

DISTRICT DEVELOPMENT PLAN

**A PILOT STUDY OF RATNAGIRI DISTRICT, MAHARASHTRA,
FOR BOOSTING ECONOMIC GROWTH**

Phase II

Report	August
20210803	2021

District Development Plan

A Pilot Study of Ratnagiri District of Maharashtra for Boosting Economic Growth

Phase II

August 2021



National Council of Applied Economic Research

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FOREWORD

The Government of India's Department of Promotion of Industry and Internal Trade (DPIIT, originally known as the Department of Industrial Policy and Promotion, or DIPP) set a goal in early 2018 of making India a US\$ 5 trillion economy by 2025. In order to achieve this, a Working Group was constituted under the chairmanship of the former Minister of Commerce and Industry, Shri Suresh Prabhu. One of the key points highlighted by the Working Group for achieving this goal was that economic growth needs to come from the States and districts using a bottom-up approach, and this could be helped by treating the district as the primary unit for planning and policy interventions. It was proposed to prepare strategic plans for the districts centred around their local strengths and economic activities with the objective of achieving an increase of at least 2-3 per cent in their annual growth rates.

The widespread economic disruption caused by COVID-19 throughout 2020 has made it a huge challenge for India to attain the goal of becoming a US\$ 5 trillion economy. This makes it all the more important that attention be focused on promoting district-level growth using a bottom-up approach.

This NCAER study started at the request of DPIIT in 2018 is part of the Working Group initiative in which six pilot districts were selected for preparing District Strategic Plans based on local research and extensive stakeholder consultation. The six districts included Sindhudurg and Ratnagiri in Maharashtra, Varanasi in Uttar Pradesh, Muzaffarpur in Bihar, Visakhapatnam in Andhra Pradesh, and Solan in Himachal Pradesh. This NCAER study covers Sindhudurg, Ratnagiri, and Solan: the other districts are covered by Indian Institute of Management, Lucknow.

The study was carried out in two phases. Phase I included the identification of potential growth areas in the districts, making an initial set of recommendations for these potential areas, and preparing the District Strategic Plans, popularly known as District Development Plans. The goal during Phase II was to implement the proposed recommendations by mentoring and hand-holding the administration and other stakeholders in the district, along with capacity building and promotion of skilling initiatives.

This study entailed several rounds of consultations with stakeholders, including the district administration, government departments, industry associations, entrepreneurs, NGOs, and ultimate beneficiaries like farmers and fishermen. The valuable feedback and inputs from all these stakeholders enabled the NCAER study team to effectively identify the thrust areas in Phase I and to prepare a comprehensive implementation plan in Phase II.

I take this opportunity to thank Shri Suresh Prabhu, PM's Sherpa G20 and G7 Summit and Member of Parliament, Rajya Sabha to initiate this important study and take keen interest through the course of the study. I also thank Smt Rupa Dutta, Principal Economic Adviser; Shri Rajat Sihar and Shri A S Bhal, former Senior Economic Advisers; and Smt Meenaxi Rawat, Economic Adviser at DPIIT, for offering their valuable insights during the course of the study. I



also wish to thank Mr Sandip Ravindra Kote (former Deputy Director, DPIIT) and Mr Brijesh Patel, Assistant Director, DPIIT, for extending their support and cooperation through both phases of the study.

At the district level in Ratnagiri, my sincere gratitude goes out to Shri Laxminarayan Misra, District Magistrate, Ratnagiri; Mr Santosh P. Kotle, General Manager, DIC, Sindhudurg; Mr Raju Badule, Assistant Commissioner, Fisheries Department, Sindhudurg; Mr Milind Gajanan Joshi, Assistant General Manager, Alphonso Mango Export Facility Centre; Mr Kalpesh Shinde, In-charge of the Crab Project, Wadamirya Ratnagiri; Mr Jaywant Vichare, Chairman of Ratnagiri Krishi Prakriya Sahakari Sanstha Maryadit and Associate member of Cashew Export Promotion Council of India; Dr B.N. Sawant, Associate Research Director, Regional Fruit Research Station, Vengurla; Mr Hrushikesh Paranjape, Managing Director, Paranjape Agro Products Pvt Ltd, Ratnagiri; and several other officials of the District Agriculture, Horticulture, Fisheries, and Tourism Departments.

The NCAER team that carried out this study, led by Dr Poonam Munjal, Senior Fellow, included Dr Nijara Deka, Mr Asrar Alam, Mr Rahat Hassan Khan, and Mr K K Lal, along with Mr Prashant Lokhande, our Consultant and Nodal Officer, who was stationed in Ratnagiri during Phase II of the study. The team benefited immensely from the guidance of Senior Advisers at NCAER, Professor D B Gupta, Mr Deepak Sanan, and Mr Somnath Sen. I wish to express my appreciation for the efforts of the entire NCAER team in facilitating this study.

We also look forward to the execution of the key recommendations made in this pilot study through appropriate interventions by the Central and State Governments and the District Administration to boost short-, medium-, and long-term economic growth in the district. I also hope that similar research and action plans can be prepared for other districts in India. As a follow-up, DPIIT should then convene a cross-district learning platform on which district administrators and others can share the lessons of their success and failure and thereby help optimise a district-driven, bottom-up approach to achieving India's goal of becoming a US\$ 5 trillion economy.

August 23, 2021

Dr Poonam Gupta
Director General, NCAER



CONTENT

STUDY TEAM	i
FOREWORD	iii
CONTENT	v
LIST OF TABLES	vii
LIST OF FIGURES	ix
EXECUTIVE SUMMARY	xi
I. Introduction	xi
II. Existing Government Schemes in the District	xii
III. Actions for Implementing the Proposed Recommendations	xiv
IV. Export Potential of the District	xviii
I. Introduction	1
I.1. Context of the Study	1
I.2. Objectives	1
I.3. Methodology	2
Refining the Sector Strategies	2
Initial Implementation Actions	3
Handholding Support for Implementation	3
Documentation and Communications with Stakeholders	3
II. Refining the Sector Strategies	5
II.1. Sector Strategies	5
II.2. Field Visits to Talukas in Ratnagiri	10
Fruit Crop Cultivation Scheme	14
Rashtriya Krishi Vikas Yojana—Mechanisation Scheme	15
Mission for Integrated Development of Horticulture	16
Magel Tyala Shettale	16
Neel Kranti Yojana (Blue Revolution)	17
III. Initial Implementation Actions	19
III.1. Setting up a Branch of the Cashew Export Promotion Council of India in either Ratnagiri or Sindhudurg District	19
III.2. Cultivation of Mangoes in Ultra High-Density Mango Plantations	22
III.3. Promotion of the Fisheries Sector	24
III.4. Promotion of Crab Farming by Adopting the Vertical Crab Rearing System	26
III.5. Improvement in Common Infrastructure Facilities for Clusters under the Existing Schemes	33
IV. Export Profile of Ratnagiri	37
IV.1. Cashews	37
IV.2. Mangoes	39
IV.3. Fisheries	43
IV.4. Crab Farming	45
V. Providing Handholding Support to the District for Implementation of the Project	47
V.1. Skill Initiatives Undertaken in the District	51
VI. Documentation and Communication with Stakeholders	65
Annexure 1	72



Record of Discussion of Review Meeting held through video conferencing with NCAER and other stakeholders of Ratnagiri and Sindhudurg district on 06-01-2021 to discuss District Development Plan Reports.72

Annexure 2.....76

Record of Discussion of The Review meeting under Chairmanship of Shri Suresh Prabhu through video conferencing with NCAER, concerned Government and non-government departments and other stakeholders of Ratnagiri and Sindhudurg district held on 28-06-2021 to discuss District Development Plan (DDP) Reports.76



LIST OF TABLES

Table 1: Proposed Interventions in the District	xiv
Table II.1: Proposed Recommendations	6
Table II.2: Concerned Department and People Consulted during Phase II	11
Table II.3: Ratnagiri <i>Taluka</i> visits	12
Table III.1: Advantages of Ultra-high Density Planting System of Mangoes.....	23
Table III.2: Financial Implications of Mud Crab Farming.....	28
Table III.3: Comparison between Pond Culture and VCRS	30
Table IV.1: Export of Cashew Nuts to the Major Markets (Value in Rs Crores).....	38
Table IV. 2: District-wise Registered Mango Farmers (2019-20)	39
Table IV.3: Export of Fresh Mangoes and Mango Pulp in 2018-19 (By States in Descending Order of the Value of Exports)	41
Table IV.4: Export of Fresh mangoes from India	42
Table IV.5: Export Destination of Indian Marine Products	45
(Quantity in Tonnes, Value in Rs crore)	45
Table V.1: Interventions for Implementation of Recommendations	48
Table A.1: Gross District Value Added –Ratnagiri and Overall Konkan Division	66
Table A.2: District-wise Number of Godowns Available, Their Capacity and Fair Price Shops ...	67
Table A.3: Cashew Statistics—RATNAGIRI	68
Table A.4: Cashew Statistics—Maharashtra	68
Table A.5: Fisheries Statistics—Ratnagiri (2012-13).....	68
Table A.6: Fisheries Statistics—Maharashtra	69
Table A.7: Fishery-Related Infrastructure—Ratnagiri.....	69
Table A.8: District-wise Estimated Annual Marine Fish Production of Maharashtra (in MT).....	70
Table A.9: Mango Statistics—Ratnagiri.....	70
Table A.10: Number of Registered Mango Farmers.....	70
Table A.11: Agro-processing Facilities in Ratnagiri.....	71
Table A.12: Storage Facilities in Ratnagiri.....	71





LIST OF FIGURES

Figure II.1: Taluka Map of Ratnagiri	10
Figure III.1: Shares of States in the Production and Area under Cashew Cultivation.....	19
Figure III.2: Shares of the South Konkan Districts in the Production and Area under Cashew Cultivation.....	20
Figure IV.1: Area and Production of Mangoes in the Districts of Maharashtra, 2016-17	40
Figure IV.2: Marine Fish Production by States (in Lakh Tonnes), 2017-18	44
Figure IV.3: Percentage Share of Maharashtra Districts in Fish Production	70





EXECUTIVE SUMMARY

I. Introduction

The Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry (DPIIT, MoCI) commissioned the “District Development Plan—A Pilot Study of Ratnagiri District of Maharashtra for Boosting Economic Growth”, a study carried out by the National Council of Applied Economic Research (NCAER) in 2018. This study was part of DIPP’s proposal to prepare strategic plans for districts aimed at boosting their annual growth rates and thereby contributing to accelerated growth of the Indian economy.

In accordance with the DPIIT’s agenda, the objective of Phase I of this study was to prepare a District Strategies Plan or District Development Plan for Ratnagiri district, Maharashtra, in close consultation with the administration and relevant stakeholders in the district. The outcome of this study was the identification of the potential areas of growth in the district and a set of recommendations to facilitate fast-track growth in these areas. These recommendations were aimed at achieving easily implementable actions and short-term goals without too many long-term aspirations.

These recommendations are expected to be implemented through the proposed actions in Phase II of the study. This report delineates the actions taken as well as the handholding support offered in the district during Phase II of the study. The key activities undertaken during this phase have been described below.

- **Refine the Sector Strategies**—This included validation of the baseline findings and identification of the growth sectors; consultations with stakeholders in the district and the State; discussions on growth opportunities with key Government agencies for the relevant sectors; discussions with selected investors and entrepreneurs in new or emerging sectors, and analysis of their aspirations; assessment of human resources and adequacy of skills for additional and new investments; and establishment of a district strategic economic development unit along with the appointment of the Project Manager and nodal officers from the district administration.
- **Initial Implementation Actions**—The initial actions for implementation included validation of roadmaps for the selected sectors; consultations with existing and potential investors, including from the Government, public sector and private sector agencies, and NGOs, among others; identification of geographical locations and sites for undertaking relevant growth activities; assessment of capacities of the State/district; and identification of key measures in the targeted areas for overcoming constraints to growth.
- **Handholding Support for Implementation**—This entailed offering hand-holding support to the district economic development unit for implementing key growth strategies,



and reporting on the agreed monitoring indicators with recommendations for course corrections.

- **Documentation and Communications with Stakeholders**—Another important goal of the project is dissemination of the data and findings from Phase II amongst the target groups in the district and the State.

II. Existing Government Schemes in the District

One of the critical elements of implementation of the proposed recommendations was to converge the action with an existing scheme, which is functional in the district or the State. The study team took stock of all the relevant schemes wherein convergence with the recommendations of the study was possible. However, it was observed that the benefits of some schemes are not being availed of fully by the target groups due to certain problems in implementation of these schemes. The concerned schemes are detailed below:

i. Fruit Crop Cultivation Scheme

The Falbag Lagavad Yojana, also called the Bhausahab Phundkar Horticulture Plantation Scheme was launched to increase the cultivation of orchards. This scheme benefits the small and marginal farmers who cannot avail of the benefits of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) because they do not have job cards. Under this scheme, farmers owning up to 10 hectares of land in the Konkan region are eligible to get funding. Although the cultivation of mangoes and cashews is accorded priority under this scheme, the beneficiaries in the study districts reported facing difficulties in receiving benefits under the scheme. This is because of the fragmentation of landholdings, which belong to many different owners as per land records. In order to avail of the benefits of any scheme, all landowners require a 7/12 certificate, which many owners find difficult to procure. Besides, the scheme is primarily meant to provide subsidy for the drip irrigation facility under orchard cultivation, but drip irrigation is not possible in many places due to lack of availability of water.

ii. Rashtriya Krishi Vikas Yojana—Mechanisation Scheme

This Centrally-sponsored scheme provides assistance to individual beneficiaries for farm mechanisation efforts. The scheme lays special emphasis on the use of improved and gender-friendly tools. However, in the case of large equipment such as combine harvesters, sugarcane harvesters, and cotton pickers, the assistance offered is limited to establishment of custom hiring centres. In many talukas of the district, there is a huge demand for equipment like power weeders, power tillers, shredders, grass cutters, and rotary tillers, but not all farmers can avail of the benefit due to lack of sufficient funds. The beneficiaries are required to initially buy the equipment on their own and the subsidy amount is transferred to them only later. Therefore, this scheme can benefit only that section of farmers who have sufficient financial resources. Delays in the issuance of grant (subsidy) amounts to farmers pose another major problem in the district.



iii. Mission for Integrated Development of Horticulture (MIDH)

MIDH is a Centrally-sponsored scheme aimed at the holistic growth of the horticulture sector, including fruits, vegetables, root and tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashews, cocoa, and bamboo. Under the scheme, farmers get a 50 per cent subsidy on grading and packing of the farm produce in an attractive manner. The maximum subsidy amount is Rs 2 lakh. In Ratnagiri district, there is a huge demand for a pack house but all the farmers cannot avail of the benefit due to the lack of sufficient funds for the subsidy. The cost of a processing unit is Rs 15 lakh, which is mostly unaffordable. Besides, the time lag between drafting of the proposal and the actual disbursement of the grant support is so long that eventually the subsidy hardly proves useful for the beneficiaries.

iv. Magel Tyala Shettale

This scheme was announced to bolster the availability of sustainable irrigation facilities in the State. Farmers interested in availing of this scheme are required to fill a prescribed application form and give their consent. This scheme is operational in all the talukas of the district. According to the Block Officers of the district, the minimum eligibility criterion for the scheme of owning at least 0.6 hectare of land, does not match the requirement of the Konkan area. The average size of landholdings in the district ranges between 0.5 hectare and 1 hectare, and even these small holdings are divided among many owners due to the prevalent phenomenon of land fragmentation. Thus, a large number of farmers find it difficult to derive any benefit from the scheme.

v. Neel Kranti Yojana (Blue Revolution)

It is posited that harnessing the huge untapped potential of fisheries and aquaculture in the district can contribute to the growth of new and innovative production technologies and management. This also helps in optimal utilisation of the under-utilised water resources. Some fishermen in the Ratnagiri Block are deriving the benefits of this scheme. However, the scheme can work optimally and produce even better results if the problems being faced by the beneficiaries are resolved. These include the non-availability of a hatchery centre; a low subsidy share of just 25 per cent; non-availability of a technical person for preparing the project report of the scheme; a long duration of up to six months or more for all the benefits of the schemes to accrue to the beneficiaries; and absence of specific guidelines for generating awareness about the sub-schemes among the people.



III. Actions for Implementing the Proposed Recommendations

The proposed actions for implementation or the interventions¹ are presented in Table 1. The table also lists the likely stakeholders/departments that would be most suitable for executing these interventions and also the manner of implementation of the intervention, primarily through convergence with an existing scheme in the district. The table thus effectively answers the following key questions: “What should be the interventions?”; “Who should implement them?”; and “How should these be implemented?”

Table 1: Proposed Interventions in the District

Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
Cashew	Besides mango, cashew should also be considered under the “One District One Product” scheme.	Ministry of Food Processing Industries	Convergence with One-District One-Product scheme, Central Government
	Build common warehouse and cold storage facilities and encourage cashew apple processing	Ministry of Agriculture and Farmer Welfare; DPIIT	Convergence with schemes like Agro Processing Cluster Scheme of Ministry of Food Processing Industries; Common Facility Centre under Cluster Development Programme (CDP); Mission for Integrated Development of Horticulture (MIDH), Ministry of Agriculture and Farmers’ Welfare; “Development of a storage facility by establishment of warehousing infrastructure” under the Rashtriya Krishi Vigyan Yojana (RKVY)
	Provide separate shops for cashews (especially the Vengurla cashew variety) at railway stations, airports highways and government premises.	GI Agencies; Airport/ Railway/Highway authorities	District administration to encourage setting up of separate shops by giving quick approvals.
	Open a branch of the Cashew Export Promotion Council of India in the district	Ministry of Commerce and Industry; Cashew Export Promotion Council of India; Agricultural and Processed Food Products Export Development Authority	MoCI to give approval on setting up of regional CEPCI, after consulting with APEDA and CEPCI on logistics to be involved.

¹ The proposed interventions also include those which were suggested by several stakeholders who participated the meetings organised by NCAER-DPIIT, held on 6th January, 2021 and 28th June, 2021, to discuss the outcome of the Phase II of the study. Minutes of both the meetings are given in Annexure 1 and Annexure 2 respectively.



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
		(APEDA) and Food Safety and Standards Authority of India (FSSAI)	
Mango	Spread awareness about the GI tag, both among producers and consumers to showcase the quality of Alphonso mango; initiate special promotion schemes for GI products	District Administration; DIC, Ratnagiri; GI agencies; APEDA, NABARD and National Plant Protection Organisation (NPPO)	Conduct awareness campaigns. Under the central government scheme of Promotion of Farmer Producer Organizations (FPOs), the requirements of capacity building activities for GI tagging can be met. NABARD, APEDA and existing FPOs are planning to do some training for post vegetational GI requirements. NCAER organised an awareness programme on “Mango Geographical Indication” on 18 October 2019 in Devgad Taluka of Sindhudurg district
	Develop improved pesticides	District Administration; Ratnagiri; Regional Fruit Research Station, Vengurla, Sindhudurg	Conduct training programmes on improved pesticides. An awareness programme on “Mango and Cashew Pest Management” was organised on 18 February, 2020 in the Kudal taluka of Sindhudurg district. NCAER organised an awareness programme on “Precautions for Using Pesticides” on 20 February 2020 in Kudal.
	Organic Certification	APEDA	Under the National Programme for Organic Production.
	Build common warehouse and cold storage facilities; improve post-harvest management, especially for Alphonso mango, so that its shelf life increases to 40-45 days and its export to distant markets is possible	Ministry of Agriculture and Farmers' Welfare; DPIIT; Agricultural University	Agro Processing Cluster Scheme of Ministry of Food Processing Industries; Common Facility Centre under CDP; MIDH, Ministry of Agriculture and Farmers' Welfare; “Development of storage facility by establishment of warehousing infrastructure” under RKVY



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
	Initiate plans to try Ultra-High Density Plantation (UHDP) on an experimental basis	District Administration; Regional Fruit Research station, Vengurla, Sindhudurg	Conduct training programmes on use of the UHDP technique. NCAER organised an awareness programme on UHDP on 14 February 2020 in Ratnagiri.
	Impart training on international packaging standards; instal a mango scanner machine at mango pack-houses to minimise spongy tissue problems. Promote the use of plastic crates instead of wooden boxes for the transportation of mangoes	District Administration; APEDA and NABARD	District administration to conduct training programmes on international packaging standards. The existing FPOs can also involve in this.
	Develop a variety-wise protocol for mango. The protocol developed for export of mangoes is not suitable for the Alphonso variety.	APEDA, NABARD and NPPO	Suitable export protocol to be developed for the Alphonso mango variety.
	Hot Water Treatment (HWT) standards to be developed separately for fruit weighing 225 gms, especially Alphonso mango. The current standards are applicable for all varieties of mangoes weighing than 500 gms.	APEDA; NABARD and NPPO	Suitable HWT standards to be developed for the Alphonso mango
Fisheries	Make available basic facilities at landing points; promote deep-sea fishing; set up the processing unit and required infrastructure including Effluent Treatment Plants	NABARD and State Government - Department of Fisheries, Maharashtra (under State Government specific Action Plan)	Local Fisheries Departments should join the process of preparing project for infrastructure development of State Government. Convergence with schemes like Blue Revolution: Integrated Development and Management of Fisheries; replacement of trawlers/old fishing boats by deep-sea fishing vessels, for ensuring sustainable marine fishery resources
	Expedite setting up of Multi-species Aquaculture Centre proposed at Vengurla Taluka	State Government— Department of Fisheries, Maharashtra	State Government specific Action Plan under the Blue Revolution scheme



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
	Government land in the district may be surveyed for suitability for use in aquaculture and may be allotted to farmers/villagers.	State Government— Department of Fisheries, Maharashtra	State Government-specific Action Plan under the Blue Revolution scheme. Awareness programmes on the Blue Revolution schemes were organized on 24 February 2020 in Malvan and in Vengurla, Sindhudurg and in Kesarveli Ratnagiri on 26 February 2020 . In Parwadi village on 27 February and in Shakhartar landing point of Ratnagiri on 28 February 2020.
Tourism	<ul style="list-style-type: none"> • Establish better tourism facilities and signages. • Smaller destination should give focus for tourism development. • Home stay and Bed and Breakfast scheme should be encouraged, since these do not need heavy investment but some capacity building and handholding initiatives. • To attract foreign tourists, locations may be positioned to be visible on international-tourist map. • Improvement of security and safety systems; better facilities' management like parking, site cleanliness • Start Vocational courses in foreign languages 	State Government (Maharashtra Tourism Development Corporation), District Tourism Department	Maharashtra Tourism Policy. Bed and Breakfast Scheme of MTDC. An awareness programme on the “Scheme of Tourism” was organised in Sawantwadi on 27 February 2020.
Coir Industry	Promote of new industries such as handicrafts and jewellery	District Administration; DIC, Sindhudurg	Maharashtra Coir Policy



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
**Crab Culture	Encourage crab cultivation either by providing a subsidy or offering a research grant for studying a new innovative area in the district	State Government— Department of Fisheries, Maharashtra and MPEDA	Initiatives can taken under the Mangrove Protection and Employment Generation Scheme, 2017-18; Blue Revolution and Pradhan Mantri Matsya Sampada Yojana (PMMSY). Mangrove based crab culture projects should be promoted under national adaptation fund of UNFCCC, which will be beneficial for climate change and environment. Besides, some capacity building programmes can be initiated by Rajiv Gandhi Center for Aquaculture (RGCA) of MPEDA.
	Setting up Crab hatchery	Rajiv Gandhi Centre for Aquaculture (RGCA), MPEDA, State Government and Ministry of Fisheries, Animal Husbandry & Dairying	It was planned in 2017 and MPEDA is ready to support the facility in Sindhudurg.
	Encourage crab cultivation using Vertical Cage Rearing System (VCRS); set up Innovative Crab Rearing Unit	State Government— Department of Fisheries, Maharashtra and Ministry of Fisheries, Animal Husbandry & Dairying.	State Government specific Action Plan under Blue Revolution; The Mangrove Protection and Employment Generation Scheme, 2017-18 and Pradhan Mantri Matsya Sampada Yojana (PMMSY)

IV. Export Potential of the District

The district has a huge export potential and should be considered as one of the export hubs in the State. Its produce including cashews, mangoes, fish, and crabs have a huge demand in the international market but due to various constraints, the producers are unable to optimise direct exports and consequently good returns.

India and Brazil together account for almost half of the global cashew nut production, with India's share being close to 40 per cent. Within India, Maharashtra accounts for one-third of the country's



total cashew production, of which a significant proportion (over 60 per cent) is produced in the Ratnagiri and Sindhudurg districts of the State. Hence, it is reasonable to assume that the cashew produce from these districts accounts for a sizeable share in the country's export to other countries. But it is not directly exported from the districts. The nearest port, Jawaharlal Nehru Port Trust, Navi Mumbai, is 300 km away from Ratnagiri. The sources of transportation to the port are the Konkan railway and the Mumbai–Goa highway. One of the suggestions for enhancing cashew export is the setting up of a regional office or a branch of the Cashew Export Promotion Council in Ratnagiri district.

In the case of the Alphonso mango, the Konkan region has been declared as an Agri-Export zone. According to the latest APEDA data (2018-19), Maharashtra is the highest exporter of fresh mangoes and mango pulp, and within Maharashtra, Ratnagiri is one of the major mango cultivating districts. There are a lot of mango processing units in the district, some of which are 100 per cent export-oriented. However, due to the lack of cold storage and transportation facilities, the units do not get enough good quality mangoes from the farmers.

As regards the fisheries sector, Maharashtra is the fourth largest marine fish-producing State in the country. As of 2017-18, Maharashtra produced 4.75 lakh tonnes of marine fish. Ratnagiri district is one of the most important maritime districts of Maharashtra. However, since there is no direct export route from Ratnagiri, the fisheries sector mainly depends on Mumbai and Goa for meeting its export targets.

The districts located in the Konkan region of the State are also known for the production of wild crabs. However, like all the other export produce of the Sindhudurg and Ratnagiri districts, crabs are also exported mainly from Mumbai or the adjacent state of Goa.

Overall, therefore, Ratnagiri district has a huge export potential, which can be exploited and fetch significantly higher incomes for producers of different products if they are provided avenues to export their products directly from the district.





I. Introduction

I.1. Context of the Study

The National Council of Applied Economic Research (NCAER) completed Phase I of the study titled, “District Development Plan—A Pilot Study of Ratnagiri District of Maharashtra for Boosting Economic Growth”, commissioned by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry (DPIIT, MoCI).

The objective of Phase I of the study was to prepare a District Strategies Plan, in close consultation with the district administration and relevant stakeholders, for three pilot districts, including Ratnagiri and Sindhudurg in Maharashtra, and Solan in Himachal Pradesh. The plan is expected to provide inputs for action-oriented policy research at the district level to enable the district to achieve an additional economic growth of 2-3 per cent by 2025.

The outcome of Phase I of the study comprised a set of recommendations proposed for the district to facilitate its fast-track growth. These recommendations have been proposed for implementation in the key potential areas of growth in the districts. The recommendations are aimed at achieving quick do-able actions and near-term goals without too many long-term aspirations.

These recommendations are expected to be implemented through the proposed actions in Phase II of the study. This report delineates the actions taken as well as the handholding support offered during the initial phase of the study in the Ratnagiri district of Maharashtra.

I.2. Objectives

As laid out in the original Terms of Reference (ToRs), the overall aim of the study is to develop district strategies for accelerating growth in the district by about 2-3 per cent. The original ToR envisaged the following activities as part of the overall exercise:

1. Preparation of a strategy with the objective of accelerating growth in the district by 2-3 per cent, which has been completed during Phase I.
2. Collaboration with the district administration, State governments, and Ministries/Departments of the Central Government to develop a strategy for growth, which has also been done during Phase I.
3. Mentoring and handholding of the district during implementation of the proposed strategy—this is part of Phase II and involves refining sector strategies and identification of the implementation actions.



4. Monitoring and reporting progress of the district—this is also part of Phase II and includes handholding support offered by the district economic development unit and monitoring of progress on the basis of the stipulated indicators.

Broadly, the objective of Phase II is to implement the recommendations proposed in Phase I of the study in conjunction with the administration, and the context of the hand-holding, and monitoring of the progress achieved.

I.3. Methodology

The first phase of the exercise used a mix of secondary data analyses and primary interactions with State and district stakeholders in order to identify the key areas for developing the draft Strategic Plan. The NCAER team also carried out field visits, and held meetings and consultations with stakeholders in the State, especially with the Departments of Economics and Statistics, and Tourism at Mumbai, among others, and in the district. District level interactions included those with the Collector and other key officers in the district administration, viz., the CEO-ZP, and agencies working in agriculture and horticulture, industries, fisheries, tourism, forests, selected industries, and entrepreneurs from both the districts, including visits to select factories and processing units.

Since Phase II of the project is mostly concerned with implementation, the key activities are primarily limited to handholding of the district administration in achieving the targeted growth rate. The key activities during this phase have been delineated below.

Refining the Sector Strategies

These include:

- i. Validation of the baseline findings and identified growth sectors, with the district administration and other stakeholders;
- ii. Consultations with stakeholders in the district and State, including farmers, producers, entrepreneurs, Government, NGOs, and leaders, in the identified sectors for implementation of their detailed action plans;
- iii. Discussions with key Government agencies (from the relevant sectors) on growth opportunities, and tackling of regulatory/policy and infrastructure constraints;
- iv. Identification of key sources of public and private financing, holding discussions with selected investors and entrepreneurs in new or emerging sectors, and analysis of their aspirations;
- v. Assessment of human resources and adequacy of skills for additional and new investments; and



- vi. Establishment of a district strategic economic development unit along with appointment of nodal officers from the district administration² and the Project Manager.

Initial Implementation Actions

- i. Validation of roadmaps for the identified sectors with sector experts and potential sponsors;
- ii. Consultations with existing and potential investors, including from the Government, public sector and private sector agencies, and NGOs, among others;
- iii. Identification of geographical locations and sites for undertaking relevant growth activities;
- iv. Assessment of capacities of the State, the private and informal sectors, and households;
- v. Identification of measures in the following areas for overcoming constraints to growth (a) Policy/regulation, (b) Infrastructure and logistics, (c) Skills and capacities, and (d) Markets and competitive strategies; and
- vi. Alignment of stakeholders for implementation of accelerated economic development strategies.

Handholding Support for Implementation

- i. Supporting Implementation of key growth sector strategies by providing hand-holding support to district economic development unit
- ii. Reporting on agreed monitoring indicators with recommendations for course-corrections

Documentation and Communications with Stakeholders

The project also entails dissemination of the data and emerging findings amongst target groups in the district and State.

² Since the District Magistrate stated that he would oversee this project himself and thus there was no requirement for a Nodal Officer, no Nodal Officer was appointed for the project.





II. Refining the Sector Strategies

This chapter summarises the recommendations and strategies to be implemented in the thrust sectors identified in Ratnagiri district during Phase I of the study. In Phase II, these sector strategies were further refined through validation with the district administration and extensive field visits conducted at the *taluka* level. Consultations were also carried out with stakeholders for each sector. This chapter also presents details of field visits undertaken as part of the project.

II.1. Sector Strategies

The outcome of Phase I of the study comprised a set of recommendations proposed for the district to enable its fast-track growth. These recommendations have been proposed for implementation in the key potential areas of growth in the districts. The recommendations are aimed at achieving quick do-able actions and near-term goals without too many long-term aspirations.

Hence, from the long list of recommendations proposed in Phase I, only short-term recommendations, which were ostensibly achievable within a year, were proposed to be implemented in Phase II of the study as part of the existing schemes and programmes operational in the State and district.

The report of Phase I, which presented the baseline findings and the proposed recommendations, was circulated among all the departments and industry representatives, and also shared with the District Magistrate, Ratnagiri. All the findings and the recommendations proposed in the report were validated by them.

Table II.1 presents the proposed recommendations, all of which are identified as short-term plan of actions in the identified domains. The table effectively answers the following key questions: “What should be the interventions?”; “Who should implement them?”; and “How should these be implemented?”



Table II.1: PROPOSED RECOMMENDATIONS

Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
Cashew	Besides mango, cashew should also be considered under the “One District One Product” scheme.	Ministry of Food Processing Industries	Convergence with One-District One-Product scheme, Central Government
	Build common warehouse and cold storage facilities and encourage cashew apple processing	Ministry of Agriculture and Farmer Welfare; DPIIT	Convergence with schemes like Agro Processing Cluster Scheme of Ministry of Food Processing Industries; Common Facility Centre under Cluster Development Programme (CDP); Mission for Integrated Development of Horticulture (MIDH), Ministry of Agriculture and Farmers’ Welfare; “Development of a storage facility by establishment of warehousing infrastructure” under the Rashtriya Krishi Vigyan Yojana (RKVY)
	Provide separate shops for cashews (especially the Vengurla cashew variety) at railway stations, airports highways and government premises.	GI Agencies; Airport/ Railway/Highway authorities	District administration to encourage setting up of separate shops by giving quick approvals.
	Open a branch of the Cashew Export Promotion Council of India in the district.	Ministry of Commerce and Industry; Cashew Export Promotion Council of India; Agricultural and Processed Food Products Export Development Authority (APEDA) and Food Safety and Standards Authority of India (FSSAI)	MoCI to give approval on setting up of regional CEPCI, after consulting with APEDA and CEPCI on logistics to be involved.
Mango	Spread awareness about the GI tag, both among producers and consumers to showcase the quality of Alphonso mango; initiate special promotion schemes for GI products	District Administration; DIC, Ratnagiri; GI agencies; APEDA, NABARD and National Plant Protection Organisation (NPPO)	Conduct awareness campaigns. Under the central government scheme of Promotion of Farmer Producer Organizations (FPOs), the requirements of capacity building activities for GI tagging can be met. NABARD, APEDA and existing FPOs are planning to do some training for post vegetational GI requirements. NCAER organised an awareness programme on



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
			“Mango Geographical Indication” on 18 October 2019 in Devgad Taluka of Sindhudurg district
	Develop improved pesticides	District Administration; Ratnagiri; Regional Fruit Research Station, Vengurla, Sindhudurg	Conduct training programmes on improved pesticides. An awareness programme on “Mango and Cashew Pest Management” was organised on 18 February, 2020 in the Kudal taluka of Sindhudurg district. NCAER organised an awareness programme on “Precautions for Using Pesticides” on 20 February 2020 in Kudal.
	Organic Certification	APEDA	Under the National Programme for Organic Production.
	Build common warehouse and cold storage facilities; improve post-harvest management, especially for Alphonso mango, so that its shelf life increases to 40-45 days and its export to distant markets is possible	Ministry of Agriculture and Farmers’ Welfare; DPIIT; Agricultural University	Agro Processing Cluster Scheme of Ministry of Food Processing Industries; Common Facility Centre under CDP; MIDH, Ministry of Agriculture and Farmers’ Welfare; “Development of storage facility by establishment of warehousing infrastructure” under RKVY
	Initiate plans to try Ultra-High Density Plantation (UHDP) on an experimental basis	District Administration; Regional Fruit Research station, Vengurla, Sindhudurg	Conduct training programmes on use of the UHDP technique. NCAER organised an awareness programme on UHDP on 14 February 2020 in Ratnagiri.
	Impart training on international packaging standards; instal a mango scanner machine at mango pack-houses to minimise spongy tissue problems. Promote the use of plastic crates instead of wooden boxes for the transportation of mangoes	District Administration; APEDA and NABARD	District administration to conduct training programmes on international packaging standards. The existing FPOs can also involve in this.
	Develop a variety-wise protocol for mango. The protocol developed for export of mangoes is not suitable for the Alphonso variety.	APEDA, NABARD and NPPO	Suitable export protocol to be developed for the Alphonso mango variety.



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
	Hot Water Treatment (HWT) standards to be developed separately for fruit weighing 225 gms, especially Alphonso mango. The current standards are applicable for all varieties of mangoes weighing than 500 gms.	APEDA; NABARD and NPPO	Suitable HWT standards to be developed for the Alphonso mango
Fisheries	Make available basic facilities at landing points; promote deep-sea fishing; set up the processing unit and required infrastructure including Effluent Treatment Plants	NABARD and State Government - Department of Fisheries, Maharashtra (under State Government specific Action Plan)	Local Fisheries Departments should join the process of preparing project for infrastructure development of State Government. Convergence with schemes like Blue Revolution: Integrated Development and Management of Fisheries; replacement of trawlers/old fishing boats by deep-sea fishing vessels, for ensuring sustainable marine fishery resources
	Expedite setting up of Multi-species Aquaculture Centre proposed at Vengurla Taluka	State Government— Department of Fisheries, Maharashtra	State Government specific Action Plan under the Blue Revolution scheme
	Government land in the district may be surveyed for suitability for use in aquaculture and may be allotted to farmers/villagers.	State Government— Department of Fisheries, Maharashtra	State Government-specific Action Plan under the Blue Revolution scheme. Awareness programmes on the Blue Revolution schemes were organized on 24 February 2020 in Malvan and in Vengurla, Sindhudurg and in Kesarveli Ratnagiri on 26 February 2020 . In Parwadi village on 27 February and in Shakhartar landing point of Ratnagiri on 28 February 2020 .
Tourism	<ul style="list-style-type: none"> Establish better tourism facilities and signages. Smaller destination should give focus for tourism development. Home stay and Bed and Breakfast scheme should be encouraged, since these do not need heavy investment but some capacity building and handholding initiatives. 	State Government (Maharashtra Tourism Development Corporation), District Tourism Department	Maharashtra Tourism Policy. Bed and Breakfast Scheme of MTDC. An awareness programme on the “Scheme of Tourism” was organised in Sawantwadi on 27 February 2020 .



Area of activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implemented?
	<ul style="list-style-type: none"> To attract foreign tourists, locations may be positioned to be visible on international-tourist map. Improvement of security and safety systems; better facilities' management like parking, site cleanliness Start Vocational courses in foreign languages 		
Coir Industry	Promote new industries such as handicrafts and jewellery	District Administration; DIC, Sindhudurg	Maharashtra Coir Policy
Crab Culture	Encourage crab cultivation either by providing a subsidy or offering a research grant for studying a new innovative area in the district	State Government— Department of Fisheries, Maharashtra and MPEDA	Initiatives can taken under the Mangrove Protection and Employment Generation Scheme, 2017-18; Blue Revolution and Pradhan Mantri Matsya Sampada Yojana (PMMSY). Mangrove based crab culture projects should be promoted under national adaptation fund of UNFCCC, which will be beneficial for climate change and environment. Besides, some capacity building programmes can be initiated by Rajiv Gandhi Center for Aquaculture (RGCA) of MPEDA.
	Setting up Crab hatchery	Rajiv Gandhi Centre for Aquaculture (RGCA), MPEDA, State Government and Ministry of Fisheries, Animal Husbandry & Dairying	It was planned in 2017 and MPEDA is ready to support the facility in Sindhudurg.
	Encourage crab cultivation using Vertical Cage Rearing System (VCRS); set up Innovative Crab Rearing Unit	State Government— Department of Fisheries, Maharashtra and Ministry of Fisheries, Animal Husbandry & Dairying.	State Government specific Action Plan under Blue Revolution; The Mangrove Protection and Employment Generation Scheme, 2017-18 and Pradhan Mantri Matsya Sampada Yojana (PMMSY)



II.2. Field Visits to *Talukas* in Ratnagiri

Ratnagiri has nine *tehsils*, which are locally termed as *talukas*. These are Ratnagiri, Rajapur, Lanja, Sangameshwar, Chiplun, Guhagar, Khed, Dapoli, and Mandangad. Figure II.1 depicts the *taluka* map of Ratnagiri district.

In order to initiate the implementation process in the district, local consultants met the concerned department and people (Table II.2). The local Consultants visited all the taluka offices in the district to discuss the possibility of implementing the proposed recommendations in the district. The key discussion points which emerged from these visits pertained to *the fragmentation of land holdings and migration of people to neighbouring States in search of livelihood*. Due to these two reasons, it is difficult to obtain consent and the 7/12³ certificate from the concerned persons in most places. Some farmers are even unable to avail of the benefits of various schemes due to the small size of their landholdings. The average size of landholdings in the district ranges between 0.5 hectare and 1 hectare, whereas as per the agricultural schemes, the average landholding size of the beneficiary should be at least 2 hectares.

Figure II.1: Taluka Map of Ratnagiri



³ The 7/12 document is an extract from the Land Register of any district in Maharashtra, which provides complete information about a particular piece of land. It contains important details such as the survey number, area, and date from which the current owner's name was registered, among other information.



TABLE II.2: CONCERNED DEPARTMENT AND PEOPLE CONSULTED DURING PHASE II

Cashew	Mr. Santosh Kolte, General Manager, DIC, Ratnagiri and Sindhudurg; Mr. Hrushikesh Paranjape, Managing Director, Paranjape Agro Products Pvt. Ltd., Ratnagiri Mr. Vidyadhar Shrikrishna Vaidya, Senior Researcher, Agricultural Technology Management Agency (ATMA) Mr. Shinde , Assistant Researcher, Agricultural Technology Management Agency (ATMA), Tel. No. 9423874344 Mr. Gurudatta Kale, Agriculture Officer, Ratnagiri District, Agricultural Technology Management Agency (ATMA); Mr. Jaywant Vichare, Chairman of Ratnagiri Krishi Prakriya Sahakari Sanstha Maryadit / Associate member of Cashew Export promotion Council of India; Mr. Milind Joshi, Assistant General Manager and Dr. Bhaskar N. Patil, Deputy General Manager, Maharashtra State Agricultural Marketing Board, Division Office, Ratnagiri;
Mango	Mr. Vinod Hedage, Block Agriculture Officer, Ratnagiri ; Mr. Allauddin Gulab Kazi, Block Agriculture Officer, Khed Mr. Ankush Dhode, Block Agriculture Officer, Lanja S. M. Kadam, Block Agriculture Officer, Guhagar; Dr R.M. Devare, Assistant Researcher, Mango Research Department, Regional Fruit Research Station, Vengurla, Ratnagiri; Mr. S. S. Dhoble Block Agriculture Officer, Chiplun Jagdish Kote, Block Agriculture Officer, Chiplun; Mr. C.P. Bhagade, Block Agriculture Officer, Sangameshwar.
Fisheries	Dr. H. S. Dhakar, Associate Dean, College of Fisheries, Ratnagiri Dr. A. U Pagarkar, research Officer, Marine Biological Research Station Mr. Pravin N. Surve, Assistant Commissioner of Fisheries, Fisheries Department, Ratnagiri District Mr. Anand Palav, District Fisheries Development Officer, Fisheries Department, Ratnagiri District. Mr. Kalpesh Shinde, Senior Researcher, Fisheries Engineering, Fisheries Faculty, Ratnagiri.
Tourism	Mr. Sanjay Dhekane, Senior Regional Officer, Ratnagiri Tourism Department.
Coir Industry	Mr. Kale, Agriculture Officer, Ratnagiri District, Agricultural Technology Management Agency (ATMA)
**Crab Culture	Mr. Kalpesh Shinde, Senior Researcher, Fisheries Engineering, Fisheries Faculty, Ratnagiri.

*Note: * These people were consulted during Phase II of the study, but the NCAER team members were continuously in touch with the people they had met during their Phase I field visits*

Many government officials have also revealed that most posts in different departments of the district have been lying vacant for long time. This makes it difficult for the existing officers to achieve the targets stipulated under different programmes and schemes.



According to the block officers, some problems like document verification and delayed delivery of grants can be solved if some power is delegated at the block level.

Details of the visits to the Ratnagiri district *taluka* are provided in Table II.3. Visits to the *taluka* were made during the period November 2019 to January 2020. However, apart from these visits, there were continuous interactions between the NCAER team members and the concerned persons at the *taluka* during the entire course of the study. Since the primary objective of the study is implementation of the proposed recommendations by converging the strategies posited with the existing Central and State government schemes, the discussions held during the *taluka* visits focused on identification of the existing schemes and the problems associated with these schemes.

TABLE II.3: RATNAGIRI TALUKA VISITS

Talukas	Persons Interacted with	Major Discussion Points
Ratnagiri	Mr Sanjay Dhakane, Senior Regional Officer, Ratnagiri, Tel. No. 9423091454 Mr Amol Deshmukh, Tourism Officer, Ratnagiri, Tel. No.: 7588062947 Mr Vinod Hedage, Agriculture Officer, Ratnagiri, Tel. No.: 9405837380	1. Nivas Nyahari Scheme, 2006 2. Hunar se Rozgar tak Scheme 3. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 4. Mechanisation [Rashtriya Krishi Vikas Yojana (RKVY) and [Unnat Sheti-Samruddha Shetkari Campaign (USSS)] Schemes 5. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 6. National Horticulture Mission (NHM) sub-schemes of the Mission for Integrated Development of Horticulture (MIDH)
Chiplun	Ms S. Dhoble, Agriculture Officer, Chiplun, Tel. No.: 9860153353. Mr Jagdish Kote, Assistant Agriculture Officer, Chiplun, Tel. No.: 7263856455 Email: taochiplun@gmail.com	1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub- schemes of MIDH 5. Magel Tyala Shettale
Dapoli	Mr Sachin Suresh Hake, Agriculture Officer, Dapoli, Tel. No.: 9822119309 Mr Subhash Abdul, Assistant Agriculture Officer, Dapoli, Tel. No.: 9422442351 Email: agridapoli@rediffmail.com	1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub- schemes of MIDH 5. Magel Tyala Shettale 6.
Guhagar	Mr Sjeerao Kambale, Agriculture Officer, Guhagar, Tel. No.: 9405067099	1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub-schemes of MIDH 5. Magel Tyala Shettale



Talukas	Persons Interacted with	Major Discussion Points
Khed	Mr Allaudin Gulab Kazi, Agriculture Officer, Khed, Tel. No.: 9850139340 Email: taokhed_09@rediffmail.com	<ol style="list-style-type: none"> 1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub- schemes of MIDH 5. Magel Tyala Shettale
Lanja	Mr Ankush Dhode, Agriculture Officer, Lanja, Tel. No.: 9370594236, Email: Tao.lanja@rediffmail.com Mr Sagar Kambate, Agriculture Officer, Lanja, Tel. No.: 9421865761, Email: talukalanja@rediffmail.com Mr Sagar Salunkhe, Agriculture Officer, Tel. No.: 8459543153	<ol style="list-style-type: none"> 1. Details of the cultivation area in Lanja 2. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. Gopinath Munde farmer- Accident death insurance scheme 5. Drip irrigation mango and cashew nut
Mandangad	Mr Juvekar, Assistant Agriculture Officer, Mandangad, Tel. No.: 9422442909	<ol style="list-style-type: none"> 1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub-schemes of MIDH 5. Magel Tyala Shettale
Rajapur	Mr S.S. Jagtap, Agriculture Officer, Rajapur, Tel. No.: 9960179405 Mr S.M. Kadam, Agriculture Officer-in charge, Tel. No.: 9890429228 Email: tao_rajapur@gmail.com	<ol style="list-style-type: none"> 1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub- schemes of MIDH 5. Magel Tyala Shettale
Sangameshwar	Mr C.P. Bhagade, Agriculture Officer, Sangameshwar, Tel. No.: 9423091454. Mr P.M. Khandagale, Assistant Agriculture Officer, Tel. No.: 9422505699	<ol style="list-style-type: none"> 1. Bhausaheb Fundkar Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Schemes 3. Mahatma Gandhi National Rural Employment Guarantee Scheme Fruit Crop Cultivation Scheme 4. NHM sub-schemes of MIDH 5. Magel Tyala Shettale 6. Group Farming Scheme

During the Phase I field visit, it was found that non-availability of sufficient cluster facilities and other common infrastructure facilities for mango and cashew growers were resulting in the wastage of mangoes, cashews, and more specifically cashew apples due to their highly perishable nature. Despite cultivating highly competitive cash crops, the cashew and mango growers in both the districts are in a vulnerable condition. Due to the lack of sustainable earning sources in the Konkan districts of Ratnagiri and Sindhudurg, the local people move away out for jobs, which has



led to a huge gender gap ratio of 1123 females per 1000 males in Ratnagiri, the highest among all districts in Maharashtra, and 1037 females per 1000 males in Sindhudurg district (Census, 2011).

While both the Central and State governments have taken several initiatives to safeguard the farmers' livelihoods, these districts have not been able to avail of much of the benefits due to various issues detailed in the following sections on different schemes.

The schemes listed in Table II.3 have been described below, along with the problems associated with them, which emerged from discussions held during the field visits in different *talukas*.

Fruit Crop Cultivation Scheme

About the Scheme

The *Falbag Lagavad Yojana*, also called the Bhausahab Fundkar Horticulture Plantation Scheme (named after the late Agriculture Minister, Bhausahab Pandurang Fundkar) was launched in order to increase the cultivation of orchards under the aegis of the Agriculture Department. The scheme, which was started as part of the Employment Guarantee scheme, was later transferred under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).

This scheme benefits the small and marginal farmers who cannot avail of the benefits of MGNREGS because they do not have job cards. The MGNREGS is for farmers who own less than two acres of land whereas under the Bhausahab Fundkar Scheme, farmers owning up to 10 hectares of land in the Konkan region are eligible to get funding.

The other larger objectives of the scheme are to:

- Provide a source of sustainable income to farmers in the form of orchards along with crop and livestock;
- Increase the income of the farmers and double it by 2022; and
- Help conserve natural resources and reduce the degree of climate change.

The scheme provides subsidy for planting of around 20 different orchards, including coconut; mango cuttings; mango cuttings (intensive cultivation); cashew cuttings; Peruvian cuttings (intensive cultivation); Peruvian cuttings; pomegranate cuttings; oranges; peanuts; paper lemon stems; orange cuttings; coconut seedlings; custard cuttings; amla clauses; chinch kalme; purple cuttings; *kokum* kalme; figs; and *chiku* stones, among others.

According to the Maharashtra Economic Survey 2019-20, grants worth Rs 46.94 crore were received during 2019-20, of which an amount of Rs 19.91 crore was spent on a plantation programme up to January 2020, and overall 11,111 beneficiary farmers had undertaken fruit plantations on a 10,706 hectare area in the State. Although mangoes and cashews are accorded



priority under this scheme, the beneficiaries in the study districts reported facing difficulties in receiving benefits under the scheme.

Problems in Implementation of the Scheme

This scheme is operational in all the nine blocks of the district. The respective block officers reported the following main issues related to the scheme:

1. Orchard cultivation in these areas has reduced over successive areas. The reason is fragmentation of landholdings, implying breakdown of landholdings into smaller fractions. The landholdings, according to land records or 7/12 document,⁴ thus belong to many owners. Sometimes the number of owners is as high as 50 to 70. In order to avail of the benefits of a scheme, all landowners require a 7/12 certificate, which is difficult to monitor in case of a large number of owners.
2. Further, since most of the farmers have migrated to Mumbai, it is difficult to obtain their consent in time.
3. Some areas are not cultivated due to low water availability. Consequently, the targeted beneficiaries cannot cultivate mango and cashew orchards. Some villages in the Vengurla taluka cannot be used for plantation because the lands have stony sections.
4. The Bhausahab Fundkar Horticulture Plantation Scheme is primarily a scheme for providing subsidy for drip irrigation facility under orchard cultivation and farmers cultivate mangoes and cashew crops in the hilly areas. However, drip irrigation is not possible due to lack of water in these hilly areas.

Rashtriya Krishi Vikas Yojana—Mechanisation Scheme

About the Scheme

This Centrally-sponsored scheme provides assistance to individual beneficiaries for farm mechanisation efforts. There is special emphasis on improved and gender-friendly tools in this scheme. However, in the case of large equipment such as combine harvesters, sugarcane harvesters, and cotton pickers, assistance is limited to establishing custom hiring centres. One reason for this is that individual ownership may not be economically viable for these large equipments, as a result of which the benefits are provided collectively in the form of creation of infrastructure and assets.

⁴ The 7/12 document is an extract from the Land Register of any district in Maharashtra, which gives complete information about a particular piece of land. It contains important details such as the survey number, area, and date from which the current owner's name was registered, among others.



Problems in Implementation of the Scheme

This scheme is active in all the nine *talukas* in Ratnagiri district. There is a huge demand for equipment like power weeders, power tillers, shredders, grass cutters, and rotary tillers, but not all farmers can avail of the benefit due to lack of sufficient funds for the subsidy. Further, the beneficiaries are required to initially buy the equipment on their own and the subsidy amount is transferred to them only later. Therefore, this scheme can benefit only that section of farmers who have sufficient financial resources. Delays in the issuance of grant (subsidy) amounts to farmers pose another major problem in the district. In Ratnagiri Block, financial provision under this scheme has been made only for 138 farmers though a total of 232 farmers have expressed interest in availing of the benefit of this scheme.

Mission for Integrated Development of Horticulture

About the Scheme

The Mission for Integrated Development of Horticulture (MIDH) is a Centrally-sponsored scheme aimed at the holistic growth of horticulture sector fruits, vegetables, root and tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashews, cocoa, and bamboo.

Under the scheme, farmers get a 50 per cent subsidy on grading and packing of the farm produce in an attractive manner. The maximum subsidy amount is Rs 2 lakh. The subsidy is provided to encourage farmers to clean, grade, and pack their produce properly, after which they get the right prices for their produce. Without cleaning and attractive packing of the produce, farmers end up getting very low prices for it even during the peak season.

Problems in Implementation of the Scheme

The National Horticulture Development Plan is a sub scheme of MIDH. This scheme was reportedly being implemented in all the blocks. In Ratnagiri district, there is a huge demand for a pack house but all the farmers cannot avail of the benefit due the lack of sufficient funds for the subsidy. The cost of a processing unit is Rs 15 lakh, which is mostly unaffordable. Besides, the time lag between drafting of the proposal and actual disbursement of the grant support is so long that the subsidy is hardly useful for the beneficiaries.

Magel Tyala Shettale

About the Scheme

This scheme was announced to increase the availability of sustainable irrigation facilities in the State. Interested farmers are required to fill a prescribed application form and give their consent. Following are the minimum eligibility conditions for the scheme:



1. The farmer should have a minimum of 0.60 hectare of land in his name, but there is no maximum limit.
2. The beneficiary farmer's land needs to be technically eligible for farming.
3. Applicants should not have benefited from any past schemes for farms and community farms, or from any other government schemes. The priority target group of the scheme is farmers below the poverty line.

Problems in Implementation of the Scheme

This scheme is also operational in all the *talukas* of the district. According to the Block Officers of the district, the minimum eligibility criteria for the scheme do not match the requirement of the Konkan area. The average size of landholdings in the district ranges between 0.5 hectare and 1 hectare, and that too is divided among many owners due to the prevalent practice of land fragmentation. It thus becomes difficult for a large number of farmers to derive any benefit from the scheme.

Neel Kranti Yojana (Blue Revolution)

About the Scheme

It is believed that harnessing the huge untapped potential of fisheries and aquaculture in the Ratnagiri district can contribute to the growth of new and innovative production technologies and management. It also helps in optimal utilisation of the less utilised water resources. The vision of the Blue Revolution (Neel Kranti Mission) is to achieve economic prosperity of both the country and its fishermen. It, therefore, also contributes towards food and nutritional security of the nation. In addition, it facilitates sustainable development of fisheries while taking into consideration the bio-security and environmental concerns.

Problems in Implementation of the Scheme

Some fishermen in the Ratnagiri Block are deriving the benefits of this scheme. However, the scheme can work optimally and produce even better results if the following problems are resolved:

- Seed problem resulting from non-availability of a hatchery centre;
- A low subsidy share of just 25 per cent;
- Lack of a technical person for preparing the project report of the scheme;
- Long duration of up to six months or more for all the benefits of the schemes to accrue to the beneficiaries; and



- Lack of issuance of specific guidelines to generate awareness about the sub-schemes among the people.



III. Initial Implementation Actions

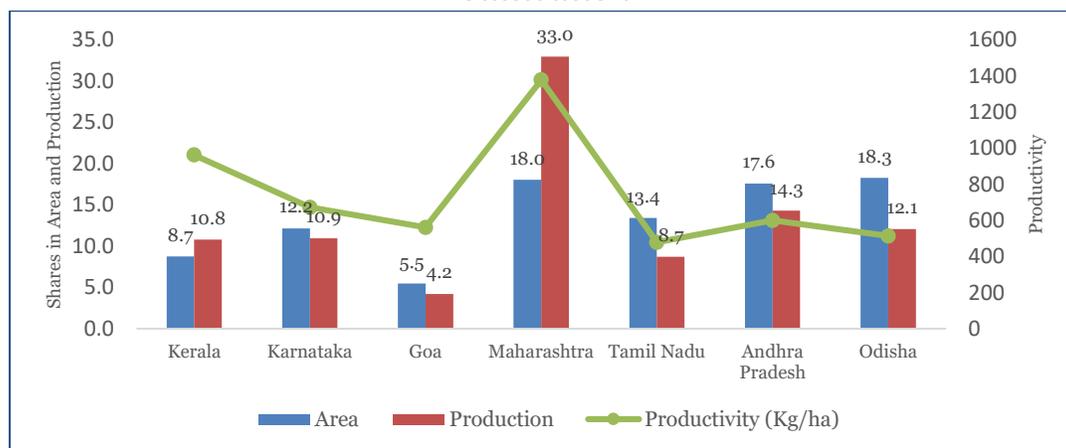
One of the first initial actions towards implementation of the proposed sector strategies was to collect more details of the sector and also present a reasonable justification for proposing them. These details were obtained either from the secondary data, to the extent available, or through the relevant stakeholders in the districts. Besides, the initial implementations also included a review of the best practices around the recommended areas in other States of India. It was found that some of the recommendations, in terms of the activities proposed for the district were being successfully carried out in other States.

All the proposed sector strategies have been detailed in this chapter.

III.1. Setting up a Branch of the Cashew Export Promotion Council of India in either Ratnagiri or Sindhudurg District

The neighbouring districts of Ratnagiri and Sindhudurg, are the highest producers of cashew in the State of Maharashtra, which itself is the largest producer of cashew among all the States of India. It also leads all the cashew-producing States with respect to its productivity. According to the Directorate of Cashewnut and Cocoa Production, Ministry of Agriculture and Farmers' Welfare, Maharashtra accounted for about 33 per cent of the total country's cashew production in 2017-18. Its share has remained almost unchanged since the last ten years. Figure III.1 presents the shares of the top cashew-producing States in the country in terms of both area and production. The figure also depicts the productivity of cashew in these States, as per the latest data from 2017-18.

Figure III.1: Shares of States in the Production and Area under Cashew Cultivation

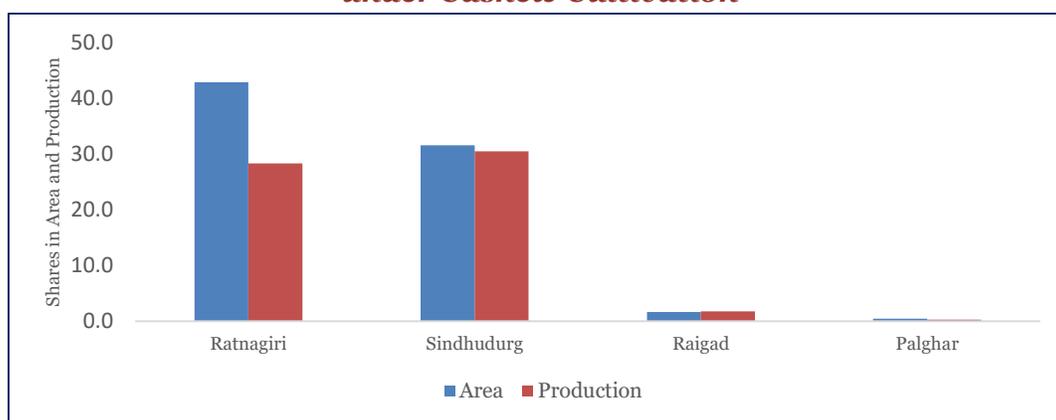


Source: Directorate of Cashewnut and Cocoa Production, Ministry of Agriculture and Farmers Welfare



Maharashtra far exceeds the other cashew-producing States, in terms of the area under cashew cultivation, cashew production, as well as productivity, which stands at 1378 kg/hectare. Within Maharashtra, cashew is a traditional crop of the Konkan region, comprising the Palghar, Raigad, Ratnagiri, and Sindhudurg districts. It is grown on hill slopes as a rainfed perennial horticultural crop. The total area under cashew cultivation in the State is 1.91 lakh hectares, of which more than 75 per cent is in the South Konkan region of Maharashtra, and mainly in the Sindhudurg and Ratnagiri districts. Figure III.2 presents the percentage share of these four districts in the total area and production of cashew in the State. Together, the Ratnagiri and Sindhudurg districts account for more than 95 per cent of the area under cashew production in the South Konkan region. They also contribute an equivalent share of more than 95 per cent in the production of cashew.

Figure III.2: Shares of the South Konkan Districts in the Production and Area under Cashew Cultivation



Source: District Superintendent Agriculture Officer, Ratnagiri.

Clearly, there is an abundance of cashew produce for the overseas market. The setting up of a branch or a regional office of the **Cashew Export Promotion Council of India (CEPCI)** in Ratnagiri or Sindhudurg district is expected to help both the districts in optimising their cashew export potential. According to the existing processing units, the export potential of the locally produced cashew in the districts is much more than that of Kerala, where the CEPCI is currently located.

Main Characteristics of Cashew Grown in the South Konkan Districts

The following main characteristics of cashew grown in the South Konkan region differentiate it from cashew grown in the other regions and other States:

- The varieties suggested by Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri, for cashew cultivation range from Vengurla 1 to Vengurla 8, which are excellent varieties for cashew cultivation.



- These varieties result in excellent cashew kernels of W-180, W-210, W-240, and W-320 grades, which are the largest and heaviest grades, and are also very expensive. W-180 is called the king of cashew.
- The cashew grown in the region is of excellent quality in terms of its taste and nutritional value is excellent because of the geo-climatic condition prevailing in this region. The production is also mostly organic in nature.
- The availability of wild flora and fauna, and a variety of aromatic and medicinal plants in this area help in retaining the quality of the cashew.

Central and State Government Schemes to Support Cashew Cultivation

Both the Central and State governments have recognised the significance of horticulture development since the 1980s. The Dr Swaminathan Committee highlighted the growing need for horticultural development in India for domestic consumption purposes, with the objective of earning foreign exchange, generating employment, and facilitating nutritional improvement in the standard of living of the Indian masses.

The major goals of the horticulture development programme are categorised as production, domestic and export marketing, and product processing and product manufacturing.

The Centrally-sponsored schemes being implemented in Maharashtra include the Integrated Fruit Development Scheme (IFDS), National Horticulture Mission, and Mission for Integrated Development of Horticulture (MIDH). The National Cooperative Development Cooperation (NCDC) and Agricultural and Processed Food Products Export Development Authority (APEDA) are also implementing their own schemes for the production and marketing of horticulture produce in India.

In addition to the Centrally-sponsored schemes, the Government of Maharashtra has also launched a number of programmes for the development of horticulture in the State.

The Maharashtra government recently declared Ratnagiri and Sindhudurg districts as horticultural districts in order to boost the economy in this region. The quality of soil in these districts is also suitable for the cultivation of horticultural crops like mango, cashew, areca nut, and kokum, among others.

Expected Benefits of CEPC

The setting up of a branch of CEPC in either the Ratnagiri or Sindhudurg district will provide the following benefits to cashew producers:

- The Council will enable the necessary liaison for bringing together foreign importers and member exporters of cashew kernels.
- Currently, the processing units are not being optimally utilised due to financial constraints. Rather than exporting, they are forced to send their produce to other states



like Goa, Kerala, and Andhra Pradesh. Moreover, the processing units operate for only four months in a year.

- The exports of cashew kernel as well as Cashew Nut Cell Liquid (CSNL) and the area under cashew cultivation are likely to increase.
- Setting up of the Council will result in higher profitability to the cashew processing units due to attractive prices in the global market.
- It will also promote expansion of cashew processing units.
- The above measures will generate additional employment opportunities.
- The Council will thus lead to overall economic upliftment of the region.

The interaction that the study team members had with the district stakeholders also revealed that cashew nut cultivation provides direct and indirect employment to a large number of people, particularly in the rural areas of Sindudurg district. The production period of cashew ranges from the 6th to the 40th year after plantation. Raw nut, cashew kernels, and CNSL are the three main cashew products whereas cashew apple is generally processed and consumed locally in the district.

The following tracking parameters are proposed for monitoring the progress of setting up of the CEPC in the district:

- Benefits of government incentives accruing to the producers;
- Volume of export of cashew products;
- Volume of cashew production due to increased demand from external markets; and
- Number of cashew processing units.

Some of the baseline cashew statistics are given in Appendix Table A.3.

III.2. Cultivation of Mangoes in Ultra High-Density Mango Plantations

Ultra-high density plantation (UHDP) is a new and proven technology, commonly practised for mango cultivation worldwide. This technology is being promoted extensively by the Division of Fruits Crops, Indian Institute of Horticulture Research (IIHR), Bengaluru. The Division of Fruit Crops was started in 1968 to cater to the research and development needs of tropical and sub-tropical fruits at the national level.

This division is mainly working on the genetic improvement of fruit crops, including mango, papaya, grapes, guava, pomegranate, custard apple, fig, jackfruit, pummelo, and under-utilised fruits for achieving improved productivity and quality, and resistance to biotic and abiotic stresses.

On the production side, the Division of Fruit Crops, IIHR, is working on the development and refinement of production technology of fruit crops through High Density Planting (HDP), canopy architecture, crop regulation, intercropping systems, and optimisation of nutrients and water



levels for attaining higher production and productivity. This division also offers courses on the breeding of fruit crops, advances in fruit breeding, and national problems in fruit crops for Post-graduate students of the University of Horticultural Sciences, Bagalkot, and the Indian Agricultural Research Institute, New Delhi.

The cultivation of mango using UHDP has been proposed for Sindhudurg district as it has not achieved optimal productivity despite being the second largest mango producing district in Maharashtra. This is mainly due to low plant population per hectare, absence of scientific methods of irrigation, inefficient nutrient management, improper orchard management practices, and losses caused by pests and diseases. The UHDP technique is expected to increase production per unit area.

The use of UHDP in mango cultivation offers the following benefits:

1. Increase in productivity by up to 2-3 times;
2. Reduction in water used for irrigation by up to 50 per cent;
3. Increase in fertiliser uptake by plants;
4. Improvement in agricultural, economic, social, and environmental sustainability by promoting good agricultural practices; and
5. Enhancement of farmers’ incomes and alleviation of poverty.

A study conducted by Makhmale Sandip (Department of Horticulture, Junagadh Agricultural University, Junagadh) reports numerous other advantages of UHDP as compared to traditional and medium density plantations.⁵ These are listed in Table III.1.

TABLE III.1: ADVANTAGES OF ULTRA-HIGH DENSITY PLANTING SYSTEM OF MANGOES

Particulars	Traditional (40 trees/acre)	Medium Density (200 trees/acre)	Ultra-high Density (674 trees/acre)
Gestation period (years)	10-15	5	3
Yield potential	Medium	High	Very high
Pruning	Very difficult	Manageable	Easy
Spray operation	Difficult	Manageable	Easy

Source: <https://www.krishisandesh.com/mango-cultivation-ultra-high-density-plantation/>

This technique has been successfully adopted in other States, especially the southern States of Andhra Pradesh, Tamil Nadu, and Karnataka, under a project called “Unnati”. Internationally too, UHDP has been successfully adopted in Israel, Spain, Italy, China, Indonesia, Taiwan, Thailand, and other countries for about 25 years now, and these countries have benefited to produce a higher share of exports of mangoes and other fruit crops as compared to India. In March 2019), the Telangana government also planned to promote UHDP for achieving better mango production. For these reasons, it is recommended that mango cultivators should experiment with UHDP for mango plantation to reap benefits. A training and awareness

⁵ <https://www.krishisandesh.com/mango-cultivation-ultra-high-density-plantation/>



programme on UHDP had also been planned on 20th March, 2020, to generate awareness about this technique among mango farmers. Dr R.M. Devare, Assistant Researcher, Mango Research Department, Regional Fruit Research Station, Vengurla, had agreed to train the farmers in the programme, which was, however, postponed due to the Coronavirus outbreak.

The following tracking parameters are used to monitor the progress of this intervention:

- Change in the volume of mango production;
- Change in mango productivity;
- Change in water use;
- Change in fertiliser use; and
- Change in the number of mango farmers.

The baseline mango statistics have been provided in Appendix Table A.9 to A.11.

III.3. Promotion of the Fisheries Sector

The 237 km long coastal belt of Ratnagiri district is the sole provider of livelihood for many people in the district. The main fisheries blocks in the district are Ratnagiri, Raipur, Dapoli, and Guhagar. In Ratnagiri district, there are 98 fisher-villages along the coast, and 48 fish landing centres. Apart from sustaining the huge number of fishermen, the fish processing units in the district not only bring in earnings from exports but also provide livelihood to a lot of people both within the district as well as in other districts of the State and even other States. The major fish processing units in the district include Jeelani Marine Products Pvt Ltd, Gadre Marine Export Pvt Ltd, and Omega Fishmeal and Oil Pvt Ltd.

During the field visit conducted in Phase I of the study, the fishermen and the district administration specifically highlighted the infrastructure problems at the landing points. According to the fisheries department of the district, there is a huge scope of increasing the processing units in the district taking into account the fish production. The fishermen also raised some issues, which the district administration agreed to consider. These include offering safety and support to the fishermen, ramping up shading and storage facilities, ensuring proper fish drying, constructing an auction hall and a boat repairing centre, providing electricity, street lights, drinking water, and toilet facilities, installing a diesel pump, making arrangements for the supply of ice, ensuring a market for local sales, and setting up a cold storage system, among other things.

Furthermore, the processing units highlighted the lack of skilled labour in the district for fishing industries. They also suggested that the setting up of an Effluent Treatment Plant (ETP) should be a mandatory norm. Gadre Marine Export Pvt Ltd., which is one of the oldest fish processing units in the district, has its own ETP, connecting the pipeline to the sea. However, Gadre Marine also accepted that there is lack of a drainage system in the Mirjole area (MIDC) of Ratnagiri. Although some of the units have their own ETPs, most other units cannot afford it, which results in less than optimal use of their plant units.



Both the Government officials and fishermen also highlighted the issue of a decline in fish production at the usual landing points, which can be resolved through promotion of deep-sea fishing.

The following recommendations for development and promotion of the fisheries sector in the district emerged from the interactions held at different levels during Phase I of the study:

- Making available basic facilities at the landing points;
- Promoting deep-sea fishing; and
- Setting up processing unit and the required infrastructure including ETPs.

All these recommendations can be implemented as specific actions for Maharashtra State under the Centrally-sponsored scheme, the Blue Revolution Integrated National Fisheries Action Plan.

An analysis of secondary data during Phase II of the study indicated that all the specific action plans for Maharashtra State under the Blue Revolution scheme had incorporated the above recommendations made during Phase I. However, it was observed that the target beneficiaries lacked knowledge and awareness about the different sub-schemes being implemented under the Blue Revolution scheme. It was thus decided to organise four awareness programmes on the Blue Revolution schemes for fishermen in different parts of the districts. Interactions during the awareness programme also revealed the lack of basic knowledge regarding various schemes among the fishermen. In fact, in some *talukas*, the officials themselves admitted to their lack of knowledge about various guidelines pertaining to different fisheries-related schemes.

In the second review meeting of the Phase II, held on 28th June 2021, it was highlighted and discussed that NABARD and Government of Maharashtra have signed an MoU for fisheries infrastructure development. Government of Maharashtra is in the process of preparing the projects under this MoU. Therefore, it was suggested that the local fisheries department of both the districts should join in the state government's process of preparing projects for fisheries infrastructure development.

Fisheries is considered as a sunrise sector in the Konkan region of Maharashtra, and has been making a significant contribution to income and employment generation by stimulating the growth of a number of subsidiary industries and foreign exchange earnings. It is thus imperative to resolve the basic problems being faced by this sector in different districts to achieve the broader economic growth targets. In this context, the role played by multi-dimensional activities under the Blue Revolution Schemes is invaluable.

Following are the tracking parameters for monitoring the progress of interventions in fisheries sector:

- Number of new processing units developed;
- Number of new landing points developed;



- Basic infrastructure available for fisher folk;
- New Effluent Treatment Plants developed;
- Reduction in untreated effluents released into the environment;
- Increase in fish-catch due to deep-sea fishing; and
- Increase in the number of beneficiaries of the fisheries schemes due to enhanced awareness.

Some of the baseline fisheries statistics are given in Appendix Tables A.5 to A.8.

III.4. Promotion of Crab Farming by Adopting the Vertical Crab Rearing System

One of the recommendations made in the study for Sindhudurg district, among the emerging areas, is to promote crab cultivation by providing financial support.

Various initiatives have been taken in the past to promote crab cultivation as a result of which the current crab production is large enough to meet both the export as well as domestic demand. According to the Marine Products Exports Development Authority (MPEDA), mud crabs are available in seven Konkan districts of Maharashtra, viz. Mumbai city, Mumbai suburban, Palghar, Thane, Raigad, Ratnagiri, and Sindhudurg. These coastal districts span a distance of 720 km along Maharashtra's coast line. The State also has access to a 16,000 hectare area of potential brackish water for fisheries development, distributed across the Thane, Raigad, Sindhudurg and Ratnagiri districts. However, till date, only 8-10 per cent of this area has been utilised for aquaculture. Some parts of this coastal area are covered with mangroves, which cannot be used for shrimp/fish farming, but such areas are ideal for promoting crab culture.

Due to the informal nature of this activity, the statistics on crab production in the Konkan region are not available across various districts and *talukas*.

The wild crabs that are caught are processed for export or consumed locally. Like all other export outputs of the Sindhudurg and Ratnagiri districts, crabs too are exported mainly from Mumbai. On an average, 300-400 kg of crabs are sent to Mumbai daily from the districts, and some of them are also sent to adjacent state of Goa.

Realising its huge potential, the MPEDA started a pilot project for open pond crab farming in Sindhudurg in 2014. This Stock Enhancement Programme on Mangrove Crab in Mangrove Pens and Tide Fed Farms was initiated with aid from UNDP, along with the Ministry of Environment, Maharashtra government, and supported by the Global Environment Facility. The larger aim of the project was to conserve mangroves and marine biodiversity in the area. The pilot project was started in collaboration with six farmer help groups from three places, including Malvan, Vengurle, and Devgad, situated along the Konkan coast in Maharashtra. Mud crab aquaculture in the mangroves was started as a pilot project in the Sindhudurg district of Maharashtra in October 2014. The primary aims of the project were to:



- Generate assured income among the weaker sections of the society by providing them an alternate livelihood option;
- Protect the mangroves; and
- Strengthen the production base for export of live and value added products.

There is a huge demand for Indian crabs in the external market but this demand is barely met due to the lack of availability of the produce. This pilot project thus helped fishermen to increase crab production manifold. Under this pilot project, mangrove crabs were farmed in one-acre line farms provided to farmers by MPEDA. These farms were located in the mangroves and were covered by high density polythene nets (HDPN), which were also provided by MPEDA. Since crabs are grown in a natural environment, no capital cost was involved. Each self-help group (SHG) was given two lines of one acre each. A total of 2000 seeds were used for each acre, leading to a total of 4000 for one farm. The project, worth over Rs 1.5 crore, was funded by the Maharashtra State Forest Department.

The crab seeds were provided to farmers by the MPEDA's hatchery, the Rajiv Gandhi Centre for Aquaculture (RGCA), located in Tamil Nadu, at a subsidised rate of Rs 2 per piece. After nine months of harvesting, each full-grown crab was expected to fetch about Rs 1000-1400 depending on the weight of the crab. Long-term planning, following the success of this pilot project, entailed setting up 15 new farms with the help of SHGs, starting from September 2015.

Here, it is important to outline the reasons as to why Sindhudurg was chosen for the pilot project. These reasons were:

- Availability of pollution-free sea-water and better water quality;
- High market value of the district's mud crabs in both the domestic and international markets, due to their robust size, dense meat, aromatic flavour, nutritive value, and soft texture;
- Availability of mangrove forests in the district; and
- Efficient conservation of mangroves, which are otherwise considered of low economic value and dumping areas for debris but can be converted into highly profitable crab farms.

Following the success of this project, the Green Climate Fund (GCF), under the United Nations Framework Convention on Climate Change (UNFCCC), was proposed for extending mangrove crab breeding not only to all the districts of Maharashtra but also to the neighbouring States of Andhra Pradesh and Odisha.

Financial Implications of Mud Crab Farming

The financial implications of mud crab farming are delineated in Table III.2.



TABLE III.2: FINANCIAL IMPLICATIONS OF MUD CRAB FARMING

Financial Implication of a 5 Hectare Crab Grow-out Pen					
	Assumptions				
	Total area	5 hectares			
	Number of Pens of 0.5 Acre Each	2			
	Survival Rate	30%			
	Average Body weight	550 gms			
I.	Non-recurring Cost—Pen Installations ⁶				
S. No.	Particulars	Quantity	Unit	Rate	Amount (Rs.)
1	Earth Work—Cutting of trenches for construction of pens	Lump sum			62,500
2	Silpauline sheet of 1 foot	Lump sum			93,750
3	Cost of garden fencing net hexagonal 15-17 mm mesh size (Size: 2.0 m x 50 m)/Pen 1000 sq. m. per acre	12,500	Sq. m.	98	12,25,000
4	Cost of 16 feet stone bamboo, including transportation for pen and catwalks (400 nos./acre)	5000	No.	70	3,50,000
5	Cost of civil construction materials	Lump sum			50,000
6	Cost of nylon cable ties @ 10 pockets (1000 nos.)/acre	125	No.	150	18,750
7	FRP float for feeding, monitoring	5	No.	4000	20,000
8	Cost of pen gate	25	No.	750	18,750
9	Cost of feed check tray 4 Nos./ pen	100	No.	400	40,000
10	Cost of plastic at items for feeding, etc.,	Lump sum			25,000
11	Cost of emergency light/ solar light	12	No.	4000	48,000
12	Cost of miscellaneous items for construction of Pen	Lump sum			1,00,000
13	Cost of hideouts (tiles, pipes, etc.)	Lump sum			50,000
Sub-total					21,01,750
	Contingencies @ 5 % of S. Nos. 1-13				1,05,088
Total Fixed Cost					22,06,838
Total Fixed Cost (after Rounding off)					22,10,000
II.	Recurring Cost per Crop				
1	Cost of crablets @ 2000 nos. per acre for 5 pens including packing and transport charges	25,000	No.	22	5,50,000
2	Cost of feed	24,750	Kg.	35	8,66,250
3	Repair and maintenance	25	No.	3000	75,000
4	Miscellaneous and unseen expenses	Lump sum			50,000
5	Harvesting and marketing expenses	4125	Kg.	20	82,500
Sub-total					16,23,750
TOTAL PROJECT COST					38,33,750
REVENUE					
1	Crabs of more than 750 gms 25% of Total Harvest	1031.25	Kg.	1100	11,34,375
2	Crabs of 500-750 gms 30% of Total Harvest	1237.5	Kg.	850	10,51,875
3	Crabs of 350-500 gms 30% of Total Harvest	1237.5	Kg.	650	8,04,375
4	Crabs of less than 350 gms 15% of Total Harvest	618.75	Kg.	350	2,16,562.5
Total Revenue					4125 Kg. 32,07,188
Gross Profit (Revenue minus Recurring cost)					15,83,438

Source: Marine Biological Research Station, Ratnagiri, Maharashtra.

⁶ Pen installations are enclosures made using net or wooden material in shallow regions along the shores and banks of the lakes and reservoirs. These are used for raising crabs in a volume of water enclosed on all the sides except the bottom, thereby permitting the free circulation of water at least from one side.



While mud crab farming results in significant profits, it also necessitates a great deal of attention to the following site details:

- Sites that have moderate mangroves with muddy bottoms can be utilised for the mangrove crab project.
- Trenches of approximately 3–4 feet covering 30 per cent of the total area need to be made to restore water even during low tides.
- The peripheral nets should be fixed using an HDPE garden fencing net of 32X22 mm hexagonal mesh of good material.
- Stocking of 3.5 cm above the crablets is necessary as small size crablets can wriggle out through the mesh.
- Each farmer should preferably have at least a one-acre farm in the vicinity where he can set up a nursery of more than 3.5 cm for crab instars or small crablets weighing approximately 15 gms each.

This project led to the initiation of open pond crab farming, but these farms have some limitations, and the crab survival rate here is only 30-40 per cent. As compared to this, another innovative initiative undertaken by the Institute of Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Fisheries Sub-centre (FSC) at Wadamirya, Ratnagiri, assures a crab survival rate of 90-95 per cent.

The technique used in open pond farming is called a Vertical Crab Rearing System (VCRS). The need for using this technique emerges from the fact that crabs have a fundamentally cannibalistic character, due to which hard crabs in the pond attack the soft crabs, which in turn, decreases the latter's survival rate. This cannibalistic nature of the crabs, in fact, poses a major problem in terms of culturing them in open systems at anything other than low density. Therefore, it is important to consider economically viable techniques for crab farming. Holding mud crabs in individual containers, as in fattening operations, can dramatically improve their survival rate as compared to pond-reared crabs, wherein cannibalism is prevalent.

Table III.3 presents a comparison of these two important techniques of crab farming, viz., pond culture and VCRS.



TABLE III.3: COMPARISON BETWEEN POND CULTURE AND VCRS

	Pond Culture	Vertical Crab Rearing System (VCRS)
1.	This is a traditional system of crab farming.	This is a sophisticated system and the result of research and development with identified potential.
2.	<p style="text-align: center;">Method Description</p> <p>In this method, young crabs are grown for a period of 5 to 6 months till they attain the desirable size. Pond culture is a mud crab grow-out system, with or without mangroves. The pond size varies between 0.5-2 hectares, with proper bunds and tidal water exchange. Wild collected crabs weighing 10-100 gm are used for stocking. The crab is usually fed trash fish along with other locally available items. Regular sampling is necessary to monitor the growth and general health of the crab, and to adjust the feeding rate. Partial harvesting of marketable sized crabs can be started from the third month onwards.</p>	<p style="text-align: center;">Method Description</p> <p>Vertical RAS is an innovative system to culture mud crabs, where crabs are held individually in containers (or “cells”) to mitigate against the risk of cannibalism and in an attempt to provide optimal conditions for their growth. In this system, small mud crabs (weighing 80-120 gm) are held in isolation until they moult, at which point they are either chilled or frozen before their new outer shell can harden. Typically, crabs are only held in the system for a few weeks until they moult.</p>
3.	<p>Loss of Crabs due to Spawning Migration</p> <p>The spawning migration of female mud crabs from the mangrove forests to offshore habitats is very common. They can spend a considerable period of time on land. As a result, if some kind of barrier is not installed surrounding a mud crab aquaculture pond, the stock would be able to walk out of the pond, which would be a direct financial loss to the farmer.</p> <p>To counter this mud crab behaviour, netting typically surrounds mud crab culture ponds. (The netting height may vary from 20 to 50 cm. The netting is typically supported by posts and may be topped with plastic. The plastic topping is added as mud crabs are good climbers and can climb up the netting, but are unable to climb up clear plastic sheeting).</p>	<p>Crabs Protected in a Confined Cell</p> <p>However, in VCRS, there is no problem of such loss, since crabs are protected in a confined cell and in individual containers. This system needs some simple construction with easily available material.</p> <p>As the name itself suggests, this culture system consumes less space. Water needs to be changed if the water parameters have adverse remarks.</p>
4.	<p>Water Requirement</p> <p>A high volume of water is required.</p>	<p>Water Requirement</p> <p>A lesser volume of water is required and the water parameters can be controlled easily. Only 700 to 800 litres of water is required for one moulting cycle of 100 crabs within 45 days.</p>
5.	<p>Labour-intensive System</p> <p>This is a labour-intensive system entailing minimal technological use. The main constraint in this system is the need for observing each crab on a daily basis. Only representative samples can</p>	<p>Technology-driven System</p> <p>In this case, the systems have been built with a variety of technological systems incorporated into them to minimise labour and maximise automation. This is probably the most</p>



Pond Culture	Vertical Crab Rearing System (VCRS)
<p>be observed. This is a tedious and time-consuming job of crab harvesting, in which 100 per cent harvesting is impossible, and there are chances of injury to both the crab as well as the crab collector. For harvesting, Proper planning and a particular period are required for harvesting, that is, a low tide is needed for de-watering the culture pond</p>	<p>sophisticated system designed to date, as it includes cameras linked to a computer system that regularly scans cells to see if one or two crabs are in each cell. The presence of two crabs in a scan implies that the crab has moulted, leaving an empty shell and a soft-shell crab that needs to be harvested. This system also includes a sophisticated water recirculation system. In this system, an individual crab can be examined, observed daily or eventually without hustles. This makes harvesting easy, and reduces the need for labour. Also, there is no chance of any injury to the crab or crab collector.</p>
<p>6. Transportation There is no mobility in this culture system.</p>	<p>Transportation This is a mobile system and can be transported from one place to other.</p>
<p>7. Risk of Cannibalism 'Stock thinning' provides chances for better survival by reducing mutual attacks and cannibalism among the crabs. But the risk of cannibalism is still not zero.</p>	<p>Risk of Cannibalism Since in VCRS, the crabs are kept separately in different cells, the risk of cannibalism is zero.</p>
<p>8. Risk of Natural Disasters Natural disasters, like tsunamis or floods may result in a heavy loss of crabs.</p>	<p>Risk of Natural Disasters There is zero risk from a natural disaster in this system.</p>
<p>9. Working Capital In this case, working capital includes the cost of crablets, crab-feed, wages, and miscellaneous charges. The cost of crablets is high as a large number of crablets are required (5000 in a one acre water spread area), given the low survival rate of the crabs. The labour cost is low as a small number of workers are required. The working capital needed for a one-acre water spread area pond, which can generate one crop in eight months, is Rs 8,19,000</p>	<p>Working Capital This system needs low working capital due to a small number of crablets required (1000 in a 100 sq. ft. shade) and a lesser number of workers required. The working capital needed for a 1000 sq. feet shade (for generating one crop in six months), is Rs 5,78,000.</p>
<p>7. Profits Earned Crabs harvested of average weight 800 gm with a 40 per cent survival rate = 2000 Crab produce = 2000 x 800 gm =1600 kg Cost of crab @800/kg. (for an 800 gm crab) Production sale = Rs 12,80,000 Profit= (Production sale)- (Production cost) = (12,80,000) - (8,19,000) = Rs 4,61,000</p>	<p>Profits Earned Crab harvested of average weight 1000 gm with 95% survival rate= 950 Crab produce = 950 x 1000 gm = 950 kg Cost of crab @1200/ kg. (for a 1000 gm crab) Production sale = Rs 11,40,000 Profit=(Production sale cost)- (Production cost) = (11,40,000) - (5,78,000) = Rs 5,62,000</p>

Source: Marine Biological Research Station, Ratnagiri, Maharashtra.



The interaction of the study team with the institute revealed that there is a huge demand of green and red crabs for pond culture, pond floating box culture, and vertical Recirculating Aquaculture System (RAS) culture, and most importantly, that it has a high export potential. However, there is a scarcity of crab seed and, even when it is available, there are variations in sizes, which ultimately affects both the production and profitability. Also, the fishermen who catch crabs sell them to the crab suppliers at a very low price, whereas the crab suppliers sell them to the processors for export at a very high price.

The research outcome of the institute also shows that there is high demand for fresh water crabs but they are not available throughout the year. However, it is possible to rear them in innovative vertical crab units in the institute. The main advantages of this exercise are that it can overcome the uncertainty of crab availability, bridge the gap between crab collectors and buyers/processors, and prevent price fluctuations. Overall, this is expected to uplift the livelihoods of fisherman in the coastal Konkan districts of Ratnagiri and Sindhudurg in Maharashtra.

Despite having high potential and being highly beneficial for local fishermen, crab culture is not separately covered under any State or Central Government schemes. Under the Blue Revolution Integrated National Fisheries Action Plan, there is a mention of a 100-hectare grow-out pond for mud crabs as one of the specific actions for the State of Maharashtra. The guidelines for the scheme laid down by the National Fisheries Development Board (NFDB) also mentions need-based financial assistance for the development of innovative and new technologies.

However, during interactions with the district administration and the field survey in different *talukas*, the NCAER study team did not find any evidence of this action so far. Moreover, the *taluka* officers did not even have any knowledge about this.

It is, therefore, suggested that need-based financial assistance should be provided to the district for the adoption of crab culture. The following important points on crab farming thus emerge from the discussions and interactions:

- There is a huge demand for green and red mud crabs (*Scylla serrata*).
- The total time period involved in crab cultivation is 8 to 9 months.
- The season for crab farming in the mangrove region is from September to May.
- The important regions for crab farming are Malvan, Vengurle, and Devgad.
- While there is no Centrally-sponsored scheme to promote crab farming, some States have their own schemes. For example, Goa provides financial assistance to crab farmers, making them eligible for 25 per cent of the actual cost limited to Rs 1.5 lakh per hectare. Assistance is also provided for the purchase of seed and feed wherein 50 per cent of the actual cost, limited to Rs 75,000 per hectare, is provided.
- In September 2017, the Maharashtra State cabinet approved a special scheme to preserve mangroves on public and private land, and to provide employment opportunities to people of the selected areas. This scheme, called The Mangrove Protection and Employment Generation Scheme, 2017-18, had a budgetary provision of Rs 15 crore. The scheme was



slated to benefit 50 villages in the coastal districts of the State, such as Palghar, Thane, Raigad, Ratnagiri, and Sindhudurg.

- While there was no budgetary allocation in 2018, the Mangrove and Marine Biodiversity Conservation Foundation of Maharashtra, an autonomous society that assists the State government in coastal marine conservation, had set aside a budget of Rs 19.2 crore for 2018-19.

The tracking parameters for monitoring the progress of encouraging VCRS as against open pond culture are the following:

- Water use;
- Crab production;
- Labour cost;
- Profit earned;
- Working capital cost; and
- Export volume.

III.5. Improvement in Common Infrastructure Facilities for Clusters under the Existing Schemes

During the field visit as part of Phase I of the study, it was found that non-availability of sufficient cluster facilities and other common infrastructure facilities for mango and cashew growers results in wastage of mangoes, cashews, and especially cashew apples, due to their highly perishable nature.

In Ratnagiri district, there is only one cashew processing cluster in Lanja, the Ratnagiri Krushi Prakriya Sahakari Sanstha Mryadit (RKPSSM), which is a well-known name in cashew nut markets. However, there are a number of small cashew processing units in the district. According to Mr Jaywant Vichare, President of the RKPSSM, only half the production capacity of cashews is being utilised in the district due to the lack of working capital. Mr Vichare raised the issue of the need for a branch of Cashew Export Promotion Council in the district, during the field survey. The processing clusters and other small processing units of the district also raised other important issues such as the lack of proper infrastructure facilities, including cold storage facilities and common warehouses.

For mango cultivation also, there is only one processing cluster in the district, the Ratnagiri Mango Product Cluster.

However, there is no agricultural cluster for mangoes and cashews in the district. Under the Agriculture Export Policy 2018,⁷ unique product–district clusters have been identified for export

⁷ https://commerce.gov.in/writereaddata/uploadedfile/MOC_636802088572767848_AGRICULTURE_EXPORT_POLICY.pdf



promotion, based on the existing production contribution to exports, exporters' operations, scalability of operations, size of the export market/India's share, and the potential for bringing about an increase in exports in the short term. Accordingly, the proposed cluster under the policy for mangoes includes the districts of Ratnagiri and Sindhudurg, and for cashews, Ratnagiri, Sindhudurg, Raigad, Kolhapur, Thane, and Palghar districts.

According to some fruit processing units, their capacity is underutilized, not because of inadequate mango production in the districts but because of the lack of common infrastructure facilities which can mobilize the mango farmers to supply mangoes for processing. Besides, if the farmers supply through middle agencies, they end up getting less price for their production.

The processing units also pointed out that there is a huge demand for Alphonso mangoes in the international market but they are unable to meet the demand due to the lack of sufficient supplies of raw Alphonso mangoes. Due to the lack of storage facilities, highly perishable mangoes are barely used for processing purposes. Cashew growers also outlined the same difficulties faced by them in terms of a lack of common facilities centre. Despite the high demand for cashew varieties grown in Ratnagiri and Sindhudurg, the farmers and processing units struggle because of lack of access to proper infrastructure facilities. Also, there is a need for setting up some common facilities for collecting the highly nutritious cashew apple, which needs to reach the processing unit within eight hours of its harvest, failing which it becomes useless. Cashew apples also have a very high export demand.

During the field survey in Phase II of the study, it was found that one of the schemes, currently operational in the districts is the Rashtriya Krishi Vikas Yojana (RKVY). There are three projects in the category of "Infrastructure and Assets" under the RKVY for both the districts, *viz.* "Development of a high-tech horticulture government nursery", "Strengthening of a laboratory at the Khar land research station, Panvel, and capacity building of farmers in soil health and fish production", and "Development of a storage facility by establishment of warehousing infrastructure, online trading facility, and easy finance through mortgage of warehouse receipt". The third of these projects is only for Ratnagiri.

In Ratnagiri, it was noticed that the allocation under this scheme is concentrated in providing subsidies on equipment such as power weeder, power tiller, shredder, grass cutter, and rotary tiller, among others. However, in some *talukas*, people are not taking any advantage of this scheme because of the lack of agriculture labour, and compromised financial conditions. On the other hand, the demand in some *talukas* is very high but the grant supply is extremely low. Secondary research by the study team also shows that this scheme includes a lot of completed and ongoing projects in both the districts (as per the Report of the DES, Planning Department, Government of Maharashtra), but those projects do not concentrate on the issues specific to the region.

Since the schemes have a huge scope of fulfilling the infrastructure requirement of the region under the "Infrastructure and Asset" category, and also can fulfil the machinery requirement under the "Mechanisation" category, it is advisable to meet these requirements in order to promote the long-term economic growth of the districts.



The Maharashtra Government also initiated a campaign called the *Unnat Sheti-Samruddha Shetkari Campaign* from the Kharif 2017-18 season onwards. This campaign is operational in both the districts. Its broad aim is to double farmers' income by the year 2022. The other objectives of the campaign include notifying farmers about different schemes and ensuring the effective implementation of different schemes related to the agricultural sector. Another goal of the project intent was to generate awareness among the farmers about advanced agricultural technologies and government schemes that are beneficial for them. According to the Economic Survey of Maharashtra 2018-19, under this campaign, the Maharashtra Government has taken lot of initiatives for farmers of the State, including carrying out several block demonstrations and training workshops, and supplying farm implements to the farmers.

However, it was observed that the initiatives taken were for farmers growing crops like wheat, pulses, cereals, sugarcane, nutria-cereals, cotton, oilseed, and palm, but did not include mango and cashew. Some of the *taluka* officers of Ratnagiri and Sindhudurg districts averred that this scheme is operational in the districts, and power tillers, power spreaders, and brush cutters are the tools being offered to the beneficiaries. These are to be provided at a maximum subsidy of 50 per cent to the farmers. The *taluka* officers reported that the beneficiaries cannot even buy these equipments at subsidised rates due to financial constraints. According to the scheme, the farmers are expected to buy the equipment first and get the subsidy amount only after making the purchase. The average market prices are Rs 20,000 a power spreader; Rs 20,000 to Rs 30,000 for a brush cutter; and Rs 1,00,000 to Rs 1,15,000 for a power tiller.

Since the scheme was initiated by the Maharashtra Government for improving the economic wellbeing of farmers of the State in order to make this scheme more inclusive, it is essential to also consider the needs of cashew and mango farmers in order to make the scheme more inclusive. This step will provide support to the cashew and mango farmers, increase their wellbeing, and also promote the long-term economic growth of the districts.

Furthermore, the Bhausahab Fundkar Falbaug Lagwad Yojana/Fruit Crop Cultivation Scheme is an important scheme operational in the district. This scheme was launched by the Government of Maharashtra in 2018-19, with the objective of enhancing farmers' income, generating employment for young farmers, changing the cropping pattern, creating a sustainable source of income, increasing raw material availability for the processing industry and facilitating conservation of natural resources.

To be eligible to participate in this scheme, farmers need to have at least 10 *knots* of land in the Konkan section, and at least 20 knots in the other sections. The area can benefit within limits. However, during the field survey, it was reported that orchard cultivation in these areas has reduced over the years, mainly due to the fragmentation of landholdings. It was also found that the scheme can benefit mango and cashew growers in the district if the eligibility conditions and other requirements of the beneficiaries are carefully considered.

Besides these, it was suggested in the second review meeting that required infrastructure can be met through Government of India's scheme for processing-based clusters. One such beneficial



scheme for the district is Agro Processing Cluster of Ministry of Food Processing Industries. *The scheme aims at development of modern infrastructure and common facilities to encourage group of entrepreneurs to set up food processing units based on cluster approach by linking groups of producers/farmers to the processors and markets through well-equipped supply chain with modern infrastructure.*

Following are the tracking parameters for monitoring the progress of interventions for improving the common infrastructure facilities in the district:

- Number of new cold storage facilities developed;
- Number of new common warehouses developed;
- Availability of raw cashew in the off-season; and
- Increase in the use of cashews and mangoes for processing.



IV. Export Profile of Ratnagiri

This chapter focuses on the sectors identified as thrust sectors and the recommendations proposed for giving a boost to these sectors in view of their huge export demand. These include the mango, cashew, fisheries, and crab sectors, among others. The export profile of the district is presented in this chapter in order to validate these findings.

First, it should be noted that the official trade-related data are not available at the district level and even at the State level. The data on trade are available across the ports of India, from where goods from all over the country are shipped out to the international market. Here, however, only information pertaining to the export profile of Ratnagiri district has been presented.

IV.1. Cashews

Worldwide, India and Brazil account for almost half of the global cashew nut production, with India's share being close to 40 per cent. India and Brazil, along with Vietnam, Nigeria, Mozambique, and Tanzania, are the six countries that account for more than 95 per cent of the global production of cashews.

India is also a major exporter of cashew nuts and earns a sizeable amount of foreign exchange from these exports, to the tune of Rs 5,500 crores per annum. Indian cashew is exported to more than 60 countries in the world, with the main markets being UAE, USA, Netherlands, UK, Germany, Japan, and Australia. The country earned foreign exchange equivalent to Rs. 5870.97 crores, from the export of 84,352 metric tonnes of cashew nuts during the year 2017-18 (Table IV.1).



TABLE IV.1: EXPORT OF CASHEW NUTS TO THE MAJOR MARKETS (VALUE IN RS CRORES)

Country	2013-14		2014-15		2015-16		2016-17		2017-18	
	MT	₹	MT	₹	MT	₹	MT	₹	MT	₹
UAE	17,421	788.20	239.40	1140.86	18,537	963.55	18,556	1216.7	17,570	1252.29
USA	33,898	1505.73	30,643	1408.85	22,661	1149.53	17,515	1102.9	13,179	906.14
Netherlands	9918	423.60	9349	417.9	6236	312.39	4891	296.27	8650	584.05
Japan	6702	311.62	7413	351.94	7826	420.76	6434	399.41	8509	596.85
Saudi Arabia	7195	326.20	6636	306.60	7535	390.75	7441	474.34	7827	552.36
Germany	2808	121.36	4724	214.42	2720	142.55	2449	150.39	3278	229.44
Spain	3089	131.97	2384	108.95	2296	117.84	2140	139.27	2534	182.16
France	2963	127.78	2958	131.02	2916	154.37	1907	118.63	2135	154.33
Kuwait	1568	73.72	1329	63.28	1706	91.22	1658	107.19	2067	150.58
Belgium	2122	94.13	26.1	116.96	2597	135.2	2362	148.8	1978	136.17
UK	2813	118.47	2766	124.76	1780	90.59	1674	104.41	1825	124.93
Korea	2221	99.90	3193	147.4	2777	144.4	2271	140.048	1541	108.41
Singapore	1654	70.55	1490	65.97	1145	58.65	1199	76.85	1268	88.95
Qatar	709	30.69	781	35.69	797	42.5	843	54.31	1153	82.82
Greece	1284	57.86	1252	57.37	1000	51.33	770	47.07	1129	77.70
Turkey	703	30.08	782	35.19	797	38.77	482	28.05	861	53.29
Canada	862	34.17	793	33.91	449	20.89	361	21.37	677	42.65
Malaysia	897	38.29	707	30.8	953	48.67	648	40.35	603	41.77
Trinidad	508	21.54	588	25.56	524	25.60	464	27.76	531	34.20
Israel	713	32.09	668	31.6	734	37.34	316	19.94	461	33.58
Iran	1181	50.59	927	41.52	1133	60.71	687	46.09	442	31.75
Italy	865	35.82	1201	53.5	839	38.85	756	42.06	383	20.79
Jordan	630	31.38	617	31.87	363	20.31	660	41.68	267	19.62
Algeria	1531	52.06	1356	52.67	602	27.59	685	39.26	60	3.56
Others	10,536	450.93	9890	440.26	4123	367.73	5133	291.6	5424	362.59
Total Ext	1,14,791	5058.73	1,18,952	5432.8	96,346	4952.1	82,302	5168.78	84,352	5870.97

Source: Director of Cashew and Coco Development 2017-18.

Since Maharashtra accounts for one-third of the country's total cashew production, of which a significant proportion (over 60 per cent) is produced in the Ratnagiri and Sindhudurg districts, it is reasonable to assume that cashew from these districts accounts for a sizeable share in country's export to other countries.

Hence, cashew grown in Ratnagiri and Sindhudurg clearly has a huge demand in the international market. But it is not directly exported from the districts. The Jawaharlal Nehru Port Trust, Navi



Mumbai, is 300 km away from Ratnagiri. The sources of transportation to the port are the Konkan railway and the Mumbai–Goa highway.

The Government of Maharashtra is taking several initiatives to promote the export of mangoes produced in the two districts, and has announced that the districts of Ratnagiri, Sindhudurg, Thane, and Raigad in the Konkan region would comprise the Agri-export Zone for Alphonso mangoes. Since both cashews and mangoes are major cash crops in the Ratnagiri and Sindhudurg districts, the cashew growers are demanding some initiatives for the promotion of cashew kernel also. One of these suggestions is the setting up of a regional office or a branch of the Cashew Export Promotion Council in Ratnagiri district.

There are about 800 cashew processing units in the Ratnagiri and Sindhudurg districts. Most of these are small labour-intensive units that are capable of generating significant employment opportunities, especially for rural women.

IV.2. Mangoes

In Maharashtra, the Konkan region is the major contributor of mango cultivation. The region is characterised by a humid, sub–tropical and monsoonal climate, which is highly favourable for growing plantation crops. Ratnagiri is one of the major mango cultivating districts in Maharashtra. Mango is cultivated on a large scale in the Ratnagiri, Guhagar, Lanja, and Rajapur blocks of the district. The total number of registered farmers (registered under the Agriculture Technology Management Agency or ATMA) in the district is 588 (Table IV.2). However, the numbers would be much higher if the unregistered farmers are also included, as both the cultivated area and production figures are highest for mango cultivation in the district (Figure IV.1).

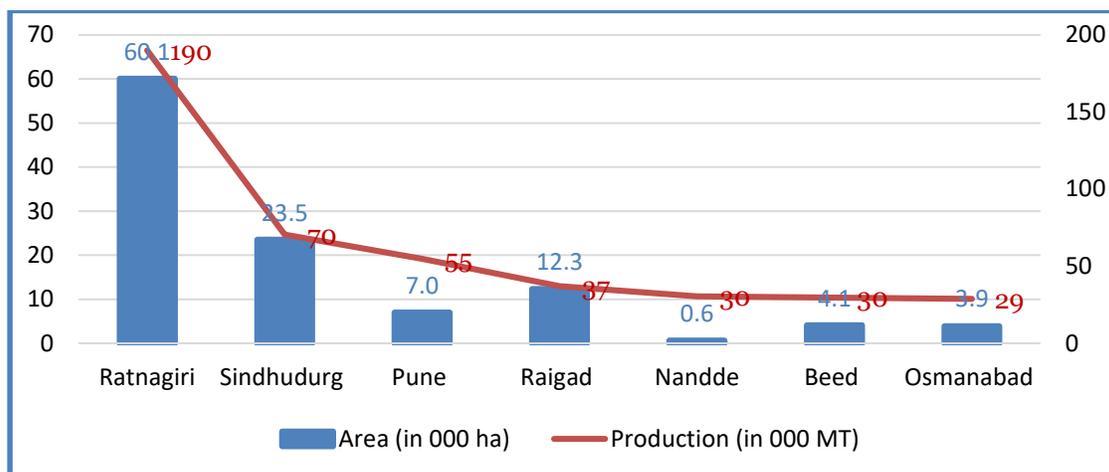
TABLE IV. 2: DISTRICT-WISE REGISTERED MANGO FARMERS (2019-20)

S. No	District	Number of Registered Farmers
1	Thane	4336
2	Palghar	50
3	Raigad	114
4	Ratnagiri	588
5	Sindhudurg	2082
Total (Konkan Region)		7170

Source: District Superintendent Agricultural Officer, Ratnagiri.



Figure IV.1: Area and Production of Mangoes in the Districts of Maharashtra, 2016-17



Source: Horticulture Statistics at a Glance, 2018.

In October 2018, the Alphonso mango from Sindhudurg and Ratnagiri received the Geographical Indication tag, certifying that it has a specific geographical origin and possesses qualities or reputation that can be attributed to its geographical origin.

India is a prominent exporter of fresh mangoes to the world. According to the Agriculture and Processed Food Products Export Development Authority (APEDA), the country exported 46510.27 MT of fresh mangoes to the world worth Rs 406.45 crores or USD 60.26 million during the year 2018-19. The major export destinations of India's mango are the UAE, UK, Oman, Qatar, and USA (APEDA, 2018-19).

Despite India being home to about 1000 varieties of mangoes, only a few varieties are commercially cultivated throughout the country. The important commercial varieties of mangoes produced in Maharashtra are Alphonso, Kesar, and Pairi (APEDA).

According to the latest APEDA data (2018-19), Maharashtra is the highest exporter of fresh mangoes and mango pulp (Table IV.3). Table IV.4 presents details about the international market for Indian mangoes.



TABLE IV.3: EXPORT OF FRESH MANGOES AND MANGO PULP IN 2018-19 (BY STATES IN DESCENDING ORDER OF THE VALUE OF EXPORTS)

State	Fresh Mangoes			State	Mango Pulp		
	Quantity in MT	Rs Lacs	US\$ Million		Quantity in MT	Rs Lacs	US\$ Million
Maharashtra	29345.58	31390.14	46.68	Tamil Nadu	70334.01	36241.36	51.75
West Bengal	5697.9	2201.7	3.18	Maharashtra	21068.11	16759.23	23.98
Kerala	1833.97	2120.1	3.1	Gujarat	11272.06	11093.31	15.83
Gujarat	651.78	957.97	1.42	Karnataka	1011.36	722.59	1.04
Karnataka	922.24	840.81	1.24	Bihar	1324.64	464.37	0.67
Telangana	702.72	755.98	1.12	Uttar Pradesh	319.66	173.38	0.25
Tamil Nadu	770.52	738.38	1.09	West Bengal	251.52	112.44	0.16
Uttar Pradesh	1917.22	509.8	0.75	Andhra Pradesh	177	107.06	0.15
Delhi	249.07	345.31	0.51	Telangana	16.42	30.1	0.04
Bihar	908.41	314.04	0.46	Delhi	22.47	25.12	0.04
Odisha	2418.54	252.94	0.37	Sikkim	36.09	13.55	0.02
Uttarakhand	956.56	165.73	0.24	Kerala	20.15	13.05	0.02
Goa	75.21	39.14	0.06	Rajasthan	4.94	8.16	0.01
Andhra Pradesh	5.4	7.69	0.01	Odisha	9.15	1.37	0
Sikkim	47.9	6.14	0.01	Uttarakhand	4.4	1.08	0
Assam	5.8	2.34	0	Madhya Pradesh	1	0.48	0
Rajasthan	1.38	1.33	0	Haryana	0.23	0.37	0
Total	46,510.20	40,649.54	60.24	Total	1,05,873.21	65,767.02	93.96

Source: APEDA.



TABLE IV.4: EXPORT OF FRESH MANGOES FROM INDIA

Country	2017-18			2018-19		
	Quantity in MT	Rs. Lacs	US\$ Million	Quantity in MT	Rs. Lacs	US\$ Million
UAE	23,542.53	18,458.37	28.61	16,398.18	15,336.16	22.78
UK	3,728.45	4,798.33	7.44	4,014.06	6,195.91	9.21
Oman	2,230.53	1,587.93	2.46	3,618.13	3,004.48	4.47
Qatar	2,321.89	1,981.35	3.07	2,877.58	2,838.83	4.2
USA	800.63	1,772.68	2.75	951.34	2,442.00	3.63
Bangladesh	168	42.1	0.07	4,813.62	1,972.66	2.85
Kuwait	1,300.31	1,630.70	2.53	1,057.03	1,564.34	2.33
Saudi Arabia	2,670.50	2,198.71	3.41	1,638.53	1,407.07	2.09
Nepal	7,878.09	1,512.12	2.35	6,975.07	1,353.85	2
Singapore	840.62	818.62	1.27	1,125.44	1,042.29	1.54
Bahrain Islands	1,288.28	908	1.41	765.08	784.2	1.17
Canada	526.23	478.23	0.74	516.23	567.27	0.84
France	224.01	250.13	0.39	201.46	266.19	0.39
Hong Kong	192.18	200.07	0.31	193.87	232	0.34
Germany	135.5	119.3	0.19	184.44	230.38	0.34
Italy	171.88	199.06	0.31	185.22	208.05	0.31
Switzerland	114.65	156.41	0.24	89.05	117.93	0.18
New Zealand	32.36	87.11	0.14	51.16	115.62	0.17
Malaysia	222.03	167.4	0.26	138.64	115.2	0.17
Maldives	53.96	47.27	0.07	110.55	106.12	0.16
Japan	77.72	115.31	0.18	59.09	101.62	0.15
Australia	66.19	140.15	0.22	50.53	93.27	0.14
Iran	64.47	72.1	0.11	93.89	92.87	0.14
Poland	0.72	1.36	0	111	90.13	0.13
Korean Republic	58.83	107.99	0.17	44.75	86.63	0.13
Russia	20.2	35.63	0.06	38.29	72.59	0.11
Norway	59.16	65.72	0.1	40.12	50.1	0.07
Netherlands	21.47	35.41	0.05	35.85	40.34	0.06
Brunei	16.93	21.83	0.03	22.31	37.41	0.06
Sweden	14.39	15.67	0.02	25.79	33.27	0.05
Mauritius	6.98	11.32	0.02	8.42	12.86	0.02
Bhutan	0	0	0	47.9	6.14	0.01
Tanzanian Republic	2.09	2.77	0	4.96	4.96	0.01
Denmark	2.3	3.99	0.01	3.21	3.79	0.01
Austria	0.02	0.01	0	2.65	3.32	0
Belgium	5.18	8.3	0.01	3.02	3.06	0
Turkey	1.55	2.42	0	1.32	2.71	0
People's Republic of China	1.64	2.69	0	1.85	2.49	0
Romania	0	0	0	1.1	2.38	0
Kazakhstan	0.41	0.84	0	3.25	2.29	0
Thailand	0.33	0.51	0	0.75	1.28	0
Spain	55.18	24.18	0.04	1.22	1.19	0
Total	49,180.46	38,234.02	59.28	46,510.27		40,649.55

Source: APEDA.⁸

⁸ https://agriexchange.apeda.gov.in/index/Product_description_32headChart.aspx?gcode=0204



Interactions with stakeholder’s during Phase I of the Study revealed that the “export potential of mango is recognised but there is a lack of skills and knowledge regarding the international food standards and specifications. Therefore, people from the district concentrate mainly on the domestic market. Support in terms of training and educating the people is strongly recommended.”

The mangoes grown in Ratnagiri have a huge demand in the international market, but they are not directly exported from the districts. The Jawaharlal Nehru Port Trust, Navi Mumbai, is 300 km away from Ratnagiri. The sources of transportation to the port are the Konkan Railway and the Mumbai–Goa highway.

In Ratnagiri, there are lots of mango processing units, of which Exotic Fruit Pvt Ltd is 100 per cent export-oriented. . During an interaction with the General Manager of Exotic Fruit Pvt Ltd, Mr Baheti mentioned that they were facing problems in terms of getting good quality mangoes from the farmers because of the lack of transportation facilities and the involvement of middlemen. He recommended a structural change with regard to organising of mango farmers and exporting the products directly to the international market.

It was highlighted in the second review meeting, that under the central government scheme of Promotion of Farmer Producer Organizations (FPOs), the requirements of capacity building activities for GI tagging can be met, for which, NABARD has signed an MoU with APEDA, which together with the FPOs promoted in the districts will do the training for post vegetational GI requirements. There are already four FPOs in both the districts for cashew and mango. For mango, APEDA is planning to promote Alfonso mango and capacity building programmes in entire Alfonso cluster areas, with the help of technical institutions, research stations and state agriculture department. It also includes the idea of promoting GI products outside the country and necessary work to be done in terms of important packaging standard, variety specific protocol etc. It was encouraged that the different coastal brand growers to take the help of Food Safety and Standards Authority of India (FSSAI) in order to get exporter’s licence from APEDA.

In order to boost the export potential of the district, organic certification should be promoted. This will enhance the export potential as well as avoid the use of pesticides altogether.

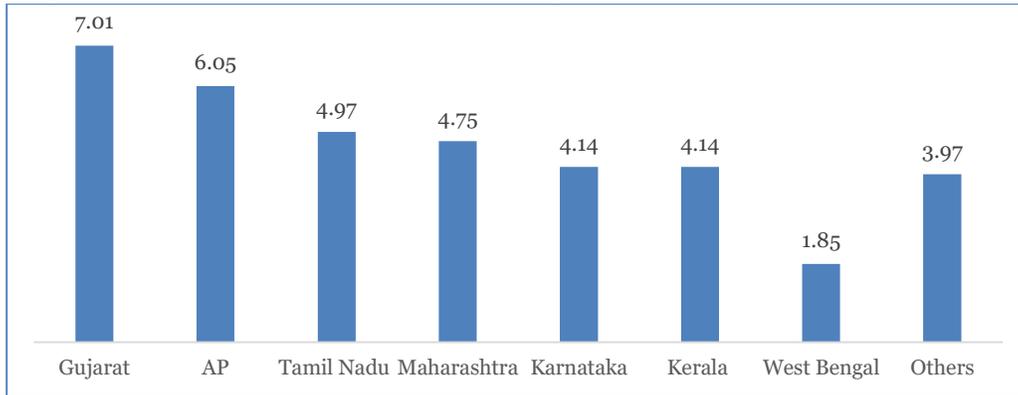
The Government of Maharashtra is taking several initiatives to promote the export of mangoes produced in the two districts, and has announced that the Ratnagiri, Sindhudurg, Thane, and Raigad districts of the Konkan region are part of the Agri-export Zone for Alphonso mangoes.

IV.3. Fisheries

Maharashtra is the fourth largest marine fish producing State in the country. As of 2017-18, Maharashtra produced 4.75 lakh tonnes of marine fish. Gujarat, with a production of 7.01 lakh tonnes, is the largest marine fish producing State in India (Figure IV.2).



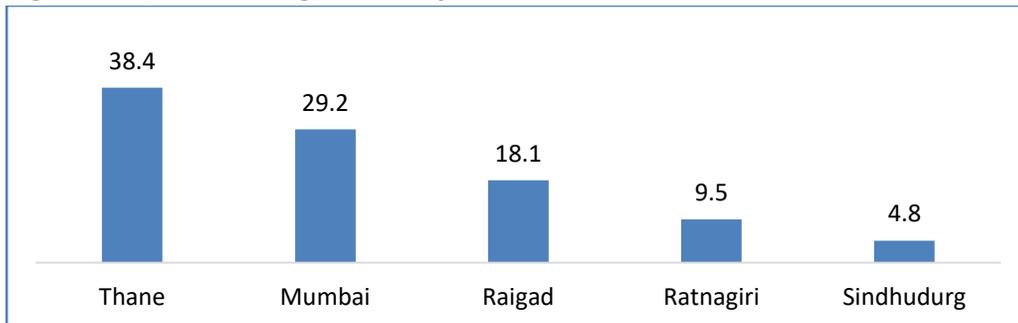
Figure IV.2: Marine Fish Production by States (in Lakh Tonnes), 2017-18



Source: Department of Fisheries, Maharashtra.

Ratnagiri district is one of the most important maritime districts of Maharashtra with its coastal belt spanning about 237 km. The fishing industry from Ratnagiri is solely dependent upon exploitation of its marine resources. About 70,000 people are engaged in fishing activity in the district. Although there is no specific district level data on employment and production of fisheries in Ratnagiri, it is well known that this sector is the backbone of the district conomy. The main fisheries blocks in the district are Ratnagiri, Raipur, Dapoli, and Guhagar. There are 98 fisher villages along the coast, and 48 fish landing centres in the Ratnagiri district.

Figure IV.3: Percentage Share of Maharashtra Districts in Fish Production



Source: Department of Fisheries, Maharashtra.

Although there is no specific district-level data on employment and production of fisheries in Ratnagiri, the Department of Fisheries, Maharashtra, reports district-wise data of marine fish production but the data is available only for the years 2005 to 2009.

However, the available data indicates the district’s contribution to fish production in the State. Thane and Mumbai lead among the five fish-producing districts, with a combined share of almost 70 per cent. Ratnagiri accounts for another about 10 per cent and Sindhudurg contributes 5 per



cent (Figure IV.3). Nonetheless, it is well-known that this sector is the backbone of the district economy.

As there is no direct export route from Ratnagiri, the fisheries sector mainly depends on Mumbai and Goa for meeting its export targets. The key export destinations of marine products in India are Japan, USA, the European Union, and China (Table IV.5).

**TABLE IV.5: EXPORT DESTINATION OF INDIAN MARINE PRODUCTS
(QUANTITY IN TONNES, VALUE IN RS CRORE)**

Market		2015-16	2016-17	2017-18	2018-19
Japan	Quantity	75,393	69,039	85,651	84,080
	Value	2611	2621	2846	2920
USA	Quantity	1,53,695	1,88,617	2,47,780	2,81,913
	Value	8633	11,482	14,770	16,220
European Union	Quantity	1,86,349	1,89,833	1,90,314	1,65,571
	Value	6311	6892	7116	6256
China	Quantity	50,042	45,443	49,701	2,25,519
	Value	1432	1342	1448	5673
South-East Asia	Quantity	3,28,900	4,84,819	6,16,707	4,46,966
	Value	7499	11,462	14,250	10,561
Middle East	Quantity	53,905	52,973	62,220	60,232
	Value	1794	1831	1849	1979
Others	Quantity	97,609	1,04,224	1,24,871	1,28,278
	Value	2140	2241	2827	2980
Total	Quantity	9,45,892	11,34,948	13,77,244	13,92,559
	Value	30,421	37,871	45,107	46,589

Source: MPEDA.⁹

IV.4. Crab Farming

Various initiatives have been taken in the past to promote crab cultivation and to ensure that the production is large enough to meet both the export as well as domestic demand. According to the Marine Products Exports Development Authority (MPEDA), mud crabs are available in the seven Konkan districts of Maharashtra, viz., Mumbai city, Mumbai suburban, Palghar, Thane, Raigad, Ratnagiri and Sindhudurg. These coastal districts stretch across 720 km of Maharashtra's coastline. Due to informal nature of this activity, the statistics on crab production in Konkan are not available across the districts and *talukas*.

⁹ https://www.mpeda.gov.in/MPEDA/marine_products_exports.php#



The wild crabs are processed for export or consumed locally. Like all the other export produce of Sindhudurg and Ratnagiri, crabs are also exported mainly from Mumbai. On an average, 300-400 kg of crabs are sent to Mumbai daily from the districts and some amount of crabs are also sent to the adjacent State of Goa.

Despite having high potential and expected to be highly beneficial for local fishermen, crab culture is not separately covered under any State or Central Government scheme. Under the Blue Revolution Integrated National Fisheries Action Plan, there is a mention of a 100 hectare grow-out pond for mud crabs as one of the specific actions for Maharashtra State. The guidelines for the National Fisheries Development Board (NFDB) scheme also mention about need-based financial assistance for the development of innovative and new technologies.

In Andhra Pradesh, a project under UNFCCC national adaptation fund for mangrove forest restoration, which is at the completion stage, gives very good results. It was suggested in the review meeting that the same line of project for mangrove-based crab culture under national adaptation fund may be implemented, which will be beneficial for climate change and environment also.

However, the NCAER study team's interaction with the district administration and field survey in different *talukas* did not find any evidence of this action so far. Moreover, the *taluka* officers did not even have any knowledge about this.



V. Providing Handholding Support to the District for Implementation of the Project

This chapter briefly presents the important activities undertaken for providing handholding support to the district. For this, the study team was in regular contact with the different departments of the District Administration Office.

Following is a delineation of the key activities undertaken as part of the handholding exercise:

- To start with, a meeting was held with Mr P.V. Shurve, Assistant Commissioner, Fisheries Department, Ratnagiri, to discuss different fisheries-related schemes and other actions needed for the district. A meeting was also held with Ms Mamta Hatkar, District Planning Officer of the neighbouring district of Sindhudurg to discuss details of the development area, sub-regions where different schemes are being implemented, and the names of different projects in both the Ratnagiri and Sindhudurg districts.
- Consultations were also held with the following relevant stakeholders and departments representing the State government and private establishments:
 - The Agriculture Department;
 - The Fisheries Department;
 - Office of the Maharashtra Tourism Development Corporation (MTDC) in Malvan and Oras;
 - The District Industries Centre; and
 - Different research stations, including the Cashew Research Centre, Regional Fruit Research Station, and Mango Research Station.
- The study team had interactions with the above departments during both Phase I and Phase II of the study.
- The recommendations of Phase I were mapped with the existing schemes to ensure their implementation. . This mapping is detailed in Table II.1.
- The local consultant visited each *taluka* (block) of the district to assess the regional differences pertaining to problems in each of the identified areas as well as the schemes active in the different *talukas*. The details of the *taluka* survey are given in Chapter IV of this report.



- Various awareness programmes were also conducted as part of the skill development initiatives in the district. The details of the programmes have been given in Chapter V of the report.

Table V.1 presents the measures for handholding and interventions undertaken so far towards implementation of the proposed recommendations. The table also outlines the justification for proposing these recommendations and the geographical locations or sites for the promotion of growth activities.

TABLE V.1: INTERVENTIONS FOR IMPLEMENTATION OF RECOMMENDATIONS

NCAER Recommendation	Justification	Location for Intervention	Interventions towards Implementation
Promoting the Ultra-High-Density Plantation (UHDP) programme	There is high local and global demand for the Alphonso mango of the Ratnagiri and neighbouring Sindhudurg districts. Therefore, increasing its production will be extremely beneficial for the district's economy. Cultivation of the Alphonso mango will also be beneficial for cashew and coconut farmers.	Across the district, but the Mandangad, Lanja and Ratnagiri talukas will especially be benefited.	An awareness programme on UHDP was conducted in the Ratnagiri Block of Ratnagiri district on 14 February 2020.
Setting up the Cashew Export Promotion Council (CEPC) in Ratnagiri or Sindhudurg	Both the districts have abundant cashew produce for the overseas market, but it is not being optimally utilised. The setting up of the CEPC is expected to help the districts in fully utilising their cashew exporting potential. According to the existing processing units, the export potential of the districts' locally produced cashew is much more than that of Kerala, where the CEPC is currently located. It has also been established through secondary sources (Horticulture Statistics, 2017-18) that Maharashtra is India's top cashew producer, accounting for about 40 per cent of the total cashew produced by the top five cashew-producing States, viz., Maharashtra, Andhra Pradesh, Odisha, Karnataka and Kerala. Kerala accounts for about 13	Across the district and the neighbouring district of Sindhudurg	A letter has been sent to DPIIT, MoCI, requesting it to look into this matter and facilitate setting up of the CEPC in either Ratnagiri or Sindhudurg, so that both the districts can avail of its benefits to the maximum.



NCAER Recommendation	Justification	Location for Intervention	Interventions towards Implementation
	<p>per cent of the same. This has also been established in “A Study on the Export Potential of Cashew from India, with special reference to Kerala”, undertaken by Chandrasekaran and Jeyakumar in 2014. Further, in Maharashtra, Sindhudurg and Ratnagiri are the two highest cashew-producing districts. Despite this, both the districts have not been able to fully explore the trade and export potential of cashew. There are schemes and benefits which the processing units could benefit from, if the demand for setting up the CEPC branch in Maharashtra is fulfilled. This will also help simplify the paperwork of the processing unit for export.</p>		
<p>Spreading awareness and re-evaluation for different sub-schemes under the Blue Revolution scheme</p>	<p>All the recommendations made for the fisheries sector can be categorised under any of the sub-schemes of the Blue Revolution scheme. However, the <i>taluka</i> visit showed lots of shortcomings on the part of both the beneficiaries and the implementation authorities.</p>	<p>The fisheries sector is extremely important for the economic development of the district, and the Ratnagiri, Guhagar, and Dapoli <i>talukas</i> will especially be benefited.</p>	<p>Four awareness programmes were conducted in 2020 under the Blue Revolution scheme in different parts of the Ratnagiri district, including one in Kasarweli on 26th February, in Pawadi on 27th February, and in the Sakhartar and Mirkadwada landing centres on 28th February. Considering the economic importance of the fisheries sector in Ratnagiri district, it is highly recommended that the Blue Revolution scheme be re-evaluated by a third party.</p>
<p>Setting up common infrastructure facilities for mango and cashew growers</p>	<p>The demand for building a common warehouse and cold storage facilities for cashew and mango in the Ratnagiri district was highlighted by many processing units and farmers during Phase I of the field survey.</p>	<p>The entire district will be benefited in the long run, but the poor farmers of the Mandangad, Lanja, and Ratnagiri blocks will be especially benefited.</p>	<p>Field visits in different <i>talukas</i> of the district revealed that the Rashtriya Krishi Vikas Yojana is active in the district. The demand for building a common warehouse and cold storage facilities for both cashews and mangoes in the Ratnagiri district can be facilitated under the said scheme. However, due to lots of</p>



NCAER Recommendation	Justification	Location for Intervention	Interventions towards Implementation
			<p>difficulties on both the implementation as well as the beneficiary sides, only a small number of people are reportedly deriving benefits from the scheme in terms of receiving subsidies on equipment like power tillers, power spreaders, and brush cutters.</p> <p>A request letter was sent to the DPIIT regarding the Rashtriya Krishi Vikas Yojana, specifically highlighting the “infrastructure and asset” component of the scheme, urging for fulfilment of the infrastructure requirement of the district for farmers.</p> <p>Other schemes which can benefit poor cashew and mango farmers are the <i>Fruit Crop Cultivation Scheme</i> and <i>Mission for Integrated Development of Horticulture</i>. The efficient implementation of both these schemes is, however, hindered by fragmentation of landholdings and out-migration of labourers. If some changes are made in the eligibility conditions, more farmers can possibly benefit from these schemes.</p> <p>Therefore, the schemes should be customised for the farmers of the district. For this purpose, it is suggested that the schemes should be properly examined and monitored by a third party.</p>
<p>Promotion of crab culture as a new and emerging area for economic growth</p>	<p>Crab cultivation is recommended in view of the demand in the export market. This will help establish a direct bridge between the local fishermen and crab collectors, on one hand, and buyers and processors, on the other hand. It will also enable enhancement of livelihoods of fishermen in</p>	<p>This would benefit all the coastal <i>talukas</i> of the entire Konkan region. However, it will especially benefit fishermen from the</p>	<p>Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Fisheries Sub-Centre (FSC), Wadamirya, Ratnagiri, has been undertaking extensive research on innovative crab rearing techniques for the local crab collectors of the entire Konkan region. A letter was thus sent to the DPIIT requesting for financial</p>



NCAER Recommendation	Justification	Location for Intervention	Interventions towards Implementation
	the coastal <i>talukas</i> of the district through crab rearing.	Ratnagiri, Guhagar, and Dapoli <i>talukas</i> .	support for promoting crab culture in the coastal districts of the Konkan region of Maharashtra.
Providing subsidy for cage farming as a new and emerging area for economic growth	Cage aquaculture, which is relatively new to India, can bring in new opportunities for optimising fish production, and also for developing new skills among fisher folk and entrepreneurs to help them enhance their earnings.	This would benefit all the coastal <i>talukas</i> of the Konkan region.	Presently, there is a scheme for cage farming in Sindhudurg, known as the <i>Subsidy of National Fisheries Development Board for Cage Farming</i> . This can also benefit the locals in the district if the regional characteristics of the district are carefully considered and integrated into the project.
Spreading awareness about the Geographical Indication (GI) tag	In October 2018, the Alphonso mango from Sindhudurg and Ratnagiri received the GI tag, certifying that it has a specific geographical origin and possesses qualities or reputation that can be attributed to this geographical origin. However, during the Phase I field visit, different government officials reported the prevalence of a lot of misunderstandings and lack of knowledge of the subject among mango farmers and processing units. The District Industries Centre advised the study team to promote GI awareness, which would benefit the entire district, in general, and farmers, in particular.	Across the district	An Awareness Programme on Mango Geographical Indication (GI) was planned on 20 March 2020. Mr Milind Joshi, Assistant General Manager, Maharashtra State Agricultural Marketing Board, Divisional Office, Alphonso Mango Export Facility Centre, APMC Campus, had agreed to organise the programme on behalf of NCAER. However, the programme was postponed due to the Coronavirus outbreak.

V.1. Skill Initiatives Undertaken in the District

Six training/awareness programmes have so far been undertaken in the district and some others are planned. These are described below.

Awareness Programme on UHDP

NCAER organised an awareness programme on UHDP on 14 February 2020. The programme was inaugurated by Dr Vaibhav Shinde, Officer in-charge, Regional Coconut Research Station, Bhatye,



Ratnagiri; Mr Vinod Hedage, Block Agriculture Officer, Ratnagiri; and Mr Vinay Joshi, Farmer, UHDP, and Chairman of the Guhagar Society. The main objective of the awareness programme was to encourage farmers to take the advantage of the newly developed UHDP technique. A total of 86 trainees attended the training programme. Mango and coconut farmers from all across the Ratnagiri district, especially from Rajapur, Sangameshwar, and Dapoli, participated in the awareness programme.

Dr Vaibhav Shinde delivered a lecture and explained the UHDP technique, including its importance and use in different crops, such as coconut, mango, and cashew nut. This was followed by a lecture by Mr Vinod Hedage on the benefits of different agriculture-related schemes for farmers. Mr Vinay Joshi described his first-hand experience of using the UHDP technique and urged farmers to visit his farm for any practical help.

During the feedback session, participants expressed satisfaction about the awareness programme and suggested that such programmes should be consistently organised and the institute should offer constant support to farmers. The programme ended with a valedictory function.



Photo 1: Registration of Farmers at the Awareness Programme on UHDP



Photo 2: Farmers being Welcomed at the UHDP Awareness Programme



Photos 3, 4, and 5: Lecture by Dr Vaibhav Shinde



List of Farmers Participating in the UHDP Awareness Programme			
S. No.	Name of the Farmer	Location	Contact No.
1.	Satyavan H. Pawaskar	Aarevare	9702837366
2.	Lakshmikant G. Bhute	Ratnagiri	9765094365
3.	Harshal G. Patil	Ratnagiri	9422441571
4.	Nilesh P. Kamble	Ratnagiri	9422811834
5.	Prajakata Sumit Shelake	Golap	9764473345
6.	Pandurang K. Koka	Chador	9860166129
7.	D.S. Pola	Golap	9689425483
8.	L.S. Kuntgal	Pali	9764345478
9.	Datrate G. Bhosale	Ratnagiri	7387108405
10.	Nilesh Jagtap	Ratnagiri	9414773600
11.	Anil Krushna Patil	Vaygani	9905702959
12.	Sachin Prakash Pawar	Velothi	9503759496
13.	Sanjay Dataram Harshe	Nevare	9834530668
14.	Rahul Ashok Chavan	Devul	9325313223
15.	T.R. Desle	Chafe	9420809813
16.	Parshuram M. Mhadam	Someshwar	94055098276
17.	Sanjiv Narayan Kokane	Ratnagiri	8605084245
18.	Aniket Gogate	Golap	9881209813
19.	Hemal Y. Phatak	Chichakhari	9545639715
20.	Sudhir S. Devalekar	Pawas	9923490319
21.	R.A. Vayala	Tarval	9527237175
22.	Sadashiv Chavan	Ratnagiri	9421016320
23.	Shrikrushna Padhe	Rajapur	9405041633
24.	Akshay Padhe	Rajapur	9421892746
25.	Rohit Dev	Rajapur	9405296492
26.	N.N. Thakare	Kurtde	9975379525
27.	Y.Y. Pawar	Merva	--
28.	S.V. Pawara	Harcheri	--
29.	Ratik Eknath Zore	Ratnagiri	9011935298
30.	Vikam Kadam	Dapoli	9209185002
31.	Ajay V. Marathe	Devgad	7776952164
32.	A.S. Pharate	Bhagavati Nagar	9405836447
33.	Jaganatha Keshav Pawar	Gavkhadi	8698251186
34.	Mukund Vaman Parajpe	Nevare	9579976732
35.	Sandeep Dattaram Tambe	Chandori	9325566287
36.	A. Rajendra Vichare	Varvade	9421231879
37.	Madhuri A. Digankar	Jakadevi	9421166533
38.	Sheleja Ravindra Prasade	Ratnagiri	9168600685
39.	Vijay Keshav Kurtdkar	Ratnagiri	9423290117



List of Farmers Participating in the UHDP Awareness Programme			
S. No.	Name of the Farmer	Location	Contact No.
40.	Prakash Shashikant Limaye	Tonde	9404901850
41.	Sunil Chandrakant Shivalkar	Mandavi	8888485631
42.	Ratnakar Kashinath Kambale	Chandor	7875155135
43.	Firoj Pawaskar	Nayari, Sangameshwar	9404881434
44.	Suhas Sahstrabuthe	Kelathe Ratnagiri	9420526496
45.	Sharad Nagvekar	Nachane	9420052525
46.	Sanjay Kulkarni	Nachane	9420054200
47.	Sandesh Khatavakar	Ratnagiri	9423877566
48.	Sachin Bhimrav Godase	Varvade	9075839550
49.	Sumit Sureshrav Mahale	Varad	9420678208
50.	Vinayak Sitaram Avare	Malgund	9421187980
51.	Raghunath Kondiba	Kapadmav	9422441729
52.	S.S. Bandve	Ratnagiri	9412469079
53.	Mukund Lad	Ratnagiri	9423829630
54.	Kashinath Vaman Bapat	Kelshi	9422465828
55.	Madhav Vaman Bapat	Golap	9422470340
56.	K. Babu Todank	Golap	9420440898
57.	Satish Tyade	Ratnagiri	9405952481
58.	J.R. Juvale	Ratnagiri	9421143525
59.	S.K. Mayekar	Ratnagiri	9145521621
60.	Shabad Mukadum	Fansoap	9834252263
61.	Deepak Kale	Dorle	9145634145
62.	Vishal Jadhav	Pawas	9922887055
63.	N.K. Sakhare	Chador	9881054175
64.	Rajendra Kulathe	Taraval	9420051389
65.	S.B. Mane	Oti	9822365500
66.	P.G. Bhuvad	Nevare	9405098265
67.	V.S. Pale	Ratnagiri	8225249546
68.	Swanand Shankar Narvarekar	Ratnagiri	9421143203
69.	J.S. Kalekhe	Pali	7775816551
70.	Tushar Aagre	Natude	8007088972
71.	Mahesh Shevade	Chafe	7385737668
72.	Manohar Kepar	Merve	8554045136
73.	Ravindra Mahadev Salavi	Ratnagiri	9420159555
74.	Vijay Shinde	Chave	8898115697
75.	Nilesh Narayan Gonnare	Chave	8007717381
76.	R.S. Parvaghe	Ratnagiri	8459619153
77.	Asdity P. Nagvekar	Ratnagiri	9022945465
78.	Kiran Ramakant	Ratnagiri	9422636830



List of Farmers Participating in the UHDP Awareness Programme			
S. No.	Name of the Farmer	Location	Contact No.
79.	Gauresh R. Waingankar	Ratnagiri	9130778176
80.	Anil Nagavekar	Ratnagiri	9421233816
81.	Jayprakash R. Kamble	Sangameshwar	9860281800
82.	Pravin Kamble	Sangameshwar	7507210352
83.	N.S. Kamble	Sangameshwar	9623966476
84.	Abhijeet A. Narhv	Karavachiwadi	8983210983
85.	Prabhakar Keshav Aapte	Rajapur	8605694431
86.	Santosh Mahadev Dhamne	Lanja	9422499537

Awareness Programme for Farmers from Kasarweli Village on the *Blue Revolution Scheme for Fisheries*

NCAER organised an awareness programme on the *Blue Revolution Scheme for Fisheries* on 26 February 2020. The programme was inaugurated by Mr Suyesh Patil, an entrepreneur dealing in fisheries, and attended by 23 trainees. During the programme, Mr Patil explained the Blue Revolution and National Fisheries Development Board (NFDB) schemes to the trainees and provided guidelines on how to derive advantages from these schemes. The participants were mainly from the Kasarweli village of Ratnagiri district.

Photo 6: A Government of Maharashtra Book on the Blue Revolution Scheme for Fisheries.

Photos 7 and 8: The Blue Revolution and NFDB Schemes being explained to trainees from Kasarweli Village



Photo 6: A Government of Maharashtra Book on the Blue Revolution Scheme for Fisheries

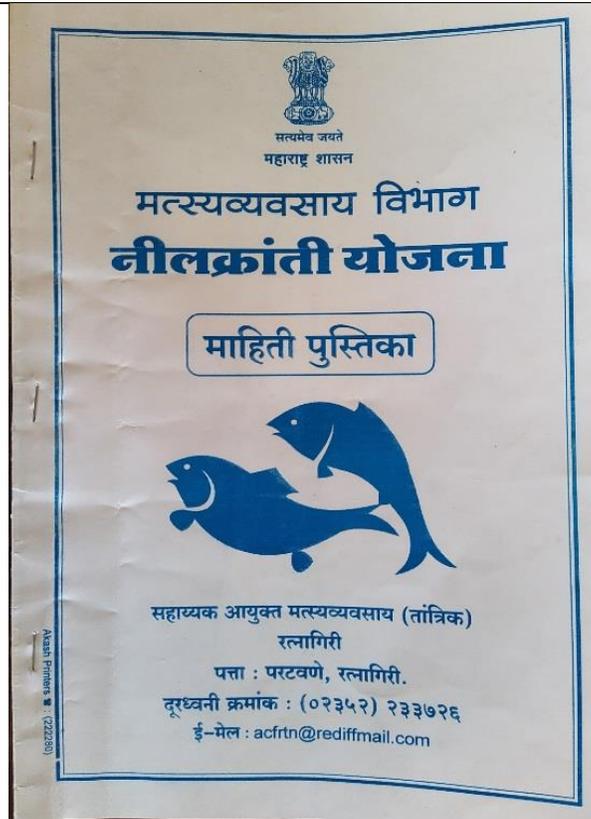


Photo 7: The Blue Revolution and NFDB Schemes being explained to trainees from Kasarweli Village



**List of Trainees Participating in the Awareness Programme at Kasarweli Village
for the Blue Revolution and NFDB Schemes**

S. No.	Name of the Trainee	Location	Contact No.
1.	Deepika Shirgaokar	Kasarweli	7798155920
2.	Manoj Lakade	Kasarweli	9158252130
3.	Aniket Dhanba	Kasarweli	8805328295
4.	Surekha Wasave	Kasarweli	--
5.	Mansvi Lakade	Kasarweli	750751858
6.	Sunil Gurav	Kasarweli	--
7.	Prakash Shirgaokar	Kasarweli	9890580130
8.	Diksha Vaingankar	Kasarweli	--
9.	Harsh Prabha Pawaskar	Kasarweli	7507266639
10.	Swati Sakhartar	Kasarweli	9673003289
11.	Utara Lakade	Kasarweli	9307693636
12.	Jayshankar Lakade	Kasarweli	9773518332
13.	Shubham Wasave	Kasarweli	9156189203
14.	Ashok Chichakar	Kasarweli	--
15.	Pralah Shirgaokar	Kasarweli	8584810715
16.	Anuja Shirgaokar	Kasarweli	7507390075
17.	Rutuja Shirgaokar	Kasarweli	9890580136
18.	Rajesh Natekar	Kasarweli	7798455795
19.	Purava Shirgaokar	Kasarweli	9890580136
20.	Durvakur Lakade	Kasarweli	7517050715
21.	Prajakata Shirgaokar	Kasarweli	9858090136
22.	Chinmaya Sakhartar	Kasarweli	9673003289
23.	Vaibhav Madhukar Shirgaokar	Kasarweli	8087330376



Awareness Programme for Trainees from Parwadi Village on the Blue Revolution Scheme for Fisheries

Another programme on the *Blue Revolution Scheme for Fisheries* was organised by NCAER on 27 February 2020. This programme was also inaugurated by the fisheries entrepreneur, Mr Suyesh Patil. A total of 24 trainees from Parwadi village of Ratnagiri district attended the training programme. They were imparted training on the fisheries and NFDB schemes and instructed how to take advantage of these schemes.

Photos 9 and 10: Trainees from Parwadi Village Attending the Awareness Programme on the Blue Revolution Scheme for Fisheries



**List of Trainees from Parwadi Village Participating in the Awareness Programme
for the Blue Revolution Scheme for Fisheries**

S. No.	Name of the Trainee	Date	27/02/2020
		Location	Contact No.
1.	Sunil Tukaram Pomenkar	Parwadi	9545029500
2.	Nayan Tushar Lakade	Parwadi	--
3.	Sarvesh Santosh Pomenkar	Sakhartar	7709411498
4.	Umesh Ganpat Wasave	Parwadi	--
5.	Janardhan Bhagya Pomenkar	Parwadi	7887490601
6.	Shubham Janardhan Pomenkar	Parwadi	--
7.	Tanuja Dattaram Wasave	Parwadi	9637338344
8.	Suchit Sunil Pamethakar	Parwadi	8390645962
9.	Sujit Nitin Sathatkar	Parwadi	--
10.	Siddhi Vinayak Buronkar	Parwadi	8554813852
11.	Sayali Prakash Pomenkar	Parwadi	--
12.	Mansi Arun Sakhartar	Parwadi	9673045334
13.	Nandani Panduran Pomenkar	Parwadi	7030403340
14.	Suhani Suryakant Pomenkar	Parwadi	9545778959
15.	Nanlani Nandkumar Dorlekar	Parwadi	--
16.	Shubhangi Bhikaji Burondakar	Parwadi	8180916936
17.	Sanjana Sanjay Pomenkar	Parwadi	7038551912
18.	Shubham Wasave	Kasarweli	9156189203
19.	Pawan Pomenkar	Parwadi	9822813304
20.	Ashok Dorlekar	Parwadi	7875901132
21.	Susmit Lakade	Parwadi	7709412770

Awareness Programme for Trainees from Ratnagiri's Sakhartar Landing Centre on the Blue Revolution Scheme for Fisheries

NCAER organised a second awareness programme on the *Blue Revolution Scheme for Fisheries* on 28 February 2020, at the Sakhartar Landing Centre of Ratnagiri, which was attended by 21 trainees. Mr Prashant Lokhande, MSc, Fisheries, explained the Blue Revolution and NFDB schemes to the trainees. The main objective of the programme was to make the fishermen aware of the schemes and their benefits.



Photos 11, 12, and 13: Awareness Programme on Blue Revolution Scheme for Fisheries being Attended by Trainees from Ratnagari's Sakhartar Landing Centre



List of Trainees from Ratnagiri's Sakhartar Landing Centre Participating in the Awareness Programme for the Blue Revolution Scheme for Fisheries

S. No.	Name of the Trainee	Location	Contact No.
1.	Anand Shirgaokar	Khalachiwadi	8806048554
2.	Yashawant Krushana Kokare	Dabhol (Guhagar)	9689238067
3.	Sunil Gurav	Nevare	9890580136
4.	Anant Shirgaokar	Sakhartar	8806048554
5.	Ajit Mahadev Lakade		9158252130
6.	Ramdas Vaigankar		7030464675
7.	Krushana Babu Kambale	Dahol (Guhagar)	
8.	Nilesh Mahadev Malak	Ganpatipule	9881745616
9.	Vijay Ramchandra Jadhav		7083547633
10.	Shashikant Bhikaji Barje	Kolther, Dapoli	9689215744
11.	Mangesh Nagesh Palshetakar	Kudali (Guhagar)	8888852022
12.	Ramakant Dorlekar	Gavade Ambere	
13.	Anant Kashinatha Bhuvand	Ganpatipule	9049570014
14.	Tulasidas Varvadkar	Sakhartar	9421614027
15.	Makarand Shirgaokar		8983620963
16.	Dhiraj Shirgaokar	Kasarweli	9673724996
17.	Parimal Shirgaokar	Kasarweli	8551054027
18.	Sukesh Pomenkar		9637964781
19.	Sidhant Shirgaokar	Kasarweli	7083347338
20.	Sagar Varavdakar		9158512070
21.	Subhash Lakade		9158149141

Awareness Programme for Trainees from Ratnagiri's Mirkadwada Landing Centre on the Blue Revolution Scheme for Fisheries

A third awareness programme on the *Blue Revolution Scheme for Fisheries* was organised on 28 February 2020. This programme was attended by 18 trainees from Ratnagiri's Mirkadwada Landing Centre. Mr Prashant Lokhande, MSc, Fisheries Science, explained the Blue Revolution and NFDB schemes to the trainees.



Photos 14, 15, 16, and 17: Awareness Programme on Blue Revolution Scheme for Fisheries being Attended by Trainees from Ratnagiri's Mirkadwada Landing Centres



List of Trainees from Ratnagiri's Mirkadwada Landing Centre Participating in the Awareness Programme for the Blue Revolution Scheme for Fisheries

S. No.	Name of the Trainee	Location	Contact No.
1.	Alfasj Dilavar Godand	Panganwadi	8149983375
2.	Sani Ramesh Rathod	Bhagavti	9158148852
3.	Sandeep Rathod	Killa	9637944752
4.	Tousif Akhatar Kazi	Pathanwadi	9970274905
5.	Tousif Siyaz Sayyad	Pathanwadi	8999717386
6.	Mohammad Patahan	Pathanwadi	8237009131
7.	Sahil Mujavak	Pathanwadi	9776964647
8.	Chetan Killekar	Platavane	9518525658
9.	Barkya B. Kolathakar	Bhagavati	9527103077
10.	Mangesh R. Herem	Bhagavati	7620438714
11.	Narayan K. Dhoke	Bhagavati	9403461902
12.	Nadeem S. Sayyad	Pathanwadi	9168900503
13.	Aruf Gezar		7798728676
14.	Sachin S. Kubal	Killa	7744967444
15.	Shankar S. Pomenkar	Bhagavati	
16.	Shrirang Tukaram Kubal	Bandar	9595076170
17.	Shubham Tanaji Patil	Bhagavati	9021010085
18.	Dattaram Chafekar		8554827576



VI. Documentation and Communication with Stakeholders

The District Administration and the key government departments of the district, like those of Agriculture, Horticulture, Fisheries, and Tourism, have been consulted on a regular basis throughout the study. The officials of these departments have been extremely cooperative through the course of the study. Besides, important inputs were received from the Regional Fruit Research Station, members of the Cashew Export Promotion Council, and also several farmers, fishermen, and crab cultivators.

These interactions helped the team in identifying the thrust areas of growth, the main constraints and their concerns during Phase I of the study and further interactions during Phase II helped the team in understanding the actual plans for intervention. Accordingly, some letters of recommendation have been written and submitted to the DPIIT for its kind action. These have been discussed in detail at other sections in this report.

The activities have been well-documented and are also discussed in this report. The developments pertaining to Ratnagiri district have consistently been communicated to the stakeholders in the district. The report for Phase I was released at a big event in Mumbai and was widely circulated among the key stakeholders. Similarly, the report for Phase II was discussed in detail with the district stakeholders, state representatives from relevant departments like APEDA and MPEDA and the DPIIT officials in the virtual conference held on 6th of Jan, 2021. The feedback obtained in this conference are also included in this report. The final report will be shared with all the stakeholders.



Appendix Tables – Baseline Statistics

TABLE A.1: GROSS DISTRICT VALUE ADDED – RATNAGIRI AND OVERALL KONKAN DIVISION

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
	GDVA at Current Prices (Rs Crore)							
Ratnagiri	13,842	15,728	18,172	22,238	21,795	25,405	28,117	28,567
KONKAN DIV.	4,36,186	4,96,236	5,59,740	6,21,626	6,75,474	7,37,076	8,19,619	9,04,733
	GDVA at Constant Prices (Rs Crore)							
Ratnagiri	13,842	14,688	15,750	18,411	17,935	19,949	21,452	21,519
KONKAN DIV.	4,36,186	4,65,990	4,93,990	5,38,372	5,78,164	6,22,673	6,66,095	7,09,747
	Per capita GDVA at Current Prices (Rs.)							
Ratnagiri	85,307	96,165	1,10,249	1,33,893	1,30,241	1,50,782	1,65,837	1,67,463
KONKAN DIV.	1,51,178	1,69,456	1,88,352	2,06,155	2,20,809	2,37,682	2,60,865	2,84,243
	Annual Growth (% , Year-on-year) - GDVA at Current Prices (Rs Crore)							
Ratnagiri		13.6	15.5	22.4	-2.0	16.6	10.7	1.6
KONKAN DIV.		13.8	12.8	11.1	8.7	9.1	11.2	10.4
	Annual Growth (% , Year-on-year) - GDVA at Constant Prices (Rs Crore)							
Ratnagiri		6.1	7.2	16.9	-2.6	11.2	7.5	0.3
KONKAN DIV.		6.8	6.0	9.0	7.4	7.7	7.0	6.6
	Annual Growth (% , Year-on-year) - Per capita GDVA at Current Prices (Rs)							
Ratnagiri		12.7	14.6	21.4	-2.7	15.8	10.0	1.0
KONKAN DIV.		12.1	11.2	9.5	7.1	7.6	9.8	9.0

Source: Economic Survey of Maharashtra, 2019-20 and Directorate of Economics and Statistics, Government. of Maharashtra.



TABLE A.2: DISTRICT-WISE NUMBER OF GODOWNS AVAILABLE, THEIR CAPACITY AND FAIR PRICE SHOPS

District	Available Godowns (up to December 2019)		Number of fair price shops (up to December 2019)
	Number	Capacity (MT)	
Mumbai	7	5,481	3,944
Thane	15	7,500	591
Palghar	21	8,900	1,082
Raigad	30	29,285	1,396
Ratnagiri	28	15,910	956
Sindhudurg	19	10,460	430
Nashik	31	17,700	2,609
Dhule	21	12,820	981
Nandurbar	22	11,000	1,061
Jalgaon	35	29,060	1,933
Ahmednagar	35	36,200	1,883
Pune	22	21,580	2,906
Satara	35	23,850	1,656
Sangli	30	19,930	1,357
Solapur	38	45,804	1,872
Kolhapur	22	17,550	1,572
Aurangabad	16	19,626	1,801
Jalna	11	16,900	1,279
Parbhani	18	10,430	1,451
Hingoli	10	10,340	796
Beed	34	30,960	1,964
Nanded	44	22,740	1,720
Osmanabad	23	17,700	1,074
Latur	25	21,740	1,347
Buldhana	33	14,080	1,710
Akola	19	13,240	965
Washim	18	10,620	871
Amravati	37	20,020	1,914
Yavatmal	32	20,260	1,881
Wardha	14	8,785	848
Nagpur	47	33,783	1,961
Bhandara	17	10,130	893
Gondia	13	12,210	998
Chandrapur	29	18,680	1,526
Gadchiroli	32	20,500	1,195
Maharashtra State	883	6,45,774	52,423

Source: Economic Survey of Maharashtra, 2019-20.



TABLE A.3: CASHEW STATISTICS—RATNAGIRI

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Area in ('000 Hectare)	90.72	91.03	91.34	92.46	97.04	102.40	106.42
Production (in '000 MT tons)	127.20	129.05	131.03	132.10	133.68	136.08	136.55
Productivity (Kg/Hectare)	1402.14	1417.63	1434.57	1428.79	1377.55	1328.91	1283.08
Employment	181440	182370	183300	186645	200406	216480	228540

Source: District Superintendent Agriculture Officer, Ratnagiri.

TABLE A.4: CASHEW STATISTICS—MAHARASHTRA

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Area in ('000 Hectare)	184.2	186.2	186.2	186.2	191.5	191.5
Production (in '000 MT Tonnes)	236.2	235.0	220.0	256.6	269.4	215.6
Productivity (kg/Hectare)	1282.3	1262.1	1181.5	1378.1	1407.4	1126.4

Source: Directorate of Cashew Nut and Cocoa Development, Ministry of Agriculture and Farmer's Welfare.

TABLE A.5: FISHERIES STATISTICS—RATNAGIRI (2012-13)

Block	Coastline in kms	Villages	Landing Centres
Mandangad	20	5	1
Dapoli	35	15	13
Guhagar	38	19	14
Ratnagiri	56	40	19
Rajapur	18	17	3
Total	167	96	50

Source: Comprehensive District Agriculture Plan (C-DAP), District Ratnagiri, 2012-13 to 2016-17.

*Note: According to the latest information, the numbers of fishing villages and fish landing centres are 98 and 48, respectively.



TABLE A.6: FISHERIES STATISTICS—MAHARASHTRA

Year	Inland		Marine		Total		Fish Seeds Produced
	Inland (000 Tons)	Growth Rate (%)	Marine (000 Tons)	Growth Rate (%)	Production (000 Tons)	Growth Rate (%)	In million fry
2004-05	130.25	4.10	417.77	-0.53	548.02	0.53	47.45
2005-06	135.20	3.80	445.34	6.60	580.54	5.93	85.40
2006-07	131.85	-2.48	464.09	4.21	595.94	2.65	549.73
2007-08	136.63	3.63	419.82	-9.54	556.45	-6.63	200.61
2008-09	127.14	-6.95	395.96	-5.68	523.10	-5.99	149.43
2009-10	134.59	5.86	415.77	5.00	550.36	5.21	188.90
2010-11	148.55	10.37	446.70	7.44	595.25	8.16	190.89
2011-12	145.11	-2.31	433.68	-2.91	578.79	-2.76	1396.89
2012-13	137.46	-5.27	448.91	3.51	586.37	1.31	94.52
2013-14	135.22	-1.62	467.46	4.13	602.68	2.78	187.50
2014-15	144.48	6.84	463.58	-0.83	608.07	0.89	65.18
2015-16	145.57	0.75	434.12	-6.35	579.69	-4.66	98.96
2016-17	200.17	37.50	462.75	6.59	662.91	14.35	189.55
2017-18	131.02	-34.55	474.99	2.65	606.012	-8.58	625.00
2018-19 (E)	144.21	10.07	500.96	5.47	645.17	6.46	1517.98

Source: State Fisheries Profile, Department of Fisheries.

TABLE A.7: FISHERY-RELATED INFRASTRUCTURE—RATNAGIRI

	Number
Ice Factories	18
Cold Storages	4
Freezing Plants	4
Processing Plants	4
Fish Meal Plants	6

Source: Marine Fisheries Census, 2010.



TABLE A.8: DISTRICT-WISE ESTIMATED ANNUAL MARINE FISH PRODUCTION OF MAHARASHTRA (IN MT)

	Thane	Mumbai Suburban	Mumbai City	Raigad	Ratnagiri	Sindhudurg	Maharashtra
2009-10	1.21.514	1,59,560		39,435	75,122	20,136	4,15,767
2010-11	1.37.701	1,43,157		46,919	95,590	23,336	4,46,703
2011-12	1.17.972	1,55,799		46,912	88,438	24,563	4,33,684
2012-13	1.23.792	70,227	98,471	41,984	87,690	26,749	4,48,913
2013-14	1.20.924	70,826	98,748	42,852	1,06,852	27,283	4,67,458
2014-15	1.04.700	66,077	1,14,957	41,249	1,15,042	21,560	4,63,585
2015-16	99.520	62,477	1,28,336	39,053	87,030	17,699	4,34,115
2016-17	97,802	65,334	1,37,349	41,514	98,443	22,305	4,62,747
2017-18	1,14,399	66,228	1,40,105	53,338	80,340	20,582	4,74,992
2018-19	99,461	63,575	1,52,557	58,847	73,738	19,054	4,67,232
2019-20	86,225	76,332	1,54,353	41,797	66,173	18,173	4,43,543

Source: Bage Saheb, Statistics In-charge at Commissioner of Fisheries, Mumbai, Maharashtra.

TABLE A.9: MANGO STATISTICS—RATNAGIRI

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Mango Production ('000 MT)	127.77	128.22	128.76	129.32	129.74	129.86	130.22
Employment	1,34,809	1,35,340	1,36,051	1,36,696	1,37,803	1,39,312	1,40,521

Source: District Superintendent Agricultural Officer.

TABLE A.10: NUMBER OF REGISTERED MANGO FARMERS

S. No.	District	Number of Registered Mango Farmers
1.	Thane	4336
2.	Palghar	50
3.	Raigad	114
4.	Ratnagiri	588
5.	Sindhudurg	2082
Total (Konkan Region)		7170

Source: District Superintendent Agricultural Officer.



TABLE A.11: AGRO-PROCESSING FACILITIES IN RATNAGIRI

Commodity	Processing Units	Functioning Units	Commodities Processed
Fruits	2127	1997	Mango, cashew, kokum
Fish	3	3	Fish, prawns
Bakery	14	14	Flour
Flour Products	5	5	Papad, coconut, etc.
Milk Products	5	5	Milk
Rice Mill	19	19	Paddy

Source: Comprehensive District Agriculture Plan, Ratnagiri, 2012-13 to 2016-17.

TABLE A.12: STORAGE FACILITIES IN RATNAGIRI

Name of Agency	Location of Facility	Commodities	Installed	Functioning
Maharashtra Warehousing Corporation	Ratnagiri	Grains	1 -Big Capacity (5000 MT)	1
Collector	Block HQ	Grains	20 Medium Capacity (2800 MT)	9
Cold Storage	Ratnagiri, Chiplun, Lanja, Sangameshwar	Milk	4	4

Source: Comprehensive District Agriculture Plan, Ratnagiri, 2012-13 to 2016-17.



Annexure 1

Record of Discussion of Review Meeting held through video conferencing with NCAER and other stakeholders of Ratnagiri and Sindhudurg district on 06-01-2021 to discuss District Development Plan Reports.

A presentation-cum-review meeting through video conferencing was held on 06th January 2021 at 03:00 PM under the Chairmanship of Shri Rajat Sachar (Principal Adviser) OEA, DPIIT to discuss the modalities of finalizing DDP Reports of both Ratnagiri and Sindhudurg Districts in Maharashtra, prepared by National Council of Applied Economic Research (NCAER), under the District Development Plan. Since the thrust areas, along with the recommendations and limitations and also the key stakeholders for both the districts are the same, a combined review meeting was proposed by NCAER. The list of participants of the meeting is annexed.

2. The Chairperson welcomed all the participants of the meeting and briefed about the objectives, mandate of the study and highlighted the progress made by NCAER. A presentation was made by Dr. Poonam Munjal of NCAER wherein she gave a brief background of the study and major recommendations for the thrust areas identified in the study. She briefly shared the findings of the project in the 1st Phase of the Development Plan Report- identifying 5 key sectors for the development of the district. These sectors are Cashew, Mango, Fisheries, Crab Farming and Tourism. She informed that during the phase 2, implementation and follow up action plan was the main focus.

3. The Report promulgated best practices in the thrust areas available in the country that could be used to replicate the success in these sectors. Detailed sector-wise discussion of the meeting is list as follows:

- 3.1 *Cashew and Mango* – These are the key products of cultivation, together constituting the largest (more than 50%) of Gross cropped area in both the districts. This owes mainly to the temperature, soil, rainfall and humidity of the region which are in favour of cashew and mango cultivation. World famous Alphonso variety of Mango is grown since many generations and have also received the GI tag in 2018. Similarly, Vengurla cashew also received GI tag. Maharashtra is the highest cashew producing state and within Maharashtra, over 70% of area under cashew cultivation is in Ratnagiri and Sindhudurg. The superior quality of both cashew and mango make them highly demanded products from both domestic and international market. For Cashew, the key recommendation is setting up of a branch of Cashew Export Processing Centre (CEPC), preferably in Ratnagiri. This will provide necessary liaison between cashew growers and foreign importers, fetch better prices to growers and hence increase their profitability. For Mango, key recommendation is to promote Ultra High Density Plantation (UHDP) in both the districts to increase productivity by many times so that farmers' income is enhanced.



- 3.2 *Fisheries* – Fishing is another main source of livelihood in the coastal blocks of both the districts. But there are infrastructural limitations. It was recommended that basic facilities be provided to fishermen at the landing points. Enough Effluent Treatment Plants should also be provided. These recommendations can be implemented through various schemes under Blue Revolution.
- 3.3 *Crab Farming* – Crab farming is an emerging area of growth, particularly in Sindhudurg. There is huge demand but not enough production. Open Pond crab cultivation also helps in mangrove protection and marine biodiversity conservation. An innovative technique called Vertical Crab Rearing System has been found to be extremely profitable and has many advantages over open pond crab rearing system. It was highlighted that crab rearing does not fall under any central or state government scheme. It is recommended that crab rearing should also be included in schemes on aqua-culture and need-based financial assistance should be provided to crab cultivators.
- 3.4 *Tourism* – Sindhudurg has been declared as Tourism District of Maharashtra since last many years. But due to lack of proper marketing strategies, infrastructural facilities and resistance from local communities, the district is still not popular among tourists, both from other states and international. Foreign tourist arrivals are almost negligible. It is recommended that proper fund allocation should be done towards tourism development and there should be best utilisation of these funds.
- 3.5 Further, districts’ export potential was highlighted in the presentation and issues related to effective implementation of various central and state schemes were discussed. It was recommended that since the local community are not much aware of these schemes, awareness programmes should be conducted. Some of the awareness programs were organised by NCAER during the Phase II of the study. It was also recommended that monitoring and evaluation of these schemes should be carried out by third party.

4 **Comments, observations and suggestions from the stakeholders and participants:**

- 4.1 Mr. Razak Ali, Deputy Director, MPEDA, stated that regarding the setting up of Crab Hatchery in Sindhudurg, the Detailed Project Report (DPR) has been submitted and it was realised that there is some budget constraint. Hence, 50% reduction in capacity was advised. Revised estimate has also been submitted and the proposal is under process.
- 4.2 Mr. Santosh Kolte, General Manager, DIC, Ratnagiri and Sindhudurg made few important points. He suggested that while only mango is considered under “One District One Product” for both the districts, but given the potential of cashew, it should also be considered as the key product for both districts. Also, as recommended by NCAER, training on packaging of mango for international market should be imparted. He also reinforced that CEPC should be set up in Ratnagiri. GI Tag awareness and training on packaging standards should be imparted. There are 3 products which have GI tag – Alphonso mango, Vengurla Cashew and kokum.
- 4.3 Smt. Manjulakshami, DM, Sindhudurg confirmed that the thrust areas are cashew, mango, fisheries and crab farming. She said that currently the practice is to sell the Alphonso mango,



packed in small boxes. There is need for some handholding in packaging according to international standards, to reach out to global market. She said that suggestion on VCRS is well taken and various efforts to promote the crab farming is going on. She agreed that the point on infrastructural limitations with regard to tourism is very correct but also added that two big projects are soon coming up. Two large hotels (one of which is Tata group) are being considered and an airport is also likely to be inaugurated in Sindhudurg on 23rd Jan. She mentioned that bamboo is also a potential area of growth, of which huge production and export is going on. She suggested that Bamboo should also be included in the report.

- 4.4 The CEO, Zilla Parishad, said that SHG groups are soon getting registered under Amazon which will help the farmers to reach out to market directly.
- 4.5 Dr. Tarun, Ministry of Fisheries and Animal Husbandry, GOI, said since there is no restriction to include crab farming under the Blue Revolution schemes, so Maharashtra Govt can feel free to include it in their schemes, as one of the priority areas. Also, state govt can submit proposal to set up hatchery.
- 4.6 Mr. Kalpesh Shinde, Senior Research Assistant (Fisheries Department) and Incharge, Crab Project. Wadamirya Ratnagiri, could not convey his concerns in the virtual meeting but later sent a mail to Dr. Poonam Munjal, expressing his concerns regarding Crab Farming. He said that the DM, Sindhudurg correctly mentioned that some projects on crab culture are going on but the crabs sent to Mumbai market are mainly captured from the creeks of Ratnagiri and Sindhudurg and not from the culture ponds. If culture ponds and culture in the controlled aquaculture system like VCRS are optimally used, then there is huge potential in crab production. He stated that the Wadamirya Crab Research Center is the only institute which is engaged in Fisheries Research, Education and Extension in Fisheries since last 45 years. Given their noteworthy contribution, it is requested that Financial assistance be provided, to uplift the economic wellbeing of fishermen community of Konkan region and Maharashtra State.
- 4.7 Ms Meenaxi Rawat, Economic Advisor, DPIIT congratulated NCAER for their work in the districts and also thanked all the participants. She requested the participants to submit their further observations to NCAER so that those can be incorporated in the Final Report. She said that recommendation on including cashew under ODOP will definitely be considered and will be forwarded to MoCI. DPIIT is also working on the marketing plan for GI products, which will soon be released

5 After detailed presentation and deliberations, following decisions were taken:

- It was decided that NCAER will incorporate all the comments and observations made by all different concerned stakeholders in the Final Report.
- It was also decided that the Final Reports will stress on clearly specifying the three key questions – “**What** are the recommendations”, “**Who** will implement them” and “**How** will these be implemented” in the report.

Meeting concluded with vote of thanks



List of Participants of presentation cum review meeting of the District Development Plan Report of Ratnagiri and Sindhudurg Districts held on 06th January 2021 at 03:00 PM

1. Shri. Rajat Sachar, Principal Adviser, OEA, DPIIT, Chairperson
2. Smt. Meenaxi Rawat, Economic Advisor, OEA, DPIIT
3. Shri Brijesh Kumar Patel, Assistant Director, DPIIT
4. Dr. Poonam Munjal, NCAER
5. Smt. K. Manjulekshmi, IAS, DM Sindhudurg
6. Dr. Hemant Vasekar IAS, C.E.O. Zilla Parishad Sindhudurg
7. Mr. Santosh P. Kotle, General Manager, DIC, Ratnagiri and Sindhudurg
8. Mr. Raju Badule, Assistant Commissioner Fisheries Dept. Sindhudurg/Ratnagiri
9. Mr. Milind Joshi, Assistant General Manager, APMC Campus, Ratnagiri
10. Mr. Deepak Mane, Regional officer, MTDC
11. Mr. Kalpesh Shinde, Senior Research Assistant, Incharge Crab Project. Wadamirya Ratnagiri
12. Mr. Razak Ali, Deputy Director, MPEDA (Mumbai)
13. Mr. Pawar, Assistant Director MPEDA (Mumbai)
14. Mr. R. Ravindra, Dy General manager APEDA (Mumbai)
15. Dr. B.N. Sawant, Assistant Research Director, Reg. Fruit Research Station, Vengurla
16. Dr. Bhaskar Patil,
17. Dr. Suvarna Deuskar
18. Mr. Hrushikesh Paranjape, Managing Director, Paranjape Agro Products Pvt. Ltd., Ratnagiri
19. Mr. Manoj Kumar Vats,
20. Mr. Parshuram Gawade,
21. Mr. Satyavinayak V Mule
22. Mr. S. N. Mhetre, Superintendent Agriculture Officer , Sindhudurg
23. Mr. Sudhir Chavan, Agriculture Development Officer, Z.P. Sindhudurg
24. Dr. Nijara Deka, NCAER
25. Mr. Asrar Alam, NCAER
26. Mr. Rahat Hasan Khan, NCAER
27. Ms. Gargi Pal, NCAER



Annexure 2

Record of Discussion of The Review meeting under Chairmanship of Shri Suresh Prabhu through video conferencing with NCAER, concerned Government and non-government departments and other stakeholders of Ratnagiri and Sindhudurg district held on 28-06-2021 to discuss District Development Plan (DDP) Reports.

1. A presentation-cum-review meeting through video conferencing was held on 28th June 2021 at 4:00 PM under the Chairmanship of Shri Suresh Prabhu (Sherpa to G20 and G7 and Ex-Minister of Commerce & Industry; Railways and Civil Aviation, Government of India) to discuss the implementation plan outlined in District Development Plans (DDPs) of Sindhudurg and Ratnagiri districts, prepared by National Council of Applied Economic Research (NCAER). The list of participants of the meeting is annexed.

2. Shri Rajat Sachar, Principal Advisor, Office of the Economic Adviser welcomed all the participants and briefed about the objectives and mandate of the meeting and highlighted the key findings of the reports prepared by NCAER. Thereafter, Shri Suresh Prabhu made his opening comments. Shri Prabhu, explained how the study was initiated keeping the bottom-up approach in mind for the overall accelerated economic growth of the country. This project is an opportunity to map how the different sectors and departments can work together for economic development. Mentioning the Trickle-down effect of development, Shri Prabhu said that by working on the potential areas, the people of the country will finally get benefited. Among others, he lauded the work done by Konkan Railway, Port Sector and Skill Department for development of the Konkan region. The introductory remarks and comments were followed by remarks from Dr Anil Sharma, Director General of NCAER. A brief presentation was made by Dr. Poonam Munjal of NCAER wherein she gave a brief background of the study and major recommendations for the thrust areas identified in the study. She briefly shared the findings of the project in Phase I of the District Development Plan Report- identifying 5 key sectors for the development of the two districts viz. Cashew, Mango, Fisheries, Crab Farming and Tourism. She informed that during Phase 2, implementation and follow up action plan was the main focus.

3. The Report promulgated best practices in the thrust areas available in the country that could be used to replicate the success in these sectors. Detailed sector-wise discussion with stakeholders at the meeting is as follows:

3.1 Dr. S. Kandan, Project Director, Rajiv Gandhi Centre for Aquaculture (RGCA), the research and development wing of Marine Products Export Development Authority (MPEDA) stated that they are ready with the required technology for Mud Crab hatchery to be implemented in Sindhudurg district, but are waiting for the state government approval. However, it was also mentioned that RGCA has already supplied more than 4.5 lakh seeds to different parts of Sindhudurg and also trained lots of people for this mud crab farming technology. Dr. Kandan also



mentioned that MPEDA is ready to serve for the development of Sindhudurg , by not only providing the mud crab technology but also seabass and other inland aquaculture.

3.2 Dr. M. Angamuthu, Chairman, Agricultural and Processed Food Export Development Authority (APEDA), talked about cashew and mango sector of the region. For mango he mentioned that APEDA is planning to promote Alfonso mango and capacity building programmes in entire Alfonso cluster areas, with the help of technical institutions, research stations and state agriculture department. He also mentioned the idea of promoting GI products outside the country and necessary work to be done in terms of important packaging standard, variety specific protocol etc. For cashew he encouraged different coastal brand growers to take the help of Food Safety and Standards Authority of India (FSSAI) in order to get exporter's licence from APEDA.

3.3 Dr. Shendhye, Additional collector Ratnagiri, highlighted that the discussion on plantation of coconut is not given due emphasis in the report. Since coir is a processed product of coconut and the coconut plantation as raw material should be encouraged.

3.4 Shri Goverdhan S. Rawat, General Manager, NABARD, made various important points for the overall development of both the districts. His first point was on fisheries infrastructure: NABARD, Government of India and Government of Maharashtra have already signed an MoU for fisheries infrastructure development. Govt. of Maharashtra is in the process of preparing the projects under this MoU. Therefore, Shri Rawat suggested the local fisheries department of both the districts to join in the state government's process of preparing projects for fisheries infrastructure development. Secondly, regarding warehousing and storage facilities for both cashew and mango, Shri Rawat suggested to explore the facilities that can be provided under the Government of India's scheme for processing-based clusters. Third, under the central government scheme of Promotion of Farmer Producer Organizations (FPOs), the requirements of capacity building activities for GI tagging can be met. He also mentioned that NABARD has signed an MoU with APEDA, which together with the FPOs promoted in the districts will do the training for post vegetational GI requirements. There are already four FPOs in both the districts for cashew and mango. Fourth, for pesticides improvement, he suggested that as in both the districts there is availability of naturally organic produce, the organic certification can be made to enhance the export potential and avoid the use of pesticides altogether. Fifth, regarding the problem of fragmentation of land holding, he suggested to keep the eligibility criteria at group level or for SHGs instead of individual farmers for various schemes. Lastly, regarding crab culture, he mentioned that in Andhra Pradesh, a project under UNFCCC national adaptation fund for mangrove forest restoration, which is at the completion stage, gives very good results. He suggested the same line of project for mangrove-based crab culture under national adaptation fund, which will be beneficial for climate change and environment also.

3.5 Representatives from Sindhudurg, Fisheries Department, pointed out that in Pradhan Mantri Matsya Sampada Yojana (PMMSY), crab is not included. If it is included, it will benefit the crab cultivators. Also pointed out the problems in Kolambi Prakalka for Prawn culture.



3.6 Mr. Rakesh Varma, Joint Secretary, Ministry of Tourism, GoI, suggested focusing on smaller destinations and tourism development to benefit the local community. Apart from employment generation, there are other focus areas like, encouraging home stays, bed and breakfast scheme, which do not need heavy investment but some capacity building and handholding initiatives. He suggested the state and local government should seriously work around the development of tourism facilities which can provide real experiences to the tourists.

3.7 Shri D Sathiyam, Secretary Spices Board, GoI, also mentioned the importance of including the coconut in the report. Also, he suggested that Kukam, which is a GI product of Sindhudurg district, should be included in the development plan of the district.

3.8 Mr. Satyavinayak Mule, district planning officer, Ratnagiri also stated requirement of focusing more on crab farming for both the districts. Here Dr. Poonam Munjal also mentioned that although there is no central scheme for promotion of crab culture, certain states, like Goa have their own crab promotion scheme, under which they provide financial assistance to crab cultivators.

3.9 Ms Deepti Srivastava, Director, Ministry of Skill Development and Entrepreneurship, Government of India, pointed out that district skill development plan initiatives are not included in the NCAER report. She suggested that better implementation of skill development initiatives can be possible if the NCAER report considers the district skill development plan. State Skill Development Mission, Maharashtra and Institute of Skill Development can support the initiatives.

3.10 Dr. V. K. Singh, Director, CRIDA-ICAI, pointed out the benefits of Climate Resilient Agriculture initiatives in Ratnagiri and suggested that these should be converged to the state and other government schemes for development.

4. After detailed presentation and deliberations, following decisions were taken:

a) DPIIT may write DO letters to the respective departments/ministries pertaining to thrust areas identified under the study.

b) Stakeholders may share their written comments with NCAER. NCAER may submit the final Reports of DDP incorporating the suggestions and observations made by stakeholders.

c) After the submission of final Reports by NCAER a steering committee may be formed consisting of representatives from NABARD, State Governments, Sindhudurg and Ratnagiri District Administration, DPIIT, ICAI, CII and others to facilitate follow-up action and implementation status of recommendations made in the Reports.

d) Another review meeting may be held after four weeks.

The Meeting concluded with a vote of thanks to the Chair.



List of Participants of the Review Meeting under Chairmanship of Shri Suresh Prabhu of the District Development Plan Report of Ratnagiri and Sindhudurg Districts held on 28th June 2021 at 04:00 PM

1. Shri Suresh Prabhu, Sherpa to G20 and G7 and Ex-Minister of Commerce & Industry;
Railways and Civil Aviation, Government of India, Chairperson
2. Shri. Rajat Sachar, Principal Adviser, OEA, DPIIT,
3. Smt. Meenaxi Rawat, Economic Advisor, OEA, DPIIT
4. Shri. Diwakar Nath Mishra, Joint Secretary, Export Promotion (Marine Product), Ministry of
Commerce and Industry
5. Smt. Rubina Ali, Joint Secretary, Ministry of Civil Aviation, GoI
6. Dr. M. Angamuthu, Chairman, Agricultural and Processed Food Export Development
Authority (APEDA)
7. Shri. Rakesh Kumar Verma, Joint Secretary, Ministry of Tourism.
8. Shri. Sanjay Gupta, Chairman & Managing Director, Konkan Railway Corporation Limited
9. Shri. D Sathiyam, Secretary Spices Board, GoI
10. Smt. Deepti Srivastava, Director, Ministry of Skill Development and Entrepreneurship,
Government of India
11. Dr. S. Kandan, MPEDA
12. Shri. Upendra Hendye, Regional Manager, Konkan Railway
13. Shri. Upendra Shendye, Additional Collector, Ratnagiri District
14. Representative from Divisional Forest Office, Chiplun, Ratnagiri
15. Dr. Anil Sharma, Director General, NCAER
16. Shri. Goverdhan S. Rawat, General Manager, NABARD
17. Shri. Brijesh Kumar Patel, Assistant Director, DPIIT
18. Dr. Poonam Munjal, NCAER
19. Shri. Satyavinayak Mule, District Planning Office, Ratnagiri
20. Shri. Santosh P. Kotle, General Manager, DIC, Ratnagiri and Sindhudurg
21. Shri. Raju Badule, Assistant Commissioner Fisheries Dept. Sindhudurg/Ratnagiri
22. Shri. Milind Joshi, Assistant General Manager, APMC Campus, Ratnagiri
23. Shri. Kalpesh Shinde, Senior Research Assistant, Incharge Crab Project. Wadamirya
Ratnagiri
24. Shri Rajan Teli, Ex-MLC, BJP President, Sindhudurg
25. Shri Sajeev Karpe, Director, Konkan Bamboo & Cane development Centre (KONBAC)



26. Shri. Naveen Kori
27. Shri .Nihar Jambusaria, Vice President, The Institute of Chartered Accountants of India,
ICAI Bhawan, Indraprastha Marg, New Delhi-110001, India
28. Dr. Peyush Punia, Principal Scientist, ICAI, Indian Institute of Farming System, Research
29. Smt. Poonam Kashyap
30. Shri. Pushkar Hate, Deputy Director and HOD (WR) - Skill Development and MSME at
Confederation of Indian Industry
31. Shri. Jawahar K
32. Shri. Jaywant Vichare, Chairman of Ratnagiri Krishi Prakriya Sahakari Sanstha Maryadit /
Associate member of Cashew Export Promotion Council of India
33. Shri. M. K. Mistra
34. Shri. M.S. Ramalingam
35. Smt. Meetu Kapur, Executive Director- Food and Agriculture Center of Excellence at
Confederation of Indian Industry
36. Shri. Mohammed Osman
37. Dr. S. Kandan, Project Director, Rajiv Gandhi Centre for Aquaculture (RGCA), the research
and development wing of Marine Products Export Development Authority (MPEDA)
38. Dr. Suvarna A. Deushar, Professor, Langa College, Ratnagiri
39. Shri. H.R Meena
40. Shri. Hanumant Hede, Sr. Regional Manager at Maharashtra Tourism Development
Corporation
41. Shri. Jaimon Uthup, Representative from UNDP
42. Shri. Digvijay, Representative from UNDP
43. Shri. Dhananjay Yadav, Chairman Maharashtra state co.op cashew processing federation
44. Dr. AK Prusty, Scientist, ICAR-IIFSR
45. Dr. Sudhanshu, Secretary, APEDA
46. Shri Babu Khan, Executive Director, CII
47. Shri Jane Karkada, Regional Director, Western Region, CII
48. Shri Jawahar Lal, Director (Rural Development), CII
49. Shri Asim Charania, Head, CII Maharashtra Office, CII
50. Dr, Indu Rani Jakhar, ZP CEO, Ratnagiri
51. Shri. Chandan Mohan
52. Representative from Collector office, Sindhudurg



53. Representative from DDM NABARD, Ratnagiri
54. Shri. A. Gopala Krishna Reddy
55. Shri. Vilas Patne, Advocate
56. Shri. Ajay Thune
57. Dr. Kshitij Awasthi, Professor, IIM Lucknow
58. Shri. Amit Srivastava
59. Dr. Nijara Deka, NCAER
60. Shri. Asrar Alam, NCAER
61. Shri. Rahat Hasan Khan, NCAER





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