THE PERFORMANCE AND POTENTIAL OF THE INDIAN CEMENT MARKET

Jagdeep Verma

Holtec Consulting, India

INTERCEM

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India

Second largest cement market Demand: ~253 mio t

Past Cement demand growth of ~8% p.a. Is the trend likely to continue?

Paucity of limestone??

Overcapacity in short-medium term

Expected to be the world's largest economy by 2050

PCC
India: ~200 kgs
World: 485 kgs

Urban population to double from the 290m in 2001 to ~590m by 2030

Economic growth: GDP growth of ~5 % in 2012-13

Obsolete Construction Techniques

Boon in the construction Industry? - which is main driver of Cement Demand

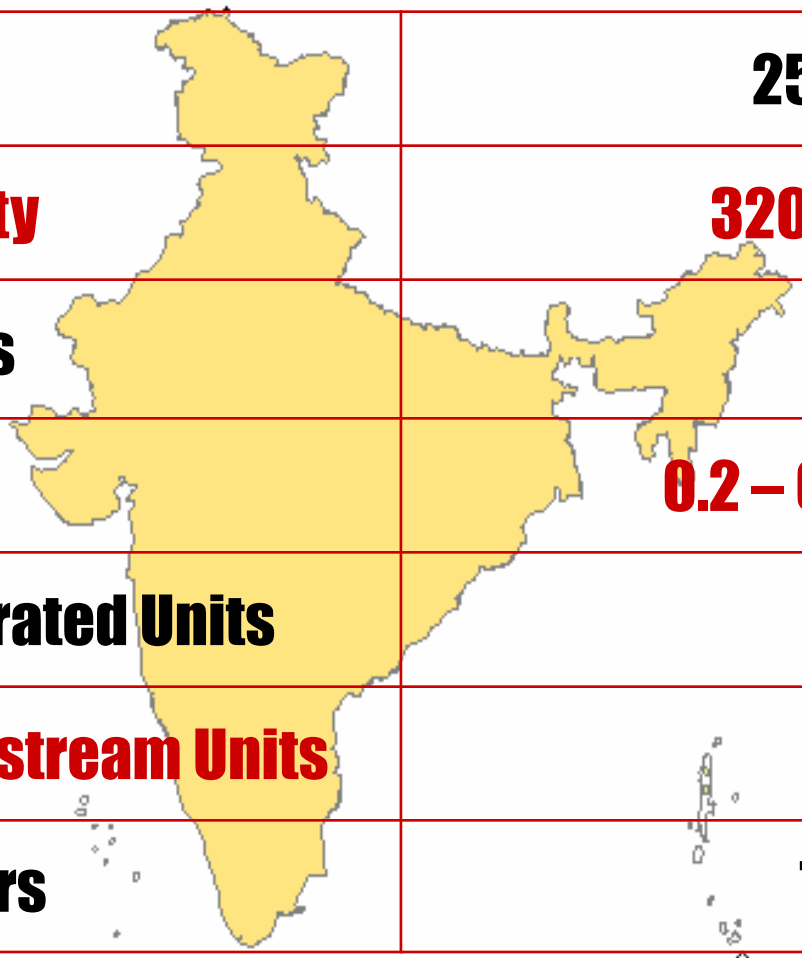
Infrastructure Constraint

Ad-hoc'ism vs System based Policies

Current Industry Structure

(Figures for FY13)

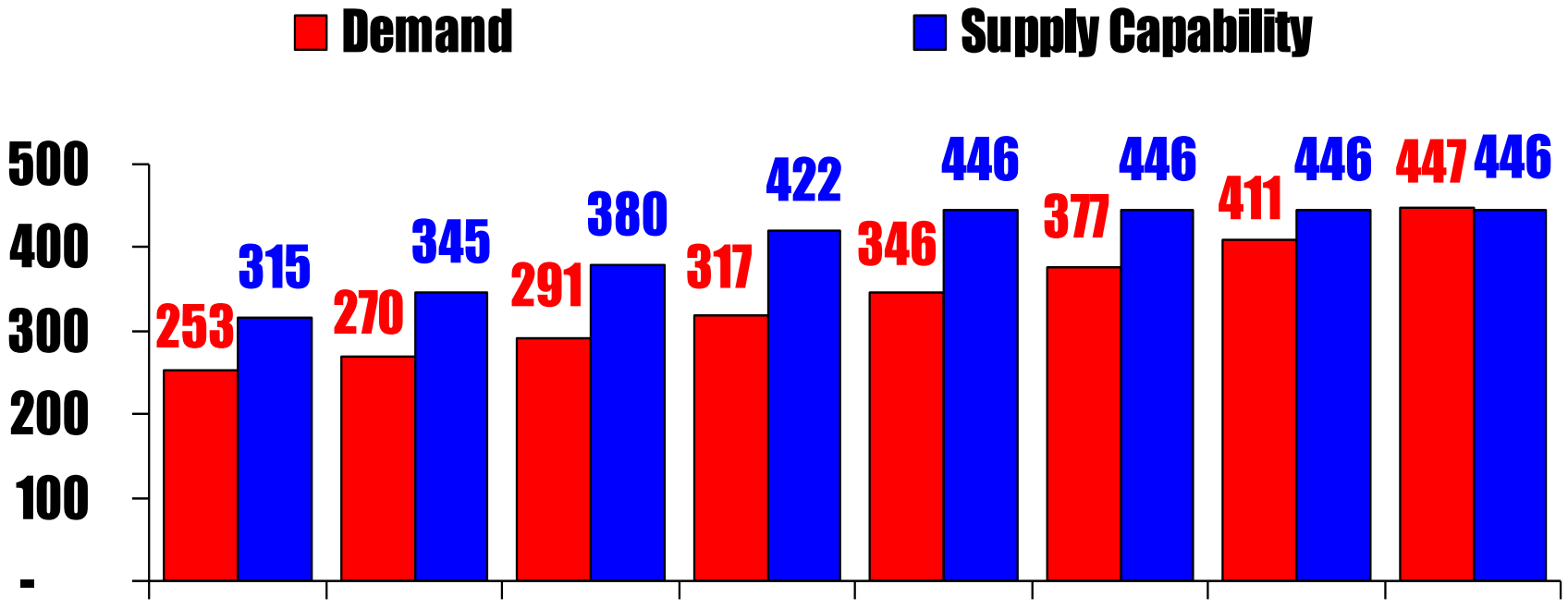
Demand	253 mio t
Effective Capacity	320 mio tpa*
Number of Plants	~210
Size of Plants	0.2 – 6.0 mio tpa
Number of Integrated Units	140
Number of Downstream Units	70
Number of Players	70-80



* Effective capacity refers to the actual supplying capability of the plants, installed capacity for FY 13 is estimated to be 368 mio tpa.

Future Demand-Supply

Supply Capability assumed static at FY 17 level of 446 mio t



	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20
PCC	204	214	228	244	262	282	302	324
CD	77	82	89	97	105	115	125	136

**Refers to domestic supply (net of exports), assuming supply for any capacity added as 50% in Yr 1 & 100% from Yr2 onwards and Cap. Util. of 90%.*

After trailing potential supply between FY 13 – FY 19, demand could again exceed supply in FY 20, if fresh capacity expansion is not planned earlier.

Plant Clusters

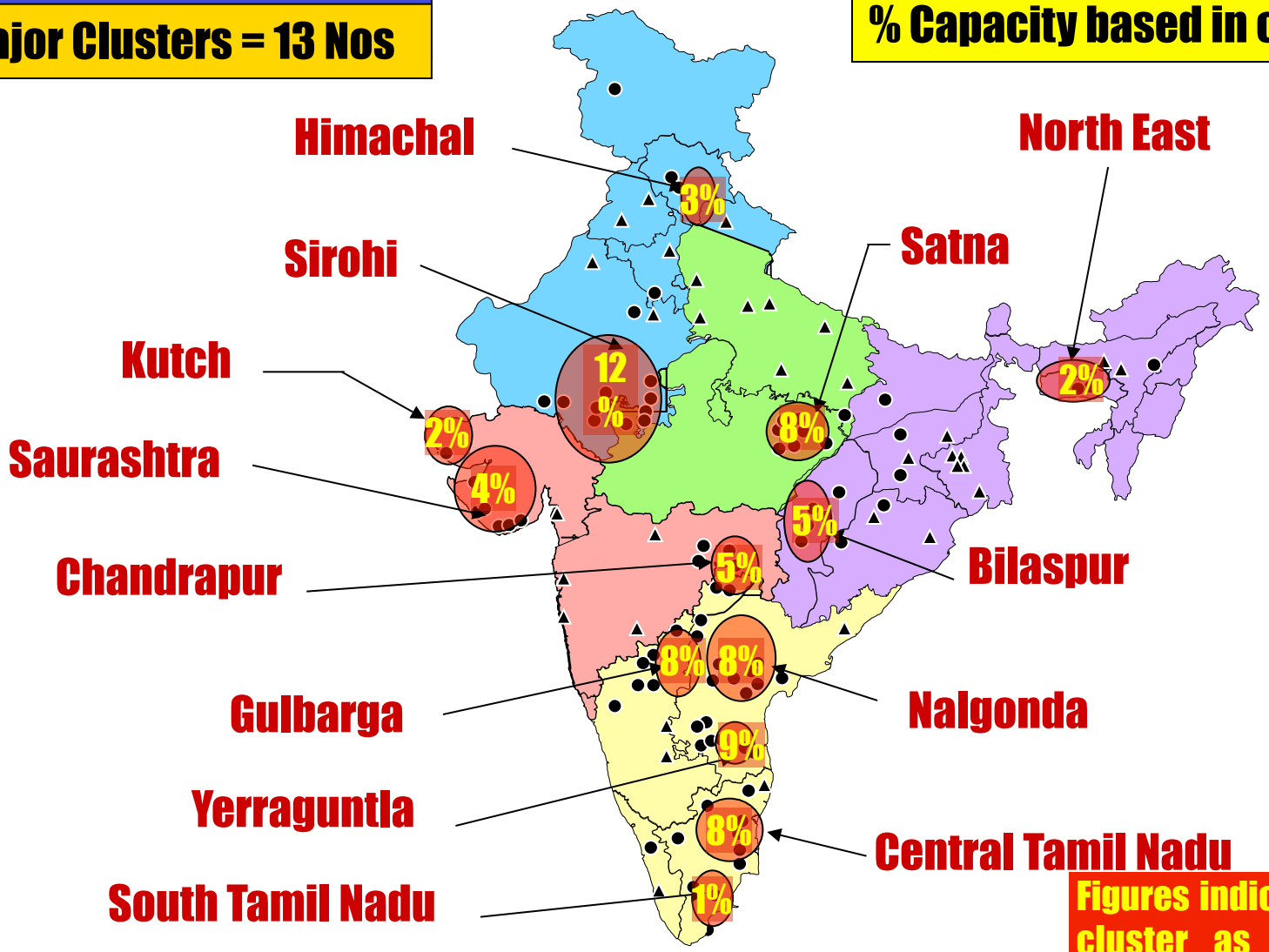
Eff. Capacity = 320 mio

Major Clusters = 13 Nos

FY 13

Tot. Cluster based Cap. ~ 240 mio

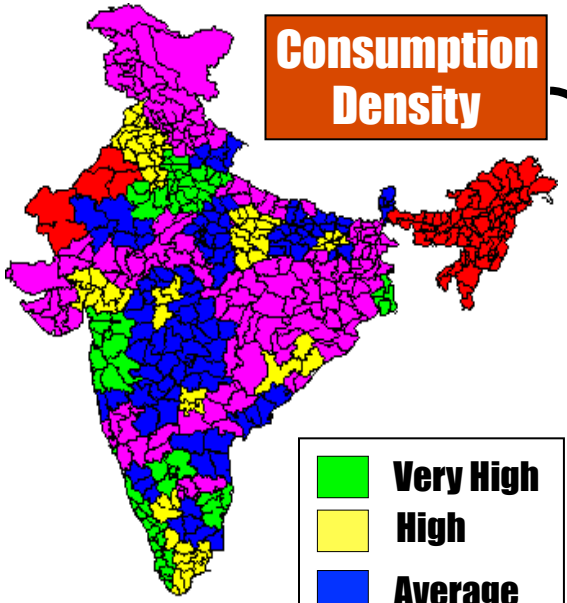
% Capacity based in clusters ~ 75%



Figures indicate capacity of the cluster as % of Total India Capacity

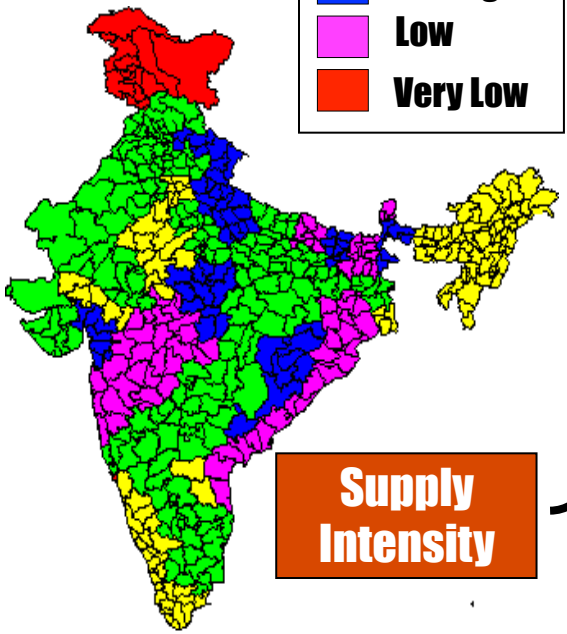
CD, SI and Market Attractiveness

Consumption Density

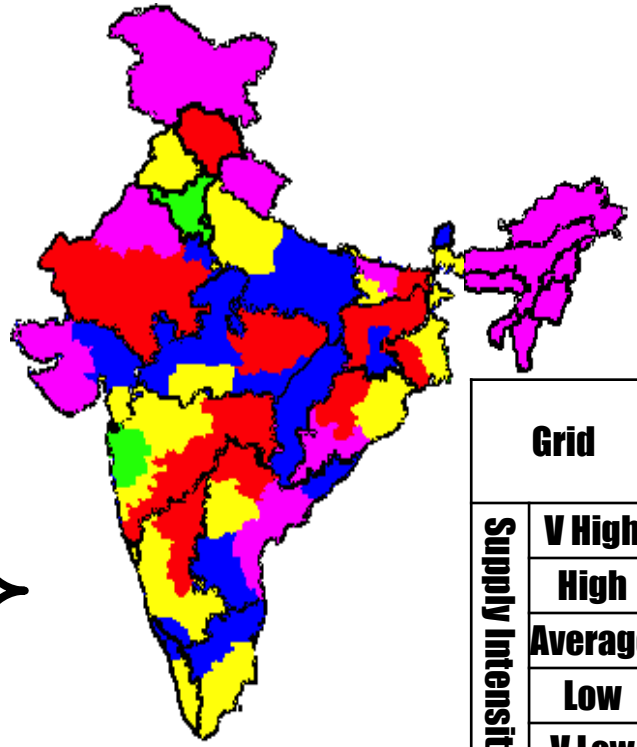


Very High
High
Average
Low
Very Low

Supply Intensity



Market Attractiveness



Grid		Consumption Density				
		V Low	Low	Average	High	V High
Supply Intensity	V High					
	High					
	Average					
	Low					
	V Low					

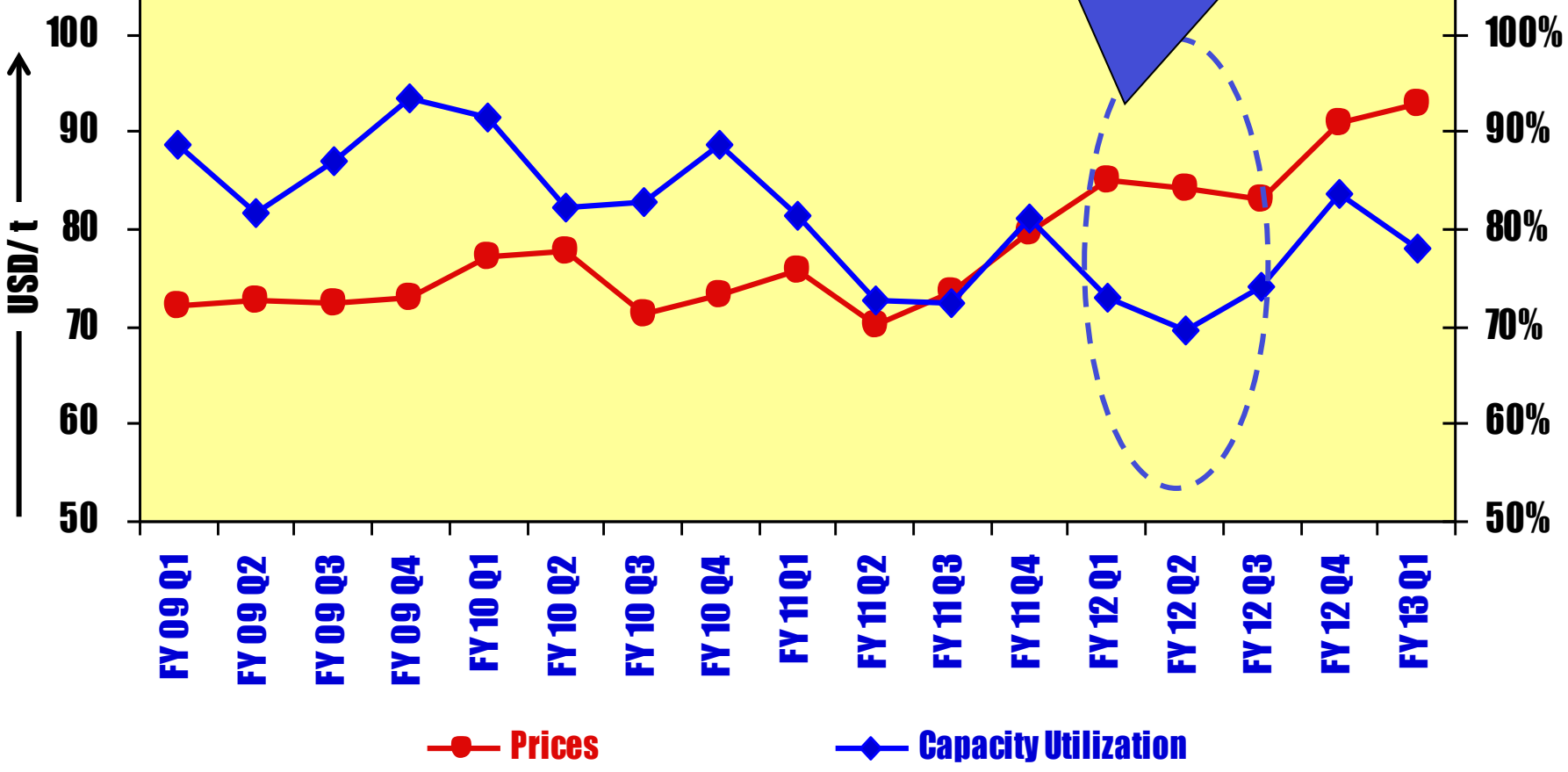
- Consumption Density (CD) measures demand intensity in a particular geographic region
- Supply Intensity (SI) measures the propensity of players to supply a market
- A higher CD implies a higher demand intensity
- Higher the SI of a market, the lower is the preference of a player to supply that market

Capacity Utilization Vs Price

Prices have remained in the range of USD 70-90 per t (increased at an average ~5% pa over past 5 years)

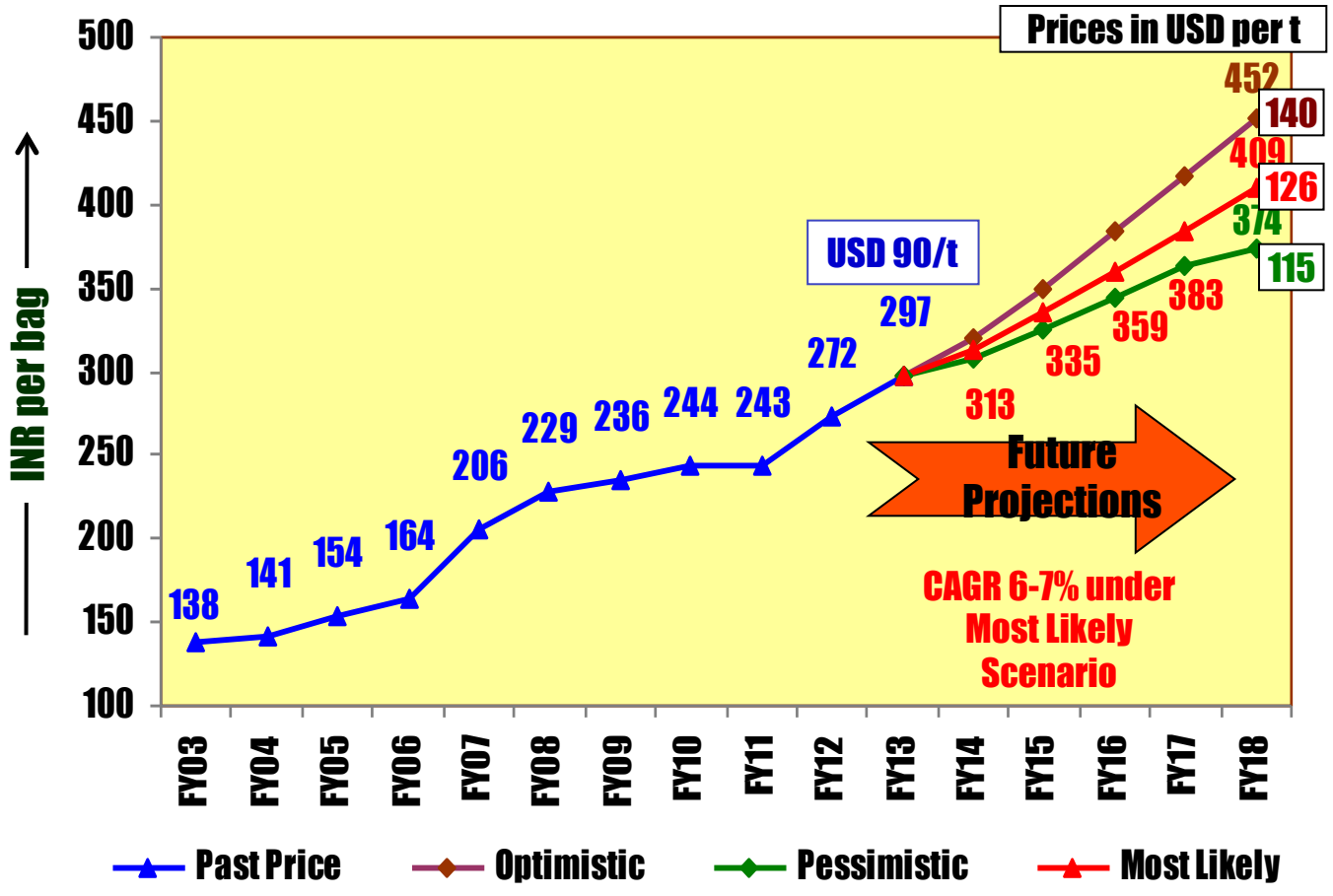
Average Capacity Utilization has been ~80% over past 5 years

Capacity Utilization dipped to a low of ~65% in mid 2011 but prices remained stable and both improved during 1st Qtr of 2012. Although capacity utilization dropped, prices remain robust.



Simulated Price Forecasts

Prices in past have grown at a CAGR of 5-7% pa.



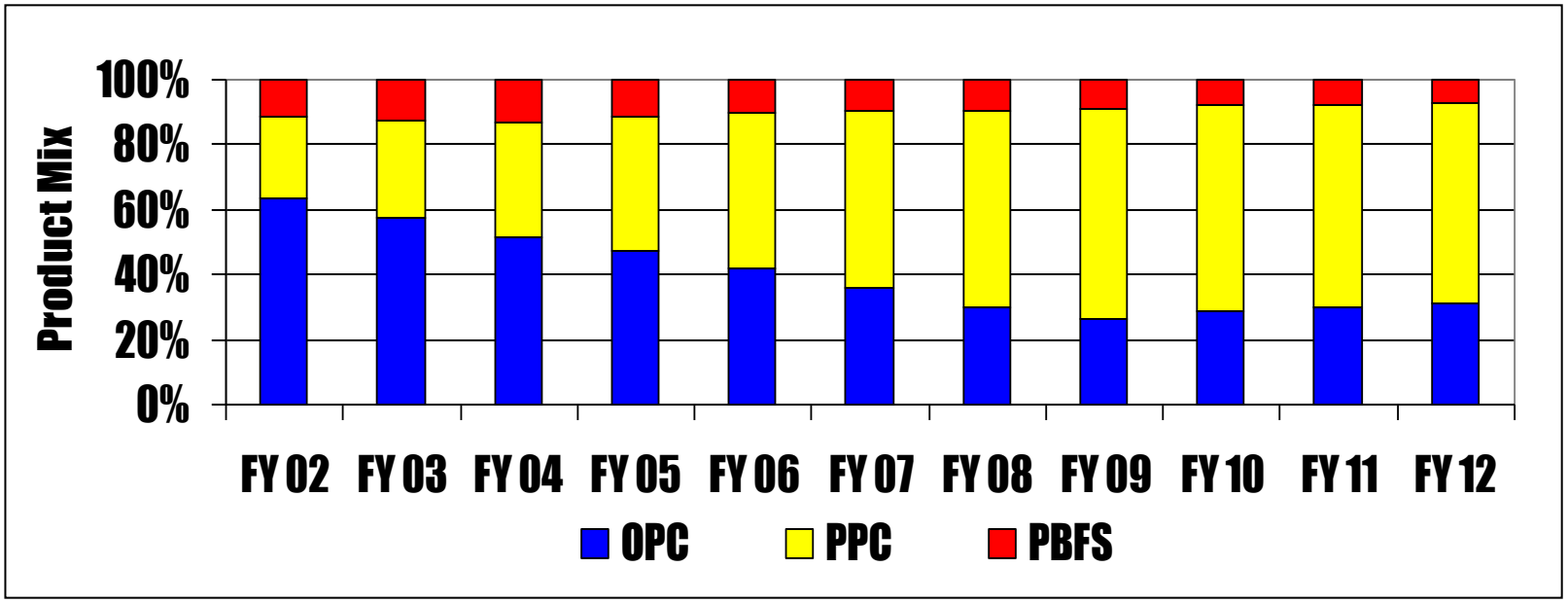
After Demand – Supply gap, rising input materials' prices are seen to have the most significant impact on Cement Price

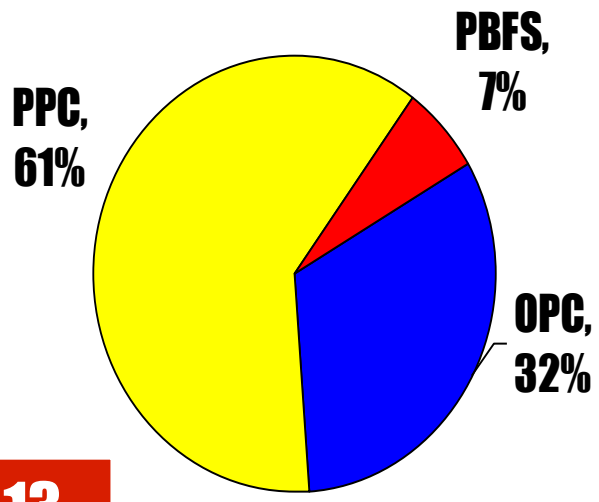
Modeling with 40 variables,

e.g.

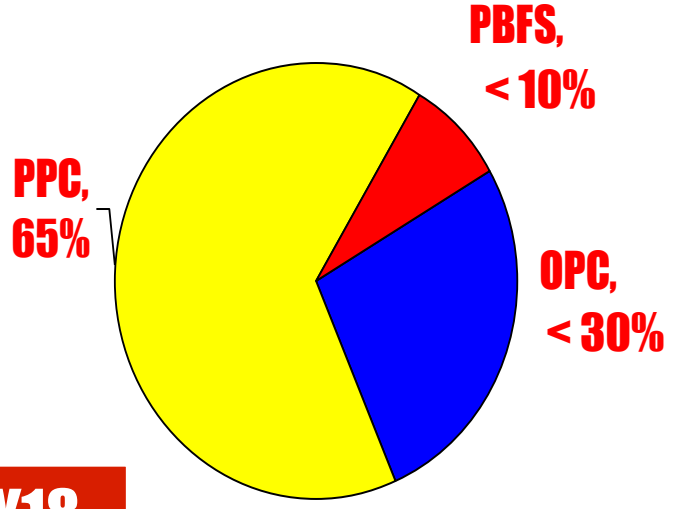
- ✓ Cement Spend
- ✓ Demand - Supply Gap
- ✓ Industry Consolidation
- ✓ Return Expectations of Investors
- ✓ Past Cement Prices
- ✓ Price Elasticity of Demand
- ✓ CAPEX for Capacity Creation
- ✓ Availability of Input Materials
- ✓ Price Indices
- ✓ Differential Costs of Delivery

Changes in Product Mix





FY 13



FY18

Technology Status

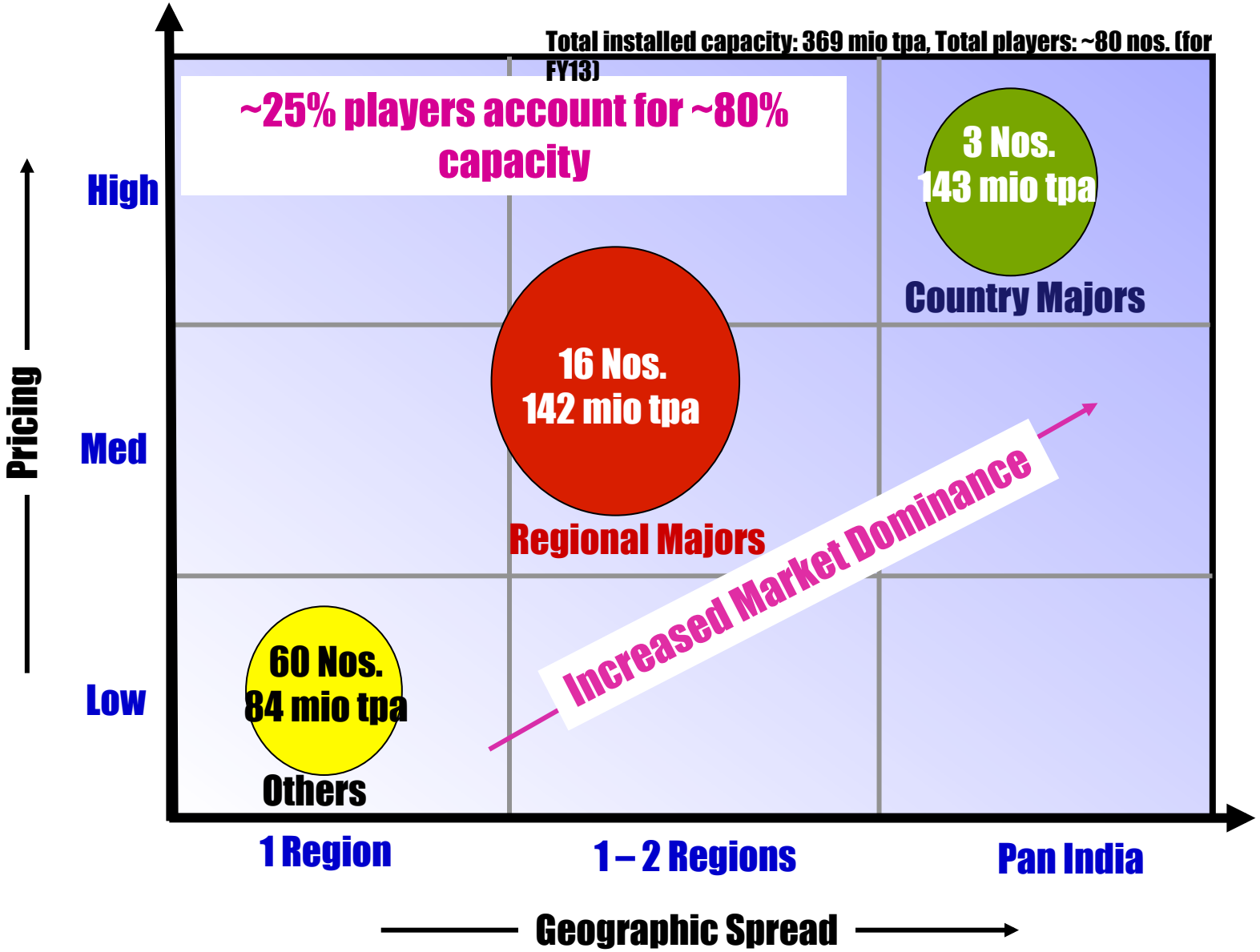
- ✓ Indian cement industry deploys the best of the technologies available.
- ✓ In many cases, India has been in the forefront to adopt latest technologies.
- ✓ Use of technology is reflected in terms of energy consumption, kiln productivity, operating hours/ year, pollution control levels, etc.
- ✓ Some of the technological developments are:
  - **Developments in Unit Operations:** Improvements in the area of mining, crushing, raw material grinding and pyro processing.
  - **Developments in other areas of Plant Technology & Operation** like Automation, Instrumentation & Plant Control Systems, Material Handling System, Integrated Quality Assurance System, Energy Efficiencies, Use of Alternate Fuels, etc

Equipment Supply

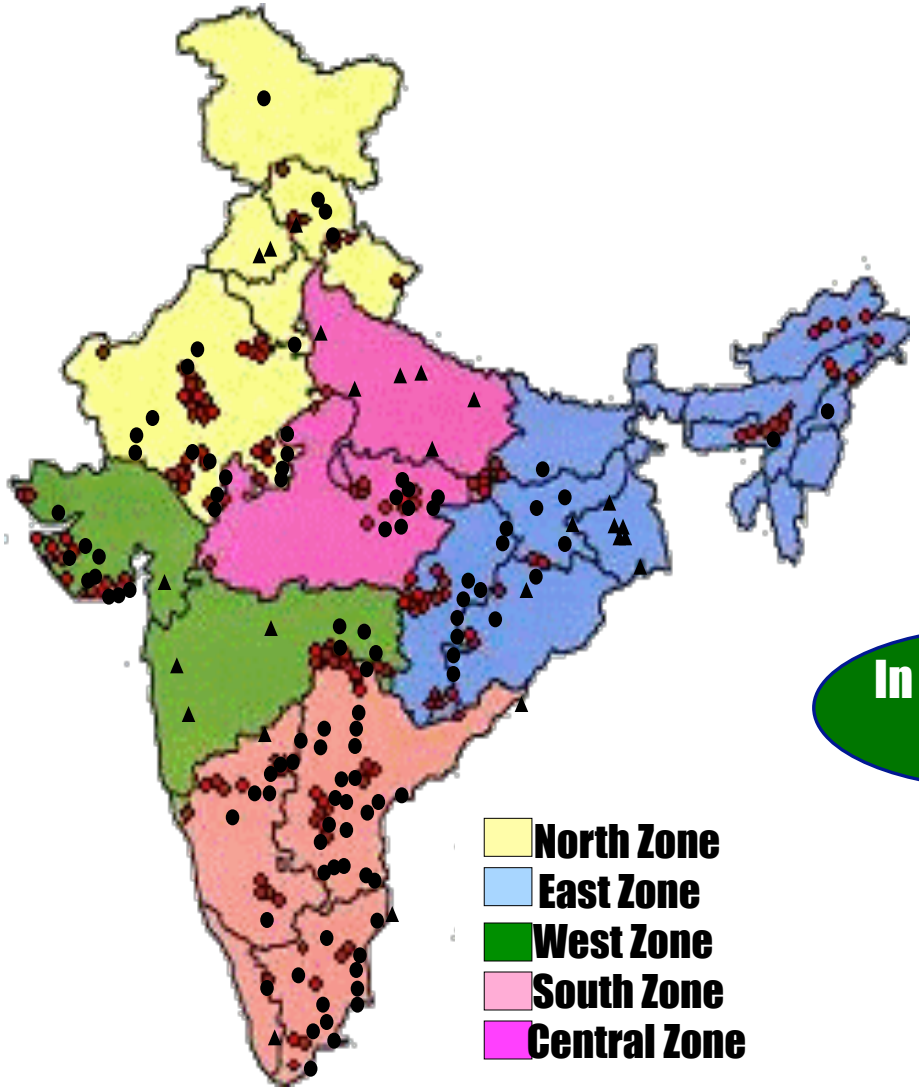
Section	Equipment	Suppliers
Raw Mill	VRM (Vertical Roller Mill)	Gebr Pfeiffer, ThyssenKrupp, Loesche, FL Smidth
	CCBM (Closed Circuit Ball Mill)	Enexco, Humboldt, ThyssenKrupp, Christian Pfeiffer, Promac, FL Smidth, Sinoma
	RPBM (Roller Press Ball Mill)	FL Smidth, Humboldt, ThyssenKrupp
	RP (Roller Press)	FL Smidth, Humboldt, ThyssenKrupp
Coal Mill	VRM (Vertical Roller Mill)	Gebr Pfeiffer, ThyssenKrupp, Loesche, FL Smidth
Cement Mill	VRM (Vertical Roller Mill)	Gebr Pfeiffer, ThyssenKrupp, Loesche, FL Smidth
	CCBM (Closed Circuit Ball Mill)	Enexco, Humboldt, ThyssenKrupp, Christian Pfeiffer, Promac, FL Smidth, Sinoma
	RPBM (Roller Press Ball Mill)	FL Smidth, Humboldt, ThyssenKrupp
	RP (Roller Press)	FL Smidth, Humboldt, ThyssenKrupp
Pyro Section	Main Machinery	FL Smidth, Humboldt, ThyssenKrupp, IKN Engineering, Sinoma

Critical equipments like main gear box, kiln burners, analyzers are imported, rest are made in India

Market Position of Cement Players



Limestone Reserves



Total Deposits
50 bio t

Individual Deposit > 50 mio t

CaO > 42%

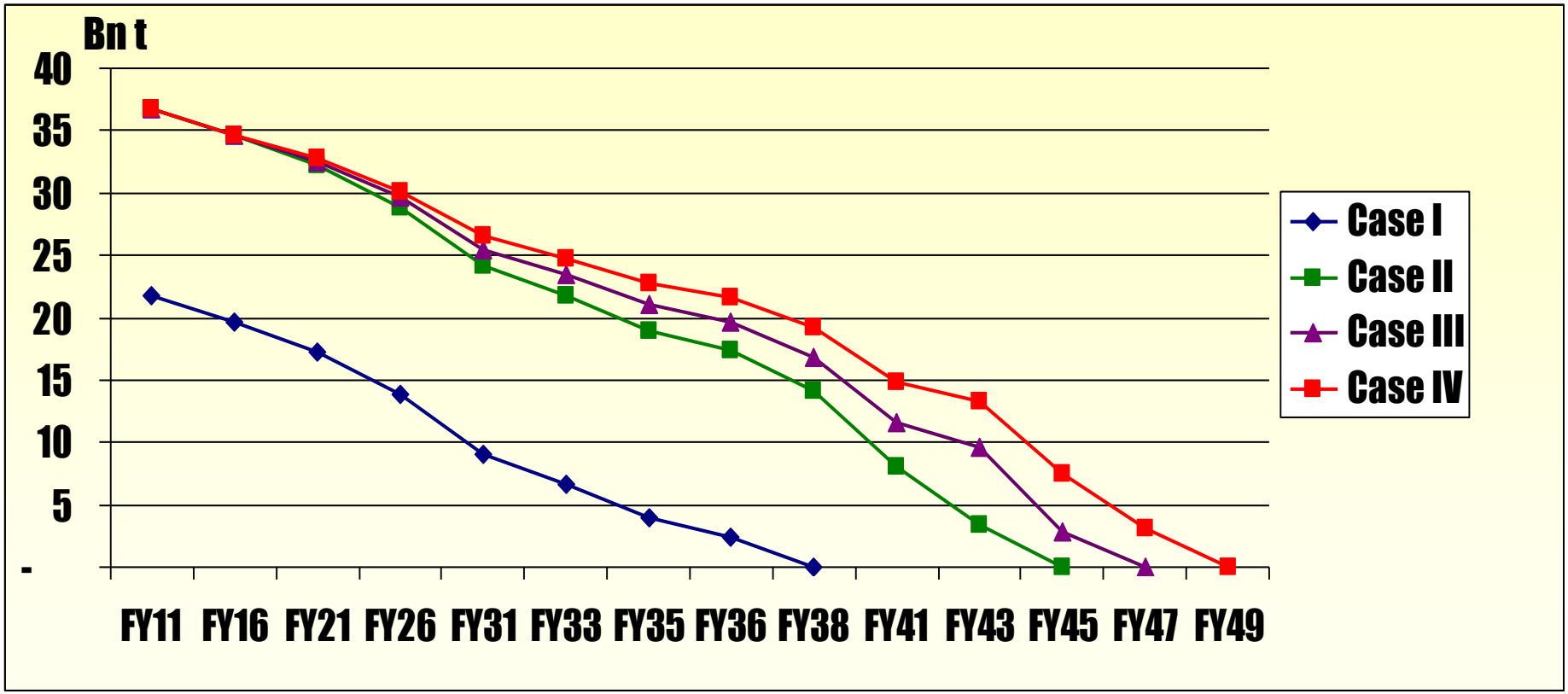
45 bio t

In Forest Land
4 bio t

Statutorily Blocked
19 bio t

Exploitable Reserves
22 bio t

Residual Limestone Reserves



Case - I : Current product mix with current limestone reserve

Case - II : Current product mix with increased exploitable limestone

Case - III : Case II with 100% blended cement beyond 2017

Case - IV : Case III with lower demand growth

Power & Water

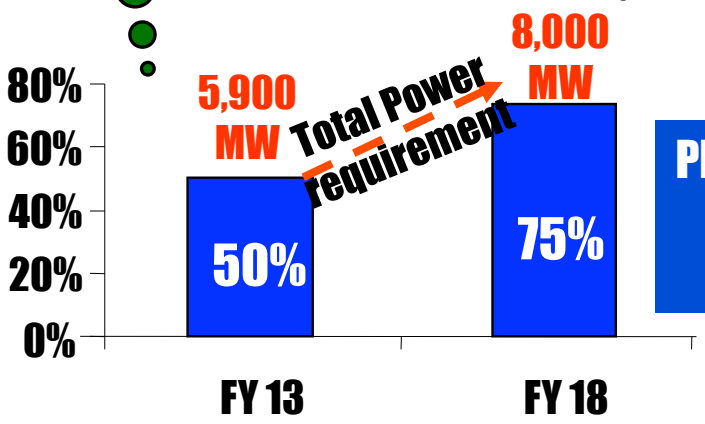
Power

Waste heat recovery for power generation

Mega thermal plants as IPP/ captive use

Greater use of wind/ tidal/ solar power

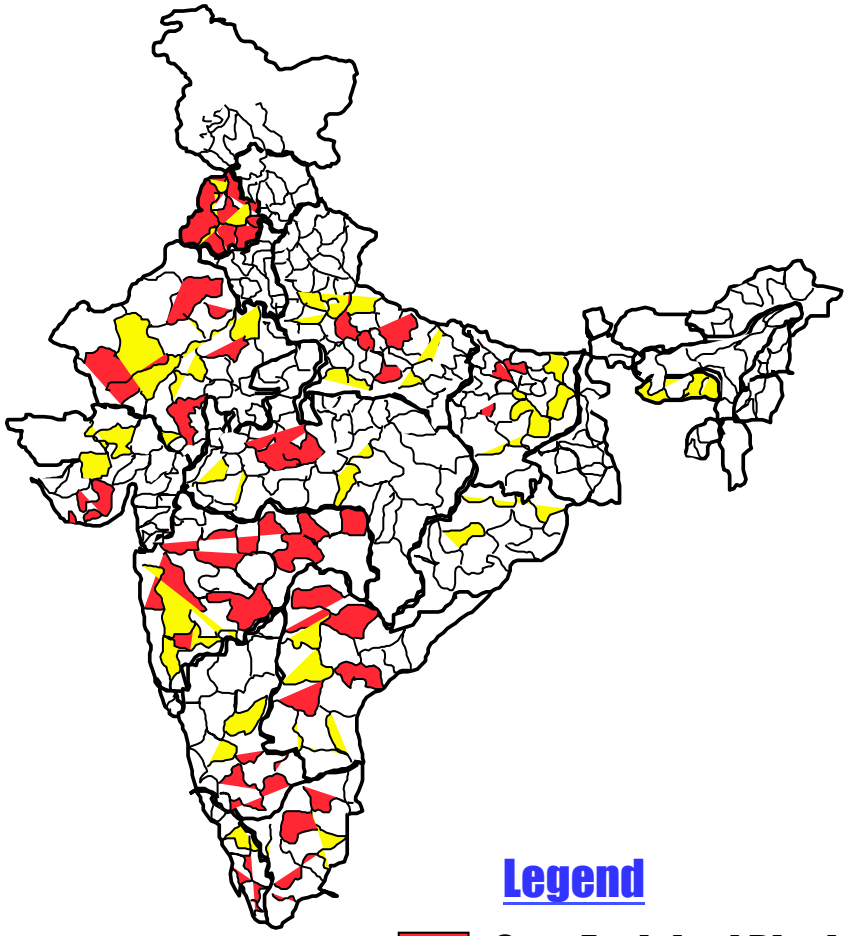
Contracting alliances with IPPs



Plants using captive power

Approximately 3,000 MW of CPP Capacity would need to be created

Water



Legend

- Over Exploited Blocks
- Critical Blocks
- Safe Blocks

Fuels and Additives

FUELS

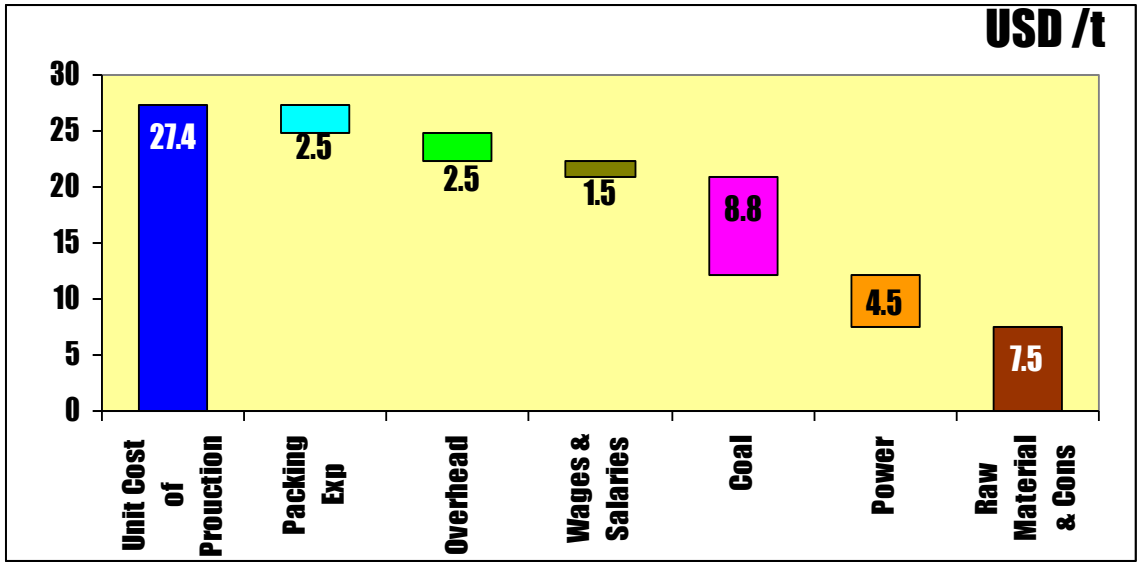
- ✓ Coal rich states are Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa, North East, Maharashtra, Andhra Pradesh.
- ✓ Indian Cement industry uses > 25% imported coal. Usage of imported coal expected to increase, especially in coastal regions.
- ✓ Alternate fuels expected to receive enhanced attention in future. Present Alternative Fuel usage in India is 2,00,000 tpa i.e. thermal substitution of approx 1%.
- ✓ Alternative Fuels used in India are Biomass, Hazardous Waste, Residue Derived Fuel (RDF), Used Tyres and Industrial Plastic Waste.

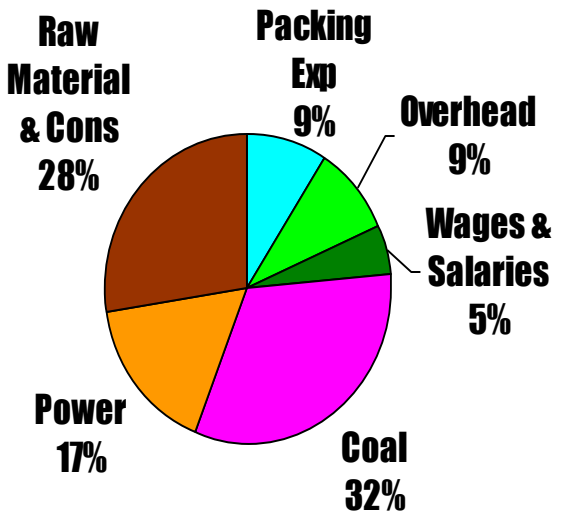
ADDITIVES

- ✓ Total installed capacity of coal based TPS in India is ~ 92,000 MW i.e. ~100 mio tpa of fly ash generation. ~40 mio tpa of fly ash is currently utilized by the cement industry.
- ✓ An additional 80 mio tpa of fly ash is expected to be available by 2015 against an incremental requirement of approximately 20 mio tpa.
- ✓ Current slag generation is ~13 mio tpa & ~9 mio tpa is utilized by the cement industry.
- ✓ An additional 10-12 mio tpa of slag could be available by 2015 as against an

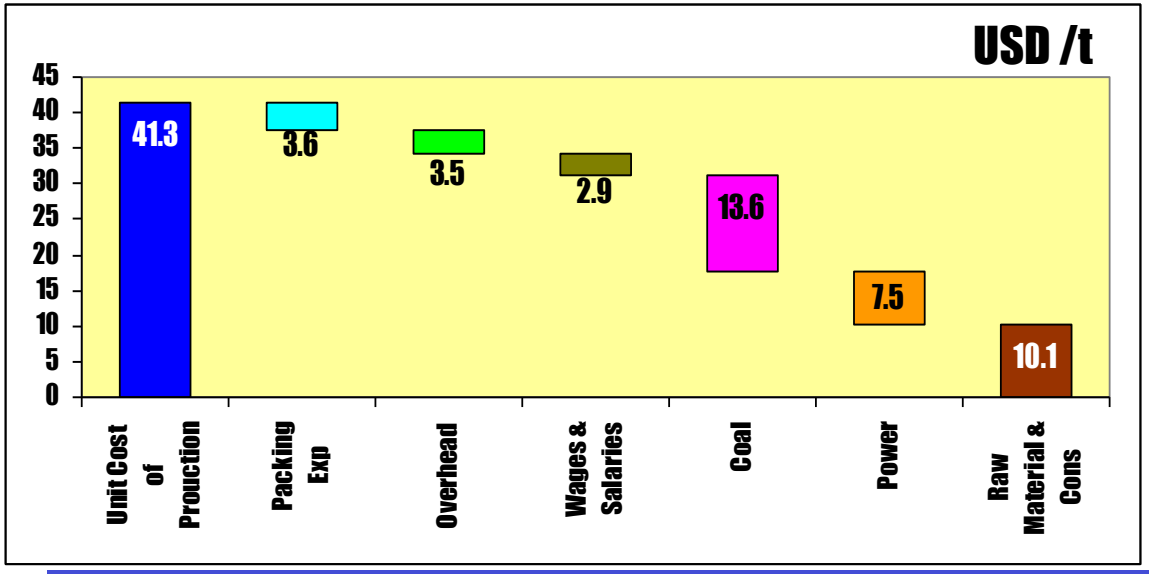
Operating Costs

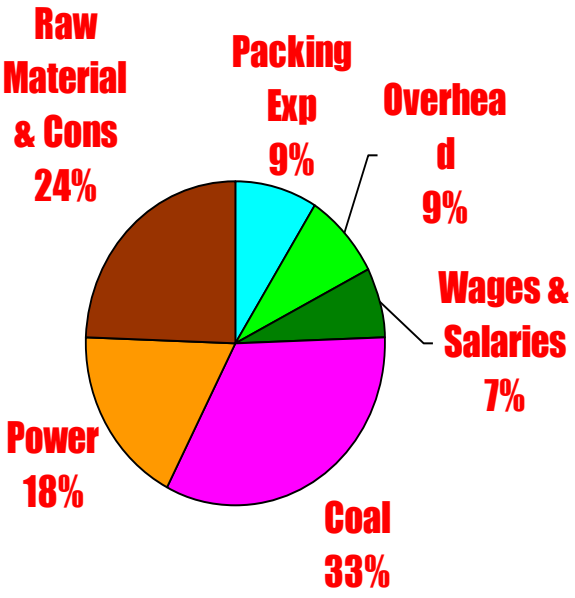
FY13





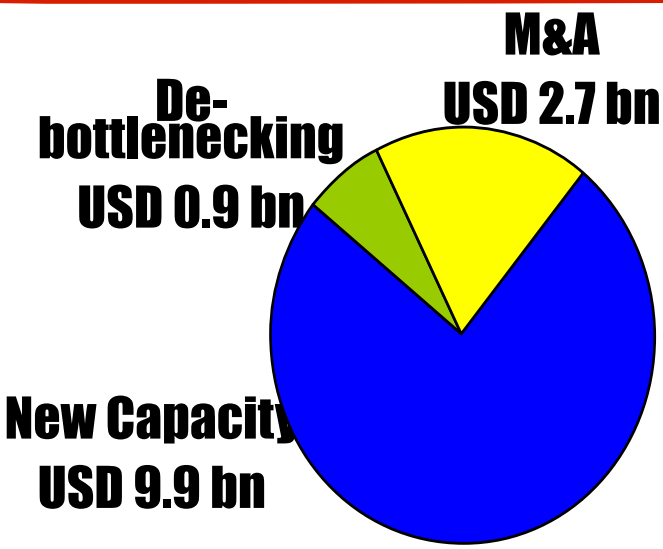
FY18





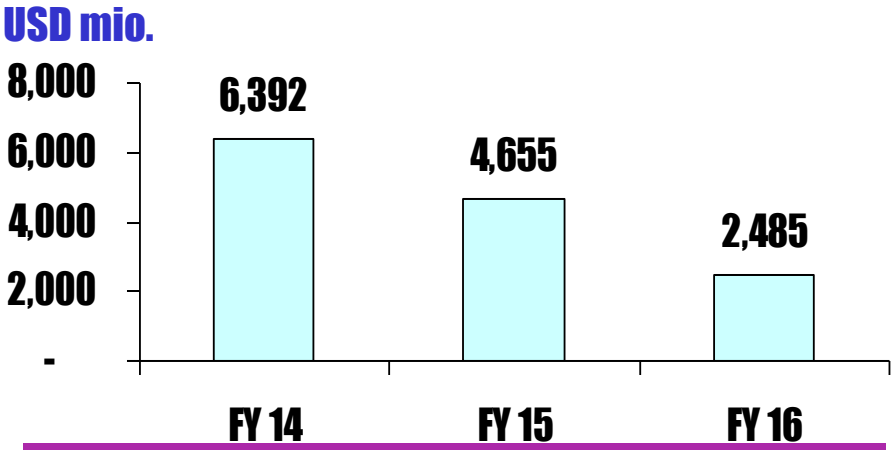
Unit operating costs (PPC) to increase by about ~50% over the period

Investment & Returns



Total Investment USD 13.5 bn

EBIDTA/t (FY 13) All India Typical Range: USD 11 to 22/ t



Unit Investment Costs could increase by ~10 % over the period

Lower EBIDTA/t witnessed due to:

- Lower demand growth than expected
- Lower Capacity utilization
- Increase in input material cost
- Increase in fuel & power cost
- Increase in transportation cost

Some Trends

- ~ 45 new clinker capacities to be between 6 - 10 k tpd/ lines.
- ~ 25 new split units with capacities between 1 - 4 Mio tpa.
- Raw Materials & Fuel characteristics to dictate choice of technology.
- Alternate fuels to receive enhanced attention.
- Coastal locations to be increasingly favoured for split units.
- Bulk cement sales to increase from 15 to 35 mio tpa and road despatches from around 170 to 200 mio tpa.
- Ready mix consumption to increase from 7 % to 15 % of total concrete.
- Energy consumption to fall to 670 kcal/ kg clinker and 70 kwh/ t of OPC.
- Adoption of global cement nomenclature and standards.
- Stricter statutory interventions in the utilisation of diminishing resources, environmental control and customer safeguards.
- Significant increase foreseen in carbon trading.

Opportunities

- ✓ **Favorable Demand-Supply balance by FY 19/20:** Demand is likely to overtake supply in next 6-7 years. Typically, plant commissioning can take 5-6 years from planning stage; now is the **time to plan** to take advantage of forthcoming deficit situation.
- ✓ **Limestone paucity:** Limestone resources are **limited and valuable**.
- ✓ **Growing demand:** India has **immense growth potential**. The future of cement market is likely to remain buoyant in medium to long term.
- ✓ **Capacity Utilization:** Present industry capacity utilization is at ~70%; this is likely to start **improving in coming years**.
- ✓ **Price:** **Prices have held up**, despite lower capacity utilisation. This is likely to continue even in the future.

Currently, industry is bottoming out and likely to start improving in next 1 – 2 years.

The Challenges of Tomorrow

- ✓ **Dwindling Natural Resources :** Limited limestone, fossil fuel and water resources. The life of cement grade limestone reserves is estimated to be around 40 years more.

- ✓ **Increasing Costs:** Energy efficiencies, equipment availability and input material costs have been the major focus areas for cost reduction in the past. However, recently freight (both inwards and outwards) has also become a focus point.

  The potential also exists for reducing costs in non-equipment related domains, e.g. material inventories, consumable consumption rates, financial expenses, etc.

- ✓ **Fuel Shortage:** Given the acute shortage of domestic coal and high cost of imported coal, alternate fuels could provide 7-10 % of the total thermal fuel requirements by FY16.

- ✓ **Increase in Gestation Period:** The gestation period in the future is likely to be in the range of 5-7 years, due to prolonged pre-project activities like Land acquisition and statutory clearances.

  Industry players could attempt to bring down actual construction time by

Web : www.holtecnet.com

E-Mail : studies@holtecnet.com

Address : Holtec Centre, A Block Sushant Lok,
Gurgaon 122001 - India

Telephone : +91 - 124 - 2385095, 4047900

Facsimile : +91 - 124 - 2385114, 2385116

Thank you