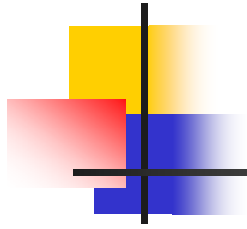


Indian Vinyl Industry

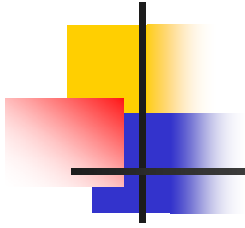
Status & Outlook

World Vinyl Forum III
Boston, Sept. 26-28, 2007



Coverage

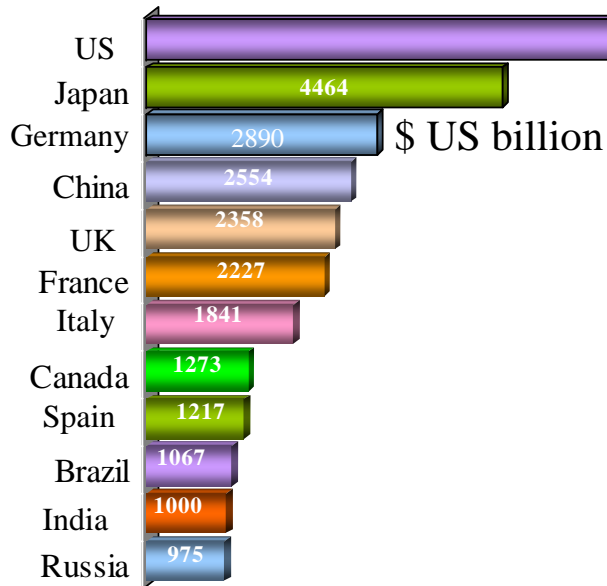
- **India - Economic snapshot**
- **Vinyl Industry...Current status**
- **Major Application Sectors**
- **Case Studies**
- **Reliance Initiatives**
- **Environmental Issues**
- **For Sustainable Growth**



Indian Economy - A Snapshot

India Poised : Enters the Trillion \$ Club

The Trillion Dollar Club



Note : Only India's GDP figs. are of March '07 and using the most recent exchange rate. Rest all figs. are as of Dec. '06
Source – Credit Suisse estimates

➔ **India moves into the elite club of 11 Economic Power Houses**

➔ **GDP > doubled in last 6 years**

➔ **Accelerated GDP growth of 9.2%**

➔ **Continued momentum in services & manufacturing sectors with double digit growth**

➔ **Globalization - an opportunity**

Indian Philosophy – “The World is One Family”



India : Key Growth Indicators

By 2020,

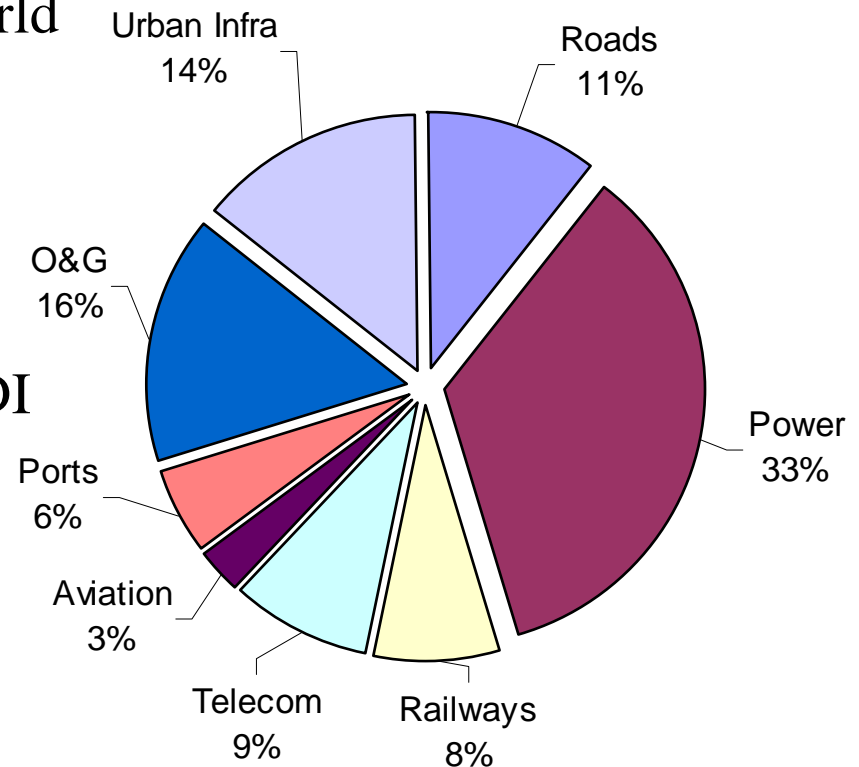
- Productivity growth to help India sustain > 8% growth
- Per Capita GDP (in US\$) will Quadruple
- Indians will buy 5 times more cars and consume 3 times more crude Oil
- > 100 million people will enter labour force
- 140 million rural dwellers to move to urban areas

Source: Goldman Sachs

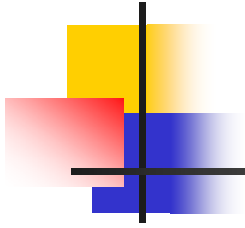
India: Entering the league of developed nations by 2020

India : Infrastructure Growth

- India - one of the fastest growing infrastructure opportunity in the world
- Investment of > US\$ 311 bln over next 5 yrs.
- 42% of infrastructure investments in construction sector
- Potential to absorb US\$ 150 bln FDI
- Key thrust areas:
 - Building & Construction
 - Roads, Ports, Aviation
 - Power & Telecommunication.
 - Water & Sewerage,
 - Gas distribution & industrial infrastructure



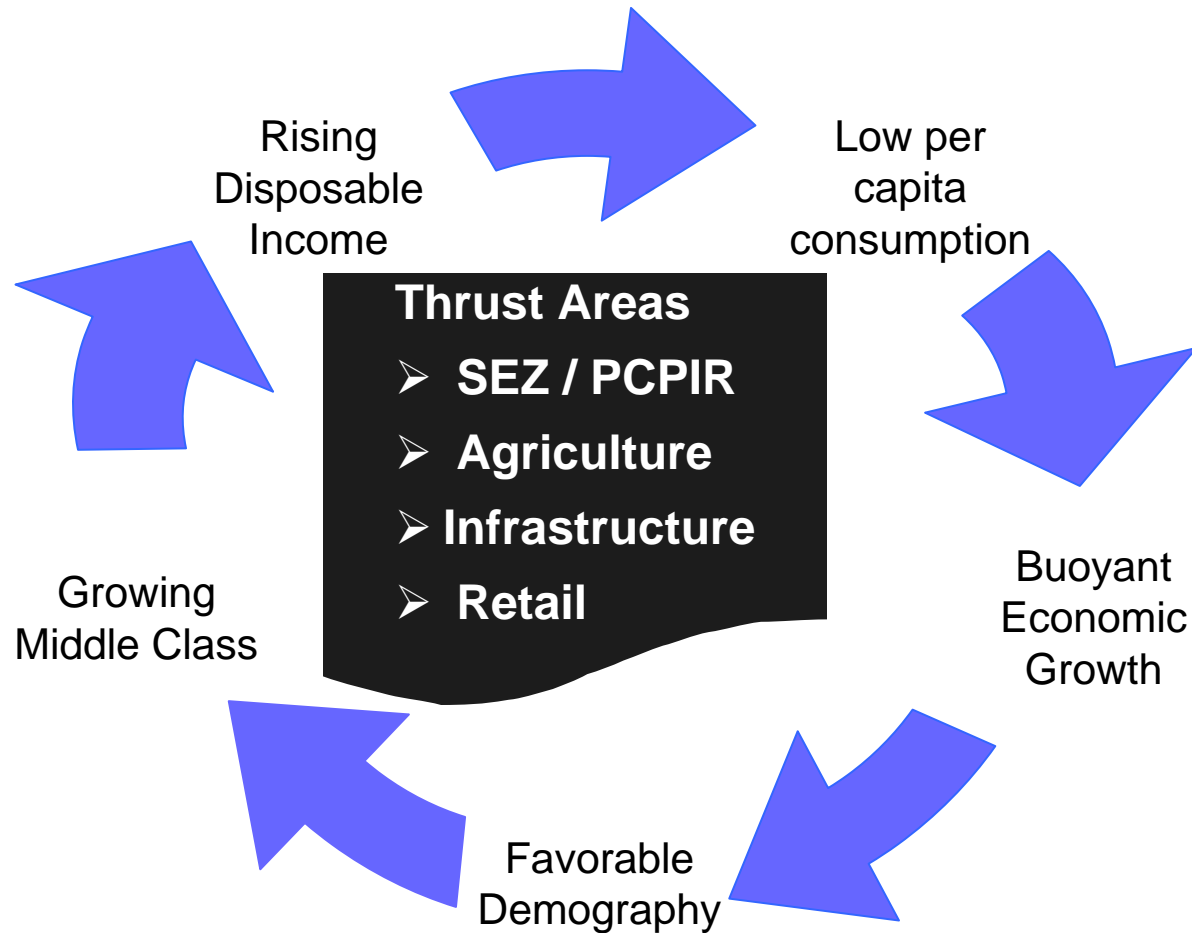
Huge potential for polymer applications



Indian Polymer Industry - Flying High

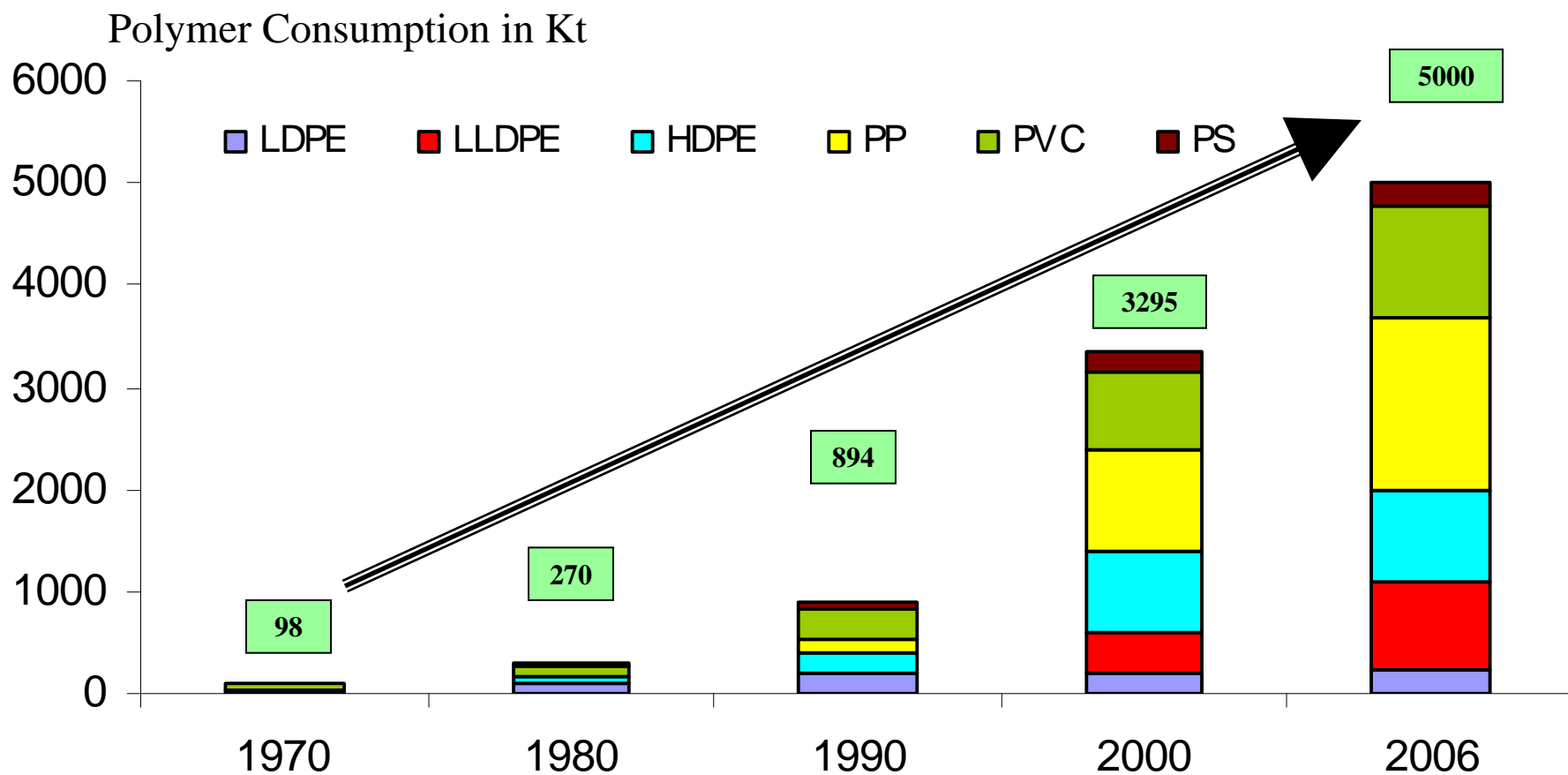
Indian Polymer Industry :

Salient Features



Giving impetus to Indian polymer industry

Indian Polymer Industry



Consumption trebling every decade

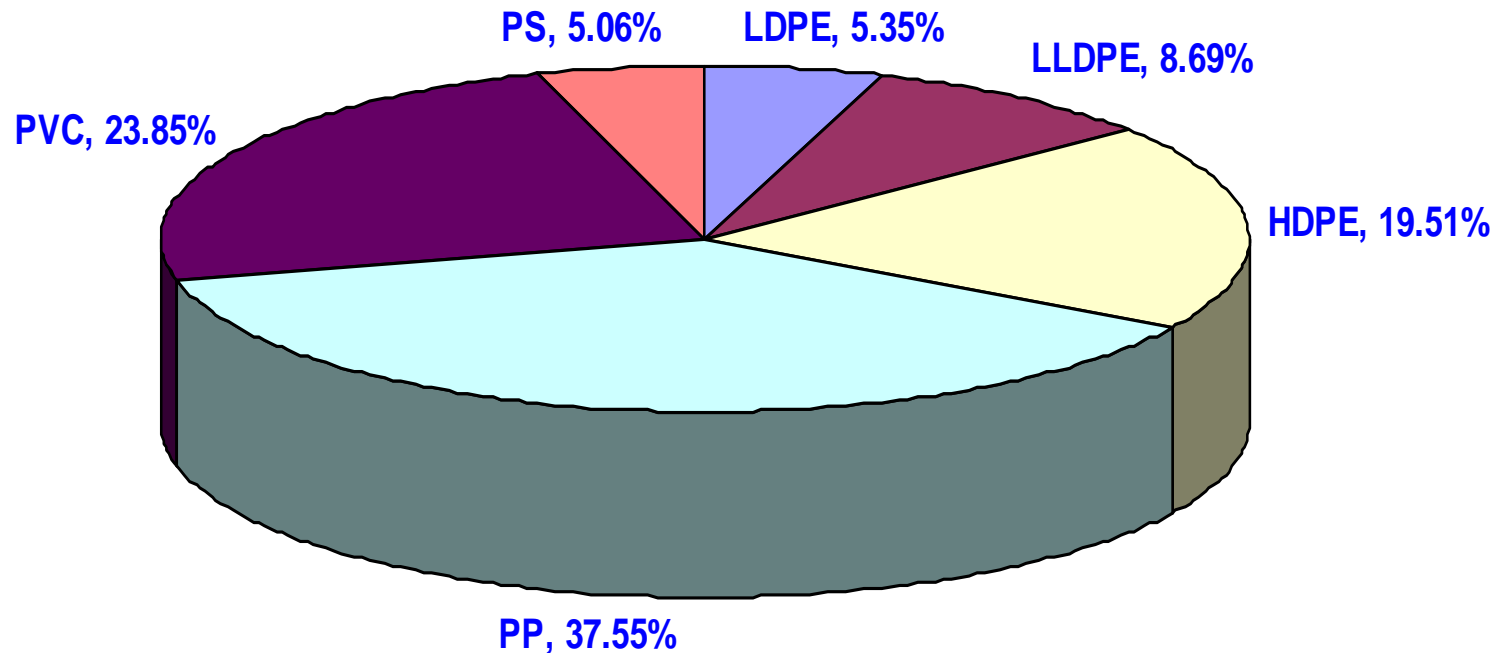
Industry Chronology

Product	Date of Commercialisation	Firm
PS	1957	Polychem
LDPE	1959	Alkali & Chem. Corp. of India (ICI)
PVC	1961	Calico Chemicals (Carbide based)
HDPE	1968	PIL
PP	1978	IPCL
LLD/HDPE Swing	1992	IPCL & RIL

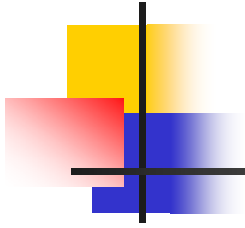
Indian polymer industry :Just 50 years young !

Polymer Consumption in India

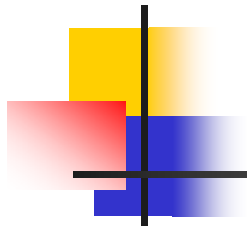
Total Consumption ~ 5,000 KTA



PVC holds a major share among polymers



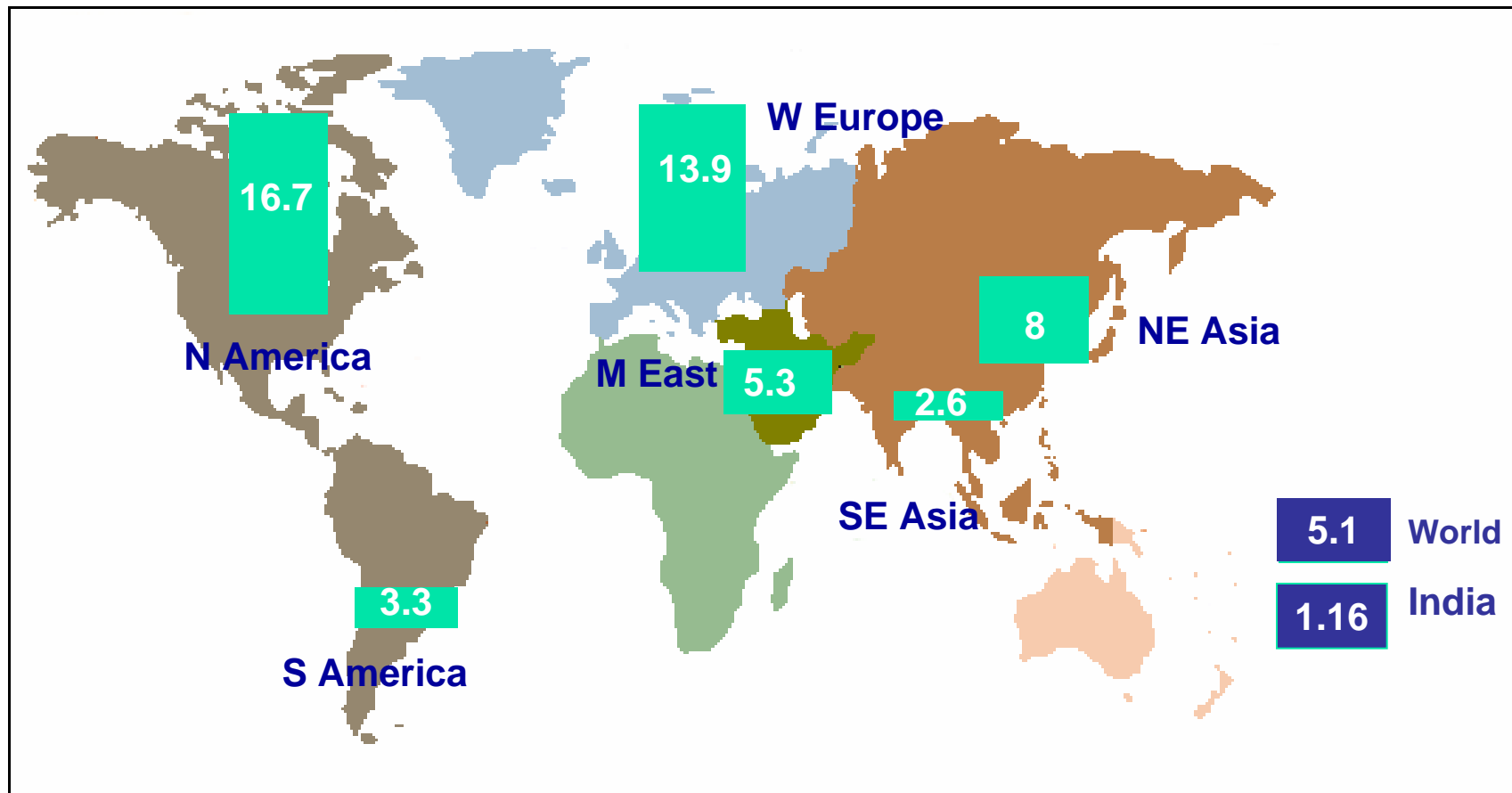
Vinyls in India



PVC in India

- ➔ **46 yrs old, flourishing since last 7-8 Yrs.**
- ➔ **PVC Consumption (2006): 1.215 MMT**
- ➔ **PVC consumption to almost double by 2010.**
- ➔ **Pipes & Fittings, Profiles & Calendaring major sectors of growth**

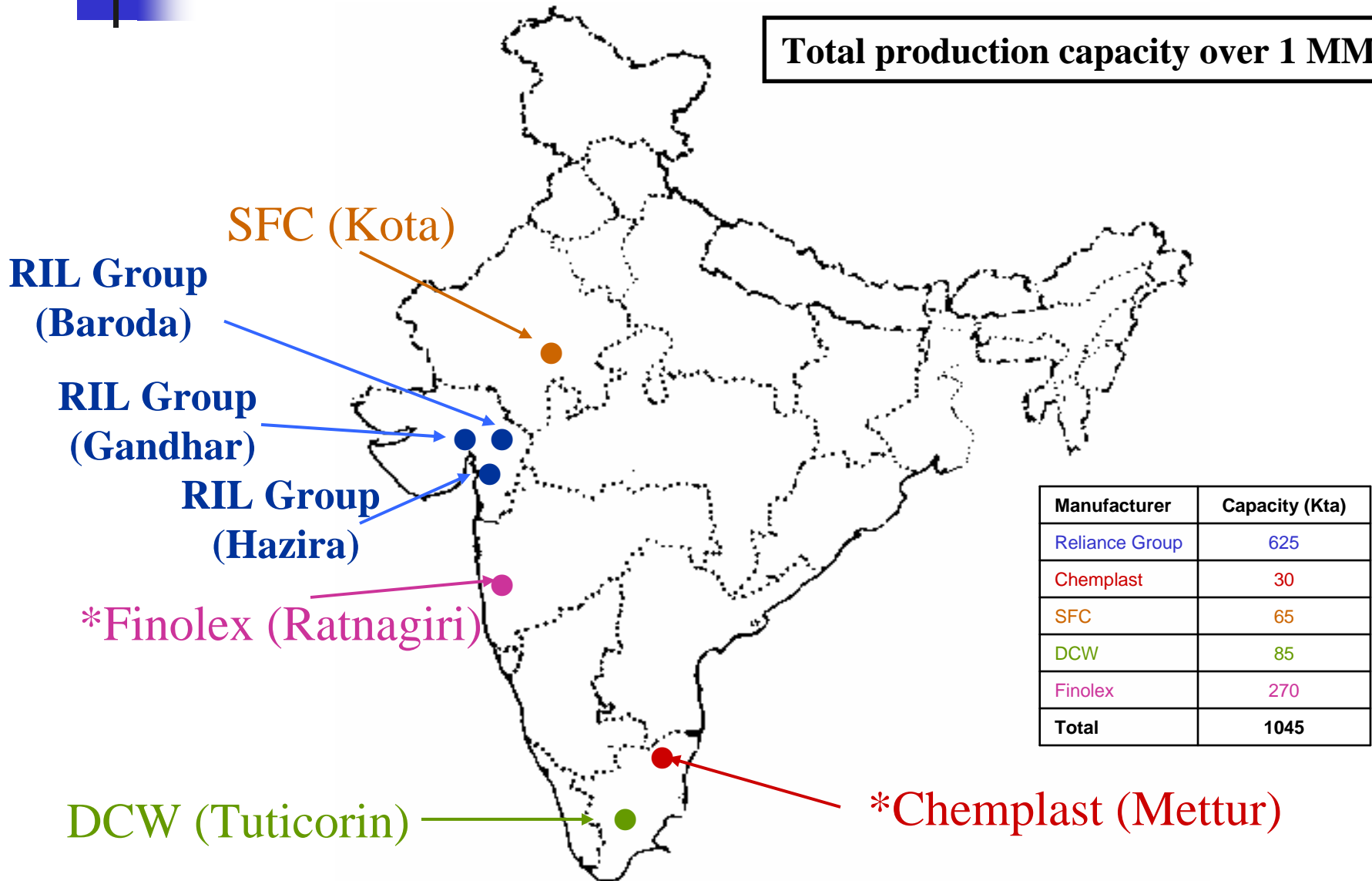
PVC : Per Capita Consumption



...Tremendous growth potential

PVC Manufacturing sites in India

Total production capacity over 1 MMTA

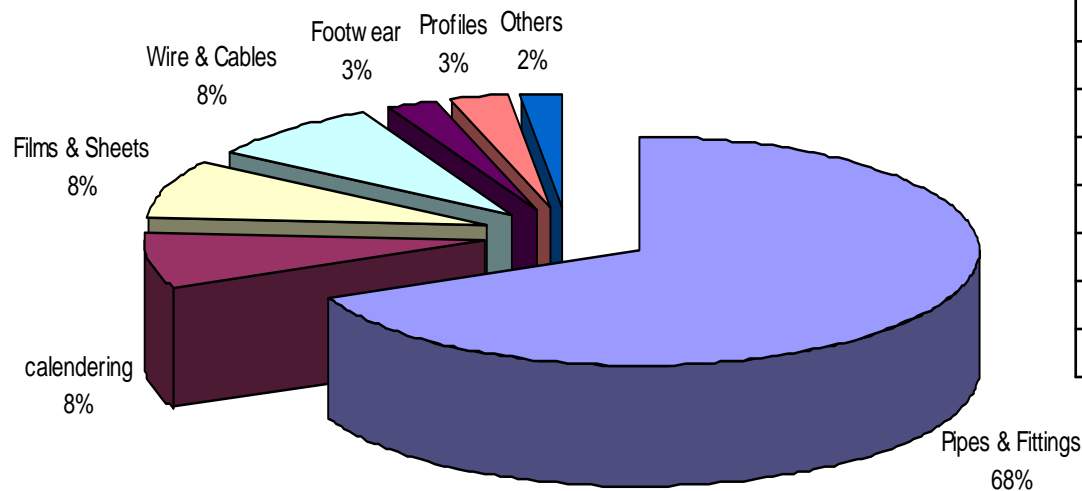


Manufacturer	Capacity (Kta)
Reliance Group	625
Chemplast	30
SFC	65
DCW	85
Finolex	270
Total	1045

* Also have emulsion PVC plants

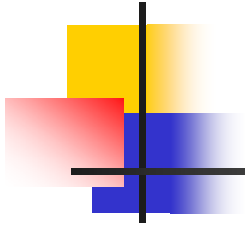
PVC Sector wise

Average CARG of 8% over last 5 years



Sector	2006-07 Consumption (Kt)	CARG over last 5 years (%)
Pipes & Fittings	831	8
calendering	98	18
Films & Sheets	102	18
Wire & Cables	99	3
Footwear	32	-9
Profiles	33	13
Others	20	14
Total	1215	8

- * Pipes and fittings dominating PVC consumption in India
- * Profiles in construction – Huge potential for growth



Major Sectors - An Overview

Consumption Drivers

Pipes & Fittings

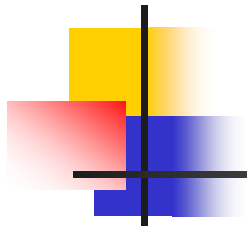
Total Water Management
More Crop per Drop
Energy Conservation

Calendering

Growth in Pharma Sector
Floorings
Packaging

Profiles

Boom in Construction
Increase in Fabrication Facilities
Energy Conservation



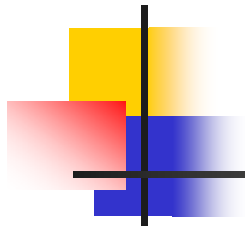
Pipe Sector

Growth Triggers -

- **Implementation of Govt. projects as per schedule**
- **Foreign funded infrastructure projects**
- **Countering the traditional material pipes**
- **Stringent specifications to ensure quality products**

Growth Inhibitors -

- **Inter material shift / reprocess ingress at higher resin prices**



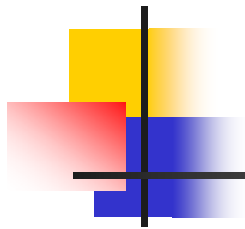
Profile Sector

Growth Triggers -

- **Boom in construction activities**
- **Energy Conservation Building Code (ECBC) in place**
- **European companies have set up window/door fabrication units with few planning for backward integration**
- **Profile manufacturers joining hands for concept marketing**

Growth Inhibitors -

- **Window/door sizes are not standard**
- **'Life Cycle Analysis' concept not totally established yet**



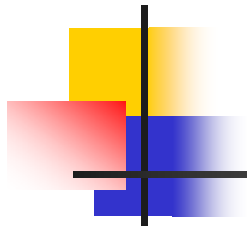
Calendering Sector

Growth Triggers -

- **Good growth in pharmaceutical, FMCG**
- **Increasing demand in hardware, toys & confectionary market**
- **Growing demand in flooring from Govt. – railways & buses**

Growth Inhibitors -

- **Competition from blown film PVC**
- **Competition from polyolefins**
- **News regarding MNCs phasing out PVC products**



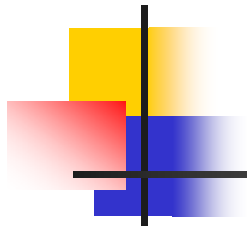
Case Studies

Pipes -

- **From restriction to 25 Kta**
- **From size restriction to stepwise acceptance of large (> 140 mm) dia pipes**
- **From imported pipes to local vendors**
- **Approval of PVC pipes in state dominated by AC pipe lobby**

Profiles -

- **Builders listing PVC windows & doors as USP**
- **First ever energy code of the country lists PVC as energy saving material**

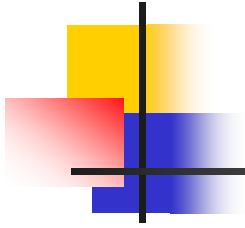


Reliance : Leading From the Front

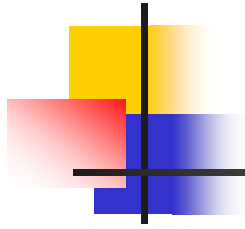


As the largest Petrochemical Company in India, Reliance works towards

- Bringing the PVC manufacturers on a common platform**
- Uniting all related industries (e.g. resin / additive / machinery / compound / end product manufacturers) & Educational Institutes**
- Using this platform to reach even the ultimate end user and -**
 - Promote Health & hygiene through PVC pipes**
 - Promote the concept of energy & environment conservation through PVC doors & windows**

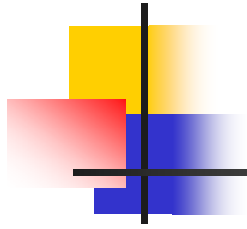


Health & Environment



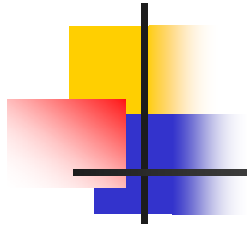
A PIL Against PVC

- **A lawyer in one of the major metros filed a PIL in high court against Govt. of India (Pollution Control Board), Local Municipal authorities, Major PVC manufacturing industries**
- **PVC was alleged to be a carcinogenic material and hence its use and manufacture in India was recommended to be completely banned**
- **RIL, IPCL and ICPE submitted their para by para reply to the 125 points raised in the PIL**
- **The case has not been called on Board afterwards**



PVC Pipes

- **One of the state Govts. issued an order postponing the purchase of PVC pipes, based on complaints of NGOs**
- **Major PVC manufacturing industries joined hands with Indian Centre for Plastics in the Environment (ICPE)**
- **Together they confronted the Govt.'s decision and arranged to get certificates regarding the safe use of PVC pipes for potable water applications**
- **The concerned Govt. then withdrew the restrictions and started purchasing R PVC pipes for potable water application.**

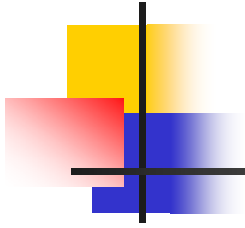


PVC Footwear

- **One of the state Govts.’ raised environmental concerns regarding manufacturing, recycling and disposal of PVC footwear**

- **Total blame was directed towards PVC**

- **A detailed explanation right from petrochemical resources through manufacturing of PVC up to usage of PVC in different sectors, its reuse/recycling was provided**



F or A Sustainable F uture



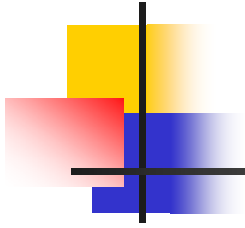
For a Sustainable Future...

- **PVC & Environment** : Guidelines/norms for manufacturing of PVC with respect to air/water pollution.
: Guidelines/norms on safe processing of PVC.
- **Additives** : Techno-commercial alternatives to additives on 'hit list' of environmentalists such as Lead and Phthalate.
- **Sustainability** : Identifying sustainable sectors and undertaking joint developmental activities.
- **Proactive approach** : Rather than reacting to the environmentalists' allegations, start promotional campaigns thru' the official website/media.



For a Sustainable Future

- **PVC Pipes** : Joint technical development programs in PVC pipe sector for capturing newer applications/expanding the horizon of existing sectors.
- **Recycling** : White paper on reprocess/recycling of PVC products for end use applications and ultimately for breaking down into chemical structures/incineration with minimum damage to environment.
- **Standards** : Comparison of the standards on the subject of Vinyls and working together for the best standards on each subject nationally as well as internationally.



THANK YOU