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FINER

News & Views



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NORTH EASTERN REGION



President's Desk

The demand for plastic/polymer product in a particular region is influenced by a range of factors such as the population, the per capita income of the population, literacy rate, status of supplies of the products, status of the commercial/industrial sector, availability of substitute products, etc. This demand for plastic has been growing rapidly over the last few years and North East India is emerging as the fastest growing region with huge potential of increase in the consumption of plastics. In North East, the present plastic processing industry is not able to meet the requirements and a substantial part of the plastic items is being brought in from other parts of the country, mainly Eastern India. As Assam is also surrounded by international borders of South East Asian countries and hence, offers tremendous scope for polymer market including scope for exports.

With the set-up of Brahmaputra Cracker & Polymer Limited (BCPL), this region will get the necessary fillip in feedstock sourcing, making the raw material available locally and on the polymer processing sector in the region. Commissioning of Brahmaputra Cracker & Polymer Limited (BCPL), which will produce polymers such as LDPE, LLDPE, HDPE, PP, will result in the emergence of a number of plastic/polymer processing units, including some leading brands of the country, in the entire North Eastern region. The marketing of these products will be done by GAIL (India) Ltd. and a Consignment Stockist (CS) will be set up at Guwahati in a very short span of time.

Again with the set up of Plastic Park in Tinsukia by Government of Assam, the manufacturing units of these Prominent polymer sector processors are basically based on the BCPL products. This Plastic Park will generate direct employment of around 22,000 and indirect employment of around 55,000, thus generating a total employment of 77,000 persons, which will be very beneficial for the North Eastern Region.

Assam is the most industrialised state in the region. Besides, we all know that our state holds the unique strategic position as the entry point to the rest of the states in the region, with the result that there is a tendency to absorb more of the polymer products that enter the state for transit. This also has an added advantage to the state of Assam, i.e. the price of the polymer products in Assam is the lowest amongst the states of the region. All these factors place Assam to have a relatively higher share of the demand for polymer products than the other states in the region.

There is also an untapped market for new entrepreneurs with existing and growing demand for finished products being catered from outside Eastern India. Favourable investment decisions from some well-known players in the plastic/polymer field already in existence.

The North Eastern region can be considered as a corridor for exports of plastic/polymer products through cross-country trade with the neighbouring countries like Myanmar and Bangladesh.

Pabitra Buragohain
President,
FINER

চন্দ্ৰমোহন পাটোৱাৰী
মন্ত্ৰী
পৰিবহণ, উদ্যোগ আৰু বাণিজ্য,
সংসদীয় পৰিক্ৰমা, অসম



Chandra Mohan Patowary
Minister
Transport, Commerce & Industry,
Parliamentary Affairs, Assam



Dispur, 14/09/2016

Message

It gives me immense pleasure to know that Federation of Industry & Commerce of North Eastern Region (FINER) is going to publish its monthly bulletin called 'FINER News & Views'.

FINER is a non-profit industry organization and one of the most vibrant organizations working for the economic and infrastructure development of North East Region.

This month's Monthly Bulletin of FINER is aptly devoted to 'Plastic Industry of North East' as plastic industry has immense potentiality to flourish in this region. Plastic has become omnipresent in our daily lives. This sector can become the leading industries in the State if tapped to its optimum level.

I hope the articles in the magazine will help in throwing light on new and emerging aspects of plastic industry. I wish the magazine is well read and well appreciated by all.

(Chandra Mohan Patowary)

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FINER DELEGATION MEETS SHRI SARBANANDA SONOWAL, HON'BLE CHIEF MINISTER OF ASSAM



FINER had contributed an amount of Rupees 10 lac to the Hon'ble Chief Minister Shri Sarbananda Sonowal for the Chief Minister's relief fund.

The FINER Delegation headed by the President Shri Pabitra Buragohain apprised the Hon'ble Chief Minister about the prevalent issues in the State like GST, Ease of doing Business, Land etc. The Hon'ble Chief Minister gave a patient hearing and welcomed inputs and suggestions made by the delegation and assured that the Government will try its level best to address all issues and concerns of the Trade, Industries and Commerce of State.

Moreover, during the meeting the Hon'ble Chief Minister has asked FINER to give inputs to the Government as how to improve the Industry scenario of the State. The Hon'ble Chief Minister also informed the delegation about the Government's willingness to be associated with FINER for some important upcoming projects of the Government.

INTERACTIVE SESSION WITH
SHRI RAVI CAPOOR, IAS
 PRINCIPAL SECRETARY, INDUSTRIES & COMMERCE, MINES & MINERALS & SOCIAL WELFARE,
 GOVERNMENT OF ASSAM



Federation of Industry and Commerce of North Eastern Region (FINER) conducted an interactive meet with Shri Ravi Capoor, IAS, Principal Secretary, Industries & Commerce, Mines & Minerals & Social Welfare, Government of Assam, on 4th Oct, 2016 at Guwahati.

The programme started with the welcoming & Felicitation of the Dignitaries .

Mr. Pabitra Buragohain, President, FINER addressed the august gathering and lauded Shri Ravi Capoor, for making the department more approachable and responsive for the Industries of the State. Mr Buragohain , on behalf of FINER, also submitted a Memorandum to the Principal Secretary, on the following issues prevalent in the State and requested the Department to take measures to address these issues for the development of Trade & Commerce of the State

Ease of Doing Business

Goods & Service Tax - Clarity in policy post GST regime-Our requests / Concerns regarding preservation under the new scheme

NEIIPP - Immediate restoration of registration under NEIIPP' 2007 and Extension of NEIIPP policy for the period lost in the process of suspension of policy

Land issue in the State

Conducting SLC/DLC at Regular Intervals for EC,

SCIS & other state incentives like power subsidy, subsidy on drawl of power line, etc

Disbursement of SCIS/Power/DOPL & Other State Incentives

Timely issue of Eligibility Certificate after SLC/DLC

Power

Shri Capoor, appreciated FINER for playing a vital role for the upliftment of Trade and Commerce in the State and the support rendered to the Department of Industries & Commerce all through in the matter. He welcomed inputs, suggestions and concern raised by the FINER and mentioned that the Department is in the process of creating an Investment Cell to address the issues related to the Trade & Commerce of the State. He also mentioned that the Department is also trying to streamline the Land issues prevalent in the State.

The senior official present from the Department of Industries & Commerce, Government of Assam, Ms Shehla Rahman, Secretary, Additional Directors -Ms Manjula Saikia, Mr Prafulla Saikia, and Shri Bipul Das, also mentioned that their doors were always open to the public and assured to extend full support to address the related issues.

An interactive session was also conducted between the distinguished guest and members of trade and commerce which turned out to be successful in the overall session.



FINER PRESIDENT SHRI PABITRA BURAGOHAIN HONORED WITH MSME NATIONAL AWARD 2014-15

FINER President **Shri Pabitra Buragohain** was honored with the prestigious MSME National Award 2014-15 for the best Entrepreneur of the North East by Shri Kalraj Mishra, Hon'ble Minister, MSME, Govt of India in the presence of the Hon'ble Prime Minister Shri Narendra Modi at MSME National Award ceremony held on 18th Oct, 2016 at Punjab Agriculture University in Ludhiana.

Shri Pabitra Buragohain, Managing Director of Orient Processor Pvt Ltd, the only Unit in the entire North East Region to produce uniformly twisted knotless and fast coloured Dyed yarn for Handloom and Power loom sector is a first generation Entrepreneur, hailing from a Sivsagar District, Assam. Son of Eminent Educationist Shri Manik Chandra Buragohain, after completion of his studies from Gauhati University, Shri Buragohain started his maiden venture in the name of Orient Processor Pvt Ltd in the year 2001, which was an Acrylic Yarn Dyeing Unit.

Experience gathered over the years and also realizing the need for quality cotton yarn for the Handloom sector in the North East Region and the demand from the neighbouring Countries, promoted Shri Buragohain to set up his second unit in the name of Orient Processors Pvt Ltd unit II Textile division, a composite Cotton Yarn Manufacturing, Package dyeing and Processing unit with State of Art machineries imported from Italy, Germany, England, Hong Kong and USA.

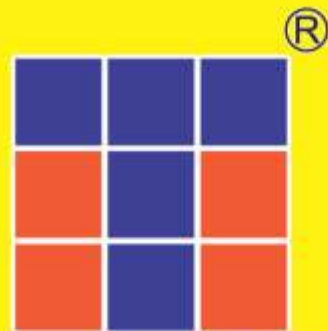




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Seminar on "Plastic Industries-Opportunities & Challenges"-2016



The Seminar on "Plastic Industries-Opportunities & Challenges" was organised by FINER in association with the Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India on 12th of September, 2016 in Hotel Lily, Khanapara, Guwahati, Assam.

The main objective of the Seminar was to disseminate appropriate information to the prospective investors and investment partners from the region regarding Government of India's thrust area. The Seminar revolved around presentations and interactive panel discussions on the various aspects of the importance of **'Plastic Industries'** and its initiative and challenges and way forward, followed by a one-to-one interaction between Ministry officials, Industry captains and Participants from various States.

The participants profile for the Seminar were, Departments of Chemical & Petrochemical of NE states, Ministries of Chemical & Fertilizers, Government of India, Department of Industries & Commerce, Government of Assam, Assam Industrial development Corporation, Department of Employment & Craftsmanship training,

Government of Assam, IIT, Guwahati, ITIs, Plastic Manufacturing Industries & Associations, Entrepreneurs from Plastics & Petrochemicals Industries, Trade and Industry Association, NGOs, Community Organizations, Research & Development Institutes of Petrochemicals, University and Colleges, Bankers, Investors, Industry Captains and Diversified Business Persons.

The Seminar along with the inaugural session also had the plenary sessions. The relevant topics which were addressed during the plenary sessions of the Seminar on "Plastic Industries-Opportunities & Challenges"-2016, were as follows:-

- Scenario of Plastic Industry in North East and Employment Generation in the Industry
- Understanding the dynamics of the change in Raw Materials used in Plastic Manufacturing
- Cost saving Techniques of Plastic & Marketing opportunities & challenges in Plastic Industry

The Brief of the Seminar on "Plastic Industries-Opportunities & Challenges"-2016

Inaugural Session

The Seminar on "Plastic Industries-Opportunities & Challenges"-2016 was a day long program, started with the registration of the participants of the seminar. The Inaugural



session began with the lighting of the lamp and felicitation of the dignitaries. Shri Chandramohan Patowary, Hon'ble Minister, Industries & Commerce, Government of Assam was the Chief Guest of the program and Shri Arun Agarwal, Director, Dept. Of Chemical & Petro Chemical, Government of India was the Guest of Honor of the program.

Welcome Speech by **Shri Pabitra Buragohain**, President FINER-

Shri Pabitra Buragohain, President, FINER started the inaugural session by welcoming the Guest and participants present in the Conclave. Shri Buragohain, in his welcome Speech introduced FINER, as the most vibrant and apex industry association of the Northeast, having its members through all segments including PSUs operating in the Region and the voice of the industries of the Region, formed for the creation and sustenance of an environment conducive to the growth of Industry, Trade and Commerce in the North Eastern States of India.

Speech by **Shri R.S. Joshi**, Immediate Past Chairman, FINER-

Shri R.S. Joshi, Immediate Past Chairman, FINER addressed the audience by saying that, the North Eastern region consumes a wide range of plastic/polymer products. However, the penetration level of plastic/polymer products

in the region is much less as compared to the national levels, due mainly to lack of a matured processing sector. Besides, the industry sector, which is universally the major user of polymer products, is quite insignificant in this region. With the set-up of Brahmaputra Cracker & Polymer Limited (BCPL), this region will get the necessary fillip in feed stock sourcing and on the polymer processing sector in this region. The emergence of North East as a manufacturer and supplier of specialty chemicals has had a major impact on Indian and Global specialty chemical industry.

Speech by Guest of Honor-

Shri Arun Agarwal, Director, Dept. Of Chemical & Petro Chemical, Government of India as a Guest of Honor: - Shri Agarwal in his speech said that the petrochemical sector has an important role to play in this endeavor. The Department has already taken up the development of four PCPIRs and 10 Plastic Parks in order to catalyze the growth of manufacturing in a big way. In the NE, Setting up of Plastic Park is going on in Tinsukia District, Assam. This Plastic Park at Gellapukhuri, Tinsukia District in Assam was approved in February, 2014, and GoI has released Rs. 22 crore to it. Further, a Centres of Excellence (CoE) at IIT, Guwahati is working on Sustainable Polymers. This CoE has performed research work in the area of cellulose nano crystals, silk nanocrystals, modified gums and their uses in the fabrication of PLA based nanobiocomposite films. CIPET Centres, located in Guwahati and Imphal, are providing technical education and imparting training in the field of plastics. It is believed that this synergy of industry, academia and R&D would help in creating a conducive and enabling environment for the growth and development of the industry in the North Eastern India.

Speech by Chief Guest

Shri Chandramohan Patowary, Hon'ble Minister, Industries & Commerce, Govt. of Assam as a Chief Guest: - Shri Chandramohan Patowary in his speech said that Plastic has become omnipresent in our daily life. In this regard, he said that Assam has immense potentiality of plastic industries and a massive campaign is necessary to tap the opportunities in the state. Shri Patowary also stated that with the Government of India's Vision of Hydrocarbon 2030, the environment is apt for investment and called upon the entrepreneurs to invest in plastic industry in Assam. He further stated that the government has recently passed the Ease of Doing Business Bill 2016 which is a single-window clearance system and will soon launch the portal that will fast-track the business projects in the state. He finally said that soon plastic industries would be incorporated with the MSME Act by dint of which all the incentives under the Act can be availed by the sector.



Plenary sessions

Session 1

Scenario of Plastic Industry in North East and Employment Generation in the Industry

Speaker 1: **Smt. Mousumi Sen** (Joint. Director Labour & Employment, Government of Assam) :- Smt Sen in her speech said that, the present status of the plastic industries shows that the sector has got huge potential to generate additional employment in the region. The BCPL project policy implementing plastic processing in all over the country has made way for lot of skill development in the Plastic Industry of the region. The initiative of the

government in establishing Plastic Park and the BCPL is a boost to the plastic industries which will not only see more plastic industries investing in the state but would also generate employment in the state. She further said that considering both direct and indirect employment, the plastic industry provides employment of around 3.3 million.

Speaker 2: **Shri O.P Tailor** (Director, Finance, BCPL):- Shri Tailor has given a detailed power point presentation on Scenario of Plastic Industry in North East and Employment Generation in the Industry. In his presentation he showed the following points:

- Projects Location of BCPL: Lepetkata, Duliajan, Lakwa, Numaligarh
- Annual Production of LLDPE/HDPE by BCPL: 220000 MT
- BCPL Products and Potential Applications for North Eastern Region and polymer consumption for NER and its opportunities
- Sectors of BCPL like Injection Moulding, Raffia monofilament, Blow Moulding, Roto Moulding, Films and its applications.
- Industrialisation promoted through Govt initiatives and establishment and promotion of Plastic Parks in North East.
- Marketing of BCPL Products will be done by GAIL and GAIL to open up a Consignment Stockist





(CS) in Guwahati in a very short span of time.

Speaker 3: Dr.H.K. Deka (Manager Quality, CIPET):- Dr. H.K. Deka has given a detailed power point presentation on Central Institute of Plastic Engineering & Tools. In his presentation he showed that CIPET was established in 1968 in Chennai and now exists in 40 different places in India. CIPET, Guwahati in 1999 and CIPET, Imphal 1988. CIPET also has a high learning programs conducted at 5 HLC & 3 R&D Wings with different under graduate, post graduate and P.hd courses along with many diploma and conventional learning programs. He also mentioned that CIPET offers blend of specialized Academic and Skill Development Training Programs in the field of Polymer Science & Technology in order to provide qualified Human Resources with entrepreneurship qualities for Polymer & Allied Industries. Shri Deka, in his presentation showed the success stories of the students of CIPET, who were now doing very good as an entrepreneur in the Plastic Industry.

Session 2

Understanding the dynamics of the change in Raw Materials used in Plastic Manufacturing

Speaker 1: Shri Arun Agarwal (Director, Dept. Of Chemical & Petrochemical, Govt. Of India):

Shri Agarwal in his speech said that, the Indian chemical industry, including plastics, pharmaceuticals, fertilizers and petrochemicals, accounts for about Rs. 8.4 lakh crore in terms of value of output. The Government has accorded a very high priority to manufacturing and the Hon'ble Prime Minister has started the initiative of 'Make in India'.

As regards plastics, its extensive littering creates a negative image in the public perception. Approximately 5.6 million tons per annum (TPA) of plastic

waste is generated in the country, particularly in the urban areas, out of which 3.3. M MT is collected and recycled. Extensive littering of plastic carry bags and other items create a negative image of plastics in the public perception. He further said that

Plastics are 100% recyclable and as such, they do not harm the environment, if used and disposed of responsibly and sensibly. If plastics can be collected, segregated and disposed of or recycled as per the laid down guidelines/rules, then the issue of plastic waste management can be effectively addressed. Therefore, the answer to the management of plastic waste lies in devising models for its integrated waste collection, segregation and recycling.

To create awareness on issues related to plastic waste management, including recycling, and to correct the perception about its negative image and polluting characteristic; Department of Chemicals & Petrochemicals (DCPC), in association with Central Institute of Plastics, Engineering and Technology (CIPET), holds Technical Seminars on Waste Management. However, the plastic industry and all connected stakeholders need to take lead in addressing this challenge. The new Plastic Waste Management Rules 2016 very comprehensive address the issue .

Speaker 2: Shri Vimal Katiyar (prof. IIT, Guwahati): Shri Vimal Katiyar has given a very detailed presentation on Plastics as a part of our day to day life. It is estimated that the demand for plastics will possibly reach up to 16.5 million metric tonnes by 2016-17 in India. Shri Katiyar further in his presentation showed that most of the plastics are being developed using fossil based feedstock such as petroleum products including various C1 to C8 based molecules. Industrial revolution led to the development of value added plastics and its products using the hydrocarbons extracted from the crude oil, which is currently undergoing a steep depletion due to its increasing demand for wider applications. He also said that developments of biodegradable plastics are emerging as the most effective method in tackling the negative impact of plastics to our environment.





Speaker 3: **Shri Prasanta Bora** (AIDC, Plastic park in charge, Government of Assam): - Shri Prasanta Bora in his speech spoke about the following points:

- Implications for organizational change in plastic producing
- Endogenous Technological change
- Indicators of dematerialization and the materials intensity of use
- Major Characteristics of constructed products and resulting limitation of construction technology
- Accounting for management control

Session 3

Cost saving Techniques of Plastic & Marketing opportunities & challenges in Plastic Industry

Speaker 1: **Dr. Arup kr. Misra** (Director, ASTEC): - Dr. Misra spoke about Plastics reduce environment impact. He said that re-use and recycle strategy for a plastic-based packaging that substantially reduces the quantity of waste to landfill would also reduce the overall environmental burden. The resources and environmental effects assessed over the life of each of the packagings included fossil fuel consumption, greenhouse gas emissions and photochemical oxidant precursors. The results demonstrate that recycle and reuse strategies for plastic-based products can yield significant environmental benefits. The study also includes some interesting findings regarding the relative contributions of transportation and construction energy, and the potential benefits of adjusting the impact assessment results to take into account the spatial variation in the significance of some environmental effects.

Speaker 2: **Shri Bivas Das** (Manager, Reliance Industries) :- Shri Bivas Das has also given a power point presentation on Marketing Opportunities and challenges of Plastic Industry and how Reliance Industries helping both with different plastic products and raw materials. He in his presentation briefed about the following points:

➤ Marketing opportunities and challenges of plastic Industry.

- In plastic there are three types of manufacturing process poly profiling, polyethylene, poly.
- Growth driven for polymer industry
- Segment wise polymer consumption

Speaker 3: **Shri Pankaj Sharma** (Director, rhino industries)/ Ranjitkarmakar(Director,sevensister):- Shri Pankaj Sharma in his speech said that in Assam Plastic Industries are suffering a lot. The plastic manufacturers of the region don't get much technical support for their machineries. He also said that they do not get technical support from the CIPET, Guwahati as most of the manufactures do not have tool. He further said that there is a shortage of raw materials and don't have a recycling Market for the industry.

Speaker 4: **Shri Swapnanil Barua** (Former Commissioner, Industry & commerce, Government of Assam>):- Shri Barua in his speech spoke about the scenario of Plastic Industry in the North Eastern Region. He also spoke about the Reliance Polymers and BCPL. The Main points he emphasized in his speech are the following:

- Technology support for the Plastic Industries in the region
- Big Players non involvement
- The role of CIPET needs to be re-examine
- Recycling material not organized properly
- There is a huge Chinese Competitions for the market of Plastic product in India

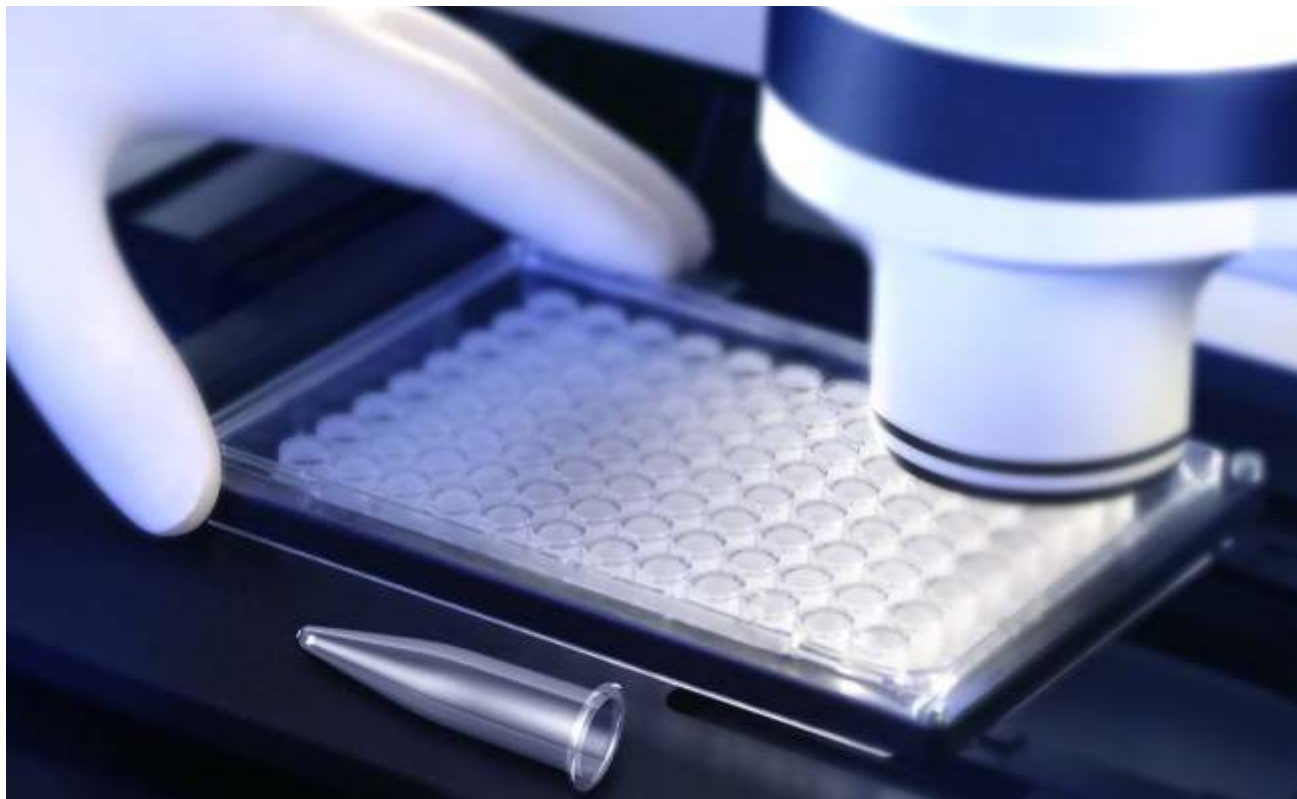
Vote of Thanks

The seminar concluded with the vote of thanks by Smt Indrani Chaudhury, Deputy Director General. She thanked all the Dignitaries present in the seminar. She further thanked all the Senior official from both the Central & State Departments of Chemical & Petro Chemical and Industry leaders of the region.

DEVELOPMENT OF BIODEGRADABLE PLASTICS AND ITS TECHNOLOGIES AT INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI

Dr. Vimal Katiyar

Department of Chemical Engineering
Indian Institute of Technology, Guwahati



Plastics are indispensable part of our day to day life and under current scenario, urban society may can never imagine their life without plastics. It is estimated that the demand for plastics will possibly reach up to 16.5 million metric tonnes by 2016-17 in India [1]. In the recent year of 2015, the global consumption of plastic materials was around 45kg/person [2]. However, the plastic consumption in North East is ~3.75 Kg per capita, which is far less than the national average of 8 Kg per capita [3]. It is noteworthy to mention that most of the plastics are being developed using fossil based feedstocks such as petroleum products including various C1 to C8 based molecules. Industrial revolution led to the development of value added plastics and its products using the hydrocarbons extracted from the crude oil, which is currently undergoing a steep depletion due to its increasing demand for wider applications. However, disposal of such plastic products is showing up as a major threat to the environment because of its non-biodegradability within a stipulated period of time (10 to 15 years). Incineration or landfilling of such plastics largely contribute to the carbon footprint to our ecosystem. Development of biodegradable

plastics are emerging as the most effective method in tackling the negative impact of plastics to our environment. As per the standard regulation, plastics may be considered as biodegradable only if it leaves low carbon foot-print with no solid waste hazards and capable to convert at least 90% of its carbon into CO₂ in 180 days. Western world countries have already taken the giant step for commercialized mass production of value added products out of biodegradable plastics. Commercially a range of versatile biodegradable plastics are available worldwide. These includes poly(lactic acid) (PLA), poly(hydroxyalkanoate) (PHA), poly(ε-caprolactone) (PCL), poly(butylene succinate) (PBS) and other polysaccharide based thermoplastics. These above-mentioned plastics have properties comparable to some of the conventional plastics such as PE, PS, PP; along with improved gas barrier properties. Hence, biodegradable plastics such as PLA, PCL, PHB, PBS shows tremendous potential to replace the commodity plastics.

The Centre of Excellence for Sustainable Polymers (CoE-SusPol) at IIT Guwahati is established in the Department of Chemical Engineering, with the mandate to develop cost effective and scalable technologies for the

production of biodegradable plastics and their products for commodity, engineering and medical applications, using both petrochemical and renewable bio-feedstock. This Centre is funded by the Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, Govt. of India.

CoE-SusPol also disseminating their expertise on degradation, recycling and reusability of environmental friendly as well as conventional plastics into useful polymers and chemicals which is also a critical research area of the proposed centre. The centre is actively disseminating its R&D output through publications, patents, technology transfer and licensing for its long term sustainability. Some of the current year publications and patent applications shown on the slides are witness of the internationally reclaimed significant progress of this centre. Vision of this centre of excellence is to provide scientific expertise on sustainable polymers to various research institutions and industrial partners and bring them at one platform. This CoE-SusPol is well equipped with modern state-of-the-art facilities for testing and characterization of polymers, polymer processing equipment such as single screw extruder, twin screw compounder, blown film plant, thermoforming plants, injection molding machine for both research and pilot scale production. Though, these facilities are explicitly dedicated to technologically advanced scientific research and development activities of biodegradable plastics but conventional plastic based industries are welcome to use these facilities for their operational trouble shooting and for advancing their industrial processes.

The importance of introducing biodegradable plastics to the market is well understood and is kept to the priority of the research centre. Therefore, the group is also intimately engaged to the troubleshooting of processing and on-service related conditions of its products.

Figure1, shows some of the sustainable products which are under development at CoESusPol, including biodegradable food packaging, resorbable medical implants, value added products from agro-waste, nanobio-materials, sustainable plastics for electronics and many more. This is achieved by created state-of-the-art facilities in the area of biopolymer extraction, nano material fabrication, biodegradable polymer synthesis, polymer processing and nanotechnology.

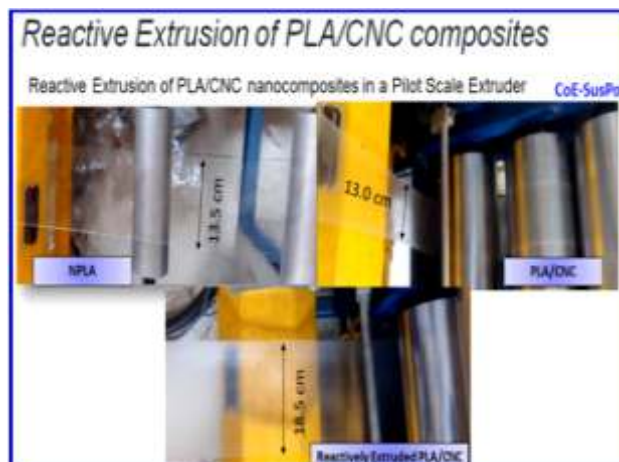


Figure1: (a) Snapshots of various R&D activities and scientifically developed products, (b) In-house thin film production of the developed PLA/CNC bionanocomposites at CoE-SusPol.

The centre is also actively involved in the training of industrial workforce and creating awareness on the benefits of sustainable plastics to our society. The centre is building continuous relation with leading experts of this field and mutually shares knowledge thereby achieving international recognition. In the same line, CoE-SusPol, IIT Guwahati has organized third symposium on Advances in Sustainable Polymers (ASP-16) which was held on 04 and 05 Aug 2016 in the Kyoto Institute of Technology (KIT), Japan. Building on the legacy of the previous two editions, ASP-16 featured talks from eminent experts from worldwide on a wide range of topics covering recent advances and developments in various areas related to sustainable polymers. Dr. Vimal Katiyar, a team leader of this centre is working hard to transform this centre into internationally recognized biodegradable plastic based HUB through creating technical manpower to further support Industrialization, by inventing elegant and cost effective technologies on this very important and strategic area of research.

(<http://www.plasticsnews.com/article/20131204/NEWS/131209962/study-plastic-consumption-to-double-in-india-by-2016>), September 27, 2016

(<https://www.plasticsinsight.com/global-consumption-plastic-materials-region-1980-2015/>) September 27, 2016

(<http://bcplonline.co.in/content.php?pageno=4&pageid=7&SubpageNo=2>) September 27, 2016

A COMPETITIVE ANALYSIS OF PLASTIC INDUSTRY

Pranjal Kumar Phukan,
CEng, Peng, MIE, MIIE, FIIE, FISME
BCPL



Abstract:

At present, the Rs 1.02 lakh crore sectors is growing at a compounded annual growth rate of about 20 per cent, according to an ASSOCHAM study. "The plastics industry is expected to touch Rs 1.7 lakh crore levels on the back of multiple factors. The plastics industry in eastern India is growing at the rate of 9% per annum as against 14% of India. The eastern Indian states of West Bengal, Bihar, Jharkhand, Odisha and Assam mark the entry of potential markets for growth of plastic Industry of India. "The region will have strategic advantages in near future, both upstream and downstream. The Assam Gas Cracker Project (Brahmaputra Cracker & Polymer Ltd) would prove game changer in shifting the focus of the industry to the eastern region," All India Plastics Manufacturers Association (AIPMA) president Ashutosh Gor said.

Keyword: Plastics, goods, ASSOCHAM, industry, BCPL, AIPMA, Eastern India states

Structure of Plastic Industry

The entire chain in the Plastic industry can be classified into (A) manufacturing of Polymers and is called "upstream" and (B) conversion of polymers into plastic articles and is known as "down stream". The upstream Polymer manufacturers have commissioned globally competitive size plants with imported state-of-art technology from the world leaders. The upstream petrochemicals industries have also witnessed consolidation to remain globally competitive.

The down stream plastic processing industry is highly fragmented and consists of micro, small and medium units. Presently there are about 26,000 registered plastic processing units of which about 75% are in the small-scale sector. The small-scale sector, however, accounts for only about 25% of polymer consumption. The industry also consumes recycled plastic, which constitutes about 30% of total consumption. Plastic processed articles which were

earlier exclusively reserved for Small Scale sector has now been de-reserved. The Micro Small and Medium Enterprise (MSME) Act 2006 increased the investment in plant and Machinery to Rs 5 crore and the current exemption on Excise Duty is Rs 1 crore. This initiative helped the industry to increase competitiveness and meet the global challenges.

Notwithstanding plastic being one of the important foreign exchange earners for the country (Exports- US\$3.512 Billion during 2007-08 and 3.603 Billion in 2008-09), the share of plastics exports remains at an abysmal 1.2% in the global export market. The domestic downstream industry comprises of 3 broad segments viz. Injection molding, Blow molding and Extrusion and caters to the requirements of a wide array of applications like packaging, automobile, consumer durables, health care, etc.

Employment Generation Potential

Considering both direct and indirect employment, the industry presently provides employment to 3.3 million people. Depending upon consumption growth with in the country, the sector has the potential of generating 3 million additional employment opportunities. Emergence of India as a key exporter of value added plastic products like China, can hasten the process.

Polymers (Plastic) Demand growth in India

Polymers registered rapid growth in 1970s, 1980s and 1990s growing at the rate of 2-2.5 times the GDP growth. The huge demand attracted investment, which led to massive increase in the capacity with in the country and thus progressively reduced our dependence on imports. In the first decade of the 21st Century (i.e. between 2000-01 and 2009-10), the demand for plastic raw material got more than doubled from 3.3 Million Metric Ton to 6.8 Million Metric Tons. The demand witnessed (CAGR of 13%) during 1995-96 to 2000-01 could not be sustained in the first five

years of the current decade and the CARG went down to 5.7%. However, the demand has now picked up and has averaged 12% between 2006-07 and 2009-10.

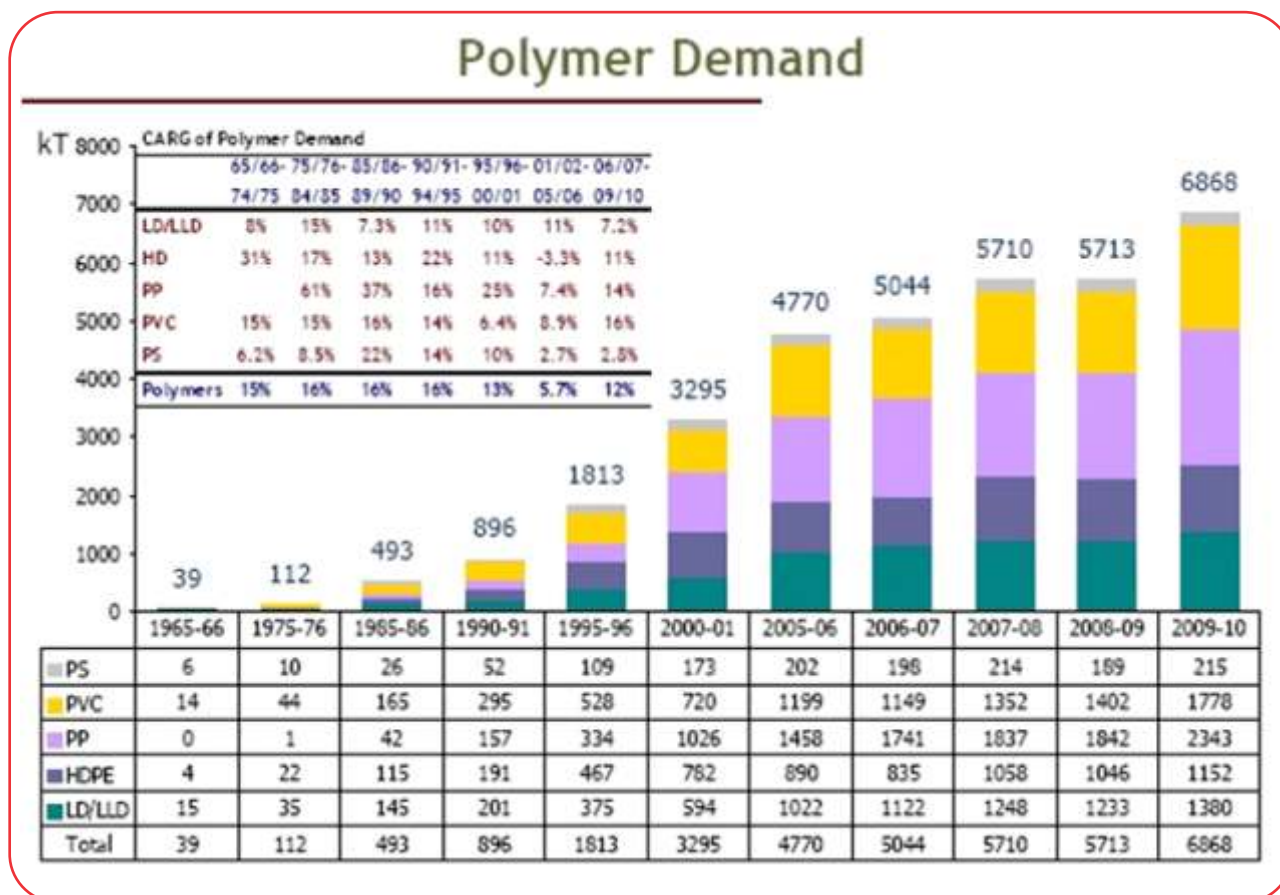
Capacity growth in India

1990s witnessed rapid growth in capacity with the entry of major domestic players in Polyvinyl Chloride (PVC)

respectively.

Export growth

Most of the capacity additions through commissioning of new plants and de-bottlenecking of existing facilities in India have essentially been to meet rising demand. From time to time, when domestic



and subsequently in Polypropylene & Polyethylene. The scope for application of plastics increased significantly and more and more sectors in the economy started using plastics on account of their multiple benefits. Today, petrochemicals are vital inputs to all critical sectors of the economy including agriculture, infrastructure, automobile, construction, consumer goods, telecommunication, packaging and healthcare.

Import Growth

Polymer imports sharply declined in 90s on account of reduced dependence on imports due to capacity additions in 1990's. There is surge in the imports in 2008-09 to around 1.1 Million Metric Tons, out of which, Polyvinyl chloride (PVC) accounts for 0.36 Million Metric Tons, Polypropylene (PP) 0.27 Million Metric Tons and Polyethylene (PE) 0.46 Million Metric Tons. The quantum of imports increased further to 1.8 MMT in 2009-10 with imports of Polyvinyl chloride (PVC), Polypropylene (PP) and Polyethylene (PE) rising to 0.70, 0.43 and 0.62 MMT

production exceeds the demand in the domestic market either due to higher imports or due to increased inventories, the surplus is exported. In recent years India has exported significant amount of PP. Going forward, India will be in a position to export more than a million tons of PP in the international market which will account for over 10% of PP's global trade.

New capacities in India

Assam Gas Cracker Project The Government has approved the Assam Gas Cracker Project at the cost of Rs. 5460.61 Crores, which was commissioned in February, 2016 and Brahmaputra Cracker & Polymer Limited has been formed which has started production with the capacity to produce 2.2 lakhs tone of Polyethylene (LLDPE/HDPE) and 60,000 Tonnes of Polypropylene per annum.

ONGC Petro Additions, Dahej Gujarat, Rs 12240 Crores (expected commissioning by 2017)

WHAT IS PLASTIC ?

By : Tarun Ranglani

A plastic is a type of synthetic or man-made polymer; similar in many ways to natural resins found in trees and other plants. Webster's Dictionary defines polymers as: any of various complex organic compounds produced by polymerization, capable of being molded, extruded, cast into various shapes and films, or drawn into filaments and then used as textile fibers. The history of manufactured plastics goes back more than 100 years; however, when compared to other materials, plastics are relatively modern. Their usage over the past century has enabled society to make huge technological advances. Although plastics are thought of as a modern invention, plastics were within everyone's reach due to their inexpensive cost. Plastics had thus come to be considered 'common' a symbol of the consumer society. From daily tasks to our most unusual needs, plastics have increasingly provided the performance characteristics that fulfill consumer needs at all levels. Plastics are used in such a wide range of applications because they are uniquely capable of offering many different properties that offer consumer benefits unsurpassed by other materials. They are also unique in that their properties may be customized for each individual end use application.

Plastics Uses

Whether you are aware of it or not, plastics play an important part in your life. Plastics' versatility allow them to be used in everything from car parts to doll parts, from soft drink bottles to the refrigerators they are stored in. From the car you drive to work in to the television you watch at home, plastics help make your life easier and better. So how is it that plastics have become so widely used? How did plastics become the material of choice for so many varied applications?

The simple answer is that plastics can provide the things consumers want and need at economical costs. Plastics have the unique capability to be manufactured to meet very specific functional needs for consumers. So maybe there's another question that's relevant: What do I want? Regardless of how you answer this question, plastics can probably satisfy your needs.

If a product is made of plastic, there's a reason. And chances are the reason has everything to do with helping you, the consumer, get what you want: Health. Safety.

NEW DELHI: The government has made it mandatory for road developers to use waste plastic along with bituminous mixes for road construction to overcome the growing problem of disposal of plastic waste in India's urban centres.

Road developers will now have to use waste plastic along with hot mixes for constructing bitumen roads within 50 km of periphery of any city that has a population of over five lakh. In recently released guidelines for developers, the government said that in case of non-availability of waste plastic, the developer has to seek the road transport & highways ministry's approval for constructing only bitumen roads.

PLASTIC IN DAY TO DAY LIFE

plastic has been used for a long time in handles and grips and other parts that are generally black. This is because heat-resistant temperature is high, durability



excellent, and moreover, PF is not penetrated by acid or alkali. In addition, it is well known that fluoro plastics employed in space rockets are also employed as fry pan coatings. is used in buckets and trash bins. Heat-resistant containers used in microwave ovens employ PP, PET and AS due to their heat resistance and transparency. In addition, many combinations of PET, PP, PA and PE are employed in multi-layer films for wrapping food. It appears as if PC is often used as a lid to directly cover food placed in a microwave oven.

The main materials used in these representative home appliances are PP, PS and ABS. Boldly

Stated, PP, PS and ABS are used in large components such as the cabinet, while engineering plastics headed by POM play an active role in internal mechanical components. Rapidly growing liquid crystal displays (LCDs) use PI in their orientation films, PVA in their polarization films, and MMA in



as mass producability are exploited. In Japanese hotels, integrally molded bathroom units incorporating a bathtub, shower room, floor and walls are used. PE is primarily used in soap holders. PE and PET are used in shampoo containers while the pump action tubes employed in containers employ PP. A lot of PP and PC is used in toothbrush handles, while PBT and PA are used in the brush part. In the case of electric toothbrushes, the cams and gears in the driving part use POM and PBT, while POM plays an active role in various components of the water cutoff mechanism. At a glance flooring made from PVC sheet can be mistaken for wood. PVC is resistant to water and low cost and on this account, it is used in bathrooms and toilets. Another strong point is the diverse variety of patterns, from marble designs, through to granite and wood

their light-guide panels. Home telephones and fax machines are incorporating more and more functions, while cellular telephones continue to become smaller, lighter, and thinner. ABS and impact-resistant PS are used in the housings of home telephones and fax machines, while POM, among other materials, is used in internal mechanical components. Not only function but also design and color have become important attributes for wall clocks and table clocks as they pursue harmony with the rest of the interior. ABS and PS are adopted for external parts due to the ability to freely design with them and color them, and because they exhibit excellent impact resistance and chemical resistance. For internal mechanical parts, POM is one resin that is used in gears and cams. Urethane foam is used as a sofa material, while well-known PVC leather is generally used as the covering material. PS, PP and ABS are used in air conditioner cabinets. Accompanying improvements in external appearance to blend in with interiors, technologies to create comfortable living spaces, deodorize, and dust proof are in the spotlight, and new plastic applications are anticipated related to this.

Almost all bathtubs are made from FRP (glass fiber-reinforced polyester) or PMMA. Their properties of heat, impact and chemical resistance, as well

finishes. Recent examples exist of PVC flooring being used throughout all rooms. At one time, PP was used in washing machine drums but more recently, PP, PS and ABS are among plastics used in switch panels. Most hoses are made from PVC, while the hose rack is typically made from PE or PP. ABS is adopted in the housings of clothes driers, while in versions with anti-microbial functions that can carry out sterilization treatment, POM is employed in the anti-microbial mat retainer and PP in the sterilization heater retainer.



GOODS AND SERVICES TAX

Courtesy : Garv & Affiliates

Goods and Service Tax (GST), one of the most radical reforms that the Government of India would have ever implemented, is likely to come into effect from April, 2017.

The advent of GST will revamp the current taxation system in India by removal of existing complexities, multiplicities and ambiguities, and is expected to act as a catalyst for removal of economic distortion and development of common national market.

Our newsletter aims at keeping you abreast with the legal scenario while assisting your business to adapt with this new taxation system.

What is GST ? How does it work?

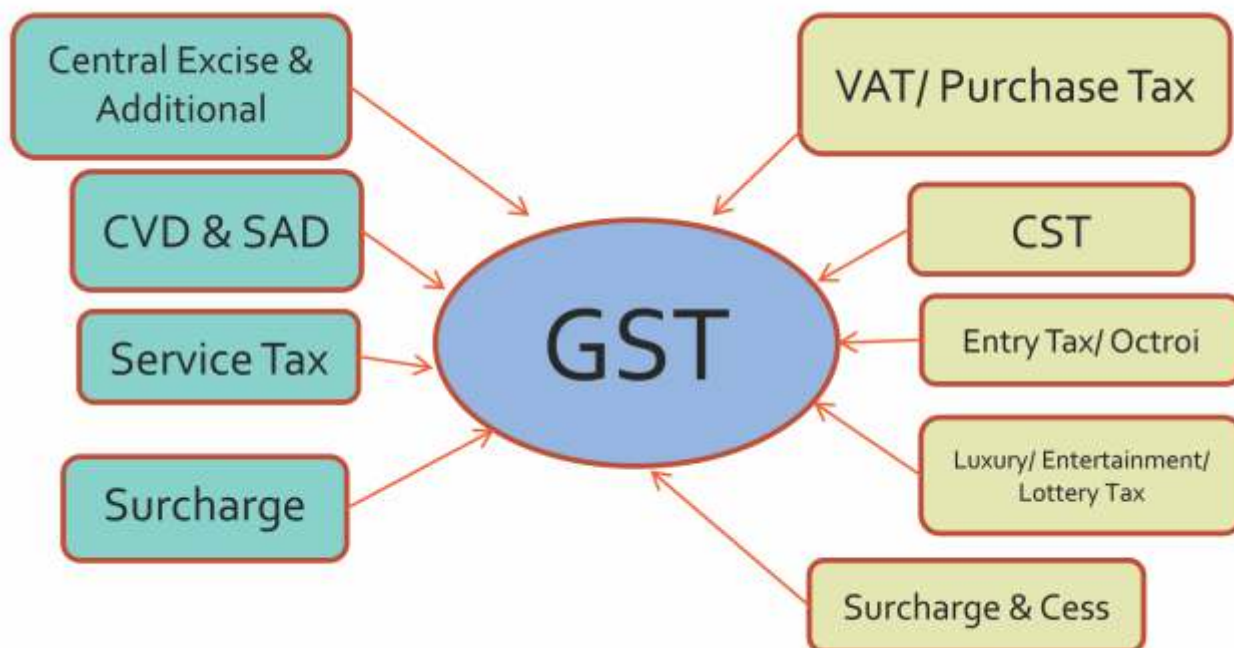
GST is a destination based tax which subsumes several indirect taxes such as Central Excise, Countervailing Duty, Special Additional Duty, Service Tax, VAT, Central Sales Tax and other taxes which eliminates double taxation. It would be levied upon supply of Goods and/or Services

within or outside the State wherein 'supply' has a wider connotation which includes transaction without consideration too.

GST is a single tax on the supply of goods and services, right from the manufacturer to the consumer. Credits of input taxes paid at each stage will be available in the subsequent stage of value addition, which makes GST essentially a tax only on value addition at each stage. The final consumer will thus bear only the GST charged by the last dealer in the supply chain, with setoff benefits at all the previous stages

GST Model law and Business Processes have been released and the GST Council has been constituted which will pave way for final Central and State GST Acts. Some issues such as taxability of stock transfers and other transitional issues are prevalent as of now, which should be addressed in the final GST legislation. One of the most prominent feature of the GST regime is the creation of GST Network for online credit, payment and return mechanism.

Taxes Subsuming into GST



A person is liable to pay tax if his aggregate turnover in a financial year exceeds Rs. 10 Lakhs. However, a person conducting business in any of the North Eastern States including Sikkim, is required to pay tax if his aggregate turnover exceeds Rs. 5 Lakhs.

Mandatory Registration – Turnover Limit

Following category of persons are mandatorily required to obtain GST registration irrespective of threshold turnover limit.

Basic Exemption Limit & Registration

Aggregate turnover means the aggregate value of all taxable and non-taxable supplies, exempt supplies and exports of goods and/or services of a person having the same PAN, to be computed on all India basis

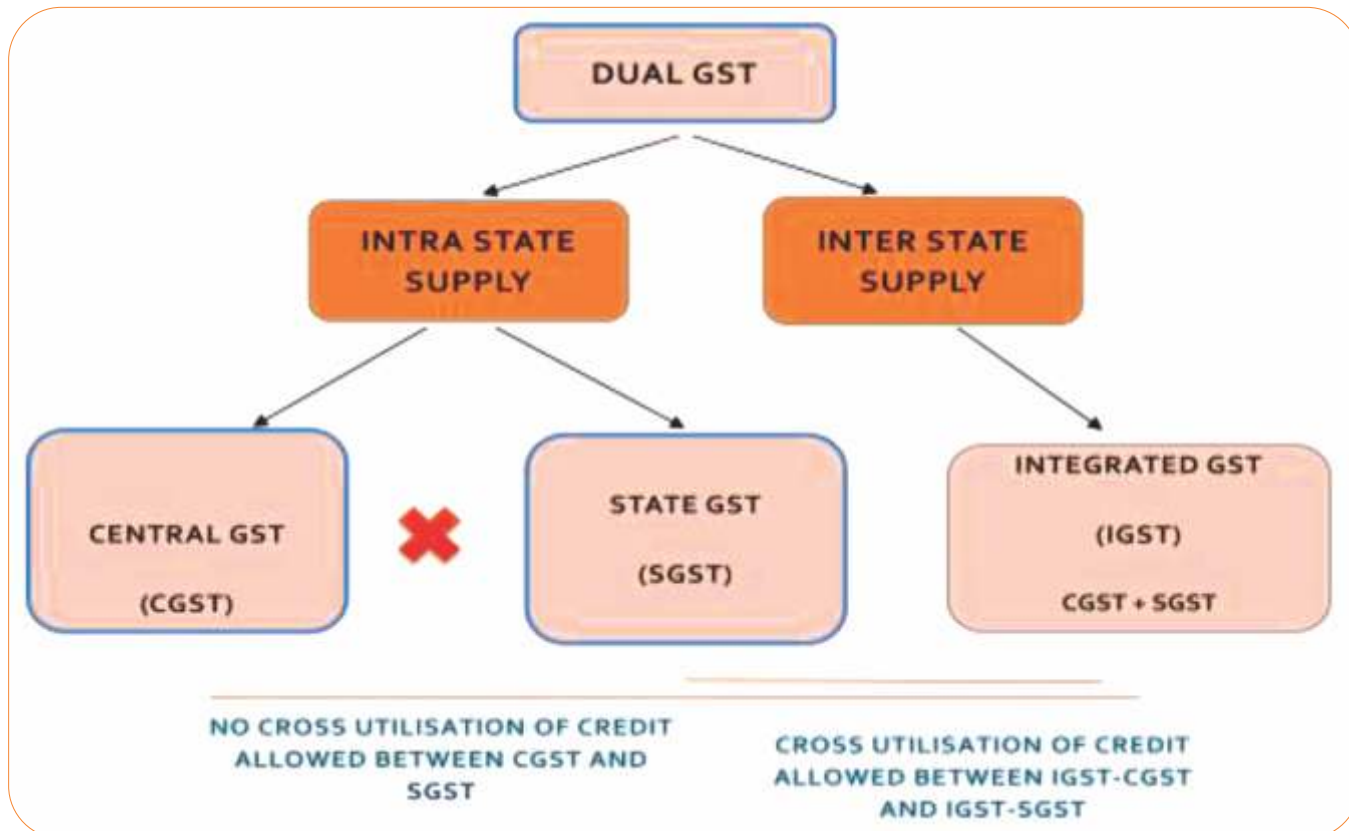
Registration – Turnover Limit

A person is required to get registered under GST if his aggregate turnover in a financial year exceeds Rs. 9 Lakhs (Rs. 4 Lakhs where business is conducted in any of the North Eastern States including Sikkim)

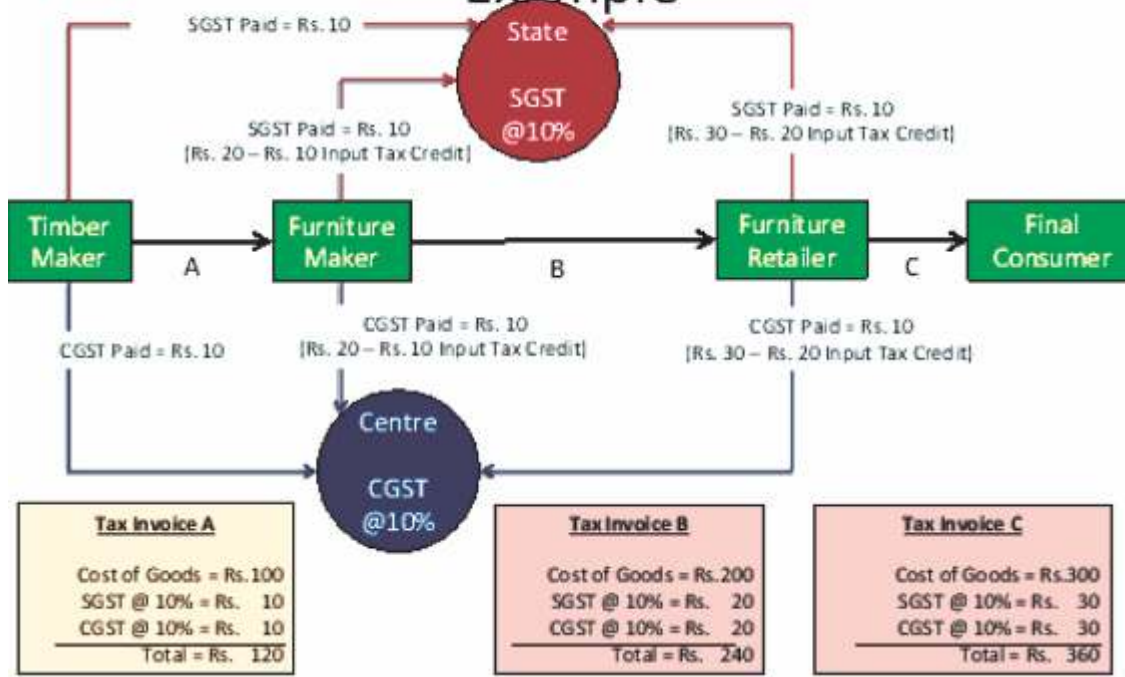
Persons making any inter-State taxable supply of goods or services

- Persons under reverse charge mechanism
- Casual/ Non Resident Taxable Person
- Input Service Distributor
- Persons who supply goods and/or services, other than branded services, through electronic commerce operator
- Persons who are required to deduct tax under GST law
- Agents
- An aggregator who supplies services under his brand name or his trade name

Dual GST Structure



Dual GST within State: Working Example



Returns

Category of Person	Monthly/Quarterly Returns	Annual Return	Total Returns to be filed annually
All Regular Taxpayer	3 Returns per month X 12 Months	1 Annual Return	37 Returns
Compounding Taxpayer	1 Return per Quarter X 4 Quarters	1 Annual Return	5 Returns
Input Services Distributor	1 Return per Month X 12 Months		12 Returns
Person deducting tax at Source	1 Return per Month X 12 Months		12 Returns



Minimum Returns

Minimum 37 Returns to be filed by every Registered person for each State

Registration in more than one state

If a person has 10 state registrations, then minimum $37 \times 10 = 370$ returns to be filed

Business Vertical

Separate Returns are required to be filed for each Business Vertical

Transition to GST: Key Planning Areas

Sector Impact

- ❖ Analyse the impact of GST on your existing business sector and processes
- ❖ Analysis of Pricing, Costs and Margins in the wake of GST law

Review of existing contracts

- ❖ Existing Orders and Contracts needs to be reviewed and amended to incorporate tax effect on account of GST
- ❖ Terms & Conditions of existing orders, invoices and documents needs to be altered

Transitional Credit

- ❖ Existing inventories of Raw Materials, Semi-Finished Goods, Finished Goods needs to be monitored especially the planning for inventory position as on year end just before introduction of GST, to avail the optimum benefit of credit
- ❖ Goods sent to job workers and the inventories held by them as at year end needs to be monitored

Change in IT/ERP systems

- ❖ The proposed GST mechanism will be completely online and system driven. The existing IT and ERP environment of your organisation needs to be modified to

align with the requirements of GST Network mechanism.

Transition to GST: Key Planning Areas

All the taxpayers registered under existing indirect taxes would automatically get temporary GST registration numbers, which would be issued on final basis on furnishing of prescribed information/documents.

GST Law provides for transitional provisions to facilitate carry forward of CENVAT as well as VAT input credit available to a taxpayer under the current regime to the GST regime. It contemplates disposal of all pending refund claims under the current law with a rejection of the refund claim resulting in a lapse of the underlying credits.

Treatment of return of goods removed under existing indirect tax regime has also been dealt with.

Appointed date means the date on which GST law comes into Effect.

Migration of Registration

- ❖ Every registered person under any of the earlier indirect tax laws shall be issued a Registration Certificate on a provisional basis under GST - valid for a period of six months
- ❖ Such registered person needs to furnish prescribed information within six months
- ❖ Thereafter Registration Certificate to be granted on a final basis
- ❖ Provisional registration to be cancelled if such person fails to furnish requisite information

Key Planning

GST law requires State wise separate registration. So existing organizations having centralized service tax registrations with different state operations need to obtain state wise registration.

Information about provisional registration will be intimated to the email id and mobile number registered with the Excise/VAT and Service Tax department. It is

advisable to ensure that correct email id and mobile number are recorded therein

VAT & CENVAT Credit

❖ A registered taxable person shall be entitled to take as GST Credit, in his electronic credit ledger, Cenvat credit and Input VAT credit carried forward in the Excise, Service Tax & VAT return filed for the period ending appointed day.

❖ Credit allowed to be carried forward if admissible



under the earlier law and also allowed under GST Law

❖ VAT and CENVAT Credit on Capital Goods is equal to the remaining ratio of aggregate CENVAT Credit from CENVAT Credit already availed which would be carried forward

Key Planning

There may be cases where return filed under earlier law is erroneous and credit amount is wrongly carried forward in such returns. It should be ensured that correct amount of eligible credit is filed in such returns under existing law to avoid inadmissibility of any input tax credit under GST regime.

Input Credit on Opening Stock to Non-Registered Persons under Existing Laws

● Allowed to registered taxable person .

❖ Who was not liable to be registered under the earlier law or

❖ Who was engaged in the manufacture/ trading of exempted goods under the existing law which are liable to tax under the GST law

● Credit of eligible duties and taxes allowed in respect

❖ inputs held in stock and

❖ inputs contained in semi-finished or finished goods held in stock

● Conditions for allowing credit

❖ Such inputs and/or goods are used/ intended to be used for making taxable supplies under GST Law

❖ The taxable person was eligible for CENVAT credit on receipt of such inputs and/or goods under the earlier law but for his not being liable for registration or the goods remaining exempt under the said law

● The taxable person is eligible for input tax credit under GST Law

● The said taxable person is in possession of invoice and/or other prescribed documents evidencing payment of duty/tax under the earlier law

● Invoices and documents were issued not more than 12 months earlier

● Eligible duties and taxes mean

❖ Excise Duty

❖ Additional Duty of Excise

❖ The National Calamity Contingent

Duty

❖ Special Additional Duty

❖ Countervailing Duty

❖ Service Tax

❖ Value Added Tax

Key Planning

❖ Under current law, excise dealers do not charge any excise duty but only transfer the CENVAT Credit to the buyer under the cover of their invoice. Under the GST regime, these dealers will be required to levy GST. However, there is no provision under Model GST law to transfer CENVAT Credit lying in stock as on the appointed day

❖ Input tax credit carry forward benefit is available to the manufacture of exempted goods, but not for provision of exempted services

❖ No credit is available for such stocks purchased prior to 12 months. Hence, it is advisable to ensure that invoices for stocks in hand on appointed date are issued within 12 months from such date

❖ Where Excise and VAT are part of cost of goods but were not acquired from registered excise or VAT dealer, there will be a huge financial implication as no credit of such duties will be available. Hence, it is advisable to plan for such kind of scenarios so that the credit of duties on closing stock on appointed date is available as GST Credit.

Goods Lying with Job Worker

● No tax on the Principal manufacturer

❖ Inputs / semi-finished goods / finished goods sent to a job worker for further processing / repairing / testing

❖ If received back within 6 months or further extension of 2 months from the appointed date

❖ Both the job worker and principal declares the inputs held in stock by job worker on behalf of the principal

● Failure on part of job worker to return back the inputs/ semi finished goods within 6 months or further

extension of 2 months, would make principal manufacturer liable to pay tax

- Where the job worker returns back the goods after 6 months or further extension of 2 months, such job worker shall be liable to pay tax

- In case of semi-finished or finished goods are sent to job worker for processing or testing, principal may transfer the such finished goods to the premises of any registered taxable person for the purpose of supplying therefrom on payment of tax in India or without payment of tax for exports within 6 months or further extended period, as may be prescribed.

- Declaration by both principal & agent regarding the stocks prior to the enactment of GST

- The invoices for such goods have been issued twelve months immediately preceding the date of enactment

- The principal has either reversed or not availed the input tax credit in respect of such Goods

Pending Refunds or Claims of Credit

Claims of refund or Credit accruing under the existing law shall be disposed off under existing law. Where any claim for refund is partially or fully rejected, the amount so rejected shall lapse.

Key Planning

The refund application under existing law, if any, is rejected the same shall lapse without any further opportunity. Hence it should be ensured that all pending refund claims are disposed off to the extent possible at the earliest.

Switching from Composition Scheme

- A registered taxable person, who was either paying tax at a fixed rate under the existing law shall be entitled to credit relating to inputs held in stock or inputs contained in semi-finished or finished goods held in stock. Such credit is eligible on the following

conditions:

- ❖ Such inputs and/or goods are used or intended to be used for making taxable goods

- ❖ Tax is not paying as per Sec. 8 of the GST Law . Eligible for CENVAT Credit on receipt of such inputs and/or goods under the existing law

- ❖ On production of invoice and/or other prescribed documents evidencing payment of duty

- ❖ Such invoices and/or other prescribed documents were not issued earlier than 12 months effective from the day of implementation of GST Law

- ❖ However, if the amount is found to be arrear of tax under GST Law, such amount shall be recovered from the assessee.

- ❖ If amount of credit has carried forward under the existing law, such person shall pay an amount by way of debit in his electronic cash/credit register in relation to inputs held in stock.



Key Planning

It should be ensured that all goods sent to job worker for processing should be returned within 6 months from the appointed day. If required the same may be sent to job worker again after the appointed day as per the provisions of GST law

Price Revision

- If a party entered into a contract before the implementation of GST Law and the price of any goods and/or services is revised upwards, the taxable person who had removed may issue to the recipient a supplementary invoice or debit note within 30 days of such price revision.

- Such note issued due to price revised may be deemed to be issued in respect of an outward supply of goods and/or service.

Goods Lying with Agent

Agent shall take credit of the tax paid goods belonging to principal on the grounds as followed:

- Agent must be registered under the GST Law

ENSURE FIRE SAFETY; SAVE LIFE AND PROPERTY

Practice Fire Safety & Protect Your Community

By : Fire & Emergency Services
Government of Assam

GENERAL FIRE SAFETY AND PROTECTION TIPS

- Ensure that all your family members know what to do in the event of a fire. Draw a floor plan with all the escape routes. The plan should include important details like stairs, hallways and windows that can be used as fire escape routes.
- Test windows and doors to ensure that they open easily. Make sure you have a safe fire escape method for all situations.
- Select a safe meeting place outside the house for your family members to assemble in case of an emergency.
- Practice alerting other members in your family. Always keep a bell and flashlight in each bedroom.
- Always sleep with the bedroom doors closed. This will keep deadly heat and smoke out of bedrooms, giving you additional time to escape.
- Find a way for everyone to sound a family alarm like yelling, pounding on walls, whistling etc. Practice yelling "FIRE, FIRE, FIRE".

BE PREPARED PLAN AHEAD

- Prepare an Escape Plan for your Home, School, Institution or Office.
- Practice evacuating the building blindfolded regularly. In a real fire situation, it is most likely that the amount of smoke generated by a fire would make it difficult to see.
- Practices staying low to the ground when escaping. Always Stay Low during a fire disaster as one breath of smoke or gases may be enough to kill.
- Feel all doors by the back of your hand before opening them. If a door is hot, get out another way.
- Practice STOP, DROP AND ROLL method, to douse of the fire caught on clothes.
- Ensure appropriate Fire Extinguishers are placed at all the strategic locations and are in working conditions.

FIRE PREVENTION IS BETTER THAN FIRE EXTINCTION

LPG ONE OF THE MOST IMPORTANT CAUSES OF FIRE

GENERAL FIRE SAFETY IN CASE OF LPG

- Accept delivery of the gas cylinder after inspecting the valve and seal.
- Never attempt to repair the valve or the Burner. Call the Gas Agency.
- Remove all the lights & other sources of heat and keep doors & window shutters open while changing the cylinder.
- Don't tilt the cylinder for the last bit of gas.
- Always keep the cylinder in upright position.
- Position the stove, ABOVE the level of the cylinder.
- Light the match stick before opening the cylinder and burner valve.
- Always switch off both the regulator and burner valve after use.
- Get the gas stoves serviced at regular intervals at your Gas Agency.

The background of the entire page is a dramatic, high-contrast image of fire and smoke. At the top, bright orange and yellow flames rise against a dark background, with wisps of white and grey smoke drifting downwards. At the bottom, more intense flames are visible, with smoke rising from them. The overall effect is one of a powerful, consuming fire.

IN CASE OF LEAKAGE OF GAS

- Please note that LPG is heavier than air. Open all windows and other shutters, immediately.
- Remove all the lights and never attempt to switch on or off any light, fan or other electrical equipments.
- If possible remove the cylinder to a safe open area to allow the gas to escape.

IN CASE OF FIRE

- Try to stop the supply of gas by closing or removing the regulator.
- Extinguish the fire if possible by covering the burning area with a wet gunny bag or cloth.
- After extinguishing the fire remove the cylinder to open area. Remember that a leaking cylinder is more dangerous than a burning cylinder.
- In case of any leakage or fire, never hesitate to call the Fire & Emergency Services and inform the Gas Agency.

(LPG ECONOMICAL IF USED PROPERLY HAZARD IF USED CARELESSLY)

WHAT BURNS NEVER RETURNS IS YOUR HOME FIRE SAFE.....?

- ✓ Get your building/ apartment inspected by Fire & Emergency Services Department in respect of Fire Safety & Fire Prevention measures.
- ✓ Collect fire safety measures suggestions from Fire & Emergency Services Department and implement them accordingly.
- ✓ After implementation of Fire Safety & Fire Prevention Measures Suggestion, collect No Objection Certificate from Fire & Emergency Services Department.
- ✓ Prepare & develop an escape plan for your home, school, institution or office.
- ✓ Display EMERGENCY TELEPHONE NUMBERS in your building, school, institution or office.
- ✓ Ensure that all of your family members know what to do in the event of a Fire.
- ✓ Always keep escape/exit/evacuation routes clear of any blockades.
- ✓ Do not store inflammable materials like Petrol, kerosene, LPG cylinders et. and keep them in a secured place outside dwelling houses. Keep such inflammable materials out of reach of Minors.
- ✓ Keep Fire Extinguishers in working conditions and learn how to operate.
- ✓ Keep your inbuilt Fire Safety System always in working condition.
- ✓ Practice evacuating the building blind folded regularly.
- ✓ Carry out periodical inspection of electrical wirings. Any hazardous condition should be reported to your electrician.
- ✓ Avoid smoking in bed and do not throw burning cigarettes and match sticks.
- ✓ Do not throw burning materials carelessly.

(Good Housekeeping is a good Fire Safety)

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Choosing a roof is the most important decision of your lifetime, as it not only beautifies your home but shelters your loved ones. DynaRoof is the pioneer in roofing, cladding and roof accessories. So why go for anything else when you get the best with DynaRoof.



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