ખચકાટ અંગે જણાવ્યું હતું.
૭. શ્રી વાલગોતર, કાર્યપાલક ઈજનેરશ્રી, સિંચાઈ દ્વારા તેઓના તથા ક્ષાર અંકુશના કામોનો ચિતાર આપી ચેરના વાવેતરની શક્યતાઓ વિશે જણાવ્યું.
 ૮. જમીન વિકાસ નિગમના સુપરવાઈઝર શ્રી ઝાલા દ્વારા જમીન સુધારણા તથા જીપ્સમ આપવા અંગેની ચર્ચામાં અધ્યક્ષ દ્વારા ગ્રાન્ટના કન્વર્ઝન દ્વારા આ પ્રકારના કામો હાથ ધરી શકાવા અંગેનું સૂચન કર્યું હતું.
 ૯. અધ્યક્ષશ્રી દ્વારા દુધ ઉત્પાદન ક્ષેત્રે સહકારી ક્ષેત્રના વિકાસ તથા મહિલા દૂધ ઉત્પાદક મંડળી અંગે સૂચન થયું. રક્ષીત વાતાવરણમાં ખેતી (ગ્રીન હાઉસ, નેટ હાઉસમાં ખેતી) માટે ખેડૂતોને તાલીમ આપી જમીન તથા પાણીની ચકાસણી બાદ જ સબસીડીનો લાભ આપવા જણાવાયું.
 ૧૦. બિજ ઉત્પાદન કાર્યક્રમની તથા બિયારણની ઉપલબ્ધી માટેની જરૂરીયાત અંગે પણ ચર્ચા કરવામાં આવી.

અધ્યક્ષ અને જિલ્લા વિકાસ અધિકારીશ્રીએ રજૂ થયેલ રીપોર્ટનો ટુંકસાર આપી દરેક વિભાગને ગ્રાન્ટના કન્વર્ઝનથી ઈનોવેટીવ કામ થઈ શકે તેમ જણાવ્યું. તેઓશ્રીએ પોતાના ચાવીરૂપ પ્રવચનમાં કુદરતી સ્ત્રોતોના વ્યવસ્થાપન તથા કૃષિ પેદાશોમાં મૂલ્ય વૃદ્ધિ કરી એક્ષપોર્ટ થવા જેવી ગુણવત્તા બનાવી, એક્ષપોર્ટ થાય અને વધારે હુંડીયામણ મળે તેવું થવાની શક્યતા દર્શાવી. તાલીમ ઘટકમાં પ્રગતીશીલ ખેડૂતોની તેના કોઠાસુઝથી કરેલ ઈનોવેશનનું ડોક્યુમેન્ટેશન તથા તેની અડધાથી એક કલાકની સીડી બનાવવા જણાવ્યું. પ્રો. અનિલ ગુપ્તાના કલેક્શનમાંથી ઉપયોગી થાય તેવા દાખલા લેવા તેમજ યુવાનોને વધારે સંખ્યામાં લાભ આપવાથી આજની શહેર તરફની ગ્રામ્ય યુવાનોની દોટ અટકી શકે તેવું જણાવ્યું. સ્કૂલોમાં ખેતી વિષયક તથા ખેતીની અગત્યતા અંગેના વ્યાખ્યાન ગોઠવવાની જરૂરીયાત અંગે ભાર મૂકવા જણાવ્યું. આ ઉપરાંત ઉત્પાદન વેચનાર-ખરીદનાર (બાયર-સેલર)ના મળવાના કાર્યક્રમ ઋતુ પ્રમાણે ઘડાય તથા સ્થળ નક્કી થાય તેવું સૂચન થયું.

ચર્ચાને અંતે અધ્યક્ષશ્રી તથા સર્વે સભ્યોશ્રીએ રજૂ થયેલ પોરબંદર જિલ્લાના સી-ડીએપી પ્લાનને આગળનો કાર્યવાહી માટે મંજૂરી આપી.

મીટીંગના અંતે ડો. કમલેશ ડાભી, કન્વીનરશ્રીએ બેઠક દરમિયાન સૂચવાયેલ મુદ્દાઓનો C-DAP માં સમાવેશ કરવાનું જણાવી અને સૂચવેલ સુધારાની ચકાસણી કરી તમામ મુદ્દાઓના સમાવેશની ખાતરી આપી સમીતીના અધ્યક્ષ તથા સર્વે સભ્યોના અભાર માની મીટીંગ પૂર્ણ કરવામાં આવી.



નોડલ ઓફિસર

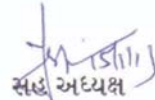
અને

સંશોધન વૈજ્ઞાનિક

ઘઉં સંશોધન કેન્દ્ર

જુનાગઢ કૃષિ યુનિવર્સિટી

જુનાગઢ



સહ અધ્યક્ષ

અને

જિલ્લા ખેતીવાડી અધિકારી

જિલ્લા પંચાયત

પોરબંદર



અધ્યક્ષ

અને

જિલ્લા વિકાસ

અધિકારી

જિલ્લા પંચાયત

પોરબંદર

