

FOOD PROCESSING & AGRI-BUSINESS IN NORTH EAST - PROSPECTS & CHALLENGES

ASEAN India Co-operation in Food Security, Agriculture
Technology & Food Engineering

12th February 2015; World Trade Centre, Mumbai

S Bhattacharjee, NERAMAC Ltd,
A Govt. of India Enterprise, Guwahati

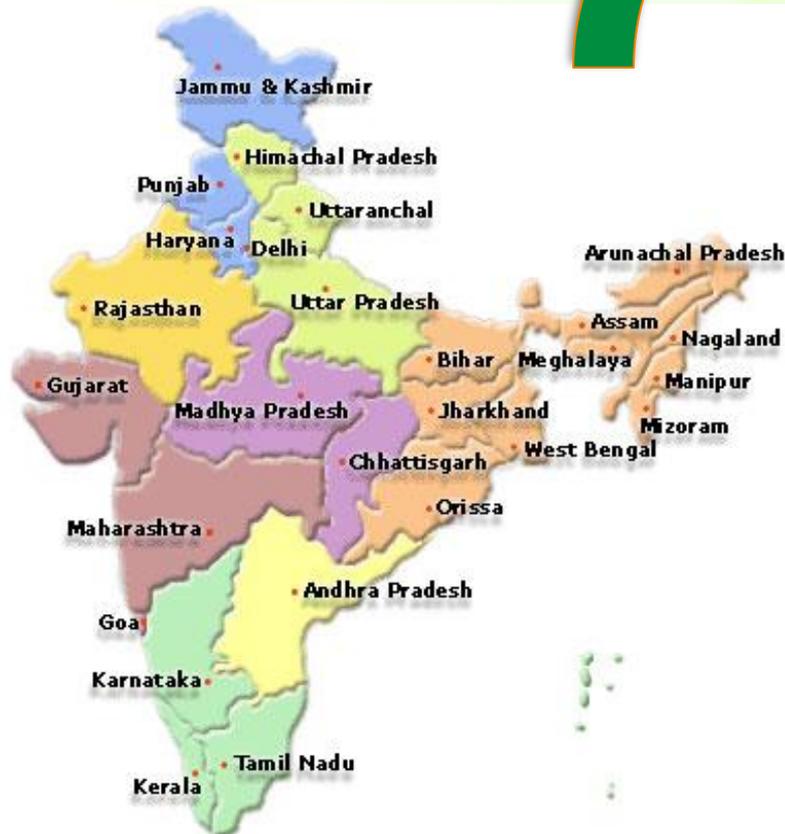
Introduction

- Food processing industry & Agri-business occupies a unique position in Indian economy as it provides vital linkages & synergies between industry and agriculture.
- North Eastern Region today stands poised as a major growth area, given the tremendous availability of natural resources. With its proximity to south east asian markets, being home to diverse & exotic variety of fruits & spices, this region could emerge as a major centre of food processing industry & can command a high price both in domestic & international market.
- Produces of the North eastern region being naturally organic has an added advantage. However, the present scenario of food industries is in a sort of paradox due to severe challenges like poorest of the poor infrastructure, inadequate Road & link roads, lukewarm response to postharvest initiative etc.

North Eastern Region – an important Hub



North East India



Northeast India -

These words evoke myriad images of warm culture and hospitality, interesting cuisine, spectacular landscapes and much more. . . . , Yet, somewhere we observe shades of loss and gloom because of the sense of monotony in the day-to-day grind. North East India is in a state of qualified, but perpetual abeyance. This is largely due to the fact that the enormous potential of the Northeast remains largely untapped, even 67 years after our Independence.



SIKKIM

ARUNACHAL PRADESH

ASSAM

MANIPUR

MEGHALAYA

NAGALAND

TRIPURA

MIZORAM



North Eastern Region – constitutes seven sisters & one brother flanked by hills & with the mighty Brahmaputra river slashing a central path between its north & south.

ABOUT NERAMAC

Incorporation:	31 st March, 1982
Promoter:	North Eastern Council, Govt. of India
Administrative Ministry:	Ministry of Development of North Eastern Region (DoNER), Govt. of India, Vigyan Bhavan Annexe., Maulana Azad Road, New Delhi-110 011
Registered/Head Office:	9, Rajbari Path, Ganeshguri, GS Road, Guwahati-781 005, Assam, India Ph.: (0361) 2341427-28, Fax: (0361) 2341428 E-mail: neramac@gmail.com Web: www.neramac.com
Zonal Offices:	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim & Tripura

DEVELOPMENTAL INITIATIVE

- NERAMAC is engaged in agro-horticultural development of NE Region through marketing intervention since last more than 32 years.
- It is instrumental in channelizing the produce of NE Region to various markets including commercial establishments so that farmers get good & remunerative prices to their produce.
- Corporation with the technical back up of its Associates handles turnkey projects on Seed Infrastructure Facility, Tissue Culture Unit, Model Floriculture Center, Model Nursery, Leaf Analysis Lab, Bio Control Lab, Import of Planting Material of all flowers & fruit crops, Establishment of Green House, Poly House, Shade, Net House etc. at different locations.



Objectives of NERAMAC Ltd.

To procure the marketable surplus of fruits and vegetables from the growers of North Eastern Region

To make necessary arrangement for its processing and marketing to give them remunerative prices.

To support farmers & producers through input supplies for better productivity under the various Central Sector Schemes.

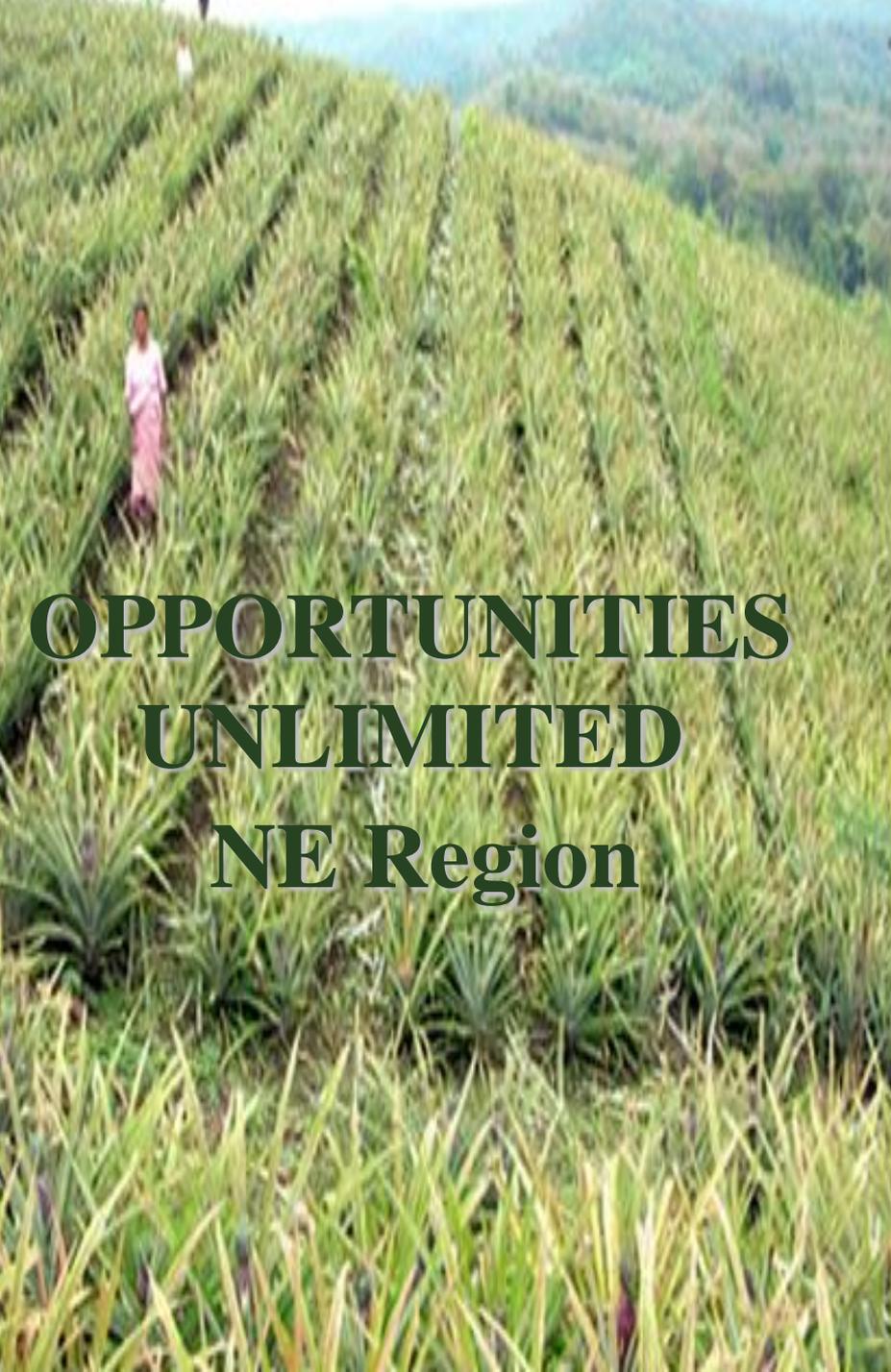
NERAMAC organizes awareness & skill development programs for development of Food Processing in NE Region.



OUR MISSION WITH GLOBALISATION

- Promoting Agro & Food Processing sector in NER...
- Leveraging the region's untapped potential for horticulture products...
- Making North East leading exporter of agro-horti produces & products ...
- Projecting North East in domestic & global map for agri- business ...





**OPPORTUNITIES
UNLIMITED
NE Region**



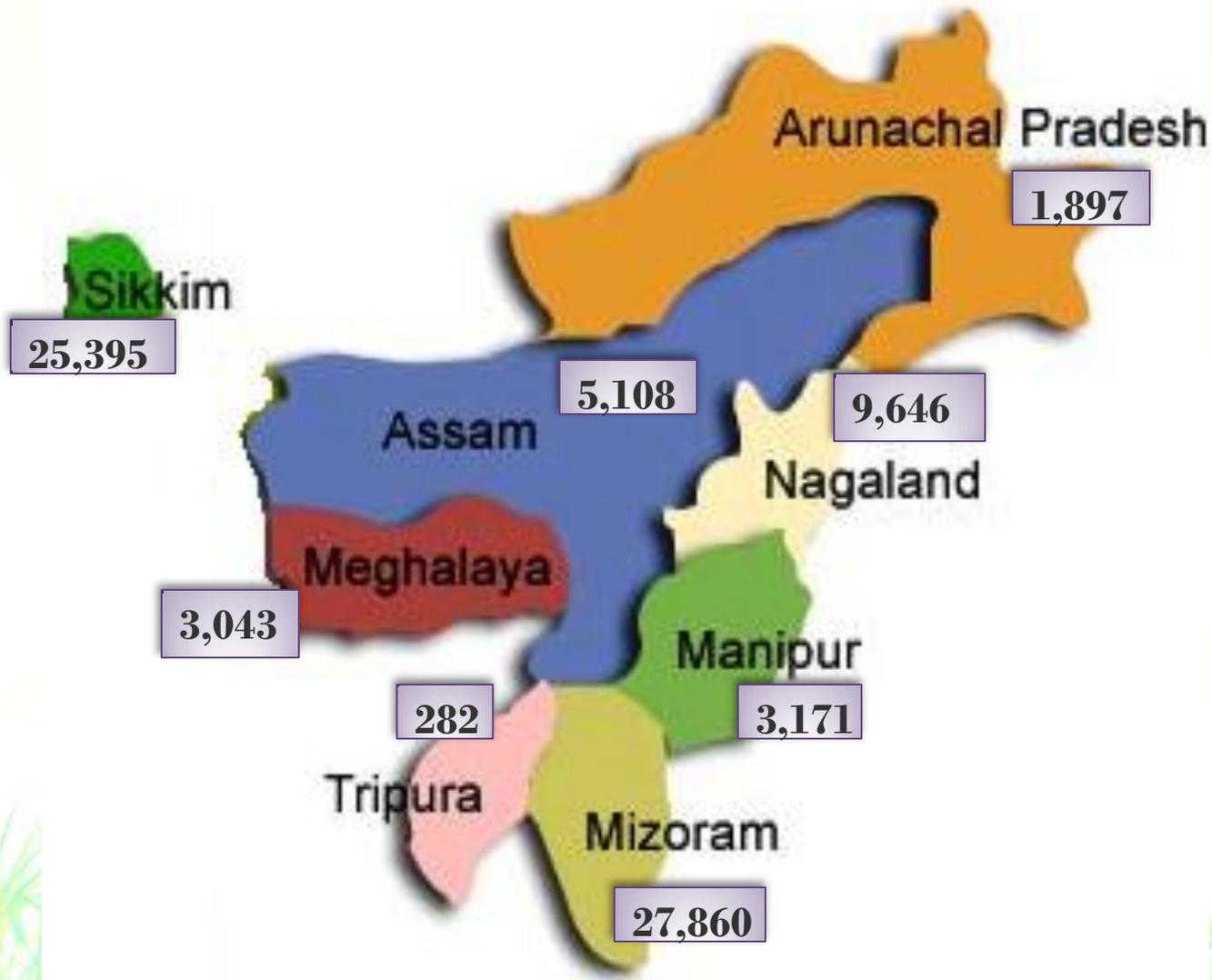
**AGRO-HORTICULTURAL
*Prosperity***



Crops with Market Potential

State	Crops
Arunachal Pradesh	Citrus, Apple, Kiwi, Walnut, Ginger, cardamom, pepper, Cabbage, tomato
Assam	Pineapple, Banana, Orange, Lime, Cashewnut Ginger, Black pepper, Arecanut, Vegetables
Manipur	Pineapple, Passion Fruit, Banana, Orange Ginger, turmeric, Chillies, Cabbage, Pea, Tomato
Meghalaya	Orange, Pineapple, Strawberry, Ginger, turmeric
Mizoram	Banana, Orange, Passion Fruit, Hatkora, Ginger, turmeric, Chow-chow, Cabbage, Broccoli
Nagaland	Pineapple, banana, passion fruit, orange Turmeric, ginger, large cardamom
Tripura	Pineapple, Banana, Litchi, Cashew nut, Vegetables
Sikkim	Orange, Ginger, Large Cardamom & Vegetables

Area under Organic Farming in NE Region (Area Ha ; 2009-10)





























CASH CROPS OF NORTHEAST: Organic



CASHEWNUT

CHILLIES

FRESH GINGER

ORANGES

PASSION FRUIT

PINEAPPLE

KIWI FRUIT

TURMERIC



PINEAPPLE

Variety- Giant Kew

Availability –

**June to August &
December to March**

Avg. fruit wt.-

1 to 1.5 kgs

**Available as fresh,
concentrate &
canned & bottled**

through PPP





PINEAPPLE

TSS (100% maturity): up to 16

Acidity % : 0.6

pH : 3.2

Total sugar (mg /100 gm): 6.6

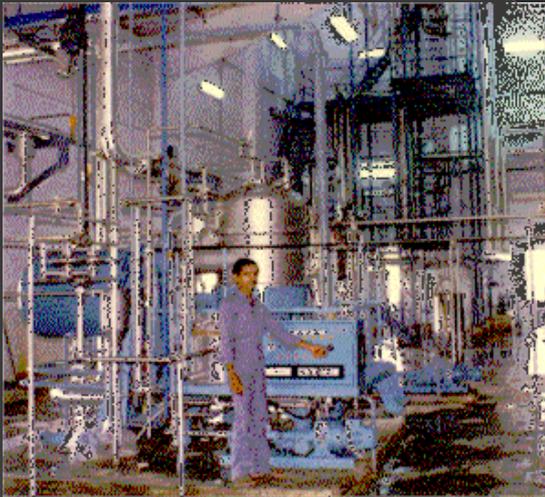
Vitamin C (mg /100 gm): 13.7



Fresh Pineapple Packing & Marketing in CFB Boxes by Rail from NER with AAU Technology



Pineapple Juice Concentrate Plant at Nalkata, Tripura has been Operational since 1988



NERAMAC has been able to keep the plant functional over the years despite ageing equipment

Pineapple As Planting Material





MANDARIN

Currently being exported to the country like Bangladesh, Khasi Mandarin is famous for its taste and sweetness.

Availability: November to January















STRAWBERRIES

Availability: December to May

Avg. fruit wt: 20 to 30 gms

Varieties: Sweet Charlie,
Camarosa, Chandler.

With the largest area in the North East at 31 Ha , Meghalaya is the biggest producer in the North East and is in a position to export large volumes to Bangladesh, Bhutan, Nepal & the Middle East.



CASHEW



Variety: V- 1, V- 4, U-3 & U-4

Availability: April through June

Chemical Free i.e. naturally
Organic by default



CASHEW

Grown Organic, Grade –4 J to 6J,

Cashew nuts of north east are a perennial favorite with the elite of the country.

Processed nuts are available all the year round.



A lip smacking snack with high nutritive and medicinal value

A collection of various spices including ginger, cardamom, black pepper, bay leaves, and turmeric. The background is a soft-focus image of these spices scattered on a light surface.

Available SPICES in NE Region

- ❖ FRESH GINGER
- ❖ CHILLIES
- ❖ BIRD'S EYE CHILLIES
- ❖ TURMERIC
- ❖ BAY LEAVES
- ❖ BLACK PEPPER
- ❖ LARGE CARDAMOM



GINGER

With relatively low fiber content, ginger enjoys good demand in the National and International markets and lends itself well to value addition.

Variety:

Nadia, Varada

Availability:

Nov to April.

PROCUREMENT MECHANISM OF FRESH GINGER

❖ SUPPORT PRICE MECHANISM:

- Arunachal Pradesh
- Mizoram

❖ DIRECT PROCUREMENT:

- Assam
- Meghalaya
- Nagaland
- Tripura

Once NERAMAC swung into action price increased from 50 paise per kg to between Rs. 3 - Rs. 25 depending on the quality.

TRADING & MARKETING OF FRESH GINGER

DIRECT MARKETING

- ❖ AZADPUR MANDI, NEW DELHI
- ❖ POSTA MARKET, KOLKATA
- ❖ CHANDIGARH / LUDHIANA SABJI MANDI
- ❖ SITAPUR TRMNL MRKT, LUCKNOW
- ❖ SABJI MANDI, NOIWARGANG, JABBALPUR
- ❖ SILIGURI REGULAED MARKET/ COOCHBEHAR

MARKETING THROUGH ASSOCIATION:

- ❖ ASSOCIATED WITH GINFED, KARBI ANGLONG, DIPHU
- ❖ MOU WITH MAMCO, GOVT. OF MIZORAM, AIZAWL

INITIATIVE ON GINGER PROCESSING (ORGANICALLY CERTIFIED)



FRESH GINGER





Lakadong Turmeric Slice
Curcumin 7.6%

TURMERIC

From the sylvan environs of Jaintia Hills of Meghalaya comes the famous variety of Lakadong.

With the HMNEH more & more production has started in NER.



02.08.2005

Curumin content: > 7%
highest in the world.

Proven medicinal
properties.

Availability: Dec to Jan



Available as:

- fresh rhizome,
- dried slices / flakes &
- packaged powder.

FRESH KING CHILLIES





Dry King Chili (Machine Dried)

Existing Market Dynamics in the North East



Initiative taken in Spices marketing

Main Produces that we intervene in procurement & marketing among spices are :

- Green Ginger
- Large cardamom(Direct Procurement/Auction)
- Turmeric
- Bay Leaves (Tez patta)
- Seed Ginger
- Planting materials
- Value addition in Ginger

Core Marketing Network

Direct Procurement (Farmers/Principal farmer)



Collection Centre (At principal farmer House)



Stocking at Ware House

Direct Selling through Siliguri Regulated Market.

Forward to Upward Market
(Delhi, Mumbai, UP, WB)

Initiative on the Export ...

TRUE POTATO SEEDS

❖ FRESH PINEAPPLE

❖ FRESH ORANGES

❖ PINE APPLE JUICE CONCENTRATE

❖ LITCHI PULP

Wastage of Agro-horti Produces

- A nation wide study on quantitative assessment of harvest & post harvest losses for 46 agricultural produces in 106 randomly selected districts was carried out by CIPHET, Ludhiana.
- Percentage of losses estimated for major produces are as under:

Crop	Cumulative Wastage (%)
Cereals	3.9-6.0%
Pulses	4.3-6.1%
Oil Seeds	6.0%
Fruits & Vegetables	5.8-18.0%
Milk	0.8%
Fisheries	2.9%
Meat	2.3%
Poultry	3.7%

NORTH EAST LOSSES ARE ALARMING APPROX. 40% - Study done by AAU, Jorhat

Circumstances & Status in NE Region

- NE Region is blessed with Agro-horti bounties
- Fruits & Vegetables are aplenty
- They being Organic, has huge export potential
- Poorest of the poor infrastructure, zero post harvest....
- Inadequate Road & link roads
- Lack of Industrial base a bane
- Marketing - burning issue!
- Lukewarm response – to postharvest initiatives
- Overcome subsidy mindset!!

Processing Units in the North East ...

Exotic Juices Ltd., Mao



MATA Foundation, Imphal



Nagaland Foods Pvt. Ltd., Dimapur



MIFCO, Mizoram



Initiative on PPP in Direct Value Addition



Initiated linkage with Passion Fruit Growers Association of Mizoram & Manipur & started procurement of Passion fruit juice to make end product through Small Scale Processing unit run by women entrepreneurs to market by NERAMAC.

Introduced value added Kew Fruit RTS, Jam & squashes by sourcing Kew fruit from Arunachal Pradesh & by involving private small scale processors from the state of Meghalaya.

Introduced Honey sourcing & packing by sourcing Honey from TAGS, Nalbari, by involving private small scale processors from BTAD, Assam



PPP Linkages in Direct Value Addition





**Integrated Ginger Processing Plant,
Export Processing Industrial Park, Byrnihat Meghalaya
Organically Certified Plant**

- **Ginger Oil, Ginger Powder & Graded Ginger**

ISSUES & CHALLENGES

1/1 Supply Chain Management Issues :

- Uneconomic scale of operation
- Lack of consistency in supply and quality
- Lack of cost competitiveness
- Inadequate infrastructure for storage & distribution
- Distress sales due to indebtedness & social obligations
- High transportation cost due to remoteness & hilly terrain leading to high marketing cost
- Lack of market information
- Lack of value addition

ISSUES & CHALLENGES

1/2 Technological Constraints :

- Small & un-irrigated, unproductive plantations requiring replacement / rejuvenation
- inadequate supply of quality planting materials
- high incidence of pests and diseases
- heavy post harvest losses due to zero post-harvest infrastructure
- Lack of quality /appropriate packaging & packaging material
- Lack of quality testing laboratory
- Lack of technical knowhow in this sector

How to come out of the situation??

- Development of Agro-horti Infrastructure
- Development of Commercial Horticulture
- Research, Skill Development & employment Generation
- Boosting Agricultural & Horticultural Exports
- Investors friendly Policies & Regulatory Frame works
- Development of Agricultural & Horticultural Input Sector
- Protocol for cash crops of north east
- Brand Building
- Organic farming cluster
- Knowledge support & Market Intelligence Cell
- Modern terminal markets

Development of Infrastructure

- Collection centers, sorting, grading & packing units
- Mobile processing units
- Cold chain & Controlled atmospheric storage
- Modern product storage hubs with Pack houses
- Refrigerated transport & Warehouses
- Common service centres
- Primary processing centers
- Common processing hubs
- Agri clinics
- Product certification /Testing centres
- Modern terminal markets

Development of Agro-horti Industry

- Better utilization and value addition of Agri –Horti produce for enhancement of farmers income
- Enhancing the shelf life of perishable fruits, vegetables, flowers etc.,
- Product diversification & value addition for better profitability
- Minimizing wastage at all stages in the food processing chain
- Adoption of latest technology for food processing industries using modern & environment friendly packaging technology

Development of Agri-Horti Input Sector

- Production and availability of high quality seeds and planting material
- Tissue culture laboratories and demonstration farms
- Green house structures & sub-systems, growing media
- Setting up major seed production, Certification, processing and storage centers
- Food processing manufacturing equipments
- Easy financing of this sector Insurance
- MIS & data base creation for Agri-Horti /allied business

Brand Building

- ◎ Product specific brand building exercise shall be undertaken especially for products having Geographical Indicators (GI) to expand the horizon for increased market share , better price realization.
- ◎ NERAMAC has initiated GI for ten crops of the NE region. Process is under completion in next few months. We have identified two crops each from Assam & Meghalaya & one each from all six hill states.

Initiative for GI Registration for Horticultural Crops of North Eastern Region

Sl. No.	State	Name of Crops
1	Arunachal Pradesh	Arunachal Orange
2	Assam	Tezpur Litchi
3	Assam	Karbi Anglong Ginger
4	Manipur	Kachai Lemon
5	Meghalaya	Memang Narang
6	Meghalaya	Khasi Mandarin
7	Mizoram	Mizo Chilli
8	Nagaland	Naga Tree Tomato
9	Sikkim	Sikkim Large Cardamom
10	Tripura	Tripura Queen Pineapple

Current Status : All the ten crops have been advertised globally

Organic Farming Clusters

- In tune with growing demand for organic produce & health consciousness and leveraging the inherent advantages of natural organic resources of this region , organic farming clusters should be promoted
- The suggested commodities may include identified cash crops like orange, pine apple, kiwi, Passion Fruit, Assam lemon, Ginger, Turmeric, Large Cardamom, King Chillies, Bird's Eye Chilli, Local Rice etc.

Post Harvest Infrastructure

- Network of collection centers, storage units, pre cooling, cold storage, primary processing centers, mobile processing units, high humidity cold storage, deep freezers, controlled atmospheric storage, modified atmospheric storage, grading & packing units, pack houses, refrigerated transport, warehouses etc
- Sheds for intermediate storage & grading/storage/cleaning operations
- Mechanized handling facilities including sorting, grading, washing, waxing, ripening, packaging etc
- Facilities for pre-shipment treatment such as fumigation, X-ray screening, hot water dip treatment, water softening plant, Vapor heat treatment, electronic beam processing, irradiation facilities etc
- Specialized transport units for horticulture & floriculture sector
- Perishable air cargo complex & Terminal markets
- Retail outlets for perishable & non-perishable products

Policy Recommendations 1/1

- ① **Strengthen public-private partnership approach:** Appropriate strategy required for public-private partnership to attract private investment including FDI. Special Economic Zone may be established especially for tea, coffee, medicinal plant and horticulture produce
- ② **Appropriate entrepreneurship development:** Institutions like Krishi Vigyan Kendras, entrepreneurship development institutes such as Indian Institute of Entrepreneurship, Panchayati Raj Institution and other regional organizations
- ③ **Increase investment in agriculture R&D:** A strong R&D support system is a *sine qua non* for generating demand-driven technologies, which are friendly to smallholders
- ④ **Strengthen regional database:** Inadequate database is a serious constraint in the NER; it needs to be streamlined for an effective analysis of the agricultural economy

Policy Recommendations 1/2

- **Strengthen NERAMAC** as the nodal agency for post harvest infrastructure and marketing
- Implementation of **MIS scheme of Government of India for major cash crops of NORTH EAST**
- Introduction of **electronic auction system** in major mandis & terminal markets
- Establish **bazaars / haats** at production clusters
- **Wine making and high value products** from fruits
- **Capacity building & capacity developments** of farmers groups, SHGs and cooperatives for aggregation of produce
- **Develop & disseminate technical standards** for cold chain infrastructure & Promotion of contract farming

Policy Recommendations 1/3

- ⦿ **Improvement of rural roads** for better connectivity to the markets; only 35% rural roads are metalled
- ⦿ **Set up primary processing centers** for value addition of horticulture produce – link it with mother plant
- ⦿ **Set up primary grading facilities at all mandies**
- ⦿ **Promote agro –eco tourism**
- ⦿ **Adequate acknowledgement of Organic farming through branding of agriculture produce**
- ⦿ **Direct marketing** of fruits and vegetables
- ⦿ **Formation of Growers Societies** to give them bargaining power for their produce

Policy Recommendations 1/4

- Extending Status of **Warehouse to Cold Storages / CA Storages** and extending coverage of scheme of warehouse slip to Horticulture Produce fit for long duration storage such as potato, onion, apples
- NERAMAC to become **trade hub for export of processed fruit & fruit wines** of NE with Myanmar and Bangladesh
- Implementation of **Model APMC act in all states of North east** to promote direct marketing of produce
- A **trans-NER platform** to promote agriculture marketing in a big way with participation of the concerned regulatory authorities, various state Governments, corporates and private investors to improve the status of agricultural marketing
- Create Brand North East – **NE FRESH**

Approach to Market Development

This major lacuna in the North Eastern region needs to be filled by developing modern marketing systems, based on post-harvest management, handling, grading, packing, processing, storage and transport, with adequate credit support and market intelligence for the naturally organic cash crops of the north eastern region.

Proposed Recommendations on value addition

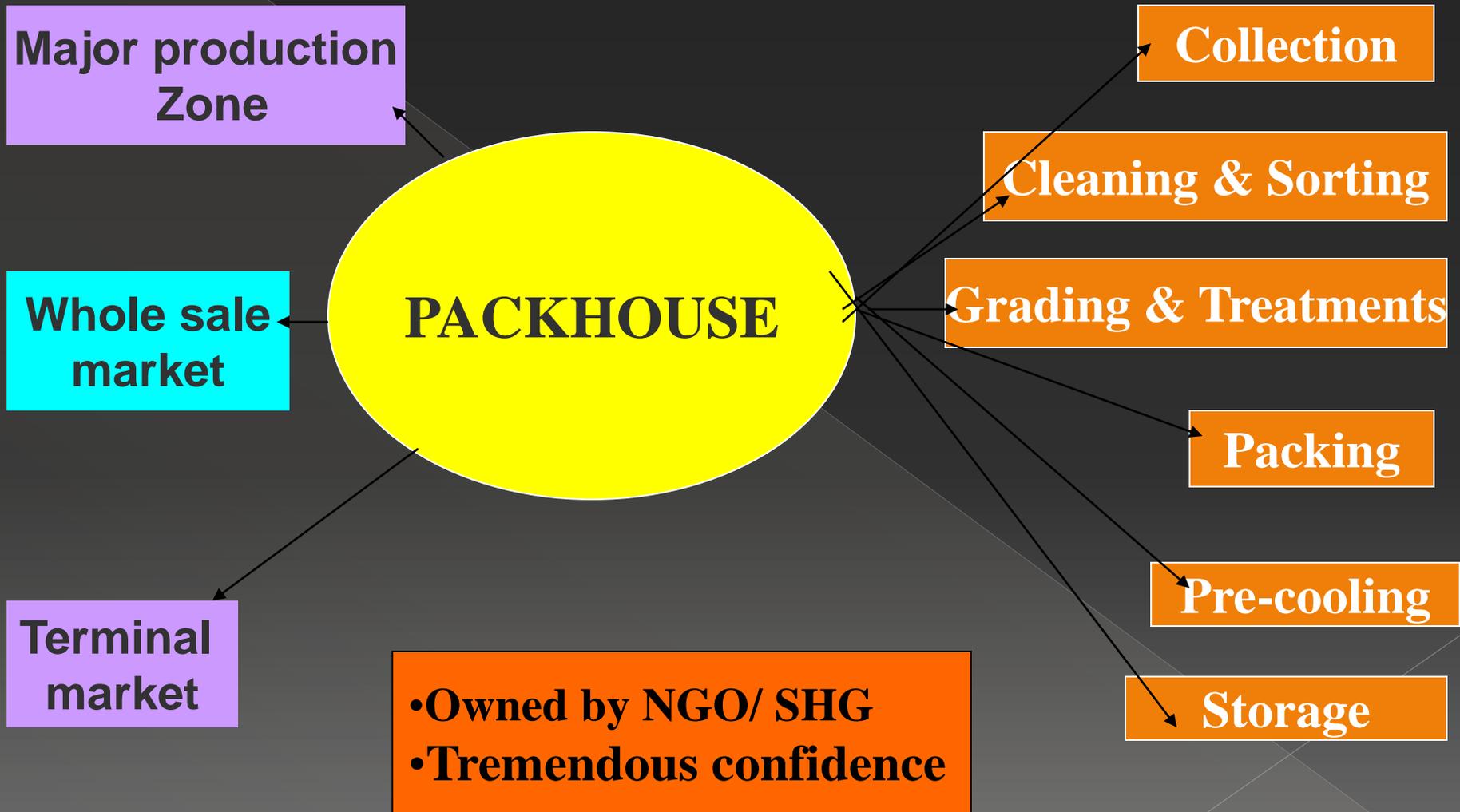
MEGA FOOD PARK for development of food processing in NE Region ???

Applications:

- **PACK-HOUSE**
- **PRE-COOLING**
- **REFRIGERATOR VAN WITH HUMIDIFIER**

Best possible option lies in involving value addition to agricultural & horticultural produces through primary processing such as SORTING, GRADING & PACKAGING to enhance shelf life of produce

Pack House Model for Fruits & Vegetables





Marketing of Horticultural Crops - Natural & Organic



Empowering the Farmers of North East

Conceptual Framework

Accumulation Centers



Collection Centers



Primary Processing Units

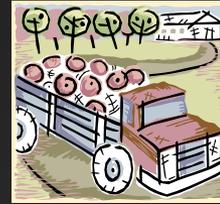


Primary production Centers to Processing Center

Production Centre



Production Centre



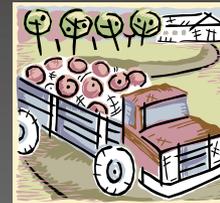
Production Centre



Processing Center



Production Centre



Production Centre



Production Centre



Production areas to Primary Processing Unit

Primary Processing Unit - NERAMAC

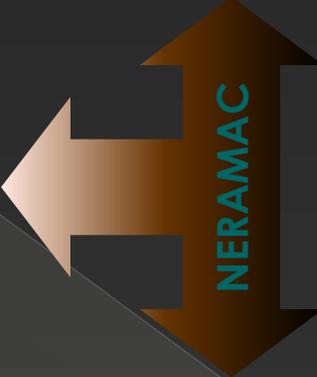


Production Areas

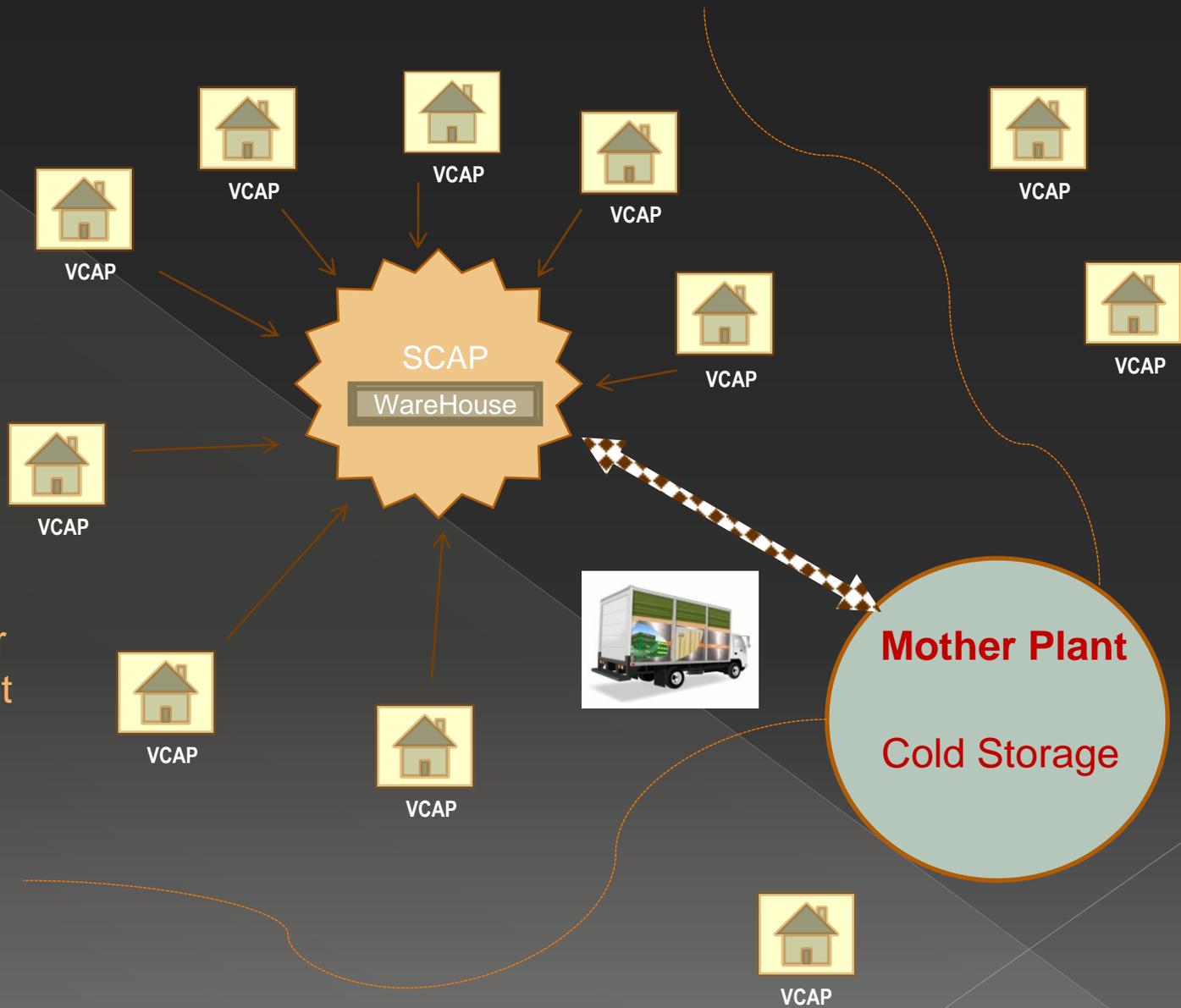
Primary Processing Unit to Main Processing Center



Main Processing Center



Cluster to
Primary Center
To Mother Plant



Best Approach for Empowerment of Farmers:



Appropriate Model for Value addition

THE FUTURE...

CLUSTER CONCEPT FOR SUSTAINABLE DEVELOPMENT

Foster / Nurture through self sufficient juicing extraction at the grower's level in pineapple producing areas.

Growers are encouraged to extract juice which *NERAMAC* source & arrange necessary **THERMAL PROCESSING** & transport in controlled conditions to the Mother Plant where concentration & packaging is done in bulk packing under refrigerated condition

The pilot project is tried for pineapple juice

A scenic landscape with rolling green hills, a winding road, and a cloudy sky. The text is overlaid on the image.

the future...

Now, the focus is on to diversify with ensured capital investment & build up islands of competence for products to market under a common brand by developing both bulk & retail packaging to compete in the global scenario....



Large Cardamom

Large Cardamom Auction in Sikkim

- NERAMAC took initiative to conduct auction programme for large cardamom in Sikkim State in view of its production and demand coming from the producer / famers.
- First auction started on the 16th of November 2010
- On the very 1st auction, farmers are got the highest price of `851 per kg when the market price was below `500 per kg.
- Presently farmers are getting the price above `1700 per kg for their produces through auction.
- Auction for large cardamom is conducted in the Auction Hall premises of Spices Board at Singtam, East Sikkim.

Auction Of Large Cardamom

○ NEARMAC

It has setup its own Large Cardamom Auction Center first of its kind now at **Singtam** (E-Sikkim) and a procurement center at **Rangpo** (E-Sikkim).

○ Spices Board:

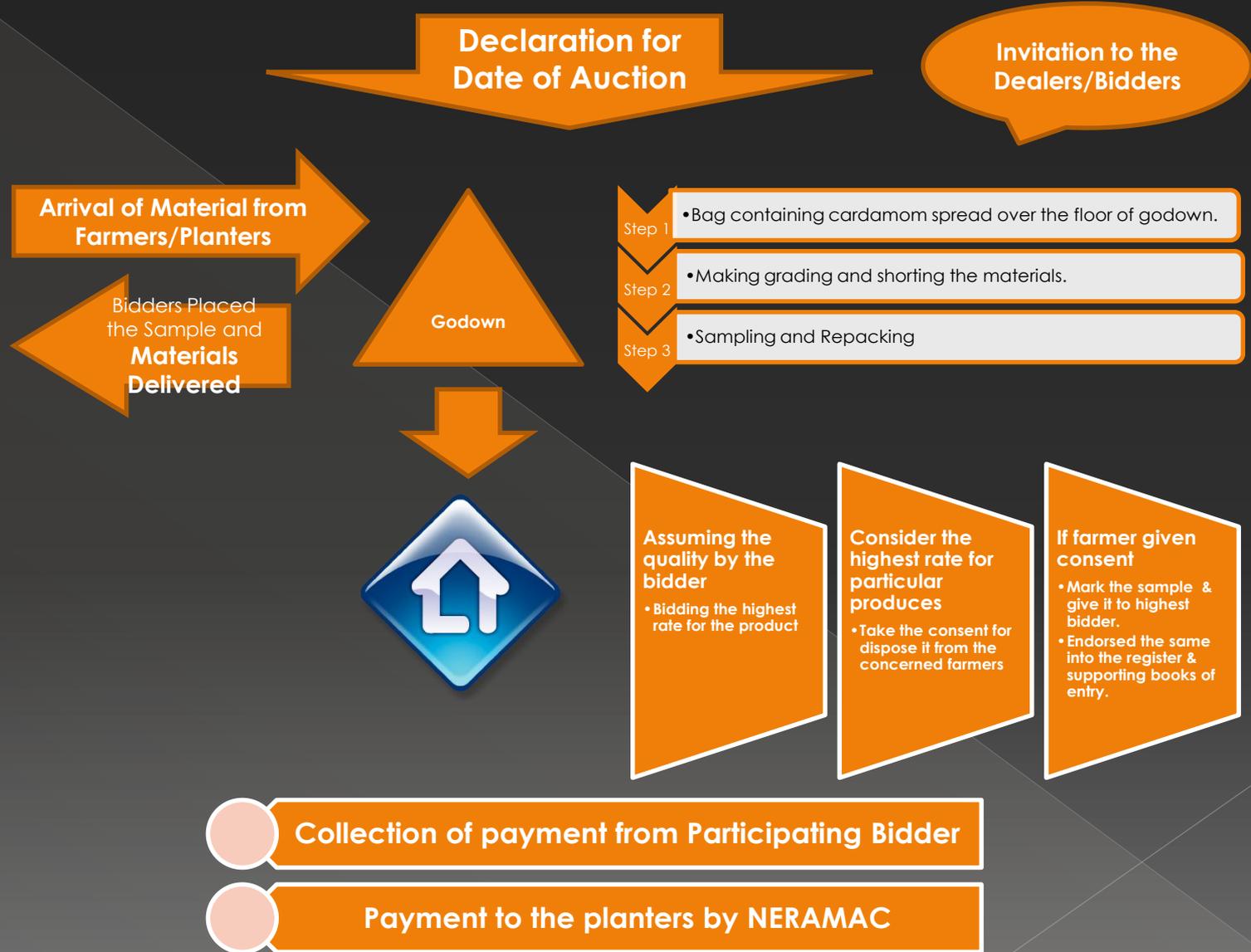
Spices board provided us auction hall for conduct auction program at Singtam (E Sikkim).

○ Department of Horticulture & Cash crop Development, GoS:

Provided warehouse facility at Rangpo at free of cost. Provided us village level rural godown at Hee gaon area for collection of Large cardamom.

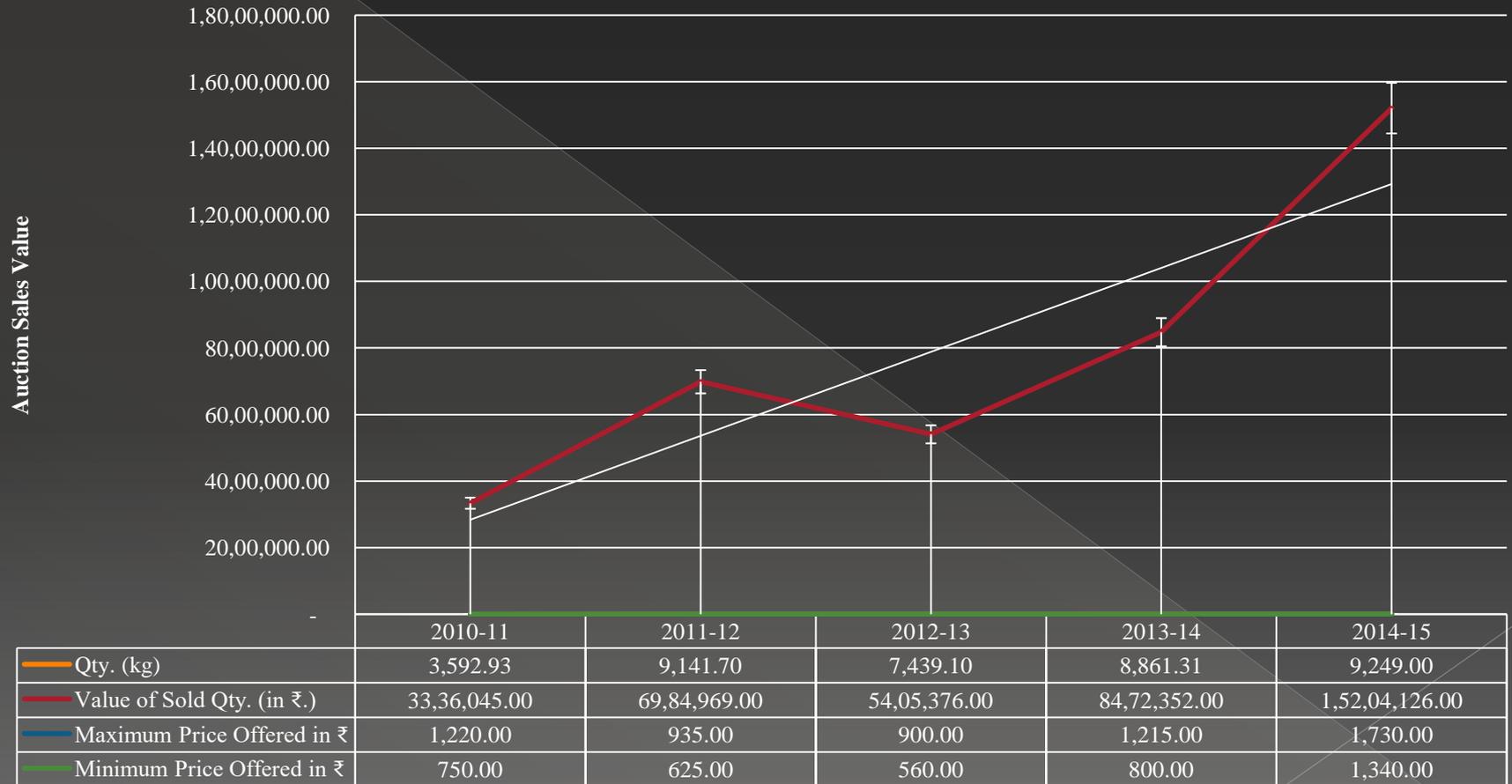


Process of Large Cardamom Auction



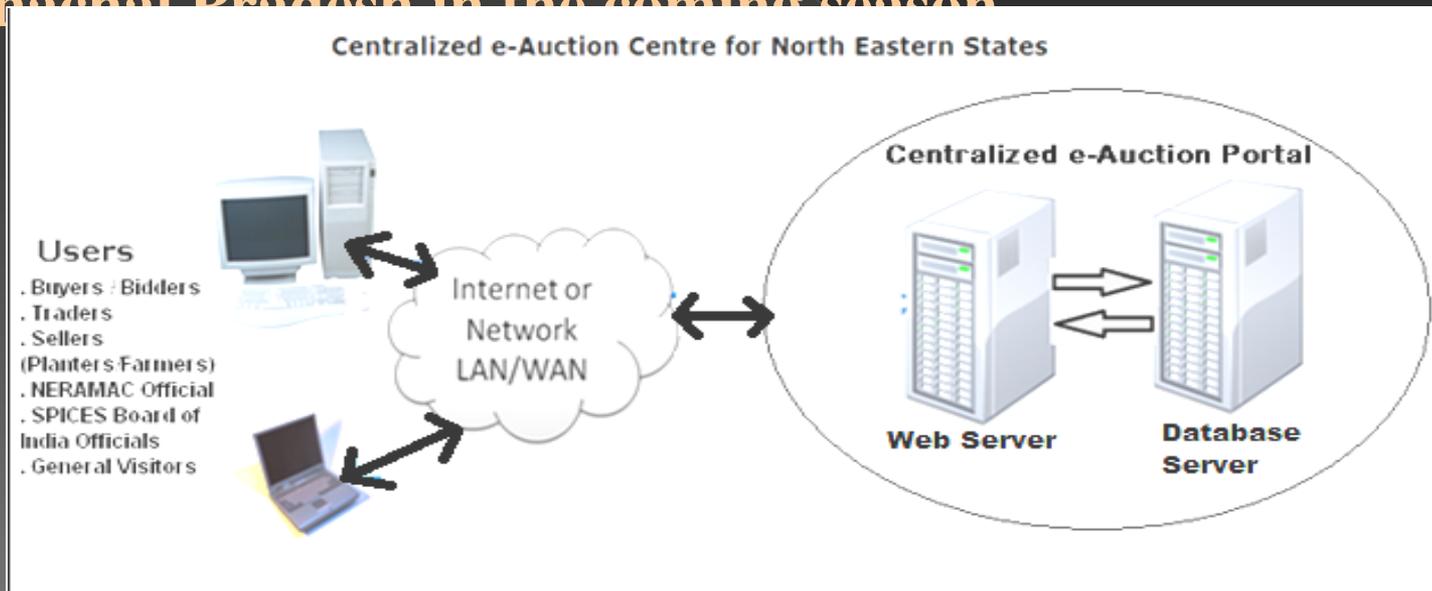
Data Sheet of Large Cardamom Auction with Graphical Representation

Year Wise Auction



Large Cardamom - E- Auction Initiative

- **NERAMAC** initiated a tie up with **C-DAC, Kolkata, Ministry of Commerce, Govt. of India** to implement e-Auction programme.
- **By April 2015, NERAMAC** will complete the web portal of the e-Auction program and is expected to start with **E-Auction in Sikkim** during **2015-16** season followed by **Nagaland & Arunachal Pradesh** in the coming season.



INITIATIVE ON MARKETING...



Glimpses of Horticulture Show Bangalore, Launching of Kiwi & Processed Kiwi from NE Region





CAPACITY Building & Development PROGRAMS

Participation in Exhibitions

Conducting:

- Seminars & Workshops
- Capacity Building Programs
- Investment Meet on Food Processing in NE States

Awareness Campaign:

- Value Addition
- Commercial Horticulture &
- NMFP Implementation



NERAMAC Ltd.- showing the path of employment



NERAMAC's initiative in packaging



INITIATIVES FOR INCLUSIVE GROWTH







Shri Pawan Singh Ghatowar, Hon'ble Union Minister, Ministry of DoNER inaugurated the North East pavilion in GAC 11 at IARI Campus, New Delhi



Valedictory & prize ceremony by Shri Vincent Pala, Union Minister of State, Water Resources & Minority Affairs at Shipra Mall, 2011



Shri P.K Pattanaik, IAS, Joint Secretary, Misnistry of DoNER Inaugurated "The Great North East Sunshine Festival" at EDM Mall, 2011



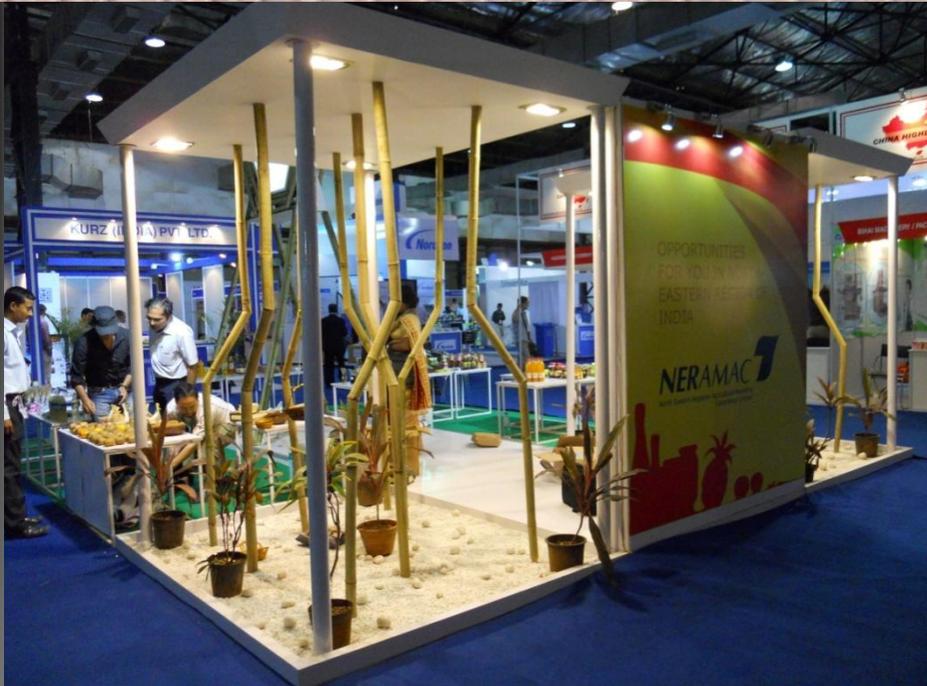
NERAMAC permanent Kiosk at EDM Mall, Kaushambi facilitated by NSFI

Indpack 2012



Indpack

15th NATIONAL PACKAGING EXHIBITION
Packaging For Progress





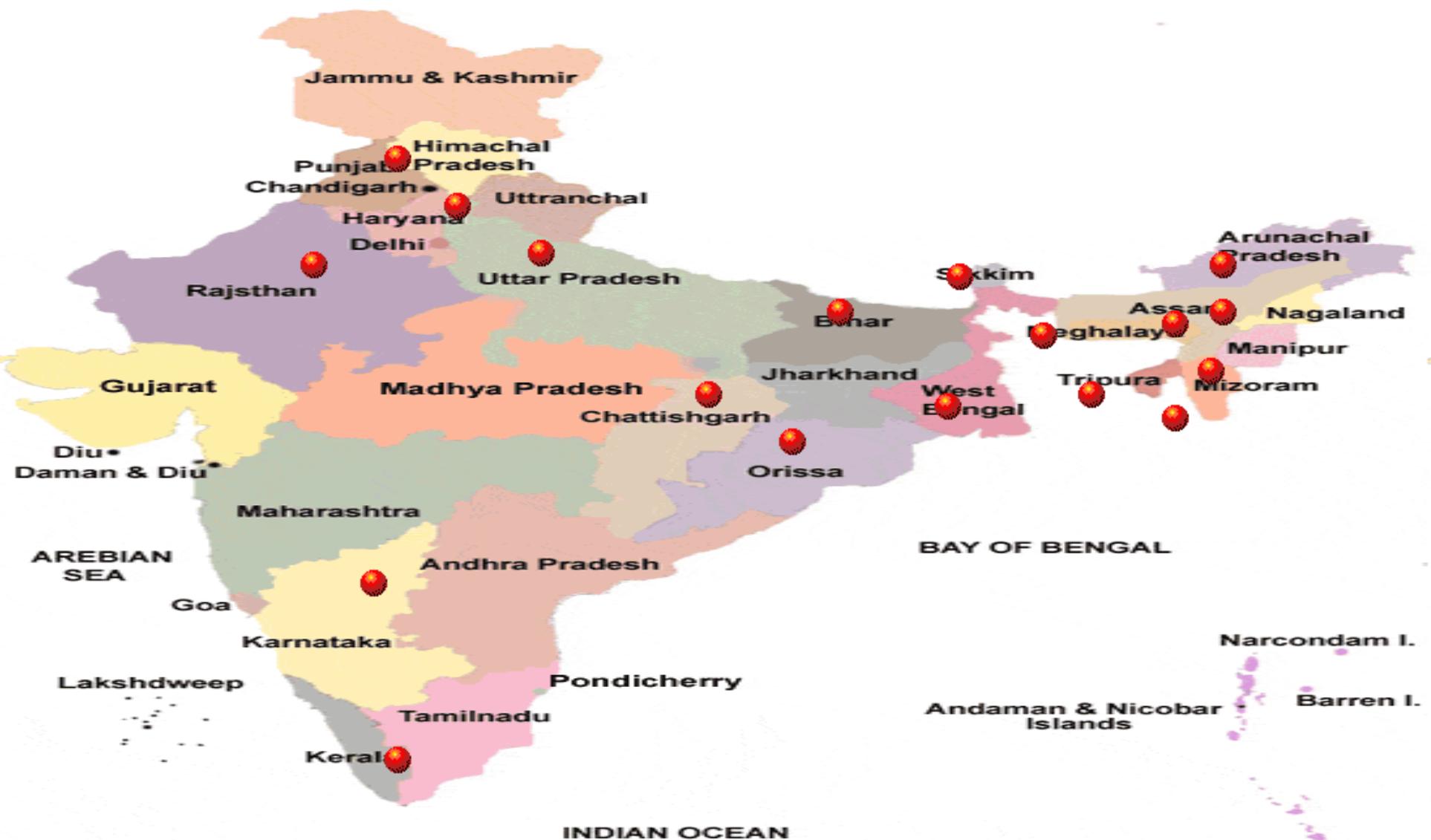


A Way Forward

- Ministry of Food Processing Industries, Govt. of India has launched a new Centrally sponsored Scheme , National Mission on Food Processing (NMFP) during 12th Plan for implementation through States & UTs .
- This initiative of MoFPI is a paradigm shift in the Ministry's approach & is driven by the need to make food processing truly a national initiative.
- Ministry has appointed NERAMAC as PMA (Project Management Agency) to administer NMFP in eight North Eastern States. Mandates of NMFP gives excellent opportunity to explore business opportunities, understand the latent potential of the Region & expand the scope of in land supply of processed food.
- Let us together commit to build a healthy, viable, vibrant and efficient food processing industry that caters to the needs of all sections of the society through safe, nutritious, accessible & affordable processed foods.

Conclusion

- North Eastern Region is considered as the richest reservoir of genetic variability of large number of horticulture & plantation crops.
- Look East Policy of the earlier Government & the present Look Act policy of Government of India has made north east more strategic & important.
- North Eastern Region has also geared up to take more challenges & capitalize on the opportunities thrown open by the huge market in the South East Asian Countries.



Presence of **NERAMAC** in India



THANK YOU

www.neramac.com