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DISTRICT DEVELOPMENT PLAN

A PILOT STUDY OF SINDHUDURG DISTRICT OF MAHARASHTRA, FOR BOOSTING ECONOMIC GROWTH

Phase II

Report	August
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NCAER 65

District Development Plan

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

Phase II

August 2021

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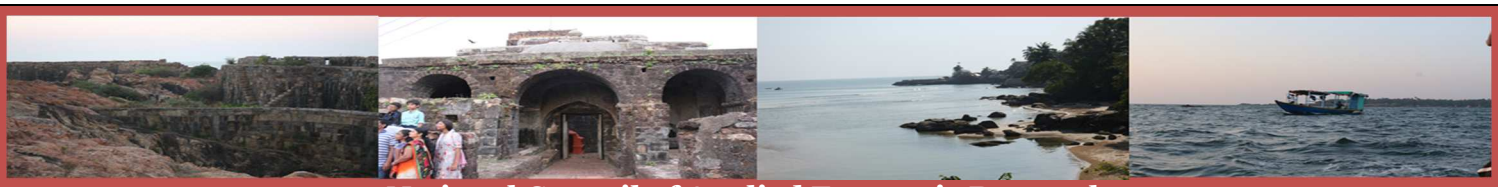
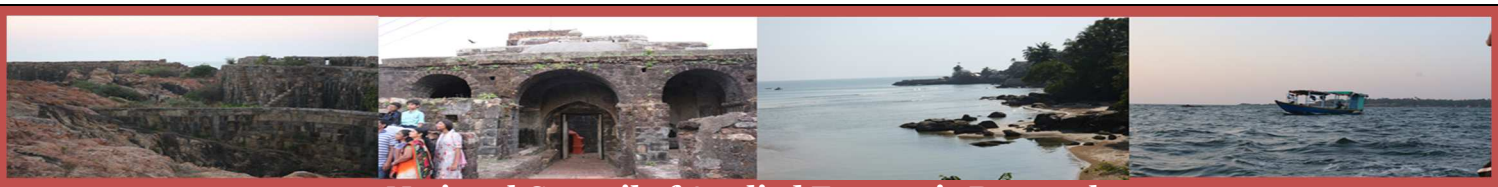




FOREWORD

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.

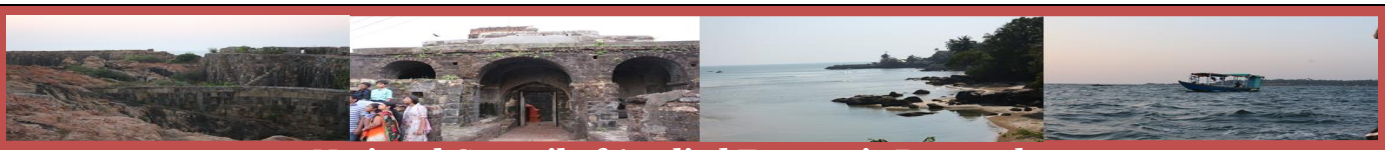
The widespread economic disruption caused by COVID-19 throughout 2020 has made it a huge challenge for India to attain the goal of becoming a US$ 5 trillion economy. This makes it all the more important that attention be focused on promoting district-level growth using a bottom-up approach.

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 Sichar 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 Sindhudurg, my sincere gratitude goes out to Smt K. Manjulekshmi, IAS, District Magistrate, Sindhudurg; Dr Hemant Vasekar, IAS, CEO Zilla Parishad, Sindhudurg; 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 the 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.

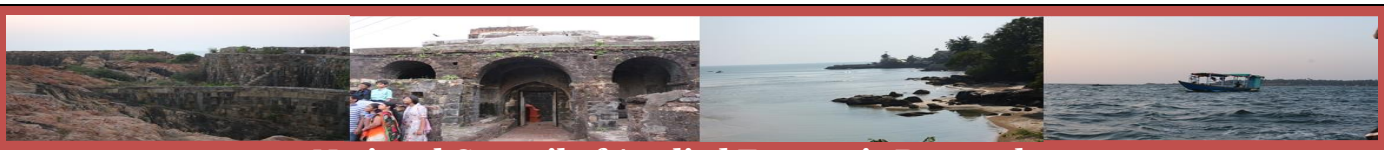
The NCAER team that carried out this study, led by Dr Poonam Munjal, Senior Fellow, included Dr Nijara Deka, Mr Asrar Alam, Mr Rahat Hassan Khan, and Mr K K Lal, along with Mr Bhavesh Vikas Gaikwad, our Consultant and Nodal Officer, who was stationed in Sindhudurg during Phase II of the study. The team 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.

The team looks 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



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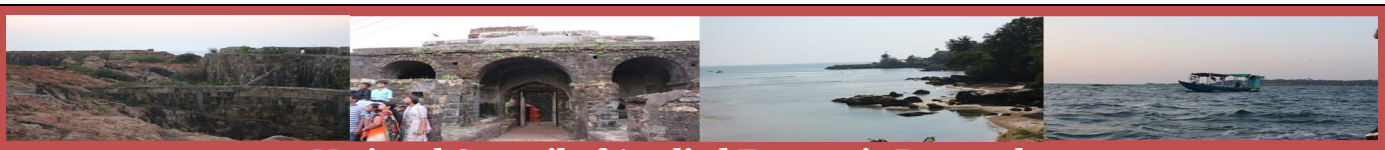

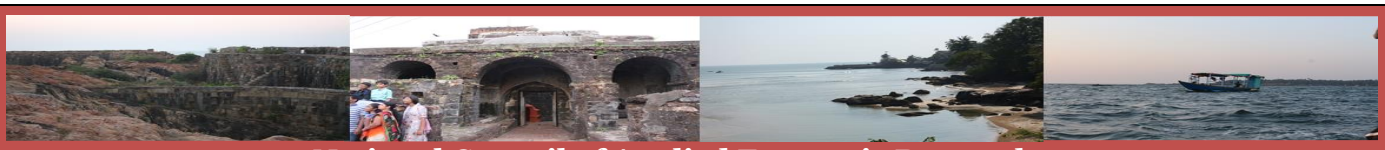

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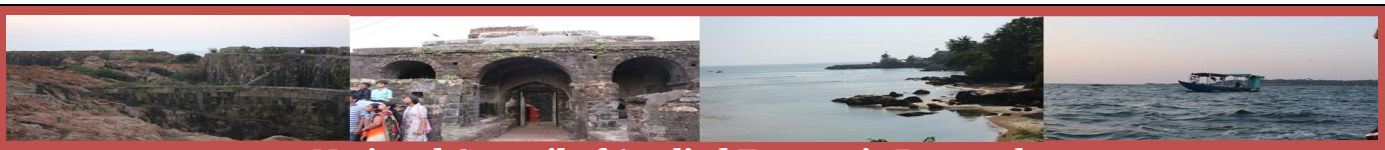

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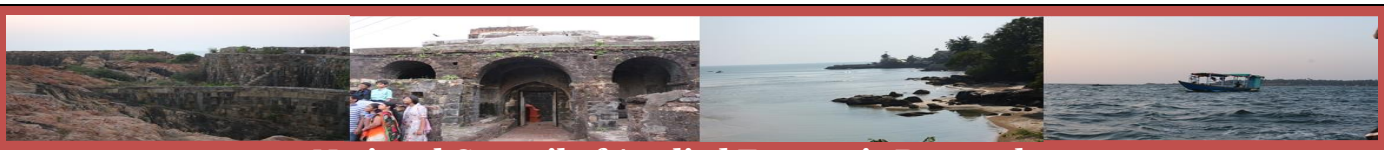


EXECUTIVE SUMMARY

I. Introduction

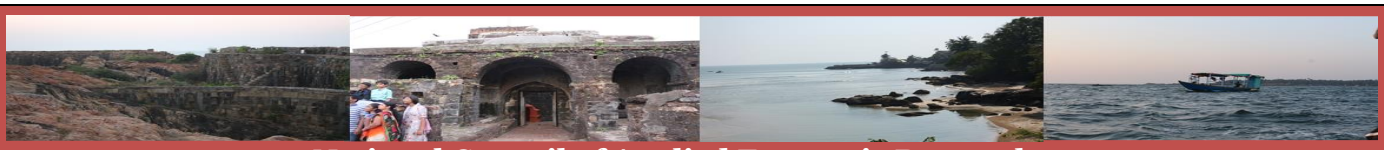
The Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry (DPIIT, MoCI) commissioned the "District Development Plan—A Pilot Study of Sindhudurg District of Maharashtra for Boosting Economic Growth", a study carried out by the National Council of Applied Economic Research (NCAER) in 2018. This study was part of DPIIT'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 Sindhudurg 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

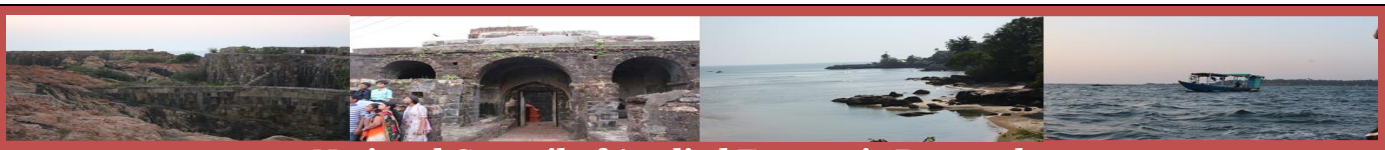
One of the critical elements of implementation of the proposed recommendations was to converge the action with an existing scheme, which is functional in the district or the State. The study team took stock of all the relevant schemes wherein convergence with the recommendations of the study was possible. 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 Bhausaheb 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 *taluka*s 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)

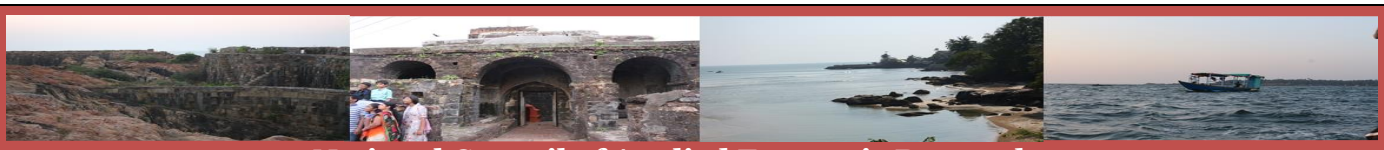
MIDH is a Centrally-sponsored scheme aimed at the holistic growth of the horticulture sector, including fruits, vegetables, root and tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashews, cocoa, and bamboo. Under the scheme, farmers get a 50 per cent subsidy on grading and packing of the farm produce in an attractive manner. The maximum subsidy amount is Rs 2 lakh. In Sindhudurg 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. National Fisheries Development Board Subsidy for Cage Farming

This scheme provides assistance for several heads like construction of new ponds and renovation of existing ones, purchase of inputs, integrated fish farming, procurement oof aerators/pumps, fish seed hatchery, transportation of fish seeds, and establishment of laboratories at the State level for assessing water quality and fish health investigations, among many others. In Sindhudurg district, there are some problems associated with the scheme, which includes availability of seeds, high cost of seeds, lack of life-saving appliances and lack of technical support. In Sindhudurg district, the dams are small but the cages provided are larger as compared to the dams. Approximately 5 to 10 cages are sufficient, since the farmers cannot afford more than these even if they were to be subsidized. The women's savings group, in fact, reports that only 3 to 4 cages are sufficient. The people cannot afford to make 50 per cent advance payment, as stipulated for participation in 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 Malvan, Devgad and Vaibhawadi Blocks 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.



vi. Tushar Thimbak Sinchan Yojana for Tribal Farmers in Maharashtra

The spray drip irrigation scheme, called Tushar Thimbak Yojana provides 50 per cent assistance to tribal farmers for purchasing land of up to 2 hectares with a cash limit of Rs 20,500, 35 per cent assistance to tribal farmers for purchase of land between 2 to 6 hectares with a maximum cash limit of Rs 14,350, and 30 per cent assistance to tribal farmers for purchase of land of more than 6 hectares, with a maximum cash limit of Rs 12,250. The objectives of this scheme are to promote water conservation, increase agricultural production, and ensure the appropriate use of water for agriculture. This scheme is active in the Dodamarg block of the district. Since Dodamarg is a mountainous area, there is low demand for this scheme, and there is insufficient water supply for irrigation. It is difficult to obtain the requisite consent under the scheme because of the collective 7/12 and because the land is divided into small fragments.

vii. Bed and Breakfast Scheme

The bed and breakfast scheme, which was introduced by the Maharashtra Tourism Development Corporation Ltd, has been designed to increase the availability of accommodation in the district for both domestic and foreign tourists. A survey conducted by MTDC found that there are many bungalows, houses, and apartments at various tourist spots like historical and pilgrimage sites, beaches, mountains, and jungle areas in the district that can be offered to tourists under this scheme, especially as it is financially not possible to construct a holiday resort at every tourist destination. However, in Sindhudurg district, it is difficult to obtain the requisite consent because of the collective 7/12 and also because of fragmentation of landholdings. Since permits are given for at least two to five rooms, many dwelling owners are unable to take advantage of the scheme. Also no registration of tourist arrivals in Sindhudurg district creats a hindrance in the scheme in administering properly.

III. Actions for Implementing the Proposed Recommendations

The proposed actions for implementation or the interventions[1] 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?”

[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.

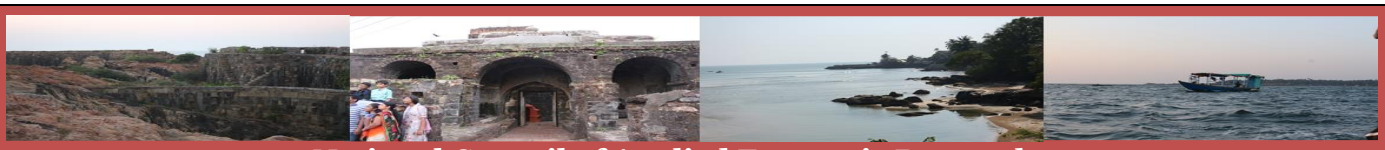
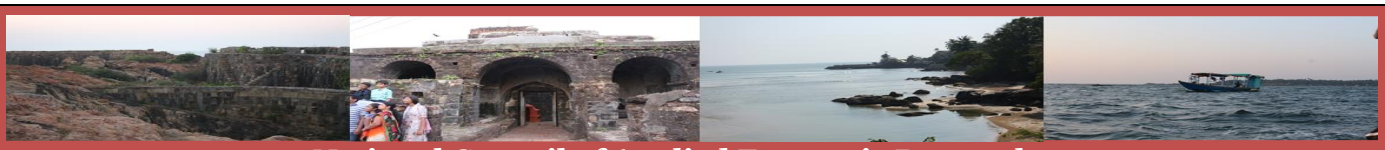
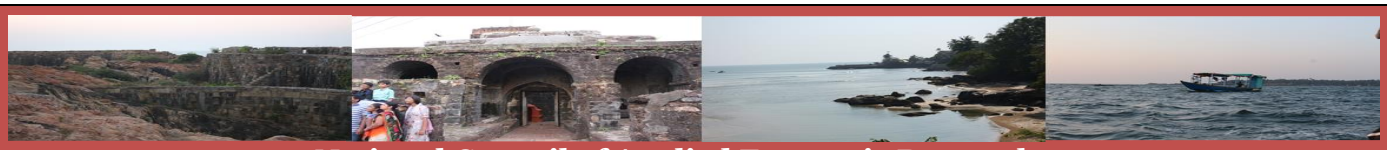


Table 1: Proposed Interventions in the District

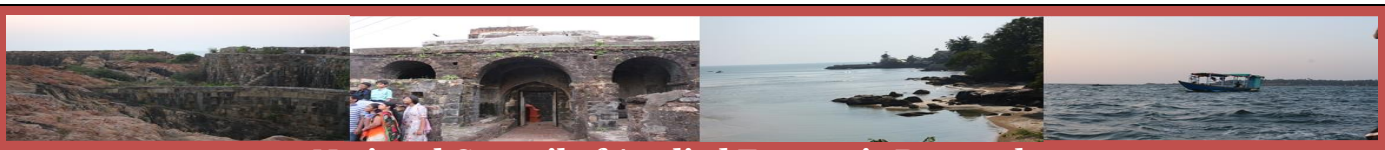
Area of Activity	WHAT should be the interventions	WHO Can implement?	HOW Can these be implememted?
Tourism	• Establish better tourism facilities and signages. • Smaller destination should give focus for tourism development. • Home stay and Bed and Breakfast scheme should be encouraged, since these do 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.**
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)



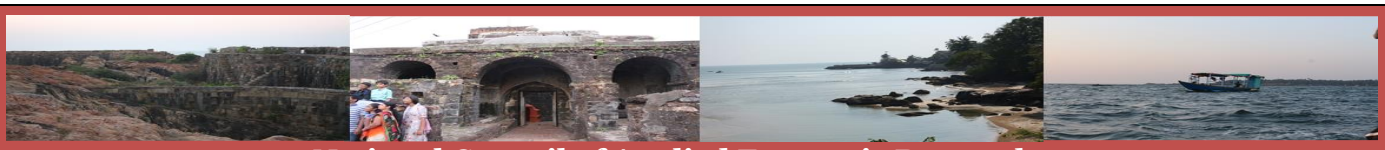
Area of Activity	WHAT should be the interventions	WHO Can implement?	HOW Can these be implememted?
	Provide separate shops for cashews (especially the Vengurla cashew variety) at railway stations, airports highways and government premises	GI Agencies; Airport/ Railway/Highway authorities	District administration 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, Sindhudurg; 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; Sindhudurg; 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.



Area of Activity	WHAT should be the interventions	WHO Can implement?	HOW Can these be implememted?
	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.
	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



Area of Activity	WHAT should be the interventions	WHO Can implement?	HOW Can these be implememted?
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 Vengurala 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 lending point of Ratnagiri on **28 February 2020**.
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

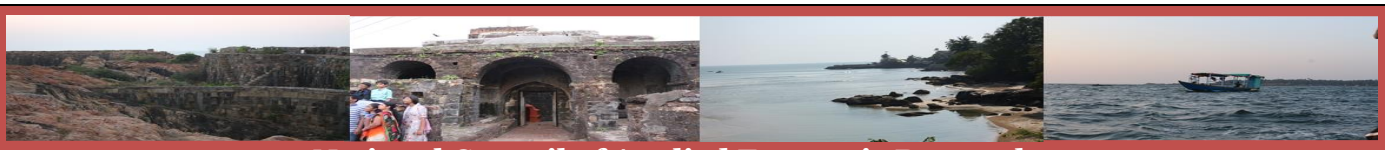


Area of Activity	WHAT should be the interventions	WHO Can implement?	HOW Can these be implememted?
			Center for Aquaculture (RGCA) of MPEDA.
	Setting up Crab hatchery	Rajiv Gandhi Centre for Aquaculture (RGCA), MPEDA, State Government and Ministry of Fisheries, Animal Husbandry & Dairying	It was planned 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, a neighbouring district of Sindhudurg. 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 , district.



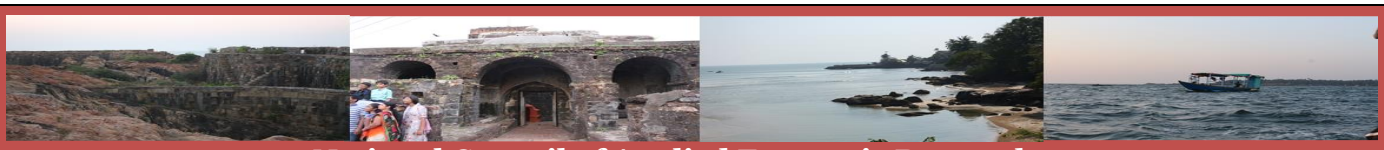
In the case of the Alphonso mango, the Konkan region has been declared as an Agri-Export zone. According to the latest APEDA data (2018-19), Maharashtra is the highest exporter of fresh mangoes and mango pulp. There are a lot of mango processing units in the district, some of which are 100 per cent export-oriented. 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. Having a coastline of 121 kilometres, Sindhudurg district provides ample opportunities for fisheries. Out of the 8 Talukas in Sindhudurg, 3 talukas are actively involved in fishing. Sindhudurg district has three major fish markets at Devgad, Chambar Bhati and Jamsande that offers significant marketing functionaries and trade. There are a total of 83 fishing villages and 34 landing points in Sindhudurg. The district is one of the most important maritime districts of Maharashtra. However, since there is no direct export route from Sindhudurg, 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.

Apart from this, being the "tourism district" of Maharashtra, Sindhudurg has a huge potential for stimulating domestic and international investments. In the 2014-15 Budget, under the scheme, "The Swadesh Darshan Programme'", the Maharashtra government proposed to promote Sindhudurg as a coastal tourism circuit, upgrading the forts that dot the Sindhudurg area along with the beaches, and also providing better infrastructure, amenities, and accommodation facilities. Bhogave beach in Sindhudurg was identified by Ministry of Environment, Forest and Climate Change as one of the 12 "Blue Flag Certification" beaches. Sindhudurg was also initially considered for a US-Style Sea World Plan, which was unfortunately not successful because of the lack of support from locals. Until now, Sindhudurg has been receiving only domestic tourists, who mostly come from the neighbouring districts and States, but it also has the potential to attract international tourists.

Overall, therefore, Sindhudurg 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 Sindhudurg 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.

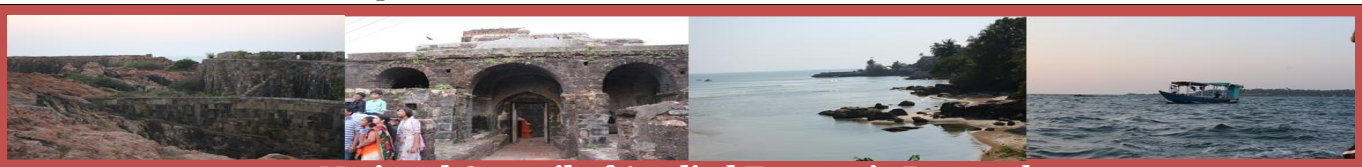
The outcome of Phase I of the study comprised a set of recommendations proposed for the district to facilitate its fast-track growth. These recommendations have been proposed for implementation in the key potential areas of growth in the districts. The recommendations are aimed at achieving quick do-able 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 Sindhudurg 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

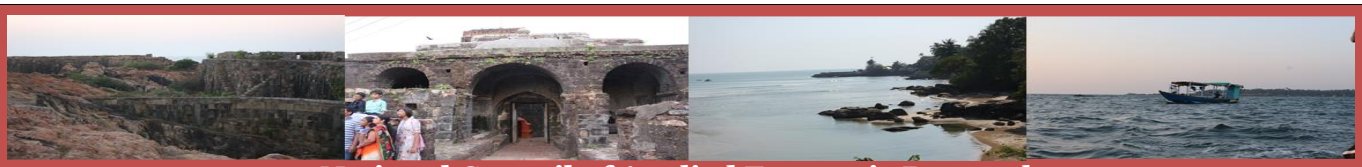
The first phase of the exercise used a mix of secondary data analyses and primary interactions with State and district stakeholders in order to identify the key areas for developing the draft Strategic Plan. The NCAER team also carried out field visits, and held meetings and consultations with stakeholders 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 administration[2] 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.

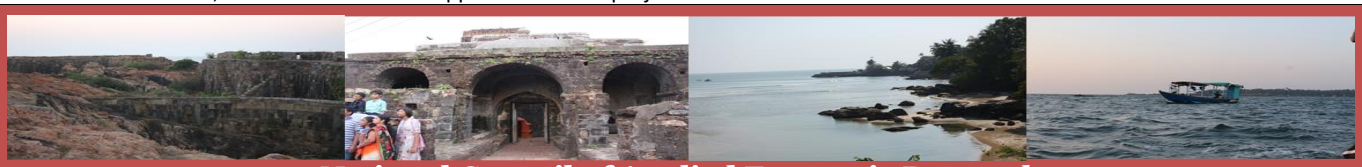
Handholding Support for Implementation

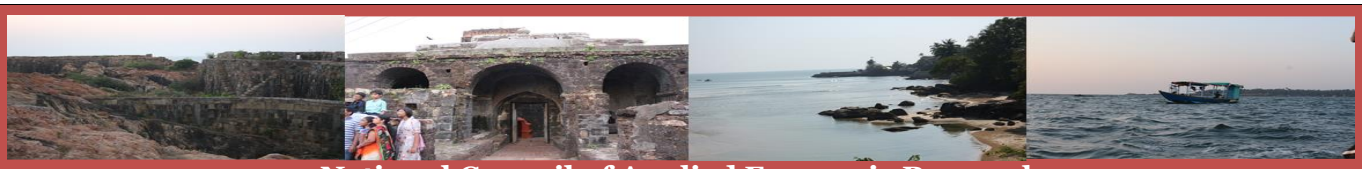
i. Supporting Implementation of key growth sector strategies by providing hand-holding support to district economic development unit
ii. Reporting on agreed monitoring indicators with recommendations for course-corrections

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 Sindhudurg 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 the Phase I of the study were a set of recommendations proposed for the district, to enable it to grow on a fast-track. These recommendations were proposed for the key potential areas of growth in the districts. Without being too aspirational, the recommendations were proposed for quick do-able actions and to achieve near-term goals.

Hence, from the list of many recommendations proposed in Phase I, only short-term recommendations, which looked likely achievable within a year, were proposed to be implemented in the Phase II.

In the Phase II of the study, these short-term recommendations were required to be implemented through the existing schemes and programmes running in the state/district. The Phase I report, which presented the baseline findings and the proposed recommendations, was circulated across all the departments and industry representatives and also with the DM, Sindhudurg. All of the findings and the recommendations proposed 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?”

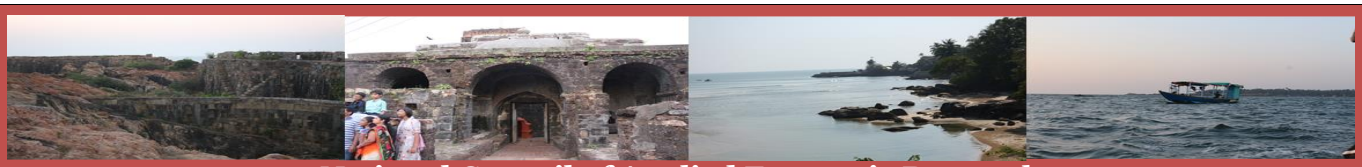
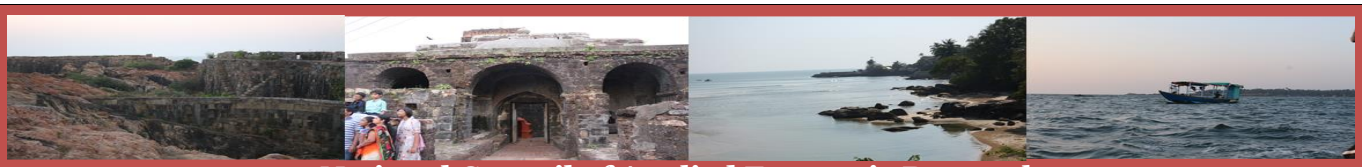
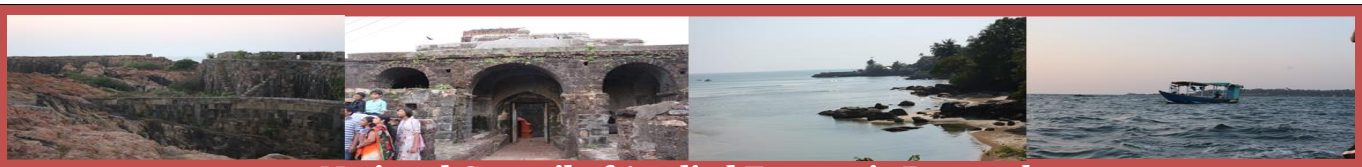


TABLE II.1: PROPOSED RECOMMENDATIONS

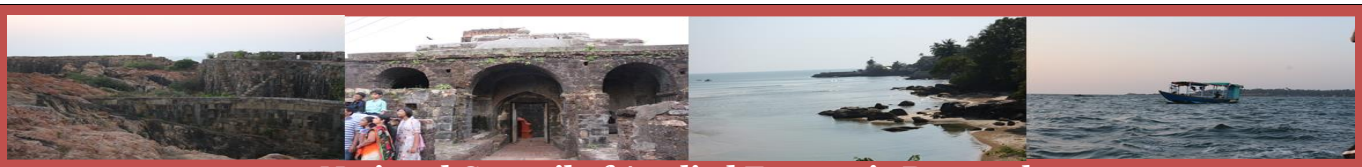
Area of Activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implememted?
Tourism	• Establish better tourism facilities and signages. • Smaller destination should give focus for tourism development. • Home stay and Bed and Breakfast scheme should be encouraged, since these do 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.**
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.



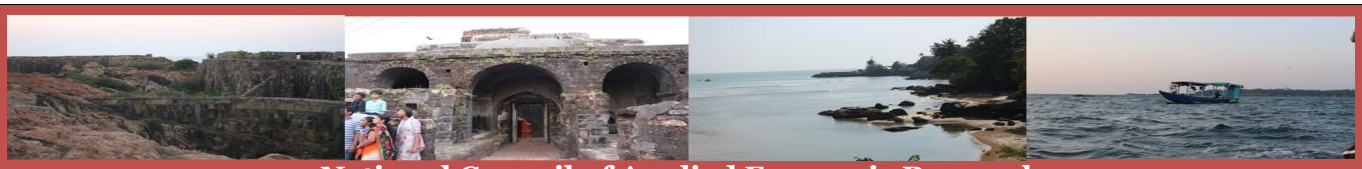
Area of Activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implememted?
	Open a branch of the Cashew Export Promotion Council of India in the district.	Ministry of Commerce and Industry; Cashew Export Promotion Council of India; Agricultural and Processed Food Products Export 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, Sindhudurg; 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; Sindhudurg; 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.



Area of Activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implememted?
	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.
	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



Area of Activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implememted?
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 Vengurala 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 lending point of Ratnagiri on **28 February 2020**.
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

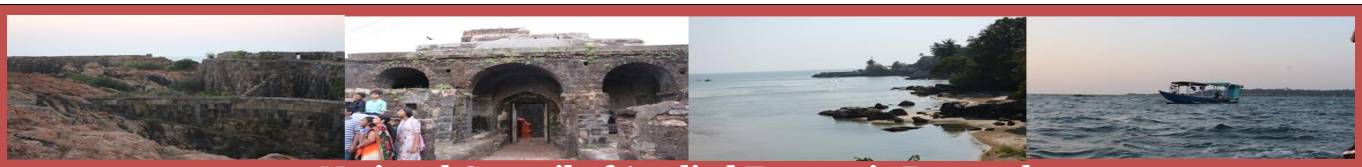


Area of Activity	WHAT should be the interventions	WHO can implement?	HOW Can these be implememted?
			environment. Besides, some capacity building programmes can be initiated by Rajiv Gandhi Center for Aquaculture (RGCA) of MPEDA.
	Setting up Crab hatchery	Rajiv Gandhi Centre for Aquaculture (RGCA), 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)

Note: .
***Crab cultivation was not discussed in the Phase I report but emerged as a potential area of activity post the field visit undertaken during Phase II of the study.*

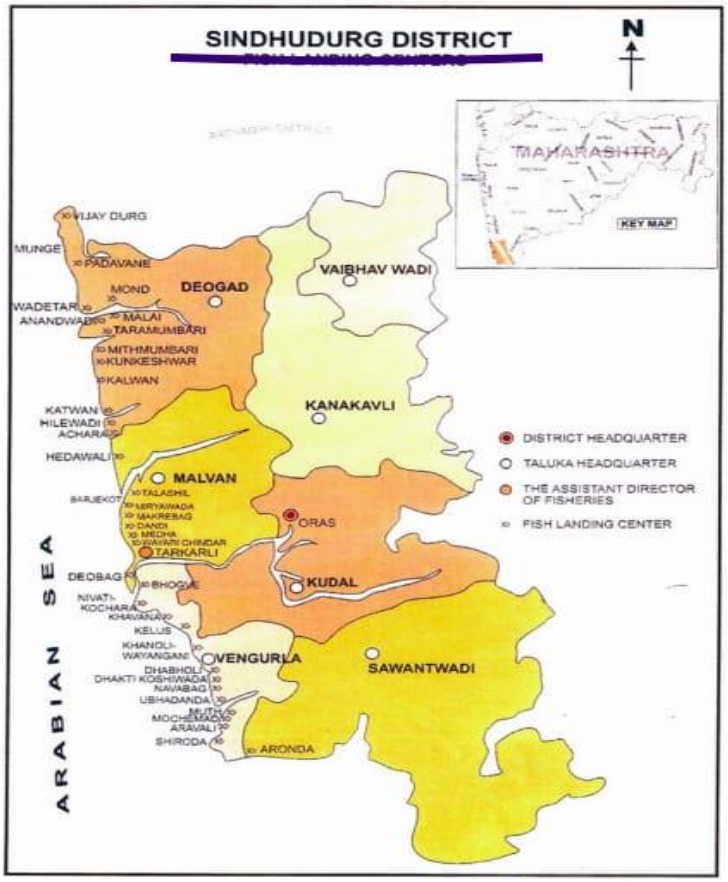
II.2. Field Visits to Talukas in Sindhudurg

Sindhudurg has eight *tehsil*s, which are locally termed as *taluka*s. These are Dodamarg; Sawantwadi; Kudal; Vengurla; Malvan; Kankavali; Devgad; and Vaibhavwadi.



The principal economic activity on the Sindhudurg coast is fishing. Among the eight *talukas*, fish production is the highest in Devgad, Malvan, and Vengurla. In Malvan, 11 out of 78 villages and in Devgad, 16 out of 57 villages are fishery villages. The fish landing sites in the Malvan *taluka* are Talshil, Miryabanda, Makrebag, Dandi and Achare, whereas those in the Devgad *taluka* are Devgad, Mithmumbari, Taramumbari, Wadatara, Anandwadi, Padavane, and Vijaydurg.

Figure II.1: Taluka map of Sindhudurg

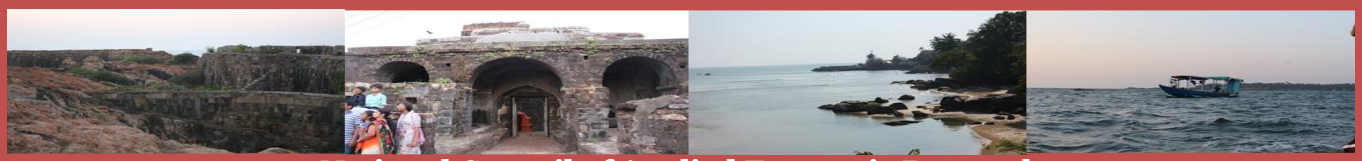


Tourism in Sindhudurg is considered to have a lot of potential, which is being explored by both the government and private sector. The district, which was declared as a "tourism district" by the Maharashtra Government in 1997, has the best beaches in the State, and an abundance of marine biodiversity, particularly corals. The popular tourist attractions in the district include Sawantwadi for leisure; Malvan for its heritage and beaches, of which Tarkarli beach is quite popular; Kudal for leisure; Vengurla for its beaches; and Devgad for its mangoes.

Cashewnut grows in plenty in the district and the world famous Alphonso or Hapus mangoes are also grown here, mainly in Devgad, Malvan, and Vengurla.

In order to initiate the implementation process in the district, local consultants met the concerned department and people (Table II.2). The local Consultants then, 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 landholdings* and *migration of people to neighbouring States in search of livelihood*. Due to these two reasons, it is difficult to obtain consent and the 7/12[3] 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

[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.



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.
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.

Details of the visits to the Sindhudurg 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.

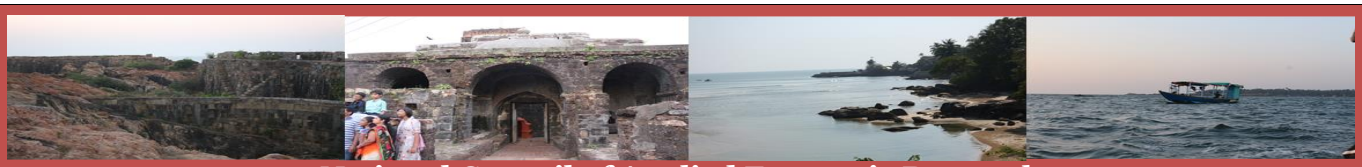


TABLE II.2: CONCERNED DEPARTMENT AND PEOPLE CONSULTED DURING PHASE II

Tourism	Mr Dipak Mane, Regional Tourism Officer, MTDC, Oras branch Mr Jagdish Chavan, Regional Tourism Officer, MTDC, Malvan branch
Cashew	Mr Santosh Kolte, General Manager, DIC, Ratnagiri and Sindhudurg; Mr Hrushikesh Paranjape, Managing Director, Paranjape Agro Products Pvt Ltd, Ratnagiri Ms Magla Kadam, Assistant Researcher, Regional Fruit Research Station, Cashew Department, Vengurla Mr Ajay Munj, Entomologist in Cashew Research Centre, Regional Fruit Research Station, Vengurla Dr A.C. Gajbiye, Assistant Researcher, Cashew Research Centre, Regional Fruit Research Station, Vengurla
Mango	Mr Sambhaji Ghadi, Assistant Agriculrure Officer, Oras Mr Samant Arji, Technical Assistant, Agriculture Officer, Oras Dr. B.N. Sawant, Associate director of R &D (Agriculture), Regional fruit Research Station, Vengurla Mr R.B. Chogule, Agriculture Officer, Sawantwadi Block Mr S.S. Kulkarni, Agriculture Officer Vengurla Block Mr V. G. Gosavi, Agriculture Officer, Malvan Block Mr Vilas Bandakaer, Assistant Agriculture Officer, Agriculture Department in Devgad Block Mr A.R. Kamble, Agriculture Officer, Agriculture department Dodamarg Block Dr R.M. Devare, Assistant Researcher, Mango Research Department, Regional Fruit Research Station, Vengurla Vengurla Block
Fisheries	Mr Murari Bhalekar, Assistant Fisheries Development Officer, Malvan, Fisheries Department Mr Satish Khade, Assistant Fisheries Development Officer, Malvan, Fisheries Department
Coir Industry	Srinivas V. Bitlingu, Officer-in-charge, Coir Board Sub-regional Office, Sindhudurg
Crab Culture	Mr Kalpesh Shinde and Dr Pagarkar, Assistant Research Officer of Dr Balasaheb Sawant Konkan Krishi Vidyapeeth Fisheries Sub-center (FSC) Wadamiya, 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.*

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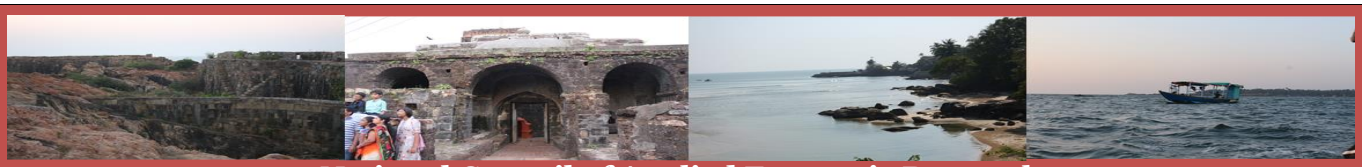
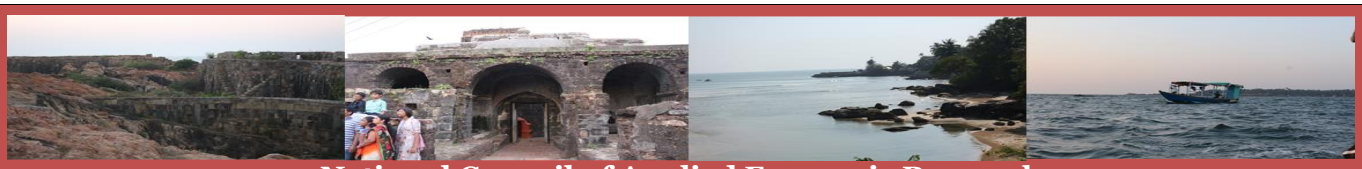


TABLE II.3: SINDHUDURG *TALUKA* VISITS

Talukas (Blocks)	*Persons Interacted with*	*Schemes for Discussion*
Malvan	Mr Murari Bhalekar, Assistant Fidheries Development Officer, Malvan, Sindhudurg. Tel. No. 9823579382 Mr Satish Khade, Assistant Fisheries Development Officer, Malvan, Sindhudurg.	1. Subsidies for Cage farming 2. Nil Kranti Yojana (Blue Revolution) 3. Chanda –Banda Scheme
	Mr V.G. Gosavi, *Taluka* Agriculture Officer, Tel. No. 9403352217.	4. Fruit Crop Cultivation Scheme 5. Horticulture planting plans 6. Mechanisation [Rashtriya Krishi Vikas Yojana (RKVY) and [Unnat Sheti-Samruddha Shetkari Campaign (USSS)] Schemes
	Mr Jagdish Chavan, Regional Manager, Malvan, Sindhudurg, Tel. No. 8422822063. Email:TARKARLIMTDC@maharashtratourism.gov.in	7. MTDC's Bed & Breakfast Scheme 8. Mahabharaman Yojana
Devgad and Vaibhavwadi	Mr Vilas Bandakaer, Assistant Agriculture Officer, Devgad, Sindhudurg, Tel. No. 97304963328.	1. Horticulture Planting Plans 2. Mechanisation (RKVY and USSS) Schemes 3. Bhausaheb Phundkar Horticulture Plantation Scheme 4. MIDS, National Horticulture Development Plan 5. Pradhan Mantri Krishi Sinchayi Yojana
	Mr Pratik Madakar, Assistant Fisheries Development Officer, Devgad, Sindhudurg, Tel. No. 8379995684.	6. Subsidies for Cage Farming 7. Nil Kranti Yojana (Blue Revolution) 8. Chanda –Banda Scheme
Dodamarg	Mr A.R. Kamble, Agriculture Offcier, Dodamarg, Sindhudurg, Tel. No. 7038078567/02363256964, Email: taododamarg@gmail.com	1. Mahatma Gandhi National Rural Employment Guarantee Scheme 2. Tushar Thimbak Sinchan Yojana for Tribal Farmers in Maharashtra 3. Mission for Integrated Development of Horticulture (MIDH)
Vengurla	Mr S.S. Kulkarni, Agriculture Officer, Vengurla, Sindhudurg, Tel. No. 8290926962/02366262576, Email: taovengurla@rediffmail.com	1. Fruit Crop Cultivation Scheme 2. Unnat Sheti- Samruddhi Sheti Scheme (USSS) 3. Bhausaheb Phundkar Fruit Crop Cultivation Scheme
Kankavali (Oras)	Mr Samant Arji, Technical Assistant, Department of Agriculture, Sindhudurg District.	1. Fruit Crop Cultivation Scheme 2. Mechanisation (RKVY and USSS) Scheme 3. Mission for Integrated Development of Horticulture (MIDH)



Talukas (Blocks)	*Persons Interacted with*	*Schemes for Discussion*
Sawantwadi	Mr R.B. Chogule, Agriculture Officer, Sawantwadi, Sindhudurg, Tel. No. 7038078567/02363256964, Email: taosawntwadi@gmail.com	1. Mahatma Gandhi National Rural Employment Guarantee Scheme 2. Tushar Thimbak Sinchab Yojana for Tribal Farmers in Maharashtra 3. Mission for Integrated Development of Horticulture
Kudal	Mr Dipak Mane , Regional Tourist Officer, Oras Office, Sindhudurg, Tel. No. 8422822069, Email: oras@maharashtratourism.gov.in	1. MTDC's Bed and Breakfast Scheme, and any other issues

During the Phase I field visit, we found that non-availability of sufficient cluster facilities and other common infrastructure facilities for mango and cashew growers result in wastage of mangos, cashews and more specifically the cashew apple due to its highly perishable nature. Despite being highly competitive cash crops, the Cashew and Mango growers in both the districts are in vulnerable condition. Due to lack of sustainable earning source in Konkan districts of Ratnagiri and Sindhudurg, people move out for job, which makes the districts having widest gender ratio in Maharashtra at 1123 females per 1000 males for Ratnagiri and 1037 females per 1000 males for Sindhudurg 1037 (Census, 2011).

While government, both central and state have taken several initiatives to safeguard the farmers' livelihood, but these districts have not been able to avail much benefits, due to the issues mentioned in the following sections on schemes.

The schemes identified in Table II.3 are described below, along with the problems associated with them, as emerged from the discussions during field visits in different talukas.

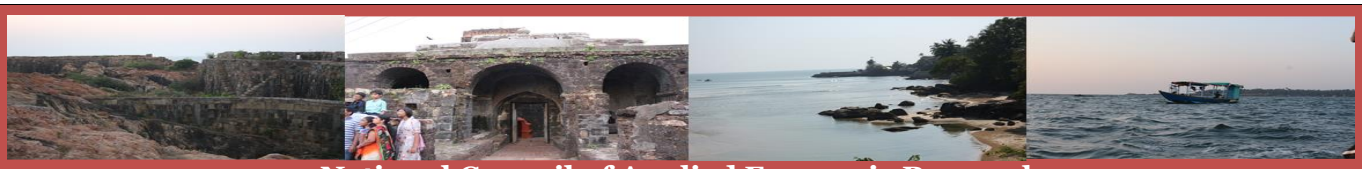
Fruit Crop Cultivation Scheme:

About the scheme

Falbag Lagavad Yojana, also named as Bhausaheb Phundkar Horticulture Plantation Scheme (named after Late Agriculture Minister Bhausaheb Pandurang Phundkar) was launched in order to increase the cultivation of orchards through the Agriculture Department. The scheme, which was started under the Employment Guarantee scheme, was later transferred to Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).

This scheme benefits those small and marginal farmers who cannot avail the benefit of MGNREGS because they do not have job card. The MGNREGS is for the farmers who have less than two acres of land. Under the Bhausaheb Phundkar Scheme, farmers owning up to 10 hectares of land in the Konkan region are eligible to get funding.

The scheme has further larger objectives of:



- providing a source of sustainable income to the farmers in the form of orchards along with crop and livestock.
- increasing the income of the farmers and doubling it by 2022.
- helping to conserve natural resources and reduce the degree of climate change.

The scheme provides subsidy for planting around 20 different orchards : coconut; mango stones; mango stones (Intensive Cultivation); Cashew nuts; Peruvian strains (intensive cultivation); Peruvian strains; pomegranate trees; orange, peanut; paper lemon stems; orange straws; coconut seedlings; peanuts; avalanche clauses; chinch clamps; purple tendons; kokum clause; funnel claws; fig; chiku stones etc.

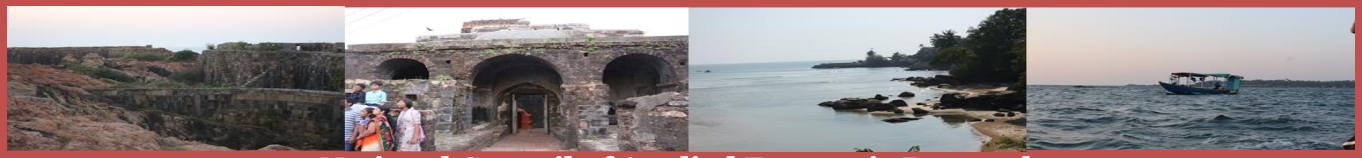
According to the Maharahstra Economic Survey 2019-20, grants of Rs. 46.94 crore were received during 2019-20, of which Rs.19.91 crore were spent on plantation programme upto January and overall 11,111 beneficiary farmers had undertaken fruit plantations on 10,706 ha area in the state. Although, Mango and cashew are given priority under this scheme, the beneficiaries in our study districts reported of having difficulties in receiving the benefits from the scheme.

Problems in implementation of scheme

Kankavali; Malvan; Devgad; Vaibhawadi and Vengurla are the blocks of Sindhudurg district, where this scheme is operational. According to the respective block officers, the main issues related to the scheme are:

1. Orchard cultivation in these area has got reduced over successive areas. The reason is fragmentation of land holdings which means breakdown of landholding to smaller parts. The landholding, according to land records or 7/12 document[4], thus belongs to many owners. Sometimes, the number of owners is as high as 50 to 70. In order to avail benefit of a scheme, the 7/12 certificate is required from all the land-owners, which becomes difficult when the number of owners is so high.
2. Also, since most of the farmers migrated to Mumbai it is difficult to get consent in time.
3. Some areas are not cultivated due to low water availability. Due to this, the target beneficiaries cannot cultivate mango orchards and cashew. Some villages in Vengurla taluka cannot be used for plantation due to the fact that there is a stone section.
4. Bhausaheb Fundkar Horticulture Plantation Scheme is a scheme to provide subsidy for drip irrigation facility under orchard cultivation and farmers cultivate mango and cashew crop in hilly areas. But due to lack of water in the hills area, it is not possible to pay for drip irrigation.

[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, date from which the current owner's name was registered etc.



Rastriya Krishi Vikash Yojana - Mechanization Scheme

About the Scheme

This centrally sponsored scheme provides assistance to individual beneficiaries for farm mechanization efforts. Improved and gender friendly tools are given special emphasis in this scheme. However, for large equipment e.g. combine harvester, sugarcane harvester, cotton picker etc., assistance is limited to establishing custom hiring centres. This is also because for these large equipment, individual ownership may not be economically viable, so benefit is provided collectively, in the form of creating infrastructure and assets.

Problems in implementation of the scheme

In the Oras and Kankavali blocks, there is a huge demand for power tillers but not all farmers can avail of the subsidy to purchase them, as the subsidy funds are not sufficient. Further, there is a huge demand for brush cutters and power spreaders in Sindhudurg district, but these machines are excluded from the guideline of the scheme.[5]

In the Malvan *taluka*, on the other hand, the lack of agricultural labour and financial condition of the needy farmers make it difficult to implement the scheme in the district. In Devgad and Vaibhavwbadi**,** during 2019-20**,** 932 applications were filed for receipt of benefits under this scheme, but only a few of them received grants.

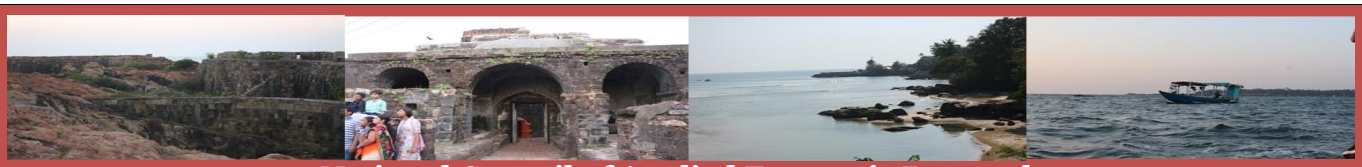
Mission for Integrated Development of Horticulture (MIDH)

About the scheme

MIDH is a Centrally Sponsored Scheme for the holistic growth of horticulture sector fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo.
Under the scheme, farmers get 50 percent subsidy on grading and packing the farm produce in an attractive manner. The subsidy is provided to a maximum of Rs. 2 lakh. The subsidy is provided to encourage farmers to clean, grade and pack their produce properly, after which they get right prices for their produce. Without clean and attractive packing, farmers end up getting very low prices even during the “peak season”.

Problems in implementation of scheme

[5] https://rkvy.nic.in/static/download/pdf/RKVY_14th_Fin._Comm.pdf



National Horticulture Development Plan is a sub scheme of MIDH. This scheme is reported in Devgad and Vaibhavwadi block. In Sindhudurg district, there is a huge demand for pack house but all farmers can not avail the benefit as the fund for subsidy is insufficient. The cost of processing unit is Rs. 15 lakh, which is mostly unaffordable. Besides, the duration between proposal and grant support is so long that it barely is useful.

National Fisheries Development Board Subsidy for Cage Farming

About the Scheme

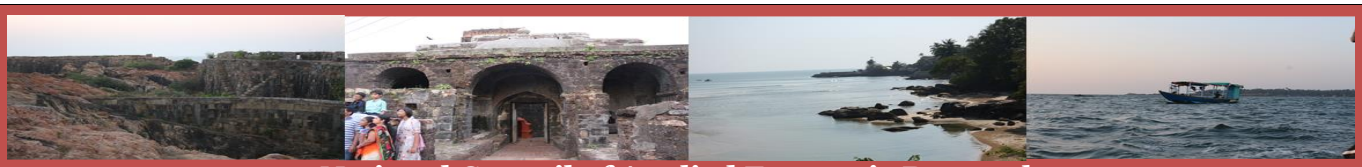
Cage aquaculture, though relatively new to the country, brings in new opportunities for optimising fish production, and also for developing new skills among fisher folk and entrepreneurs to help them enhance their earnings. Under the scheme, assistance is provided for several heads like construction of new ponds and renovation of existing ones, purchase of inputs, integrated fish farming, procurement oof aerators/pumps, fish seed hatchery, transportation of fish seeds, and establishment of laboratories at the State level for assessing water quality and fish health investigations, among many others.

Problems in Implementation of the Scheme

In the Oras and Kankavali Blocks of the district, block officers reported to have the scheme. Here, all the items have to be procured by the farmers after the sites have been verified by the authorities and permission has been obtained.

The main problems associated with the scheme, as reported by the stakeholders are as follows:

- Seed availability is a problem (subsidy is offered for seabass seed).
- The seed cost, at Rs 42-45 per seed, is high.
- Life-saving appliances are not provided.
- There is lack of technical support.
- Instrumentation facility is not available.
- The Cages do not have proper designs. In Sindhudurg district, the dams are small but the cages provided are larger as compared to the dams.
- Approximately 5 to 10 cages are sufficient, since the farmers cannot more than these even if they were to be subsidised. The women's savings group, in fact, reports that only 3 to 4 cages are sufficient.
- The people cannot afford to make 50 per cent advance payment, as stipulated for participation in the scheme.



Neel Kranti Yojana (Blue Revolution)

About the scheme

The huge untapped potential in fisheries and aquaculture in Sindhudurg district can contribute to the growth of new and innovative production technologies and management. It also helps in utilizing the less utilized water resources. Blue Revolution (Neel Kranti Mission) has the vision to achieve economic prosperity of the country and its fishermen. It, therefore, contributes towards food and nutritional security also. It results in fisheries development in a sustainable manner, while keeping in view the bio-security and environmental concerns.

Problems in implementation of scheme

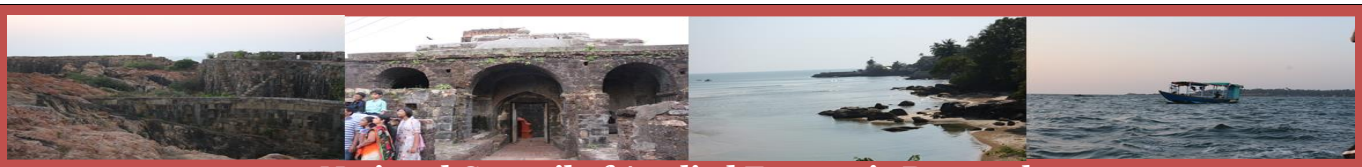
In Malvan, Devgad and Vaibhawadi blocks, some fishermen are taking benefits of the scheme. However, this scheme can work still better if following problems are solved.

- Seed problem (non-availability of Hatchery center)
- Subsidy share is low (25 percent)
- Lack of Technical person for preparation of project report for scheme
- It takes up to six months or more to get benefits of the schemes
- No specific guidelines for the people for their awareness about the sub-schemes.

Tushar Thimbak Sinchan Yojana for Tribal Farmers in Maharashtra

About the Scheme

The spray drip irrigation scheme, called Tushar Thimbak Yojana, was launched by the State government of Maharashtra for tribal farmers. The scheme is being implemented by the Zilla Parishad agriculture department of Maharashtra for farmers living in tribal areas. Under this scheme, the State government provides 50 per cent assistance to tribal farmers for purchasing land of up to 2 hectares with a cash limit of Rs 20,500, 35 per cent assistance to tribal farmers for purchase of land between 2 to 6 hectares with a maximum cash limit of Rs 14,350, and 30 per cent assistance to tribal farmers for purchase of land of more than 6 hectares, with a maximum cash limit of Rs 12,250. The objectives of this scheme are to promote water conservation, increase agricultural production, and ensure the appropriate use of water for agriculture. This scheme is active in the Dodamarg block of the district.



Problems in Implementation of the scheme

- Since Dodamarg is a mountainous area, there is low demand for this scheme, and there is insufficient water supply for irrigation.
- It is difficult to obtain the requisite consent under the scheme because of the collective 7/12 and because the land is divided into small fragments.

Bed and Breakfast Scheme

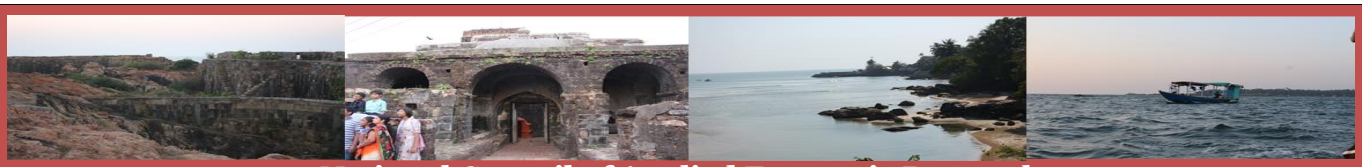
About the Scheme

The bed and breakfast scheme, which was introduced by the Maharashtra Tourism Development Corporation Ltd, has been designed to increase the availability of accommodation in the district for both domestic and foreign tourists. Owners of bungalows, houses, and flats who can offer rooms of requisite standards for renting to tourists may participate in this scheme.

A survey conducted by MTDC found that there are many bungalows, houses, and apartments at various tourist spots like historical and pilgrimage sites, beaches, mountains, and jungle areas in the district that can be offered to tourists under this scheme, especially as it is financially not possible to construct a holiday resort at every tourist destination. MTDC registered these bungalows, houses, and apartments have thus been registered by MTDC for use by tourists, which has also helped in generating self-employment for the owners of these dwellings.

Problems in Implementation of the Scheme

- It is difficult to obtain the requisite consent because of the collective 7/12 and also because of fragmentation of landholdings.
- Since permits are given for at least two to five rooms, many dwelling owners are unable to take advantage of the scheme.
- The authority for doing registration proceedings is given only to the Sindhudurg district office. Consequently, though there are many unauthorised businesses in the locality, MTDC has no authority to prosecute them.
- A lot of tourism policies have been initiated in Sindhudurg district but they have not been implemented. Even though Government funding is available at the MTDC office in Sindhudurg, it is not being used. Thus, a lot of the government funding goes back to the government. Since Sindhudurg district is a tourist destination, it is recommended that it should have a large MTDC office, and the authority to decide issues pertaining to tourism should be delegated to the tourism officer.
- There is no registration of tourist arrivals in Sindhudurg district.



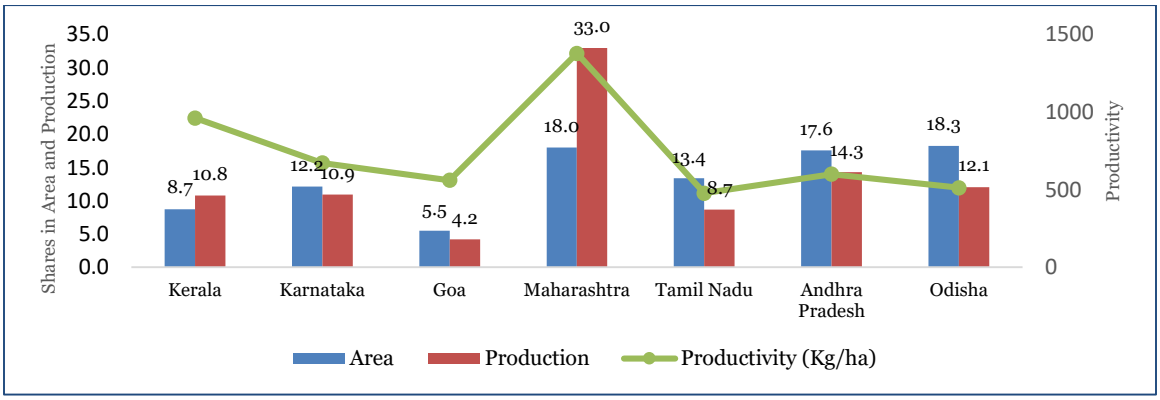
III. Initial Implementation Actions

One of the first initial actions towards implementation of the proposed sector strategies was to collect more details of the sector and also reasonable justification of 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 the review of the best practices around the recommended areas in other states of India. We have found that some of the recommendations, in terms of activities, which are proposed for the district, are being successfully carried out in other states. Each of the proposed sector strategies with all these details are described in this chapter.

III.1. Setting up a branch of Cashew Export Promotion Council of India (CEPC) in either of the two districts of Ratnagiri and Sindhudurg

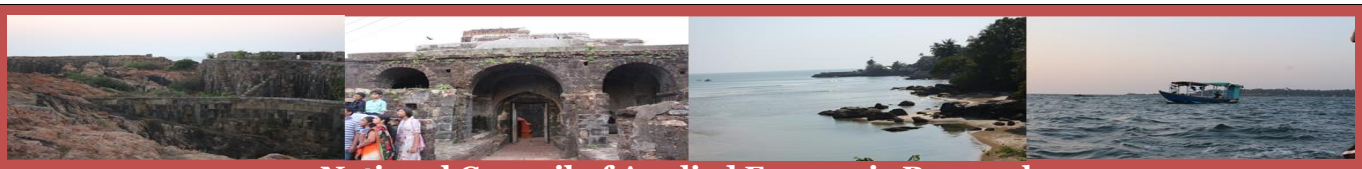
The neighboring districts of Ratnagiri and Sindhudurg, are the highest producers of cashew in the State of Maharashtra, which itself is the largest producer of cashew among all the States of India. It also leads all the cashew-producing States with respect to its productivity. According to the Directorate 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



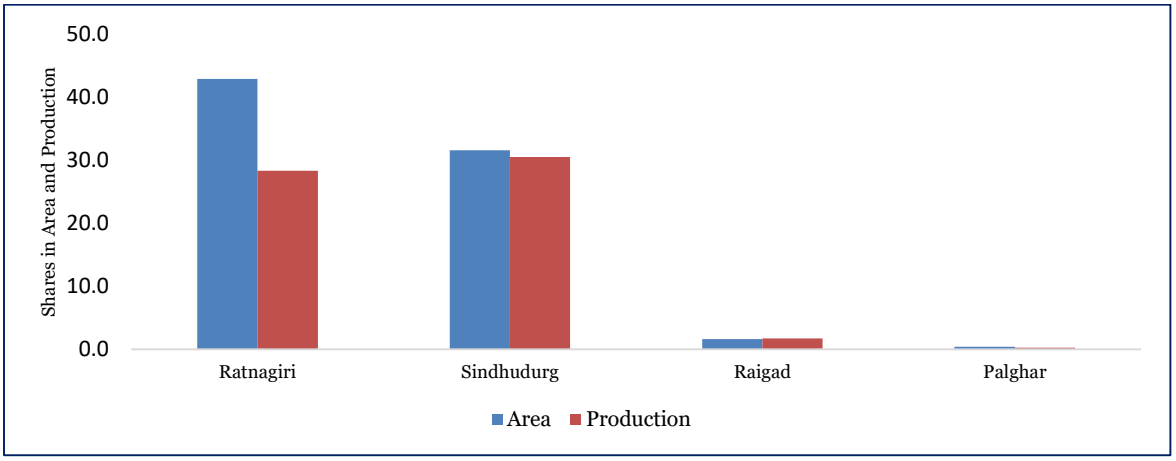
Source: Directorate of Cashewnut and Cocoa Production, Ministry of Agriculture and Farmers Welfare

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



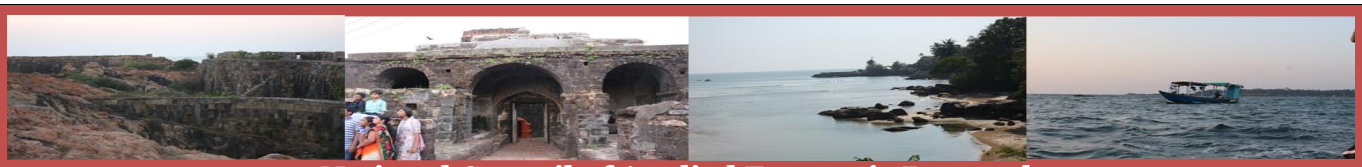
Source: District Superintendent Agriculture Officer, Ratnagiri.

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 (CEPC) 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.

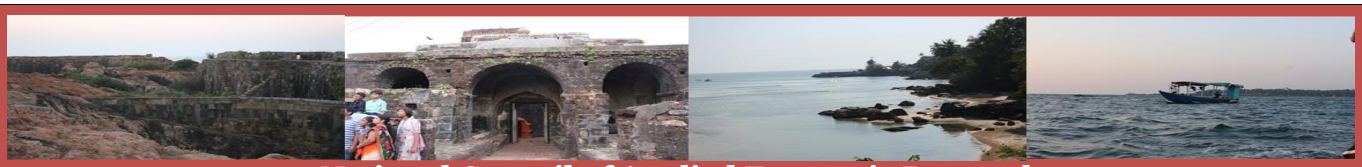
In addition to the Centrally-sponsored schemes, the Government of Maharashtra has also launched a number of programmes for the development of horticulture in the State.

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 Sindhudurg 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.

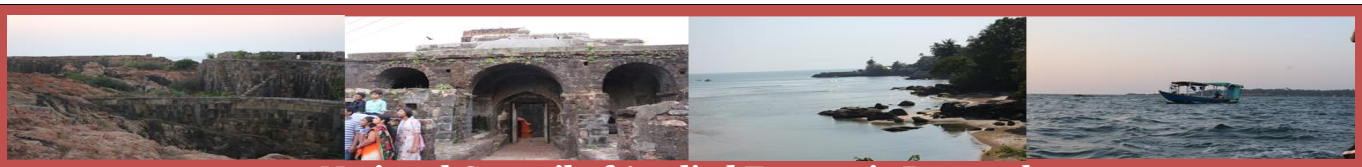
Some of the baseline cashew statistics are given in Appendix Table A.3.

III.2. Promotion of the Fisheries Sector

With a coastline of 121 kilometres, the district has a huge potential for the fisheries sector. There are eight main fish landing centres in Sindhudurg, namely Vijaydurg, Devgad, Achara, Malvan, Sarjekot, Kochara, Vengurla, and Shiroda. There are a total of 83 fishing villages and 34 landing points in Sindhudurg.

In Phase I of the project, we made the following recommendations for development and promotion of the fisheries sector in Sindhudurg and its neighbouring district of Ratnagiri:

- Making available basic facilities at landing points;
- Promoting deep-sea fishing;



- Setting up processing unit and required infrastructure, including effluent treatment plants.

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

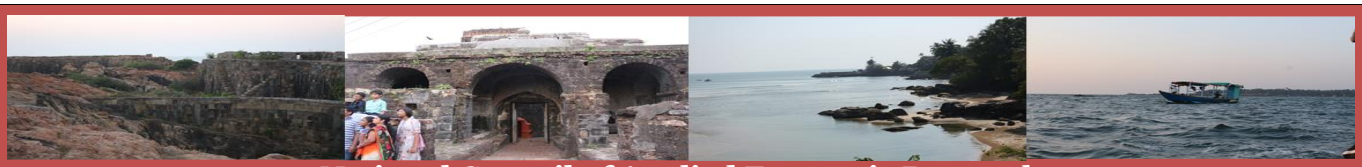
During the Phase I field visit, our interactions with both fishermen and the Fisheries Departments in both the districts revealed an extreme lack of basic facilities at the landing points, mostly including boat repairing centres, diesel pumps, toilets, drinking water supply, arrangement for the supply of ice, markets for local sale, and cold storage systems, among other things.
Both the Government officials and fishermen pointed to a reduction of fish production at the usual landing points, an issue that can easily be resolved if deep-sea fishing is promoted. Our discussions with the major processing units also indicated that though some of the units have their own effluent treatment plants, most units cannot afford these plants, which has been resulting in less than optimal use of their plant units.

During Phase II of the study, our secondary data analysis showed that all the specific action plans for Maharashtra State under the Blue Revolution scheme included our recommendations. However, the target beneficiaries lacked knowledge and awareness about different sub-schemes under the Blue Revolution scheme.

In view of this lack of awareness among the beneficiaries, we organised five awareness programmes on the Blue Revolution schemes for fishermen in both the districts for Ratnagiri and Sindhudurg. Interactions during the awareness programme also highlighted the lack of basic knowledge about the schemes among the fishermen. In some of the *talukas*, even the officials admitted to their lack of knowledge about various guidelines for 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 infrastructre development.

Fisheries is considered as a sunrise sector in the Konkan region of Maharashtra, and has been making a spectacular contribution to income and employment generation by stimulating the growth of a number of subsidiary industries while also bringing in foreign exchange earnings. It is thus very important to solve the basic problems of this sector in order to achieve the broader targets of economic growth in both the districts. In this context, the importance of the role played by multi-dimensional activities under the Blue Revolution Scheme cannot be over-emphasised.



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

- Number of new processing units developed;
- Number of new landing points developed;
- Basic infrastructure available for fisher folk;
- New effluent treatment plant developed;
- Reduction in untreated effluents released into the environment;
- Increase in fish-catch due to deep sea fishing; and
- Increase in number of beneficiaries of fisheries schemes due to increased awareness.

Some of the baseline fisheries statistics are given in Appendix Tables A.5 to A.9.

III.3. Cultivation of Mango in Ultra High Density Mango Plantation

Ultra-high density plantation (UHDP) is a new and proven technology, commonly practiced 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 the research and development needs in tropical and subtropical fruits at national level.

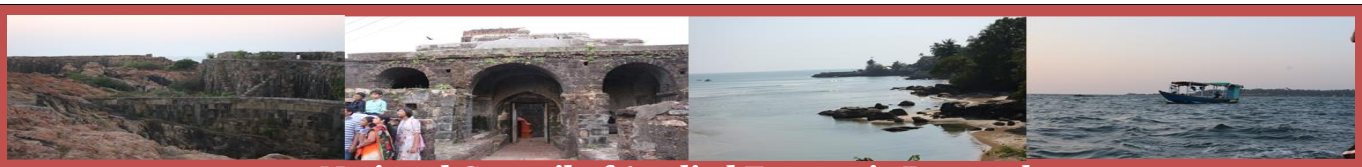
This division is mainly working on the genetic improvement of fruit crops (Mango, Papaya, Grapes, Guava, Pomegranate, Custard apple, Fig, Jackfruit, Pumelo & Underutilized fruits) for improved productivity, quality and resistant to biotic and abiotic stresses.

On the production side, The Division of Fruit Crops, IIHR, is working on the development and refinement of production technology of fruit crops through the High Density Planting (HDP), canopy architecture, crop regulation, intercropping systems and optimization of nutrients and water level for higher production and productivity. This division is also offering courses on breeding of fruit crops, advances in fruit breeding and national problems in fruit crops to the Post Graduate students of University of Horticultural Sciences, Bagalkot and Indian Agricultural Research Institute, New Delhi.

The cultivation of mango using UHDP is proposed for Sindhudurg as although the district is second largest mango producing district in Maharashtra, the productivity is not very impressive. 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 due to pests and diseases. UHDP is the technique which increases production per unit area.

The benefits of Ultra High Density Plantation in mango cultivation are:

1. Increases productivity up to 2-3 times
2. Reduces water used for irrigation by up to 50 percent
3. Increases fertilizer uptake by plants



4. Improves agricultural, economic, social & environmental sustainability by promoting good agricultural practices
5. Enhances farmers' income and helps alleviate poverty

A study conducted by Makhmale Sandip (Department of Horticulture, Junagadh Agricultural University, and Junagadh) reports the following advantages of UHDP when compared with traditional and medium density plantation[6].

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

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, like 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 others for about 25 years now and these countries have benefitted to the extent of having higher share of exports of mango and other fruit crops as compared to India.

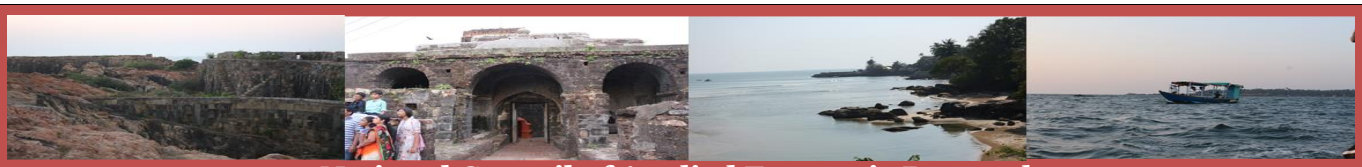
Recently (March 2019), Telangana government also planned to promote UHDP for better quality and higher productivity.

For all of the reasons above, we recommend that mango cultivators should experiment UHDP for mango plantation to reap benefits. To make them aware of this technique, a training/awareness programme on Ultra High Density Planation was planned for 20th March, 2020. Dr R.M. Devare, Assistant Researcher, Mango Research Department, Regional Fruit Research Station, Vengurla, had agreed to train the farmers in the programme. But due to Coronavirus outbreak, the programme was postponed.

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

- Change in volume of mango production
- Change in mango productivity
- Change in water use

[6] https://www.krishisandesh.com/mango-cultivation-ultra-high-density-plantation/



- Change in fertiliser use
- Change in number of mango farmers

The baseline mango statistics is provided in Appendix Table A.10 to A.12.

III.4. Improvement in Common Infrastructural Facilities for Clusters, under the Existing Schemes

During the Phase I field visit, we found that non-availability of sufficient cluster facilities and other common infrastructure facilities for mango and cashew growers was resulting in the wastage of mangoes, cashews, and more specifically the cashew apple, due to its highly perishable nature.

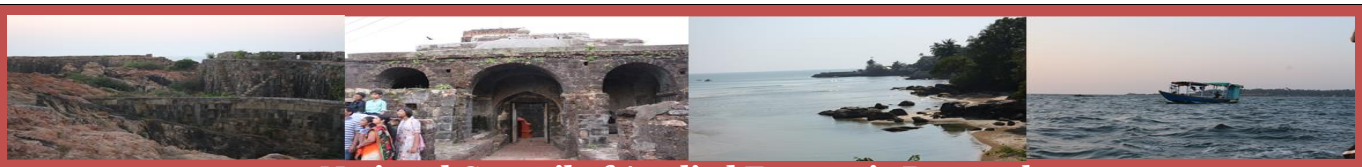
In Sindhudurg district, there are two cashew processing clusters, one in Malvan and the other in Vengurla. However, there are a number of small cashew processing units across the district. The cashew clusters in the district include Zantye Cashew in Tulas, Vengurla, and Zantye Cashew Industries in Dhuriwadi, Malvan. The processing clusters and other small processing units of the district raised issues of lack of proper infrastructure facilities, like cold storage and common warehouse facilities.

There is no agricultural cluster for mango and cashew in the district. Under the **Agriculture Export Policy 2018**[7], unique product-district clusters have been identified for export promotion, based on the existing production contribution to exports, exporters operations, scalability of operations, size of export market/India's share and potential for increase in export in short term. Accordingly, the proposed cluster under the policy for mango include Ratnagiri and Sindhudurg for Maharashtra and for cashew, Ratnagiri, Sindhudurg, Raigad, Kolhapur, Thane and Palghar.

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

[7] https://commerce.gov.in/writereaddata/uploadedfile/MOC_636802088572767848_AGRI_EXPORT_POLICY.pdf



unit within eight hours of its harvest, failing which it becomes useless. Cashew apples also have a very high export demand.

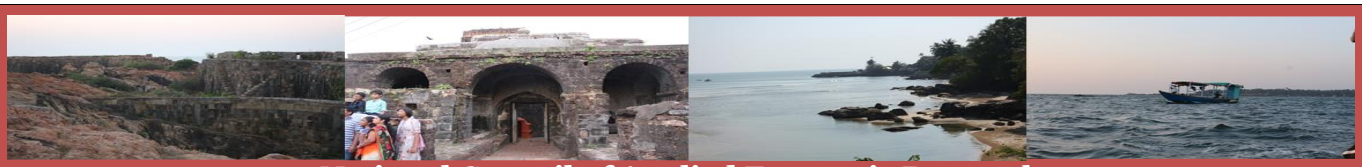
During the field survey in Phase II of the study, it was found that one of the schemes, currently operational in the districts is the Rashtriya Krishi Vikas Yojana (RKVY). There are three projects in the category of "Infrastructure and Assets" under the RKVY for both the districts, *viz.* "Development 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 both Sindhudurg and 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 *taluka*s, 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 *taluka*s 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



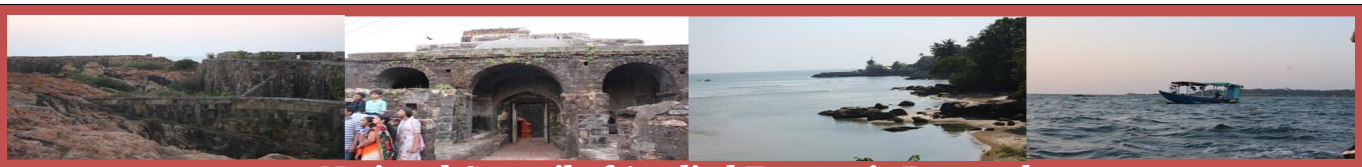
equipments at subsidised rates due to financial constraints. According to the scheme, the farmers are expected to buy the equipment first and get the subsidy amount only after making the purchase. The average market prices are Rs 20,000 a power spreader; Rs 20,000 to Rs 30,000 for a brush cutter; and 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 Bhausaheb 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.



III.5. Promotion of Crab Farming by adopting Vertical Crab Rearing System

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

Various initiatives have been taken in the past to promote the crab cultivation so that the production is large enough to meet 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 comprise 720 km of Maharashtra coast line. The state is blessed with 16,000 hectare of potential brackish water area for fisheries development; distributed in Thane, Raigad, Sindhudurg and Ratnagiri districts. But till date only 8-10 percent of area has been utilized for aquaculture. Some of these are covered with mangroves, which cannot be used for the Shrimp/Fish farming. However, such area is ideal for the crab culture.

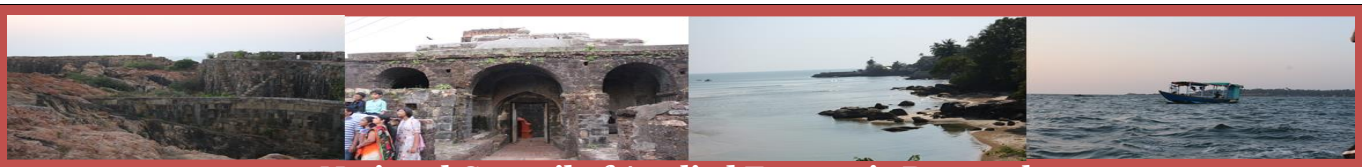
Due to informal nature of this activity, the statistics on crab production in Konkan are not available across districts and talukas.

The wild caught crabs are processed for export or consumed locally. Like all other export produces 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 adjacent state of Goa.

Realising its huge potential, MPEDA started a pilot project for open pond crab farming in Sindhudurg in 2014. This project was initiated with the 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 the mangroves and marine biodiversity in the area.

This was started with the involvement of six farmer help groups from three places that include Malvan, Vengurle and Devgad situated along the Konkan coast in Maharashtra. Mud Crab Aquaculture in the mangroves was started as a pilot project in Sindhudurg district of Maharashtra in October 2014. This Stock Enhancement Programme on Mangrove Crab in Mangrove Pens and Tide Fed Farms was initiated with the aid from UNDP, along with the Ministry of Environment, Maharashtra Government and supported by the Global Environment Facility. The aims of the project were the following:

- generate assured income among the weaker sections of the society giving 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 of Indian crabs in the external market but due to lack of availability, this demand is barely met. This pilot project helped the fishermen increase crab production manifold.

Under this pilot project, Mangrove crabs were farmed in the one-acre line farm that was provided to farmers by MPEDA. This farm was located in the mangroves and were covered by high density polythine nets (HDPN), which were also provided by MPEDA. As the crab is grown in the natural environment, there was no capital cost involved. Each SHG was given two lines of 1 acre each. For an acre, 2000 seeds were used, translating to a total of 4000 for a farm. The project, amounting 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, 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.

The long term planning, following the success of this pilot project, was to set up 15 news farms with the help of SHGs, starting from September 2015.

It is important to mention here as to why Sindhudurg was chosen for the pilot project. The reasons are as below:

- Pollution-free sea-water and better water quality
- Its mud crab has very high market value in both domestic and international markets, due to its robust size, dense meat, flavour, nutritive value and texture.
- Availability of mangrove forests
- Conservation of mangroves. These are otherwise considered of low economic value and a debris dumping area but could be converted into highly profitable crab farm

Following the success of this project, the Green Climate Fund (GCF), under the United Nations Framework Convention on Climate Change (UNFCC), was proposed to be used to extend mangrove crab breeding to all districts of Maharashtra and to Andhra Pradesh and Odisha too.

Financial Implication of mud crab farming

We were able to obtain the financial implication of Mud Crab Farming, which is presented in the table below (Table III.2):

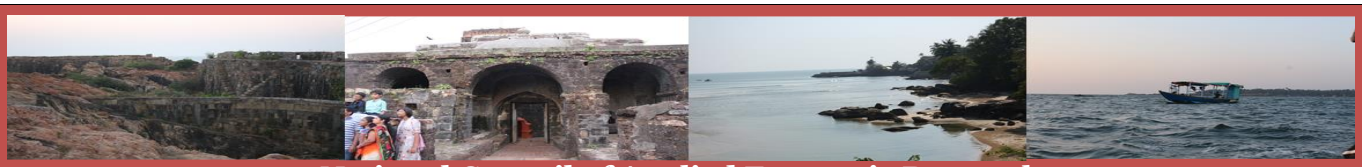


TABLE III.2: FINANCIAL IMPLICATIONS OF MUD CRAB FARMING

Financial Implication of a 5 ha Crab grow-out Pen					
	Assumptions				
	Total area	5 ha			
	No. of Pen of 0.5 acre	2			
	Survival Rate	30%			
	Average Body weight	550 gms			
I.	**NON Recurring Cost - Pen Installations[8]**				
S. No.	Particulars	Qty.	Unit	Rate	Amount
1	Earth Work - Cutting of trench for	Lumpsum			62500
2	Silpauline sheet of 1 feet	Lumpsum			93750
3	Cost of Garden Fencing Net Hexagonal	12500	Sq.	98	1225000
4	Cost of 16 ft. stone bamboo including	5000	No.	70	350000
5	Cost of Civil Construction Materials	Lumpsum			50000
6	Cost of Nylon Cable Ties @ 10 Pockets	125	No.	150	18750
7	FRP float for feeding, monitoring	5	No.	4000	20000
8	Cost of Pen Gate	25	No.	750	18750
9	Cost of Feed Check Tray 4 Nos./ Pen	100	No.	400	40000
10	Cost of Plastic at Items for Feeding, etc.,	Lumpsum			25000
11	Cost of Emergency light/ Solar light	12	No.	4000	48000
12	Cost of Miscellaneous items for	Lumpsum			100000
13	Cost of Hideouts (Tiles, Pipes etc.,)	Lumpsum			50000
Sub Total					2101750
	Contingencies @ 5 % of Sl No. 1 -13				105088
Total Fixed Cost					**2206838**
Total Fixed Cost (after rounding off)					**2210000**
II.	**Recurring Cost per Crop**				
1	Cost of Crablets @ 2000 Nos. Per Acre	25000	No.	22	550000
2	Cost of feed	24750	Kg.	35	866250
3	Repair & Maintenance	25	No.	3000	75000
4	Miscellaneous & unseen Expenses	Lump sum			50000
5	Harvesting & Marketing Expenses	4125	Kg.	20	82500
	Sub Total				**1623750**
	TOTAL PROJECT COST				3833750
	REVENUE				
1	Crabs of more than 750 gms 25% of	1031.25	Kg.	1100	1134375
2	Crabs of 500-750 gms 30% of Total	1237.5	Kg.	850	1051875
3	Crabs of 350-500 gms 30% of Total	1237.5	Kg.	650	804375

[8] Pen installations are the enclosures which are made using net or wooden material in shallow regions along 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 bottom permitting the free circulation of water at least from one side.

Financial Implication of a 5 ha Crab grow-out Pen					
4	Crabs of less than 350 gms 15% of Total	618.75	Kg.	350	216562.5
	Total Revenue	**4125**	**Kg.**		**3207188**
	Gross Profit (Revenue minus				**1583438**

Source: Marine Biological Research Station, Ratnagiri, Maharashtra

While the mud crab farming does result in significant profits, but it also requires following site details to be taken care of:

- Site with moderate Mangroves with muddy bottom can be utilized for Mangrove Crab project.
- Trenches 30% of total area needs to be made to restore water even during low tide (Approximately 3-4 feet)
- The peripheral nets should be fixed with HDPE Garden Fencing net of 32X22 mm Hexagonal mesh of good material.
- Stocking of 3.5 cm above crablets is necessary as small size crablets can go through the mesh.
- Preferably farmers should have at least 1 acre farm in vicinity where he can do nursery of crab instar or small crablets to more than 3.5 cm. (approximately 15gms)

This project initiated open pond crab farming but these have some limitations and the crab survival rate is only 30-40 percent. As compared to this, an innovative initiative undertaken by the Institute of Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Fisheries Sub Center (FSC) Wadamirya, and Ratnagiri assures the survival rate of 90-95 percent.

This technique is called Vertical Crab Rearing System (VCRS). The main necessity of this technique comes from the fact that the crabs are known to have cannibalistic character, due to which hard crabs in the pond attack the soft crabs which decreases their survival rate. This cannibalistic nature of the crabs presents a major problem for culturing them in open systems at anything other than low density. Therefore, it is important to consider the economically viable techniques for crab farming. By holding mud crabs in individual containers, as in fattening operations, survival can be dramatically improved as compared with pond-reared crabs where cannibalism is prevalent.

The following (Table III.3) is the comparison of two very important technique of crab farming - Pond culture and Vertical Crab Rearing System (VCRS).

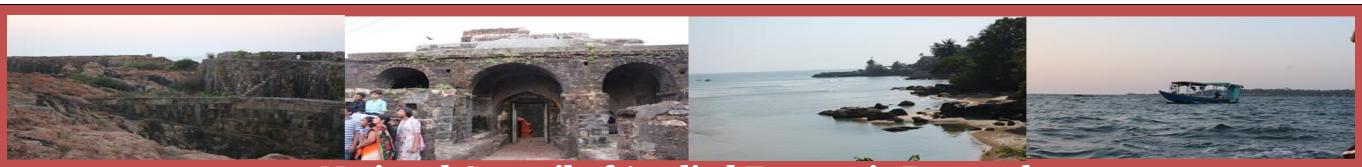
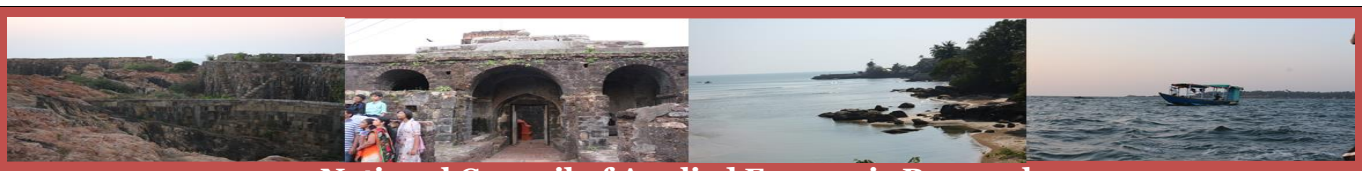


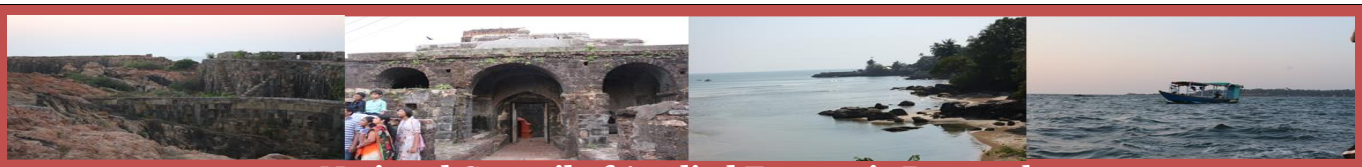
TABLE III.3: COMPARISON BETWEEN POND CULTURE AND VCRS

	Pond culture	Vertical Crab Rearing System (VCRS)
1.	This is traditional system of crab farming.	This is a sophisticated system and result of research and development with identified potential.
2.	**Method description** In this method, young crabs are grown for a period of 5 to 6 months till they attain desirable size. Pond culture is a mud crab grow-out system, with or without mangroves. The pond size varies between 0.5-2 ha, with proper bunds and tidal water exchange. Wild collected crabs of 10-100 gm weight are used for stocking. Feeding the crab is usually with trash fish along with other locally available items. Regular sampling is necessary to monitor the growth and general health, and to adjust the feeding rate. Partial harvesting of marketable sized crabs can be started from 3rd month onwards.	**Method description** 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 growth. In this system, small mud crabs (80-120 g) 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.
3.	**Loss of crabs due to spawning migration** The spawning migration of female mud crabs from the mangrove forests to offshore habitats is very common. They can spend considerable period of time on land. As a result, if some kind of barrier is not installed surrounding a mud crab aquaculture pond, stock would be able to walk out of the pond, which would be a direct financial loss to the farmer. To counter this mud crab behaviour, netting typically surrounds mud crab culture ponds. (Netting height may vary from 20 to 50 cm in height. 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 they can climb up netting, but are unable to climb up clear plastic sheeting).	**Crabs protected in confined cell** However, in VCRS, there is no problem of such loss, since crabs are protected in confined cell and in individual containers. This system needs some simple construction with easily available material. As the name itself suggests, it is less space consuming culture system. Water need to be changed if the water parameters are having adverse remarks.
4.	**Water requirement** Water volume required is high.	**Water requirement** Water volume required is lesser and water parameters can be controlled easily. Only 700 to 800 litre water is required for one moulting cycle of 100 crabs within 45 days.
5.	**Labour intensive** This is labour intensive system with minimal technological use. Main constraint is observation of each crab on daily basis. Only representative samples can be observed. Tedious job of crab	**Technology-driven** Systems have been built with a variety of technological systems incorporated into them to minimize labournd maximize automation. Probably the most sophisticated system



	Pond culture	Vertical Crab Rearing System (VCRS)
	harvesting, 100% harvesting is impossible, time consuming, chances of injury to both crab as well as crab collector. For harvesting, proper planning and particular period is required i.e. low tide for de-watering the culture pond.	designed to date includes cameras linked to a computer system that regularly scans cells to see if one or two crabs are in each cell. Two crabs in a scan means 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. Individual crab can be examined, observed daily or eventually without hustles. Easy for harvesting, less labour required. No injury to crab or crab collector.
6.	**Transportation** No mobility of this culture system.	**Transportation** This is a mobile system and can be transported from one place to other.
7.	**Risk of cannibalism** 'Stock thinning' provides chances for better survival by reducing the mutual attacks and cannibalism. But still the risk of cannibalism is not zero.	**Risk of cannibalism** However, in VCRS, the crabs are kept separately in different cells, so the risk of cannibalism is zero.
8.	**Risk of natural disasters** Natural disaster, like tsunami, flood may result in heavy loss.	**Risk of natural disasters** This risk is also zero in this system.
9.	**Working capital** Working capital includes cost of crablets, crab-feed, wages and miscellaneous. Cost of crablets is higher as large number of crablets are required (5000 for one acre water spread area), given low survival rate. Labour cost is also lower as less number of workers is required. For a one acre water spread area pond (one crop of 8 months), working capital is Rs. 8,19,000	**Working capital** Low working capital, due to lesser number of crablets required (1000 for 100 sq. ft. shade) and less number of workers required. For a 1000 Sq. ft. Shade (for one crop of 6 months), working capital is Rs. 5,78,000
7.	**Profit earned** Crabs harvested of average weight 800 gm with 40% survival rate = 2000 Crab produce = 2000 x 800gm =1600 kg. Cost of crab @800/- kg. (for 800 gm crab) Production sale = Rs. 12,80,000/- Profit= (Production sale)- (Production cost) = (12,80,000) - (8,19,000) = **4,61,000/-**	**Profit earned** Crab harvested of avg. wt. 1000 gm with 95% survival rate= 950 Crab produce = 950 x 1000gm = 950 kg Cost of crab @1200/ kg. (for 1000 gm crab) Production sale = 11,40,000/- Profit=(Production sale cost)- (Production cost) = (11,40,000/-) - (5,78,000/-) = **5,62,000/-**

Source: Marine Biological Research Station, Ratnagiri, Maharashtra



Our interaction with the institute revealed that there is a huge demand of Green and Red Crabs for pond culture, pond floating box culture, vertical Recirculating Aquaculture System (RAS) culture and most importantly it has high export potential. However, there is a scarcity of crab seed and, if available, there are variation in sizes, which ultimately affects the production and profitability. Also the fishermen who catch crabs, sell to the crab suppliers at a very low price, while the crab suppliers sell them to the processors for export at a very high price. The details of this technique is presented in Box 1.

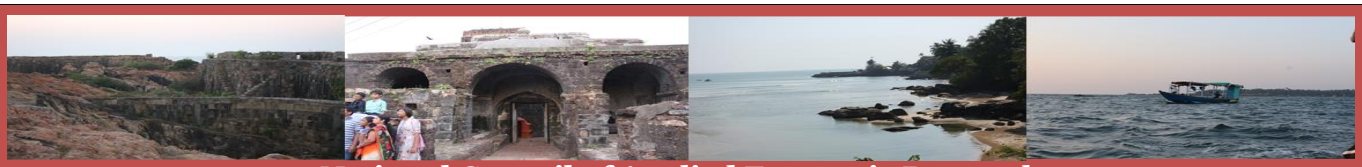
The research outcome of the institute also shows that the fresh water crabs have high demand but are not available throughout the year. However, it is possible to rear them in innovative vertical crab units in the institute. The main advantages of this exercise are to overcome the uncertainty of crab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

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 schemes. Under Blue Revolution Integrated National Fisheries Action Plan, there is a mention of 100 ha grow-out pond for Mud Crab as one of the specific actions for Maharashtra state. The schemes guidelines of National Fisheries Development Board (NFDB) also mentions about need based financial assistance for development of innovative and new technologies.

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

It is, therefore, suggested that need-based financial assistance be provided to the district for the adoption of crab culture. Summarising the importance of crab farming, the following important points emerge:

- There is a huge demand of green and red mud crabs (*Scylla serrata*)
- 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 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 percent of the actual cost limited to Rs. 1.5 lakh per hectare. Assistance is also provided for purchase of seed and feed where 50 percent of the actual cost, limited to Rs. 75000 per hectare, is provided.
- In September 2017, 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 Rs 15 crore budgetary provision for it. Under the



scheme, 50 villages in the coastal districts such as Palghar, Thane, Raigad, Ratnagiri and Sindhudurg were supposed to be benefitted.

- While there was no budgetary allocation in 2018, 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 to monitor the progress of encouraging VCRS, as against open pond culture, are the following:

- Change in water use
- Change in crab production
- Change in labour cost
- Change in profit earned
- Change in working capital cost
- Change in export volume.

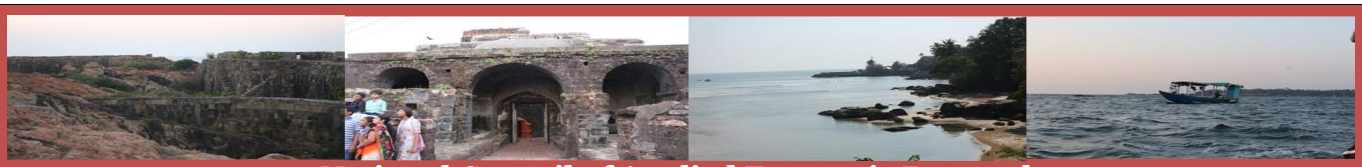
III.6. Setting up a Crab Hatchery in Sindhudurg

The proposal to set up a crab hatchery in Sindhudurg has been under consideration since the last three years. However, despite the funds allocated for this hatchery, it has not been set up as yet.

The Rajiv Gandhi Centre for Aquaculture (RGCA), the research and development (R&D) arm of the MPEDA, located at Thoduvai, Sirkali, in Nagapattinam district, Tamil Nadu, took up R&D work on the production of mud crab seeds in the hatchery, and established a hatchery at Thoduvai Village, Sirkali, Nagapattinam, Tamil Nadu. This hatchery is among a very few mud crab hatcheries in the world. The other countries producing crab seed in a hatchery include Philippines, Vietnam, and China.

The RGCA hatchery has been regularly producing mud crab seeds reared to crablet sizes at its demonstration farm and supplying them to farmers in the area. Owing to the highly cannibalistic nature of the larvae of this species, larval rearing of mud crabs is a very challenging task and survival rates achieved are extremely low when compared to other crustacean species and species of finfish. But scientists at RGCA have achieved a breakthrough survival rate of 7 to 14 per cent against the world average survival rate of just 3 per cent.

This encouraging breakthrough achieved by RGCA opens up avenues for commercialisation of mud crab hatchery technology leading to organised mud crab aquaculture in the coastal areas of the country. This also provides an alternate livelihood option to the weaker sections of the society and strengthens the production base of mud crabs for export.



Given the success of the RGCA hatchery and in order to boost crab production to meet the high international demand, there were plans to set up another hatchery in Maharashtra in 2017,[9] [10] which was also in the news in 2019. For this, MPEDA was willing to support a facility in Sindhudurg and RGCA was asked to provide technical assistance for it. It was supposed to be constructed at the swampy Vageshwer village in Sindhudurg, which is well known for its mangrove forest and is the ideal home of the mud crab.

The main aims of setting up of crab hatchery in Sindhudurg were to:

- Increase production to meet high international demand
- Save on the cost of flying in crablets from RGCA, Tamil Nadu, and hence make it more profitable; and
- Reduce the mortality rate of crablets, many of which could not survive the journey.

Financial Support for the Maharashtra Hatchery

According to the Maharashtra Government's Budget for the year 2017-18,[11] "A sub centre for crab hatchery is being created in Sindhudurg district on the lines of the centre now operational in Tamil Nadu. A sum of Rs 9.31 crore is provided for this initiative in 2017-18. Likewise prawn hatcheries will also be developed".

Economic Value Expected to be Generated

The hatchery was expected to have the potential to produce one million crablets in a year. For rearing, no capital cost is required. The input cost includes the cost of net and crab feed. With regard to crab feed, the crabs eat barnacles and oysters that are found in abundance in wetlands. They also keep the wetlands clean by eating dead fish. So, apart from entailing a low cost in terms of crab feed, rearing crabs has an added advantage of keeping wetlands clean.

The market value of each full-grown crab is about Rs 1000-1400. This works out to be a total value of Rs 100 crore in a year.

The parameters to monitor the progress of intervention on setting up a crab hatchery in Sindhudurg track changes in the following:

- Crab production;
- Cost of transportation of crablets;
- Profit levels;
- Mortality rate of crablets; and
- Crab export volume.

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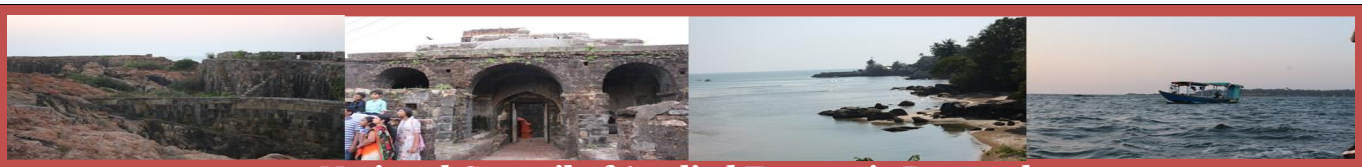
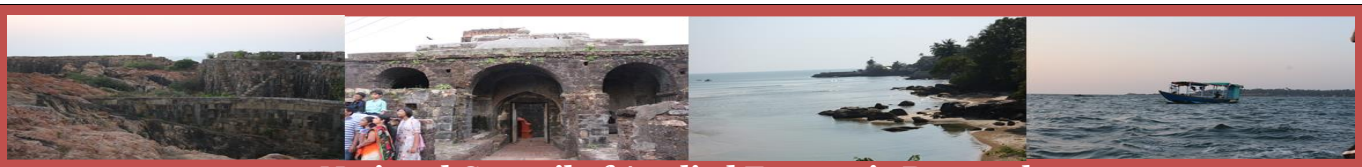
[9] "*Maharashtra to set up India's 2nd crab hatchery among mangroves in Sindhudurg",* The Hindustan Times, April 16, 2017.
[10] "*Mud Crab Hatchery to be Established in Maharashtra",* March 05, 2019
11 https://www.maharashtra.gov.in/PDF/Budget_2017_English_Part_I.pdf





IV. Export profile of Sindhudurg

This chapter aims to highlight that the sectors which have been identified as thrust sectors and several recommendations are proposed to give these sectors a boost, are also important because of their huge export demand. These include mango, cashew, fisheries, crab etc. To validate this, the export profile of the district is presented in this chapter.

It should first be noted that the official trade-related data are not available at district-level and even at state-level. The data on trade are available across ports of India, from where the goods from all over the country are shipped out to international market. However, we can present the information which may support the export profile of Sindhudurg district.

IV.1. Cashew

Worldwide, India and Brazil account for almost half of the global cashew nut production, with India's share at close to 40 percent. Along with Vietnam, Nigeria, Mozambique and Tanzania, the six countries produce more than 95 percent of world production.

India is the major exporter of cashew nuts and earns a sizeable amount of foreign exchange to the tune of Rs. 5,500 crores per annum. Indian cashew is exported to more than 60 countries in the world, mainly to U.A.E U.S.A., Netherlands, U.K., Germany, Japan, Australia, etc. The country earned foreign exchange equivalent to ₹5870.97 crores, from export of 84,352 metric tonnes of cashew nuts in the year 2017-18 (Table IV.1).

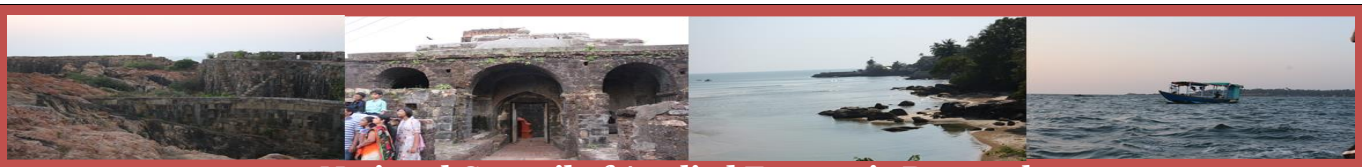


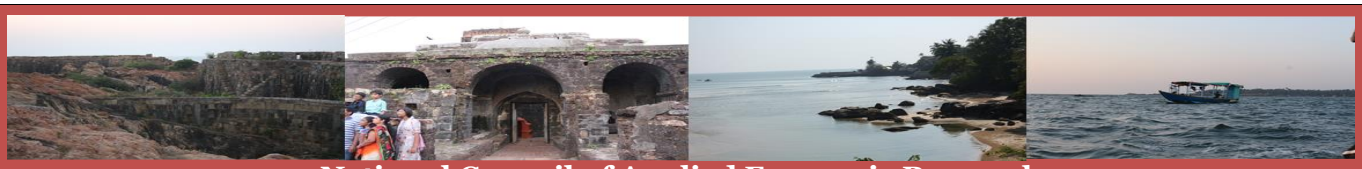
TABLE IV.2: EXPORT OF CASHEW NUTS TO THE MAJOR MARKETS (VALUE IN RS. CRORES)

Country	2013-14		2014-15		2015-16		2016-17		2017-18	
	MT	₹	MT	₹	MT	₹	MT	₹	MT	₹
U.A.E.	17421	788.20	239.40	1140.86	18537	963.55	18556	1216.7	17570	1252.29
U.S.A.	33898	1505.73	30643	1408.85	22661	1149.53	17515	1102.9	13179	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
Germ-any	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
U.K.	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	10536	450.93	9890	440.26	4123	367.73	5133	291.6	5424	362.59
Total Expo	**114791**	**5058.73**	**118952**	**5432.8**	**96346**	**4952.1**	**82302**	**5168.78**	**84352**	**5870.97**

Source: Director of Cashew and Coco Development 2017-18

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

Hence, clearly cashew grown in Ratnagiri and Sindhudurg have huge demand in international market. But these are not directly exported from the districts. The Jawaharlal Nehru Port Trust, Navi Mumbai is 300 km. away from Ratnagiri. The sources of transportation are Konkan railway and 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 Ratnagiri, Sindhudurg, Thane and Raigad districts of Konkan region as Agri-Export-Zone for Alphonso mango. Since both cashew and mangoes are major cash crops in the Ratnagiri and Sindhudurg districts, the cashew growers demand some initiatives to be taken for the promotion of cashew kernel also. One of these is suggested as setting up of a branch of regional office/ branch of Cashew Export Promotion Council in Ratnagiri district.

There are number of cashew processing units in Ratnagiri and Sindhudurg districts, about 800 in number. Most of these units are small but labour intensive. They are capable of generating employment opportunities especially to rural women.

IV.2. Mango

In Maharashtra, Konkan region is the major contributor of mango cultivation. The region is characterized by humid, sub–tropical and monsoonal climate, which is very much favourable for growing plantation crops. Sindhudurg is one of the major Mango cultivating districts in Maharashtra. It is cultivated on a large scale in Vengurla, Devgad, and Kankavali and Malvan blocks of the district. The total number of registered farmers (registered under Agriculture Technology Management Agency, ATMA) in the district is 2082. However, if the unregistered farmers are included with it, the numbers will be far higher than this as area and production are both second highest in the district for mango cultivation (Figure IV.1) after Ratnagiri.

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

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

Source: District Superintendent Agricultural Officer

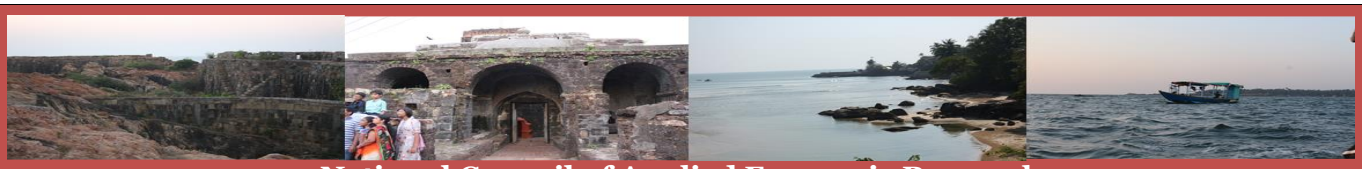
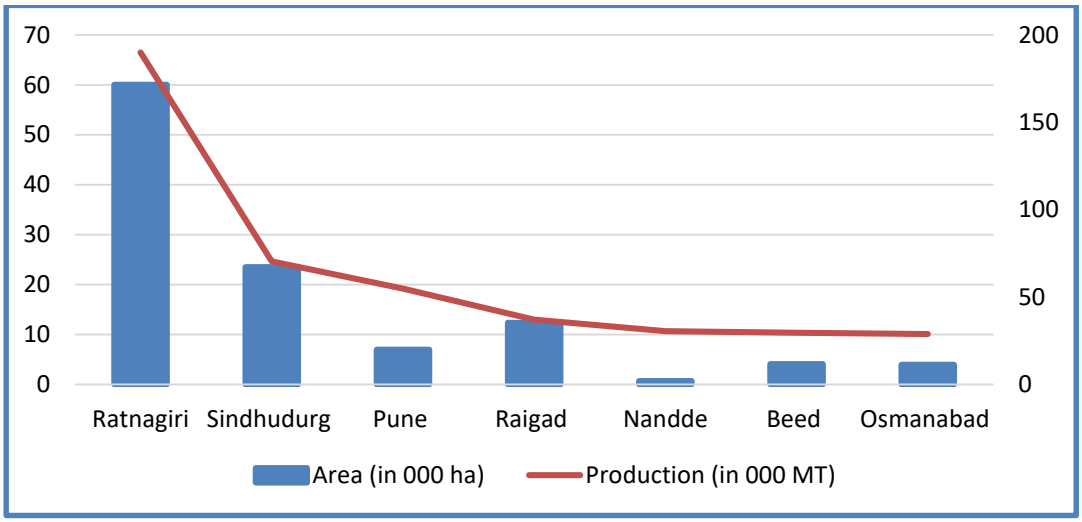


Figure IV.1: Area and Production of Mango in Maharashtra Districts, 2016-17



Source: Maharashtra 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 is due to the geographical origin.

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

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

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

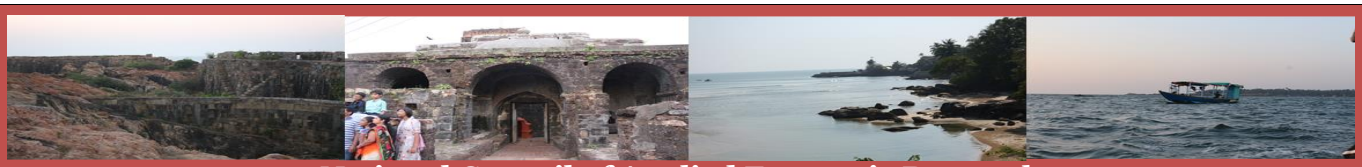


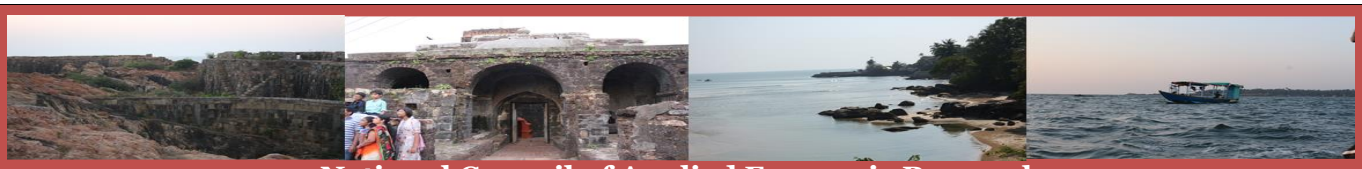
TABLE IV.3: EXPORT OF FRESH MANGO AND MANGO PULP IN 2018-19 (BY STATES IN DESCENDING ORDER OF VALUE OF EXPORT)

	Fresh Mango				Mango Pulp		
State	Qty	Rs. Lacs	US$ Mill	State	Qty	Rs. Lacs	US$ Mill
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	UP	319.66	173.38	0.25
Tamil Nadu	770.52	738.38	1.09	West Bengal	251.52	112.44	0.16
UP	1917.22	509.8	0.75	AP	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
AP	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	MP	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 MANGO FROM INDIA

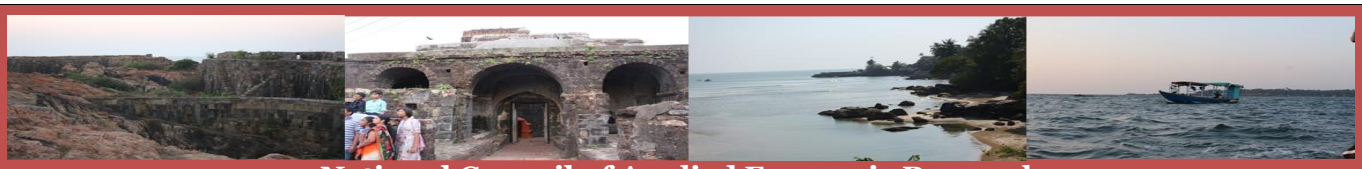
	2017-18			2018-19		
Country	Qty in MT	Rs. Lacs	US$ Mill	Qty in MT	Rs. Lacs	US$ Mill
U Arab Emts	23,542.53	18,458.37	28.61	16,398.18	15,336.16	22.78
U K	3,728.45	4,798.33	7.44	4,014.06	6,195.91	9.21
Oman	2,230.53	1,587.93	2.46	3,618.13	3,004.48	4.47
Qatar	2,321.89	1,981.35	3.07	2,877.58	2,838.83	4.2
U S A	800.63	1,772.68	2.75	951.34	2,442.00	3.63
Bangladesh Pr	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 Arab	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
Baharain Is	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



	2017-18			2018-19		
Country	Qty in MT	Rs. Lacs	US$ Mill	Qty in MT	Rs. Lacs	US$ Mill
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
Korea Rp	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
Netherland	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
Tanzania Rep	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
China P Rp	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	60.26

Source: APEDA

Stakeholder's interactions in Phase I of this Study revealed that the "export potential of mango is recognized 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. 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 conduct 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 undertake necessary steps to develop important packaging standard, variety specific protocol etc. It was encouraged that the different coastal brand growers may take the help of Food Safety and Standards Authority of India (FSSAI) in order to get exporter's licence from APEDA..

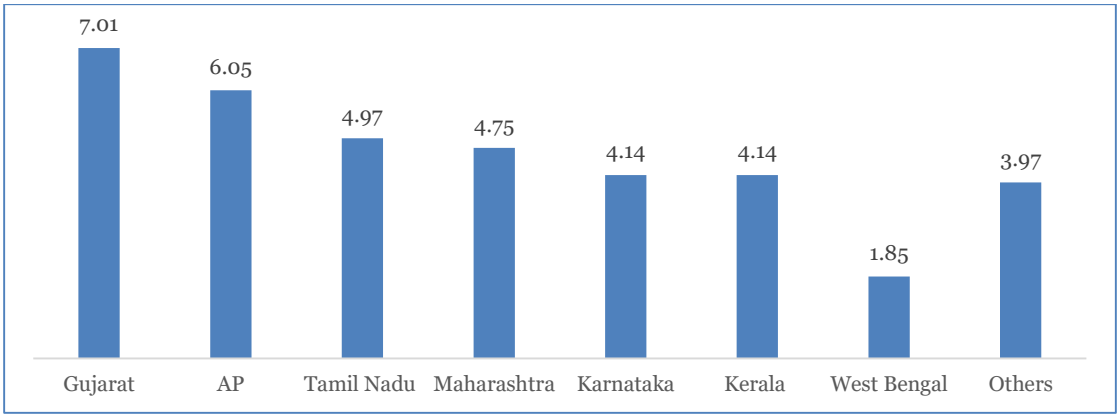
In order to boost the export potential of the district, organic certification should be promoted. This will enhance the export potential as well as avoid the use of pesticedies altogether.

The Government of Maharashtra is taking several initiatives to promote the expot 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

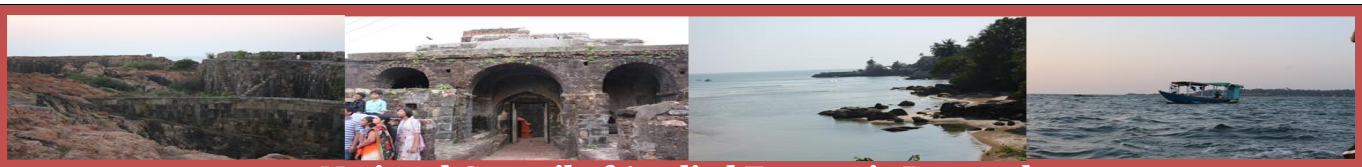
Maharashtra is the fourth largest marine fish producing state in the country. As of 2017-18, Maharashtra produced 4.75 lakh tonne marine fish. Gujarat, with 7.01 lakh tonne, is the largest marine fish producing state (Figure IV.2).

Figure IV.2: Marine fish production by states (in lakh tonnes), 2017-18



Source: Department of Fisheries, Maharashtra

The Sindhudurg district has a coastline of 121 kilometres providing ample opportunities for fisheries. There are 8 main fish-landing centres in Sindhudurg, namely Vijaydurg, Devgad, Achara, Malvan, Sarjekot, Kochara, Vengurle and Shiroda.



The population of fisher folk in the district was reported to be 25,365 persons, 34 fisheries cooperative societies, and annual fish production at 27,283 metric ton[12]. Fish provides quality food and sustainable income. Out of the 8 Talukas in Sindhudurg, 3 talukas are actively involved in fishing. Sindhudurg district has three major fish markets at Devgad, Chambar Bhati and Jamsande that offers significant marketing functionaries and trade.

There are a total of 83 fishing villages and 34 landing points in Sindhudurg. Although there is no specific district level data on employment and production of fisheries in Sindhudurg, the Department of Fisheries, Maharashtra, reports district-wise data of marine fish production but the data is available for the years 2005 to 2009 only.

However, it indicates the district's contribution to state fish production. Thane and Mumbai lead among the five fish-producing districts, with the combined share of almost 70 percent. Ratnagiri accounts for another about 20 percent and Sindhudurg and Raigad contribute the remaining 10 percent. Nonetheless, it is well-known that this sector is the backbone of Sindhudurg district economy.

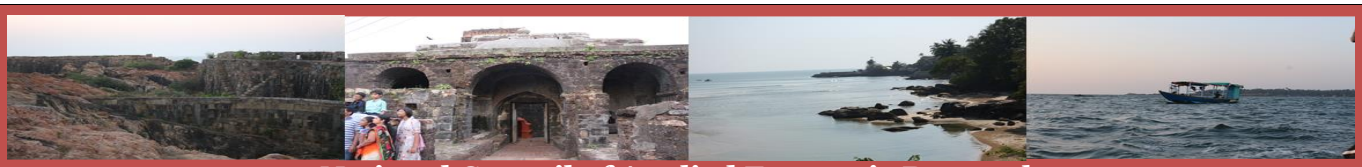
As, there is no direct export route from Sindhudurg; the fisheries sector mainly depends on Mumbai and Goa for its export purpose. The key export destinations of marine product in India are Japan, USA, European Union and China (Table IV.5).

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

MARKET		2015-16	2016-17	2017-18	2018-19
JAPAN	Quantity	75393	69039	85651	84080
	Value	2611	2621	2846	2920
USA	Quantity	153695	188617	247780	281913
	Value	8633	11482	14770	16220
EUROPEAN UNION	Quantity	186349	189833	190314	165571
	Value	6311	6892	7116	6256
CHINA	Quantity	50042	45443	49701	225519
	Value	1432	1342	1448	5673
SOUTH EAST ASIA	Quantity	328900	484819	616707	446966
	Value	7499	11462	14250	10561
MIDDLE EAST	Quantity	53905	52973	62220	60232
	Value	1794	1831	1849	1979
OTHERS	Quantity	97609	104224	124871	128278
	Value	2140	2241	2827	2980
Total	Quantity	945892	1134948	1377244	1392559
	Value	30421	37871	45107	46589

Source: MPEDA[13]

[12] Comprehensive District Agriculture Plan (C-DAP), District Sindhudurg, Department of Agriculture, Sindhudurg [http://krishi.maharashtra.gov.in/Site/Upload/Pdf/sindhudurg_cdap.pdf accessed on 29/11/2018]
[13] https://www.mpeda.gov.in/MPEDA/marine_products_exports.php#



IV.4. Crab Farming

Various initiatives have been taken in the past to promote the crab cultivation so that the production is large enough to meet 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 comprise 720 km of Maharashtra coastline. Due to informal nature of this activity, the statistics on crab production in Konkan are not available across districts and talukas.

The wild caught crabs are processed for export or consumed locally. Like all other export produces 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 adjacent state of Goa.

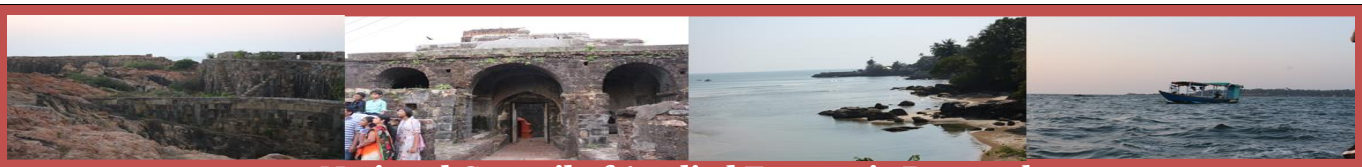
Despite having high potential and expected to be highly beneficial for local fishermen, crab culture is not separately covered under any state or central government schemes. Under Blue Revolution Integrated National Fisheries Action Plan, there is a mention of 100 ha grow-out pond for Mud Crab as one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

However, interaction with district administration and field survey in different talukas did not find any evidence of this action so far. Moreover, taluka officers do not even have knowledge about this.

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.

IV.5. Tourism

By earning foreign exchange for the Indian economy and contributing significantly to GDP, tourism is a potential means for generating export revenues. It is also highly labour-intensive and generates large numbers of jobs, including for young people and women. Being the “tourism district” of Maharashtra, Sindhudurg has a huge potential for stimulating domestic and international investments.



In the 2014-15 Budget, under the scheme, "The Swadesh Darshan Programme'", the Centre proposed to develop tourist circuits across the country, and made provisions to fund them. Under this programme, the Maharashtra government proposed to promote Sindhudurg as a coastal tourism circuit, upgrading the forts that dot the Sindhudurg area along with the beaches, and also providing better infrastructure, amenities, and accommodation facilities. The other plans as part of the programme included conversion of the Nivati fort at Malvan into cottages, and setting up of resorts and restaurants at Sawantwadi Palace.[14]

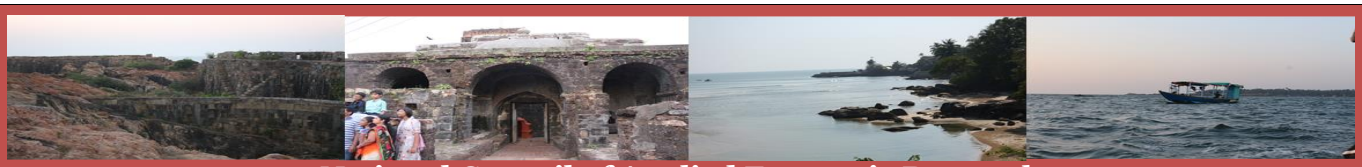
Bhogave beach in Sindhudurg was identified by Ministry of Environment, Forest and Climate Change as one of the 12 "Blue Flag Certification" beaches.[15] The "Blue Flag" certification serves as an eco-label and can be obtained by a beach, marina, or sustainable boating tourism operator if it adheres to the requisite criteria. The certification is awarded by the Denmark-based non-profit Foundation for Environmental Education (FEE). Apart from this, Sindhudurg was also initially considered for a US-Style Sea World Plan, which was unfortunately not successful because of the lack of support from locals.[16]

Until now, Sindhudurg has been receiving only domestic tourists, who mostly come from the neighbouring districts and States, but it also has the potential to attract international tourists. In this context, promoting the Chipi Airport in Sindhudurg, the Mumbai-Goa Highway, and the Coastal Road in Konkan can be used as a first step towards making the district an international tourist hub.

[14] https://www.hindustantimes.com/mumbai/maharashtra-sindhudurg-to-be-developed-as-major-tourist-hub/story-QZMrbT9Bbn1LY5gmhb5gEL.html

[15] https://www.hindustantimes.com/mumbai-news/maharashtra-s-sindhudurg-beach-eyes-international-recognition/story-ktkEhUbpwNroqeCELArh6I.html

[16] https://theprint.in/india/governance/nearly-a-decade-on-maharashtras-us-style-sea-world-plan-in-cold-storage/73858/



V. Handholding Support for Implementation

This section briefly presents the important activities undertaken towards providing the handholding support to the district. For this, we have been in regular contact with different departments of 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 Ms. Mamta Hatkar, District Planning Officer to discuss the development areas, regions where different schemes are being implemented, names of different projects and Sindhudurg district annual plan.

- Consultations were also held with the following relevant stakeholders and departments representing the State government and private establishments:

    - Agriculture Department
    - Fisheries Department
    - Maharashtra Tourism Development Corporation (MTDC) office in Malvan and Oras
    - District Industries Centre
    - Different Research stations including Cashew Research Centre, Regional Fruit Research Station, Mango Research Station etc.

- The study team had interactions with these departments in both Phase I and Phase II.

- 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 *taluka*s. 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.

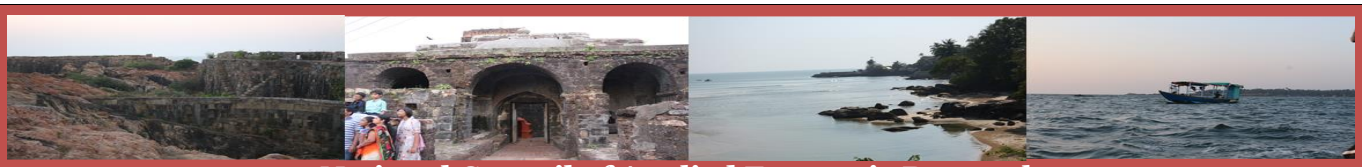
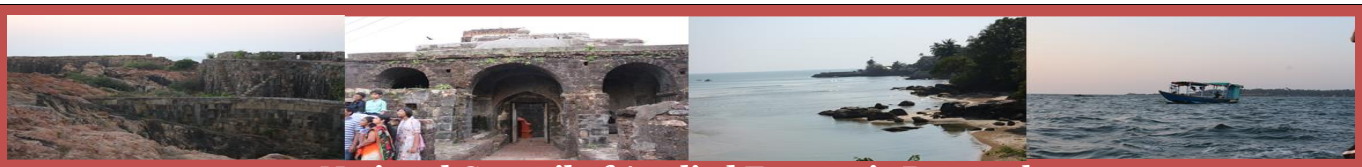
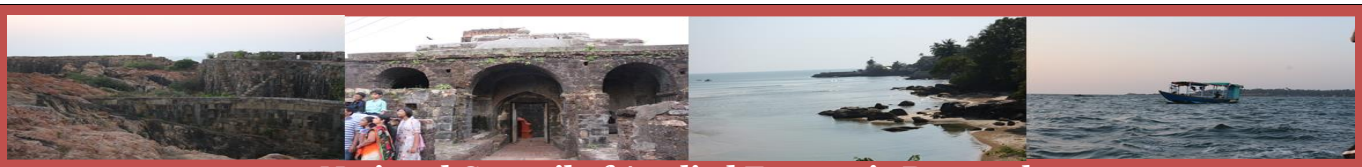


TABLE V.1 INTERVENTIONS FOR IMPLEMENTATION OF RECOMMENDATIONS

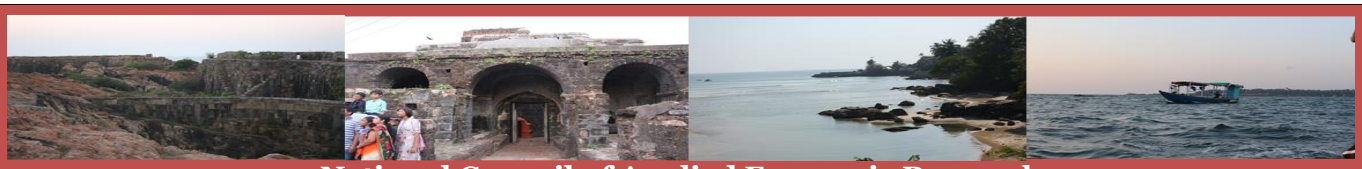
NCAER Recommendation	Justification	Location for intervention	Interventions towards Implementation
Spreading awareness about the Geographical Indication (GI) tag	In October 2018, the Alphonso mango from Sindhudurg and Ratnagiri received the GI tag, certifying that it has a specific geographical origin 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 conducted in Poip village of Malvan
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 per cent of the same. This has also been established in "A Study on the Export Potential	Across the district and the neighbouring district of Ratnagiri	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.



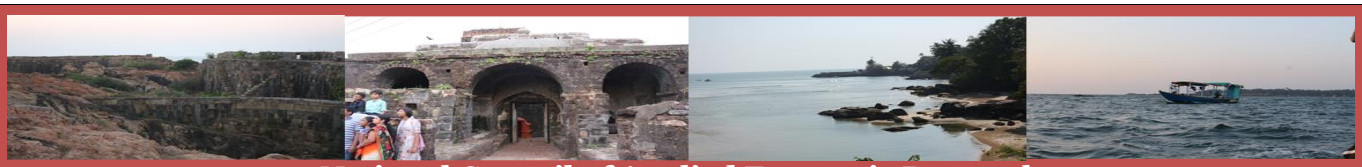
NCAER Recommendation	Justification	Location for intervention	Interventions towards Implementation
	of Cashew from India, with special reference to Kerala", undertaken by Chandrasekaran and Jeyakumar in 2014. Further, in Maharashtra, Sindhudurg and Ratnagiri are the two highest cashew-producing districts. 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.		
Spreading awareness for the different sub-schemes under Blue Revolution. Also 1. Make available basic facilities at landing points; 2. Promote deep-sea fishing; 3. Propose and facilitate establishment of Processing Unit and required infrastructure including Effluent Treatment Plants.	All the recommendations made for the fisheries sector can be categorised under any of the sub-schemes of the Blue Revolution scheme. However, the *taluka* visit showed lots of shortcomings on the part of both the beneficiaries and the implementation authorities. .	Across the district, especially benefits to Malvan, Devgad and Vengurla talukas of Sindhudurg district.	• Two Blue Revolution Awareness programme was conducted in Sindhudurg district. One in Malvan taluka on 24th February and another in Vengurla taluka on 26th February 2020. • Considering the economic importance of the fisheries sector in Sindhudurg district, it is highly recommended that the Blue Revolution scheme be re-evaluated by a third party.
Improved pesticide development	During the Phase I field survey, it was found that the existing pesticides have become immune to pests, so there is huge demand for improved pest management	Entire district, especially benefit to Vengurla, Devgad and Kankavali.	Two pest-management awareness programmes were conducted in different villages of Kudal *taluka*. First on 18th February, 2020 and second on 20th February, 2020.
Setting up common infrastructure facilities for mango and cashew growers	The demand for building common warehouse and cold storage facilities for Cashew and Mango in Sindhudurg district was highlighted by many processing units and	Entire district will be benefited in longer-run. But poor farmers of	Field visits in different *talukas* of the district revealed that the Rashtriya Krishi Vikas Yojana is active in the district. The demand for building a common



NCAER Recommendation	Justification	Location for intervention	Interventions towards Implementation
	farmers during the Phase I field survey.	Malvan, Kankavali and Dodamarg blocks will be extremely benefited.	warehouse and cold storage facilities for both cashews and mangoes in the Sindhudurg district can be facilitated under the said scheme. However, due to lots of 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. 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. Other schemes which can benefit poor cashew and mango farmers are the *Fruit Crop Cultivation Scheme* and *Mission for Integrated Development of Horticulture*. 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. 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.



NCAER Recommendation	Justification	Location for intervention	Interventions towards Implementation
Promotion of crab culture as a new and emerging area for economic growth	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 the coastal *talukas* of the district through crab rearing.	This benefit entire coastal talukas of Konkan. However, fishermen from Malvan, Devgad and Vengurla will be benefited especially.	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 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 benefits entire coastal talukas of Konkan. However, Oras and Kanavali talukas will be extremely benefited.	Presently, there is a scheme for cage farming in Sindhudurg, known as the *Subsidy of National Fisheries Development Board for Cage Farming*. This can also benefit the locals in the district if the regional characteristics of the district are carefully considered and integrated into the project.
Generating awareness for Tourism Sector	Sindhudurg was declared the country's first eco-tourism district in 1997. However, during our field visits and discussions with the DM, we learnt that lthough the implementing agencies face problems, a more complicated problem is the attitude of the locals towards tourism development in the district. This has led to loss of opportunities in terms of the local people reaping the benefits of tourism. This is also because the local people have had limited exposure and training in ways to promote and manage tourism. as a result of which larger operators seek to maximize the tourism	Across the entire district, especially in Malvan, Vengurla, Sawantwadi and Devgad	Apart from the regular discussion with the MTDC branches in the district, an awareness programme was conducted on 27 February 2020 in Sawantwadi. The agenda of the training programme was to make people understand and the importance of tourism for the district, and also to encourage them to avail of the benefits of existing tourism-related schemes.



NCAER Recommendation	Justification	Location for intervention	Interventions towards Implementation
	potential in neighbouring areas like Goa and Karnataka instead.		
Promoting the Ultra-High Density Plantation (UHDP)	Alphonso mango of Sindhudurg and neighbouring district of Ratnagiri retains high export demand. Also it has high local demand for own consumption. Therefore, increase in its production will be extremely beneficial for the district economy. It is even beneficial for cashew and coconut farmers.	Across the district, but especially Vengurla, Devgad, Kankavali and Malvan Talukas will be benefited.	In the district, an awareness programme on Ultra High Density Planation was planned for 20th March, 2020. Dr. R.M. Devare, Assistant Researcher, Mango Research Department , Regional Fruit Research Station, Vengurla, had agreed to train the farmers in the programme. But due to Coronavirus outbreak, the programme was postponed.

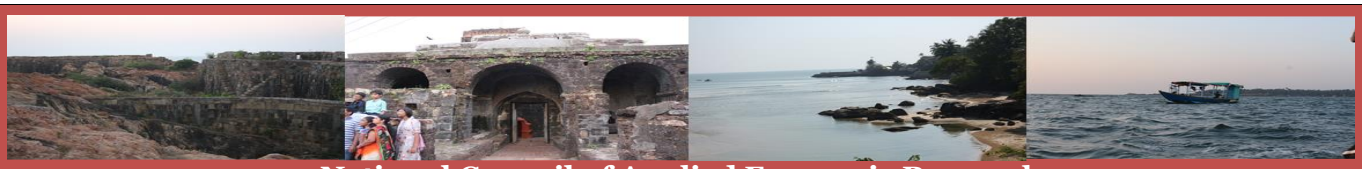
V.1. Skill Initiatives undertaken in the district

So far we have undertaken six training/awareness programmes in the district and there are some other planned. These are described below:

1. Awareness Programme on Geographical Indication for Mango

NCAER organised an awareness programme on "Mango Geographical Indication" on 18 October 2019. The programme was inaugurated by Mr V.C. Choudhari, Chairman of Mango Producer Society and Ms Reshma Joshi, Director of the Devgad Taluka Mango Producer Institute, Jamsande, and Former District Council Member. The awareness programmes were attended by 19 trainees. Local mango farmers from all across the Sindhudurg district, especially from the villages of Poip, Varad, Pendur, and Malvan, participated in the awareness programme.

Mr Choudhari welcomed the gathering and explained the objective of the awareness programme. Ms Reshma Joshi explained the importance of Geographical Indication (GI) in general, and for Alphonso mango), in particular, as well as the GI registration process, details of the GI certification institute (Registration Office), GI) law, and the difference between genuine and counterfeit manufacturers, among other things.During the awareness programme, pamphlets were also distributed to the trainees to obtain their feedback on the session, and the participants expressed satisfaction about the awareness programme. The programme ended with a valedictory function.



List of Participants

S. No.	Name	Address	Mobile. No.
1	Ganpat Anil Gamade	Hedul	8275364474
2	Sonu Keshav Gavde	Hedul	9422262601
3	Pradeep Parsuram Surve	Poip	9422846681
4	Anant Ramakant Pamode	Rathivade	7588435568
5	Ramchandra Baburav Parab	Chunavre	9404918716
6	Mangesh Damodar Panav	Poip	9404784254
7	Mrs Enita Anant Rane	Poip	9869125747
8	Sradhesh R. Maloumbar	Viran-Masade	9403349576
9	Sitaram Tukaram Mestri	Pendur	9801212998
10	Ajay A. Prabhugaonkar	Masure-Marde	9421236448
11	Sushama M Dhamapurkar	Makkav	9421191580
12	J.K. Sawant	Ajarnuy	9403638733
13	S.G. Kotale	Masure	8007419155
14	Mrs V.R. Kubal	Varad	9420388631
15	Ras B. Patil	Masure	8275589552
16	Naresh Y. Palav	Poip	9422122618
17	Rahan Hemant Palav	Poip	9405018635
18	Mrs Anuna Anil Palav	Poip	8275649170
19	Namadev S. Parab	Chunavre	9404784254

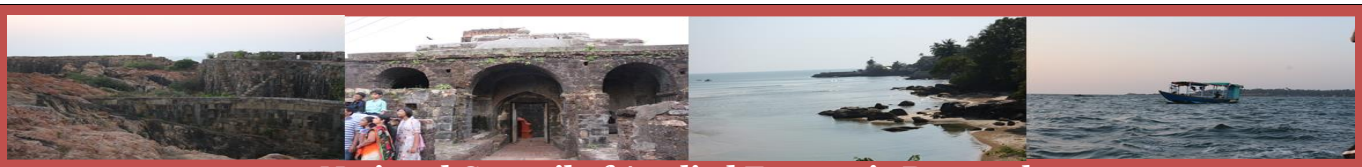
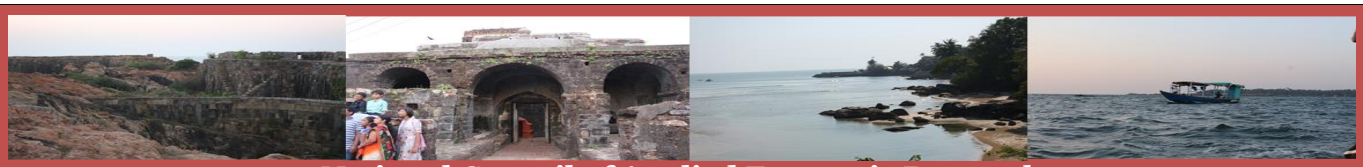


Figure V.1: Training Programme on GI Tagging

2. Awareness Programme on Mango and Cashew Pest Management

An awareness programme on "Mango and Cashew Pest Management" was organised on 18 February, 2020 in the Kudal *taluka* of Sindhudurg district. The programme was inaugurated by Mr Balkrishna Gawade, Entomologist, Krishi Vigyan Kendra Kirlos, Sindhudurg. The awareness programme was attended by 24 trainees. Local mango and cashew farmers from all over the Sindhudurg district, especially from Ambrad, Kudal (*taluka*), participated in the awareness programme. Miss Shreya Mestri, leader of the Bachat Gat Kudal (Women's Saving Group), CMRC office, welcomed the gathering and explained the objective of the awareness programme. Mr Balkrishna Gawade explained the importance of mango and cashew pest management, integrated pest management, need for f pesticides, methods of their application, different variants like immune and new pesticides and organic pesticides, and also the precautions to be followed in their usage.



List of Participants

S. No.	Name	Mob. No
1	Sugandha S. Kadam	88055447338
2	Shalini Badu Kadam	
3	Vina Sawant	9403012748
4	Vasant Kadam	
5	Suvrta S. Kadam	
6	Vikas Raul	7887343421
7	Sunita Soma Pawar	
8	Devaki A. Rahul	
9	Vithoba Rahul	9657249614
10	Vaishali V. Punare	7057077629
11	Anajali Ramakant Rahul	
12	Janadhardh Rahul	
13	Janvhi J. Rahul	
14	Supriya Mestri	8308899475
15	Gagesh Rahul	9358568165
16	Kalpana Rahul	
17	Vaishali Sawant	9623912448
18	Kusum Rahul	9623820753
19	Ramakant Rahul	
20	Deviky Rahul	8652284912
21	Krishna Rahul	9130788505
22	Shreya Mestri	9021862791
23	Vinita V. Rahul	7774902303
24	Aradhana Rahul	7720886883

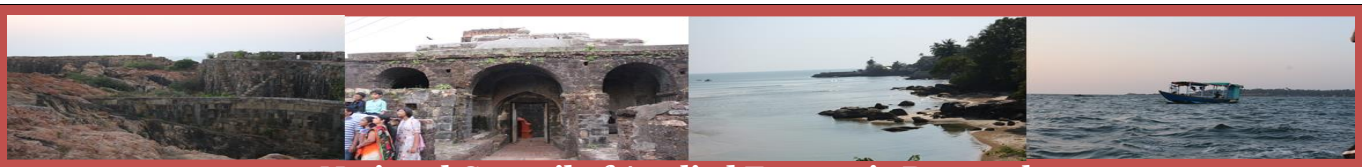
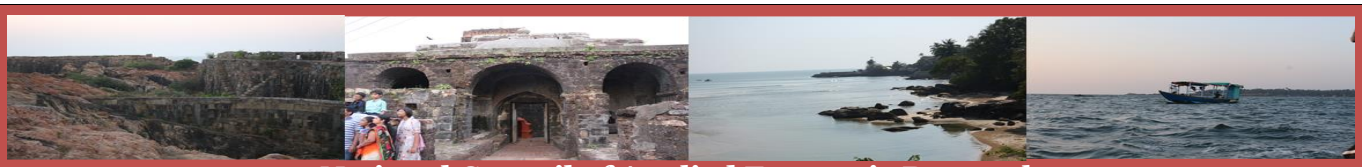


Figure V.2: Awareness Programme on Mango and Cashew Pest Management

3. Awareness Programme on Precautions for Using Pesticides

NCAER organised an awareness programme on "Precautions for Using Pesticides" on 20 February 2020 in Kudal. The programme was inaugurated by Mr Sakharam Sawant, Extension Officer, Panchayat Sameeti Kudal, who has an MSc in Agricultural Entomology. Also present at the session was Mr Prafful Walavalkar, Agriculture Office, Panchayat Sameeti Kudal, who too has an MSc In Agriculture. The awareness programme was attended by 35 trainees. Local agricultural farmers from all over the Sindhudurg district, especially from Kudal (*taluka*), participated in the awareness programme. Mr Preetam Keravdekar, leader of the Bachat Gat Kudal (Women's Saving Group), CMRC office, welcomed the gathering and explained the objective of the awareness programme. Mr Sawant and Mr Walavalkar explained the precautions and legal responsibilituies to be followed while using pesticides, and other issues entailed in their usage, including transportation, protection of non-pest animals and plants, container disposal, posting treated fields, pre-harvest intervals, maximum residue levels, processed crops, crop injury and personal safety of the users.



List of Participants

S. No.	Name	Mob. No.	Address
1	Resma K. Patil	7028537750	Kudal
2	Annapurna S. Parab	9420771982	Kudal
3	Arun Kadam		Kudal
4	Vimla Vinod Dhavankelkar	9404943840	Kudal
5	Milind Dangre	9075829737	Kudal
6	Rajeswari Kudalkar	9420307252	Kudal
7	Sayli Kudalkar	8261982042	Kudal
8	Rosan N. Gonded	8888231534	Kudal
9	Ramju Havildar	7815138186	Kudal
10	Mehbub Darni	7388603369	Kudal
11	Nasir Godad	8806132523	Kudal
12	Rahim Godad		Kudal
13	Sajida Rafik Godad	89753755280	Kudal
14	Govatni G. Dhavnkae	8551072732	Kudal
15	Satush Jadhav		Kudal
16	Nikita N. Pokhare	7517279689	Sawntwadi
17	Sayali Rahul	9730233116	Kudal
18	Sadhna Palkar	9420261423	Kudal
19	Perna Dalvi	9545194327	Kudal
20	Shilpa Ravle	9766285401	Kudal
21	Samidha C. Ghadi	7507255318	Kudal
22	Nitin Pokhare	7517279689	Kudal
23	Ashok Kadam	966573782	Kudal
24	Vaishanvi R. Kudalkar	9403560580	Kudal
25	Shakshi Chende	7768804778	Kankavli
26	Savita Pawar	9823744060	Kudal
27	Vishnu Rane	8888585069	Kudal
28	Sushama S. Bangare	9405862707	Devgad
29	Digambar Parab		Kudal
30	Sunita S. Kunkavlekar	7030114861	Kudal
31	Namrta N. Prabhu	8805621918	Kudal
32	Sunadha R. Endi	9420205538	Kudal
33	Shashikant Parab	9405187926	Kudal
34	Mitali Dhur	9823744060	Kudal
35	Dipika Parab	9423214394	Kudal

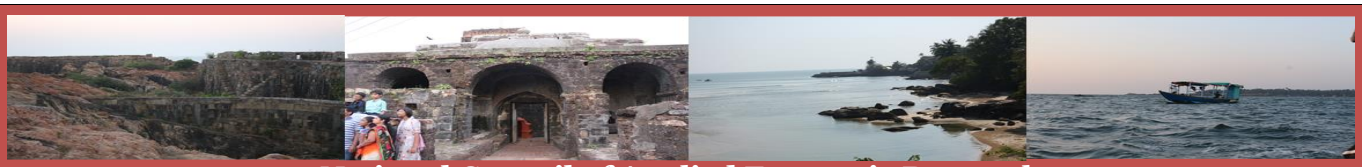
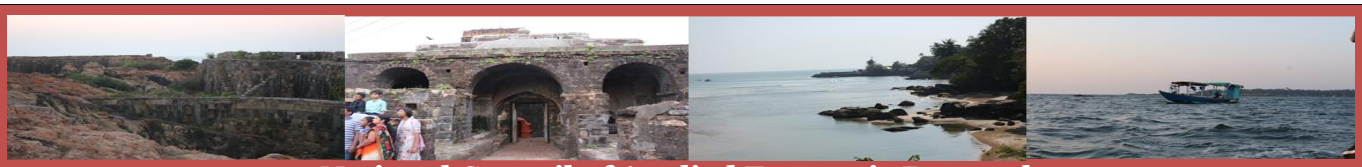


Figure V.3: Awareness Programme on Precautions for Using Pesticides

4. Awareness Programme on the Blue Revolution: Integrated Development and Management of Fisheries Scheme

An awareness programme on the "Blue Revolution: Integrated Development and Management of Fisheries" scheme was organized on 24 February 2020 in Malvan. The programme was inaugurated by Ms Mauri Malankar, leader of the Bachat Gat Kolam, Malavan (Women's Saving Group), Malvan. The awareness programme was attended by 26 trainees. Local fisher folk from all over the Sindhudurg district, especially from Malvan *taluka*, participated in the awareness programme. Ms Malankar welcomed the gathering and explained the objective of the awareness programme. Mr Bhavesh Gaikwad, PhD Fisheries Science, explained details about the Centrally –sponsored Blue Revolution: Integrated Development and Management of Fisheries scheme, and highlighted the vision, pattern of financial assistance, and implementing agencies associated with the scheme. Centrally Sponsored Scheme on Blue Revolution, The other issues discussed at the awareness programme inckuded the development of marine fisheries, infrastructure and post-harvest operations, strengthening of post-harvest infrastructure, assistance provided for fish transport infrastructure, the national scheme for fishermen, and development of inland fisheries and aquaculture. During the discussion session, the trainees also flagged the issue of lack of dissemination of concrete information about the scheme among them.



List of Participants

S. No.	Name	Mob. No.	Address
1	Nada Bapu Bavakr	9404370417	Kolam
2	Sandhay Mohan Manakar	9403291937	Kolam
3	Aapa Kapvdekar		Kolam
4	Santosh Dhuri	9860472688	Kolam
5	Manasai Mangesh Temkar	9405676659	Adari
6	Rujula Prubhavakr		Kolam
7	Arti Krushna Namnaik		Kolam
8	Vrushali Lad	9049630834	Malavan
9	Parsuram Kaptkar	9405264825	Malavan
10	Hemant Mettar	7588488298	Malavan
11	Vaisahali Jaitapkar	9421268695	Adari
12	Vinita Lokhande		Malavan
13	Jaipraksh Shelatkar		Malavan
14	Pramila Prathakr		Malavan
16	Lakshmi Sheletkar		Malavan
17	Ashri Paradkar		Malavan
18	Bhayghayshri Dichorkar	8600421635	Kolam
18	Ankita P. Bandkar	9420405884	Kolam
20	Vaman Lad	9049630834	Kolam
21	Bhakti Kavtakr	9405264825	Kolam
22	Chettayna Patkar	8975800983	Kolam
23	Mayuri Malnkar	8007650532	Khenda
24	Manali Kamekar	9420305047	Kolam
25	Sanjana S. Malankar	94047552002	Kolam
26	Ankita Nemlkar	9420397920	Kolam

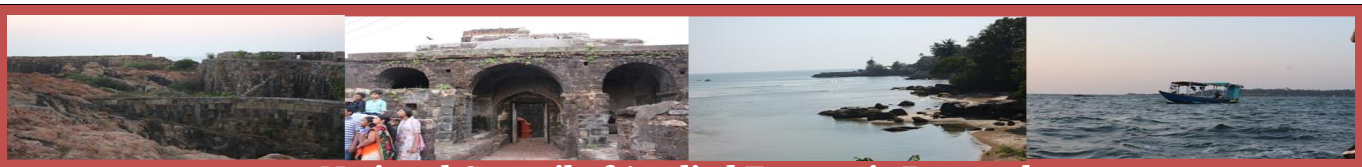
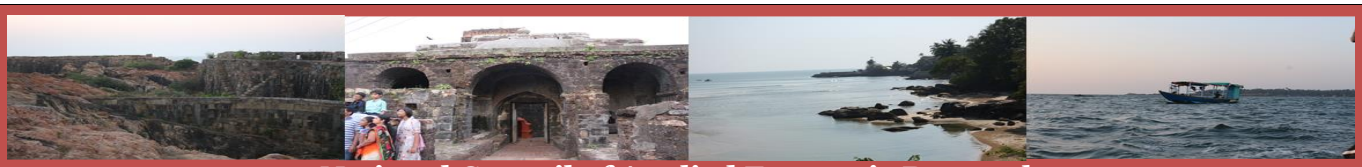


Figure V.4: Awareness Programme on Blue Revolution: Integrated Development and Management of Fisheries Scheme

5. Awareness Programme on Blue Revolution: Integrated Development and Management of Fisheries Scheme

Another awareness programme on the "Blue Revolution: Integrated Development and Management of Fisheries" scheme was organised in Vengurla on 26 February 2020. The programme was inaugurated by Mr Prittam Kerawadekar, Swadhar CMRC, Manager, and Ms Swati Manjerekar, leader and Coordinator of the Bachat Gat (Women's Saving Group, Vengurla. The awareness programme was attended by 23 trainees. Local fish farmers from all over the Sindhudurg district, especially from Vengurla *taluka*, participated in the awareness programme. Ms Manjerekar welcomed the gathering and explained the objective of the awareness programme. Mr Bhavesh Gaikwar, PhD, Fisheries Science, delivered a lecture on awareness about the Blue Revolution: Integrated Development and Management of Fisheries scheme, as well as the vision, pattern of financial assistance, and the implementing agencies associated with the scheme. The other issues discussed in the programme included the development of marine fisheries, strengthening of infrastructure and post-harvest operations, assistance provided for developing fish transport infrastructure, the national scheme for fishermen, and the development of inland fisheries and aquaculture.



List of Participants

S. No.	Name	Mob. No.	Address
1	Gitanjali Jadhav	9404941786	Vengurla
2	Vrushali Jadhav	8957128215	Vengurla
3	Pundalic Jadhav	9730789501	Vengurla
4	Vaishali Nadekar	8806074426	Vengurla
5	Viddal Jadhav	8957128215	Vengurla
6	Lushi Disoja	9404442955	Vengurla
7	Diksha Redekar	9405398626	Vengurla
8	Anushaka Malabari	7219816015	Vengurla
9	Manoj Gahdi	9404748564	Vengurla
10	Swati Besta	8698473646	Vengurla
11	Aan Mari Farnadis	9158370992	Vengurla
12	Mayura Manjerekar	9673887110	Vengurla
13	Sivprasad Redekar	7798844146	Vengurla
14	Monali Jadhav	9665344417	Vengurla
16	Smita Paradkar	9158735640	Vengurla
17	Ranjana Gavde	7769971620	Vengurla
18	Nishidini Mestri	9765575170	Vengurla
18	Purnima Mahajan	9765847375	Vengurla
20	Kurjon Farnadis		Vengurla
21	Rutuja Chenvankar		Vengurla
22	Sakshi Gavde	8806075761	Vengurla
23	Anjali Shirdkar		Vengurla

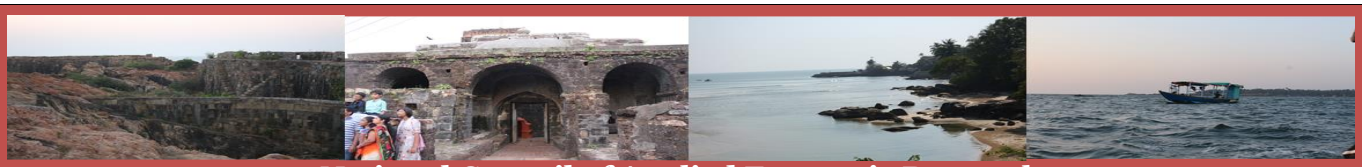
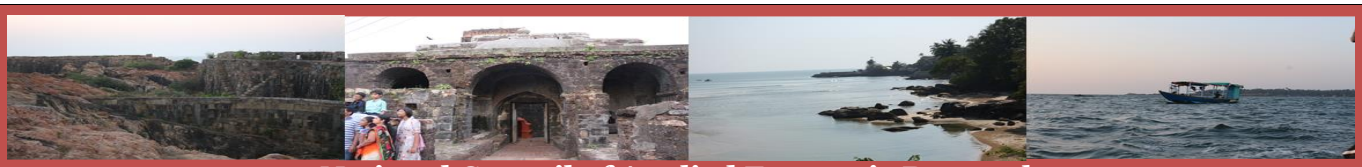


Figure V.5: Awareness Programme on the Blue Revolution Scheme

6. Awareness Programme on Scheme of Tourism

An awareness programme on the "Scheme of Tourism" was organised in Sawantwadi on 27 February 2020. The programme was inaugurated by Smt Sareeta Balkrishna Belanekar, Scientist, Horticulture. The awareness programme was attended by 26 trainees. Local people from all over Sindhudurg district, especially from Sawantwadi *taluka*, participated in the awareness programme. Ms Sushanti R. Arondekar, leader of the Bachat Gat Kudal (Women's Saving Group) CMRC Office, welcomed the gathering and explained the objective of the awareness programme. Smt Sareeta Balkrishna Belanekar, and Mr Bhavesh Gaikwad, PhD, Fisheries Science explained the need for spreading awareness about the scheme of tourism. the existing tourism resources and services available in Sindhudurg, the pattern of tourism employment in Sindhudurg, and the importance of carrying out sustainable rural tourism development in Sindhudurg.



List of Participants

S. No.	Name	Mob. No.	Address
1	Snajana Sandesh Jadhav	9420965984	Swantwadi
2	Laxmi Jadhav	9422563229	Swantwadi
3	Urmila L. Jadhav		Swantwadi
4	Vaman V. Jadhav		Swantwadi
5	Arajun Jadhav		Swantwadi
6	Gouri Mapsekar	9420170189	Swantwadi
7	Manasi Gad	9404970993	Swantwadi
8	Vanita Jadhav		Swantwadi
9	Satyvati Jadhav		Swantwadi
10	Darshath Kadham		Swantwadi
11	Madhavi Mahadev Jadhav		Swantwadi
12	Dipika Jadhav		Swantwadi
13	Mohini Gad		Swantwadi
14	Bhavika Jadhav		Swantwadi
15	Chnadravati Jadhav		Swantwadi
16	Suchita Jadhav		Swantwadi
17	Anusaya Jadhav		Swantwadi
18	Rajani jadhav		Swantwadi
19	Saravasati Jadhav		Swantwadi
20	Madhavi Mapsekhar		Swantwadi
21	Rajashree Jadhav		Swantwadi
22	Sanjavni Jadhav		Swantwadi
23	Neha Moyar	9420170558	Swantwadi
24	Anjali shirdodkar		Swantwadi
25	Manali Jadhav		Swantwadi
26	Reshama Moyar		Swantwadi

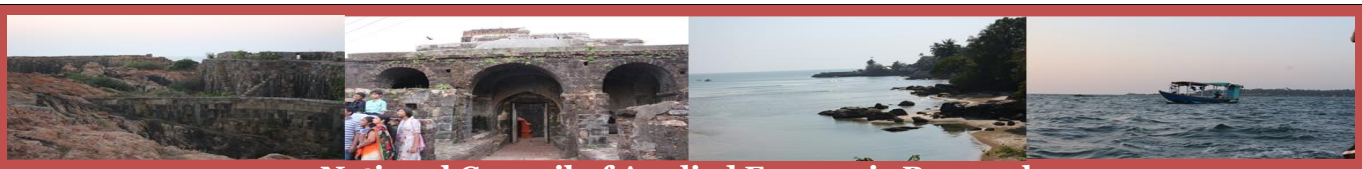


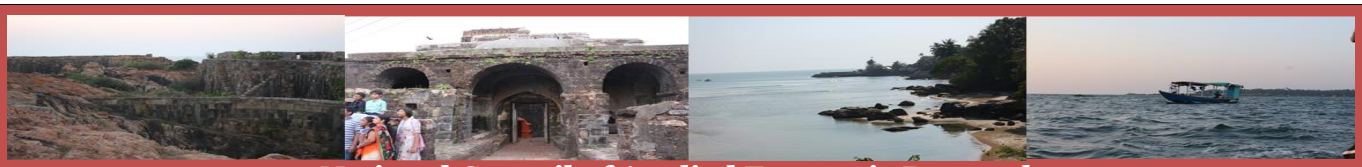
Figure V.6.: Awareness Programme on Scheme of Tourism

VI. Documentation and Communications

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

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

The activities have been well documented and are discussed in this report. The district stakeholders have always been communicated with the developments. The Phase I report was released in a big event in Mumbai and was widely circulated among the key stakeholders. Similarly, Phase II report will also be shared with them.



Appendix Tables – Baseline Statistics

TABLE A.1: GROSS DISTRICT Value ADDED – SINDHUDURG 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)							
Sindhudurg	8033	9153	10316	11174	11987	13907	16911	16479
KONKAN DIV.	436186	496236	559740	621626	675474	737076	819619	904733
	GDVA at constant prices (Rs crore)							
Sindhudurg	8033	8495	8955	9282	9782	10765	12263	11846
KONKAN DIV.	436186	465990	493990	538372	578164	622673	666095	709747
	Per capita GDVA at current prices (Rs.)							
Sindhudurg	94124	106455	119107	128077	136427	157275	190132	184228
KONKAN DIV.	151178	169456	188352	206155	220809	237682	260865	284243
	Annual growth (%, year-on-year) - GDVA at current prices (Rs crore)							
Sindhudurg		13.9	12.7	8.3	7.3	16.0	21.6	-2.6
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)							
Sindhudurg		5.8	5.4	3.7	5.4	10.0	13.9	-3.4
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.)							
Sindhudurg		13.1	11.9	7.5	6.5	15.3	20.9	-3.1
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, Govt. of Maharashtra

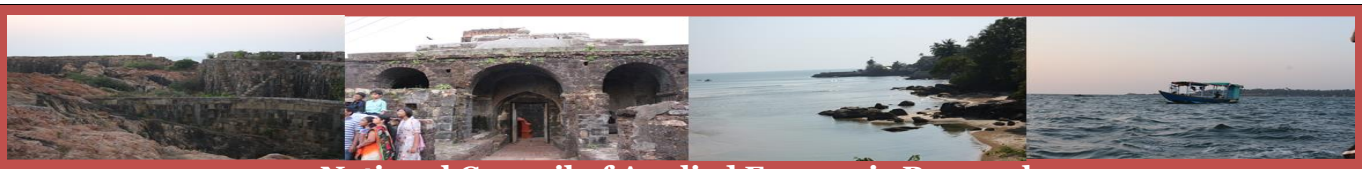


TABLE A.2: DISTRICT-WISE NUMBER OF GO-DOWNS AVAILABLE, THEIR CAPACITY AND FAIR PRICE SHOPS

District	Available Godowns (upto December, 2019)		Number of fair price shops (upto 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

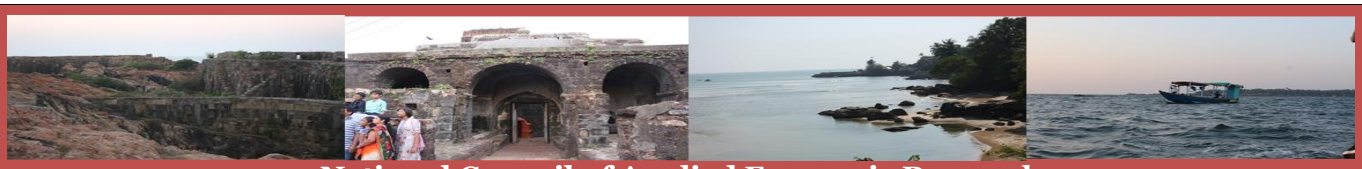


TABLE A.3: CASHEW STATISTICS - SINDHUDURG

	2013-14	2014-15	2015-16	2016-17	2019-20
Area in (Hectare)	38230.0	38541.0	38752.0	38900.0	59277.8
Production (in MT tons)	39835.0	40892.0	41930.0	42790.0	66003.0
Productivity (Kg/hect)	1042.0	1061.0	1082.0	1100.0	1113.5
Registered Large Cashew Processing Units					101
Small Micro Units					150
Total number of Cashew Processing Units					251
Processing of Raw Cashew Nut (MT)					150000
Export value of kernels to other countries (Rs crore)					28.5

Source: Comprehensive District Agricultural Plan (C-DAP) for Sindhudurg; http://www.krishi.maharashtra.gov.in/Site/Upload/Pdf/sindhudurg_cdap.pdf (for years 2013-14 to 2016-17)

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 tons)	236.2	235.0	220.0	256.6	269.4	215.6
Productivity (Kg/hect)	1282.3	1262.1	1181.5	1378.1	1407.4	1126.4

Source: Directorate of Cashewnut and Cocoa Development, Ministry of Agriculture and Farmer's welfare

TABLE A.5: FISHERIES STATISTICS – SINDHUDURG (2019-20)

	Sindhudurg
Number of Fishing Villages	83
Number of Landing Points	34
Number of Main Fish-landing centres	8
Number of Fisheries Cooperative Societies	34
Number of Processing Units	2

Source: Comprehensive District Agriculture Plan (C-DAP), District Sindhudurg, Department of Agriculture, Sindhudurg

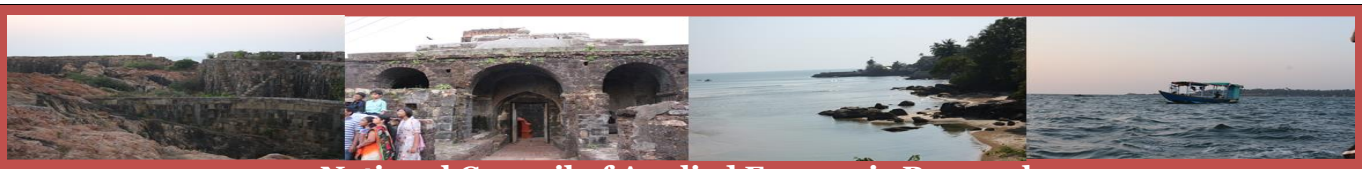


TABLE A.6: FISHERIES STATISTICS –MAHARASHTRA

Year	Inland		Marine		Total		Fish seeds produced In million fry
	Inland ('000 tons)	Growth rate (%)	Marine ('000 tons)	Growth rate (%)	Production ('000 tons)	Growth rate (%)	
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: FISHERFOLK POPULATION IN KONKAN DISTRICTS OF MAHARASHTRA

	Fisherfolk Population	% distribution
Maharashtra	3,86,259	100.0
- Raigad	123574	32.0
- Thane	121869	31.6
- Ratnagiri	66685	17.3
- Greater Mumbai	40953	10.6
- Sindhudurg	33178	8.6

Source: Marine Fisheries Census, 2010

TABLE A.8: FISHERY RELATED INFRASTRUCTURE - SINDHUDURG

	Number
Ice Factories	9
Cold Storages	8
Freezing Plants	1
Processing Plants	1

Source: Marine Fisheries Census, 2010

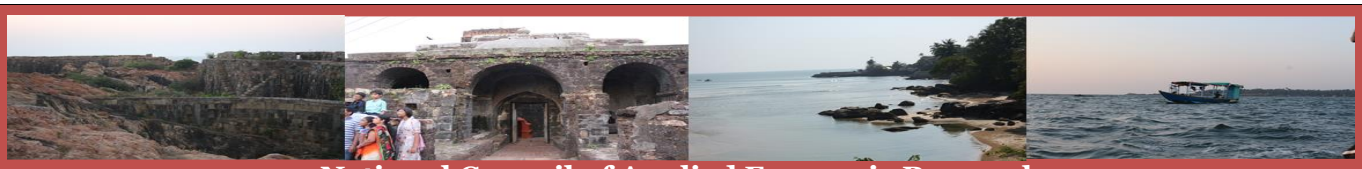


Table A.9: District-wise Estimated Annual Marine Fish Production of Maharashtra (in MT)

	Thane	Mumbai Suburban	Mumbai City	Raigad	Ratnagiri	Sindhudurg	Maharashtra
2009-10	121514	159560		39435	75122	20136	415767
2010-11	137701	143157		46919	95590	23336	446703
2011-12	117972	155799		46912	88438	24563	433684
2012-13	123792	70227	98471	41984	87690	26749	448913
2013-14	120924	70826	98748	42852	106852	27283	467458
2014-15	104700	66077	114957	41249	115042	21560	463585
2015-16	99520	62477	128336	39053	87030	17699	434115
2016-17	97802	65334	137349	41514	98443	22305	462747
2017-18	114399	66228	140105	53338	80340	20582	474992
2018-19	99461	63575	152557	58847	73738	19054	467232
2019-20	86225	76332	154353	41797	66173	18173	443543

Source: Bage Saheb, Statistics incharge at commissioner of fisheries, Mumbai, Maharashtra

Table A.10: Mango Statistics – Sindhudurg

	2013-14	2014-15	2015-16	2016-17
Area under Mango Production (Ha)	19052	19121	19162	19200
Mango production (MT)	44772	48567	52408	57408
Productivity	2350	2540	2735	2990

Source: Comprehensive District Agricultural Plan (C-DAP) for Sindhudurg; http://www.krishi.maharashtra.gov.in/Site/Upload/Pdf/sindhudurg_cdap.pdf (for years 2013-14 to 2016-17)

Table A.11: Number of registered Mango Farmers

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

Source: District Superintendent Agricultural Officer

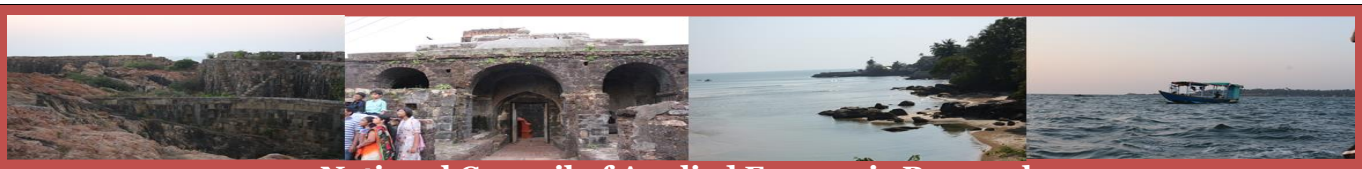
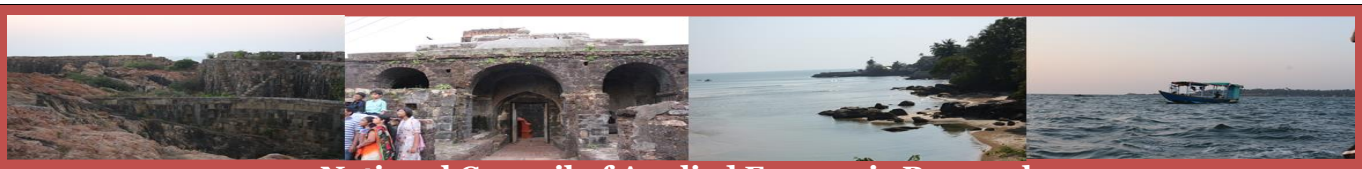


TABLE A.12: NUMBER OF MARKET COMMITTEE LICENSEES 2017-18 - SINDHUDURG

	Mango	Cashew
Devgad	10	15
Kankavli	2	45
Vaibhavvadi	0	0
Malwan	3	13
Kudal	2	10
Vengurla	0	0
Sawantwadi	0	0
Dodamarg	0	1
Total	17	84



Annexure 1

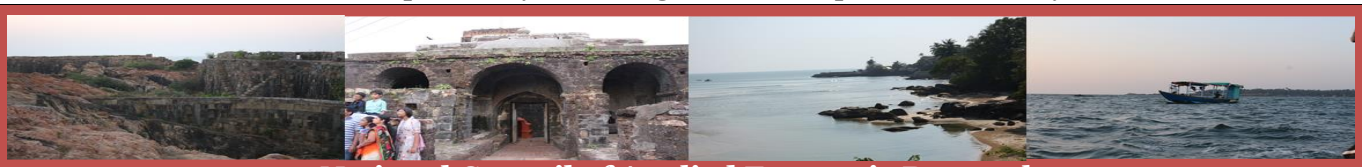
Record of Discussion of Review Meeting held through video conferencing with NCAER and other stakeholders of Ratnagiri and Sindhudurg district on 06-01-2021 to discuss District Development Plan Reports.

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.

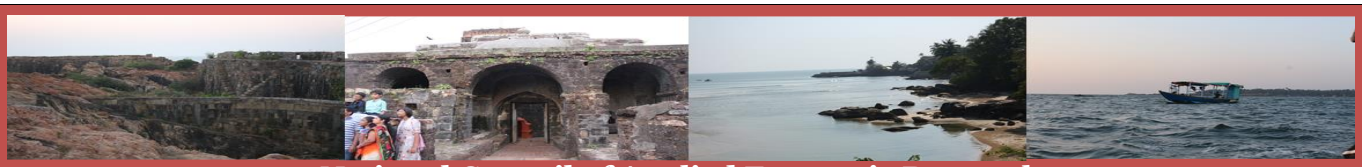
3.4 *Tourism* – Sindhudurg has been declared as Tourism District of Maharashtra since last many years. But due to lack of proper marketing strategies, infrastructural facilities and resistance from local communities, the district is still not popular among tourists, both from other states and international. 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.

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.

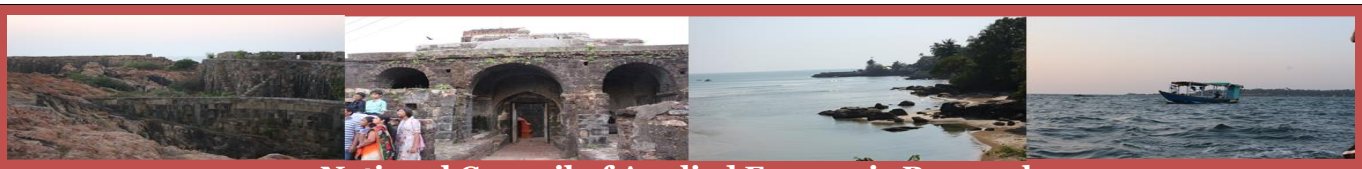
4.3 Smt. Manjulakshami, DM, Sindhudurg confirmed that the thrust areas are cashew, mango, fisheries and crab farming. She said that currently the practice is to sell the Alphonso mango, packed in small boxes. There is need for some handholding in packaging according to international standards, to reach 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:

   5.1 It was decided that NCAER will incorporate all the comments and observations made by all different concerned stakeholders in the Final Report.

   5.2 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

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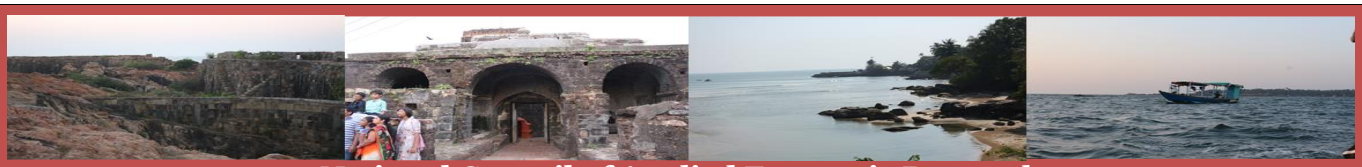
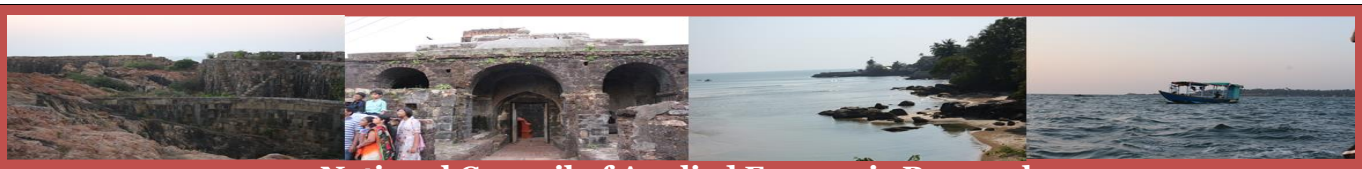


List of Participants of presentation cum review meeting of the District Development Plan Report of Ratnagiri and Sindhudurg Districts held on 06th January 2021 at 03:00 PM

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, M D, 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

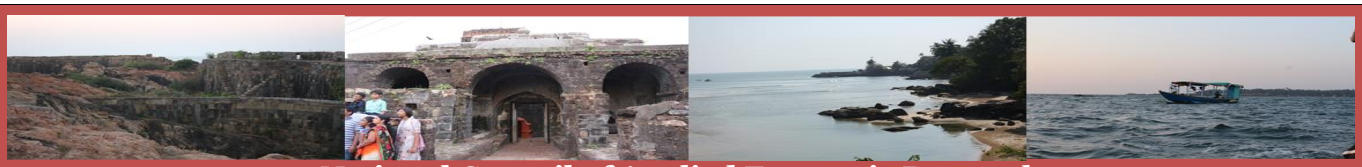
Record of Discussion of The Review meeting under Chairmanship of Shri Suresh Prabhu through video conferencing with NCAER, concerned Government and non-government departments and other stakeholders of Ratnagiri and Sindhudurg district held on 28-06-2021 to discuss District Development Plan (DDP) Reports.

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



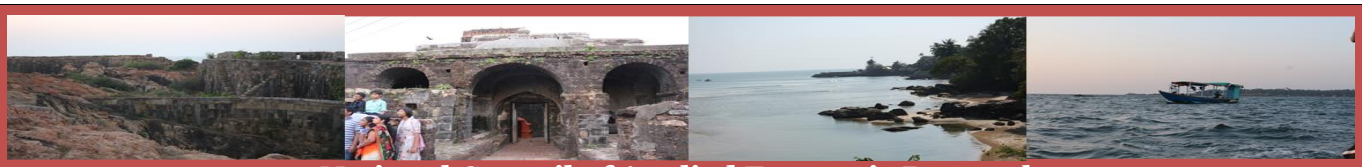
development of Sindhudurg , by not only providing the mud crab technology but also seabass and other inland aquaculture.

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 Sathiyan, 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:

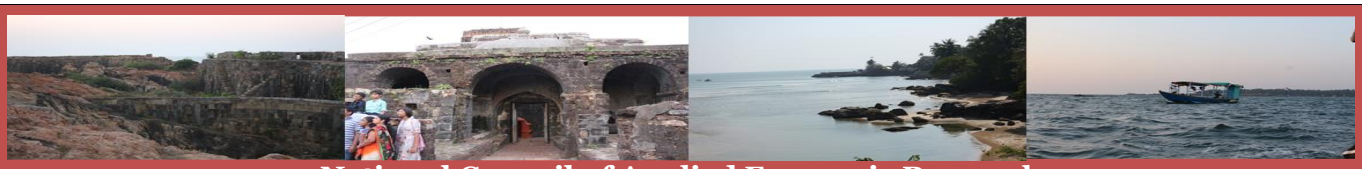
a) DPIIT may write DO letters to the respective departments/ministries pertaining to thrust areas identified under the study.

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.

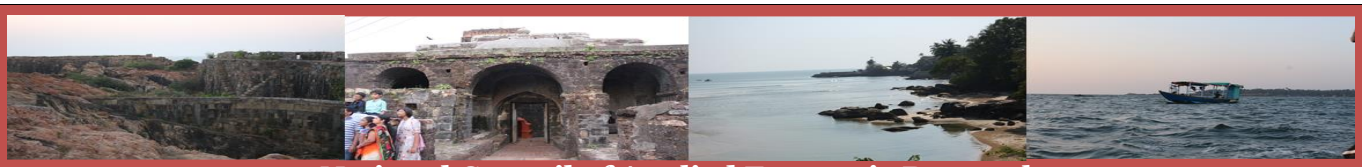
d) Another review meeting may be held after four weeks.

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

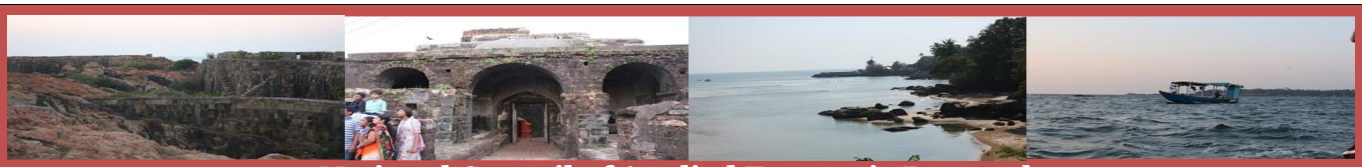


List of Participants of the Review Meeting under Chairmanship of Shri Suresh Prabhu of the District Development Plan Report of Ratnagiri and Sindhudurg Districts held on 28th June 2021 at 04:00 PM

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 Sathiyan, 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. Upenndra 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



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