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# The Indian HVAC&R Growth Story

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# The Indian Economic Scene

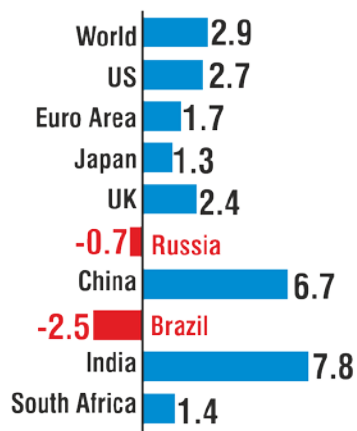
Indian Population:  
1.25 Billion

17.5% of Global  
Population



## Gross Domestic Product

WORLD BANK'S 2016  
GROWTH FORECAST (%)



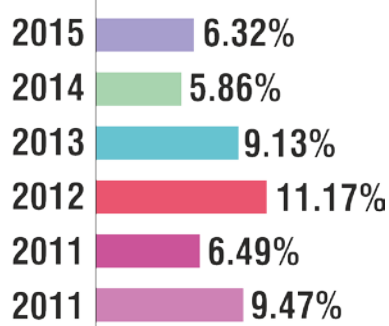
**World Bank Growth Forecast for 2016 - 7.8%**

Highest Among all Major Economies: Introduction of Goods & Services Tax (GST) will add 2% to GDP Growth

Real GDP Growth up from 6.9% in 2014 to 7.3% in 2015 (World Bank). Higher than all major economies except China

## Inflation

### Consumer Price Index



**Inflation Under Control**

Consistent Achievement of Fiscal Deficit

Targets:

3.9% of GDP in 2015

Target 3.5% in 2016



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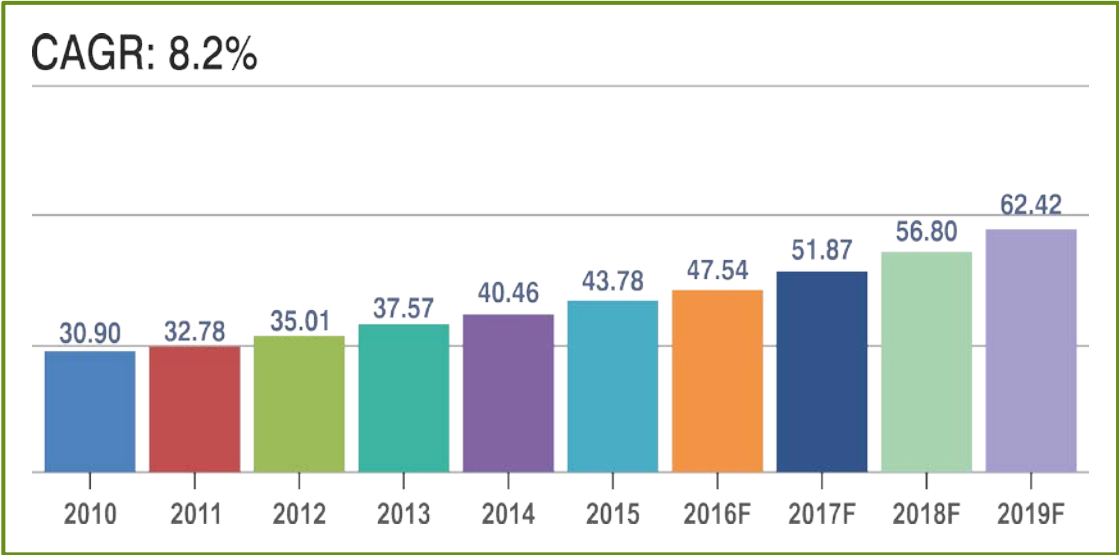
# The Indian Economic Scene

Exchange Rate INR per USD

INR Relatively Stable  
over 3 Years  
Foreign Exchange Reserves:  
USD 347 billion  
Current Account Deficit:  
1.4% of GDP



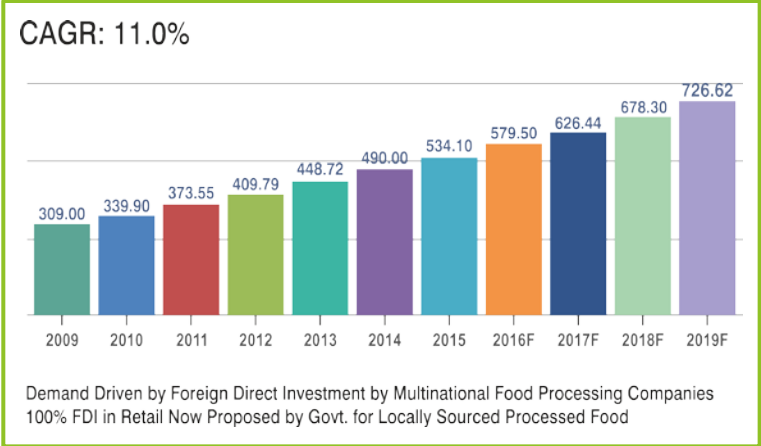
## Tourism & Hospitality Industry by Value (USD Billion)



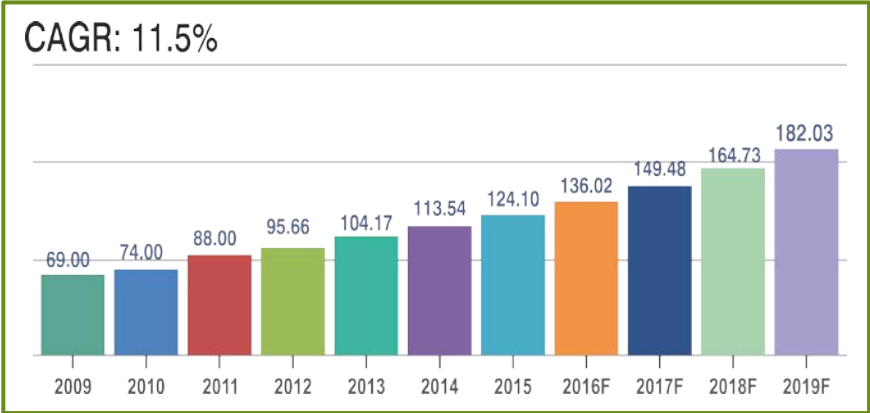
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# India Retail Market Size

by Value, 2014 – 2019F (USD Billion)

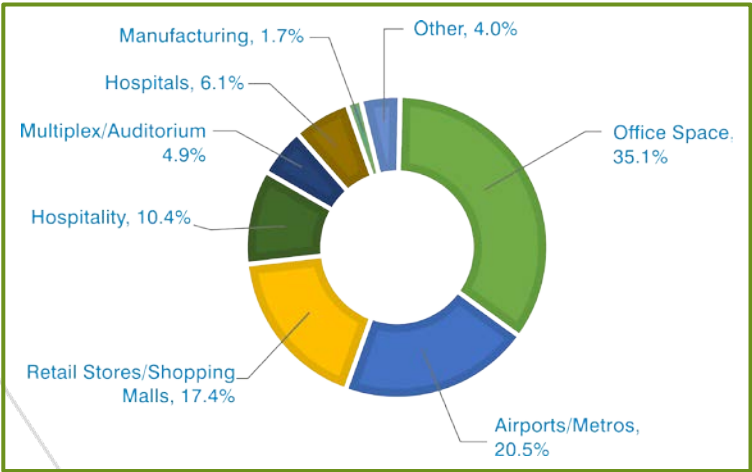


# IT Industry by Value (USD Billion)

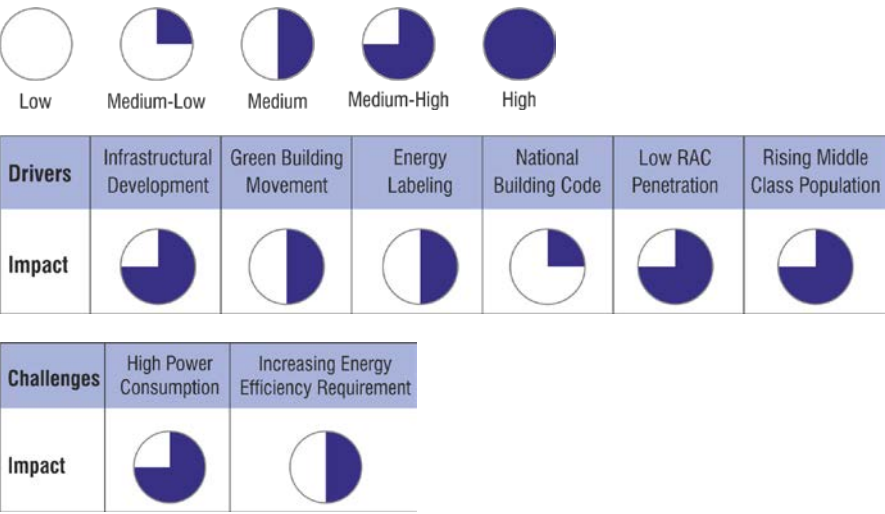


# Central Air Conditioning Market Share

by End User Industry, by Value, 2019F



# Growth Drivers & Challenges



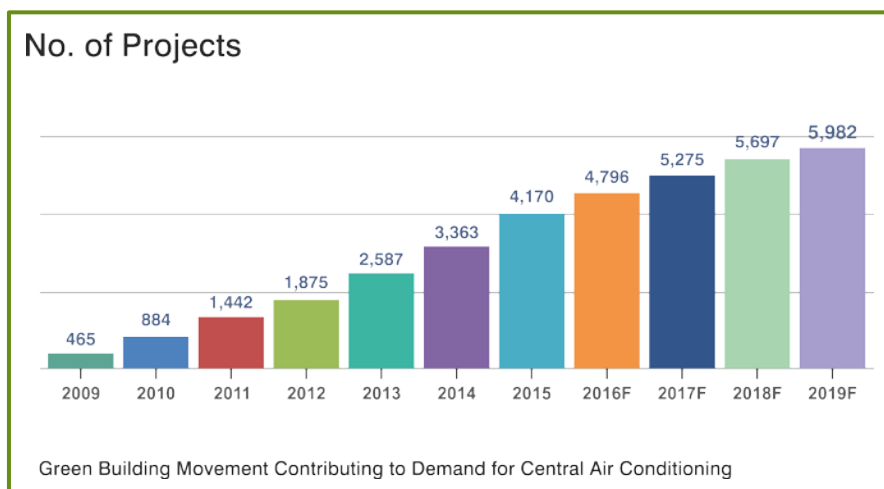
## Growth Drivers

- India Emerging as Leading Economy Worldwide
- Infrastructure Sector Booming
- High-Rise Buildings, Shopping Complexes, Malls, Hypermarkets now Penetrating in Tier 2 Cities as well
- USD 1 Trillion Government Investment in Infra Projects During 2013-19
- High Rise Buildings, Metro System, Airports, High Speed Trains
- Private Mega Infrastructure Projects Worth USD 2.68 Billion Cleared: Commercial Establishments, SMEs, Telecom Infra, IT/ITES, Healthcare, Hospitality, Electronics and Industrial Systems in Manufacturing, Defence, Industry & Banking
- **Real Estate Boom -**
  - Urbanization Growing at 32% Y-o-Y,
  - Multinationals Entering India, Boosting Real Estate Growth
  - Construction of High Rise Buildings, Malls, Retail Stores, Apartments
  - Growth in IT Parks, Special Economic Zones
  - Real Estate Investments - From USD56 Billion in 2010 to USD177 Billion in 2016 - 21.3% CAGR

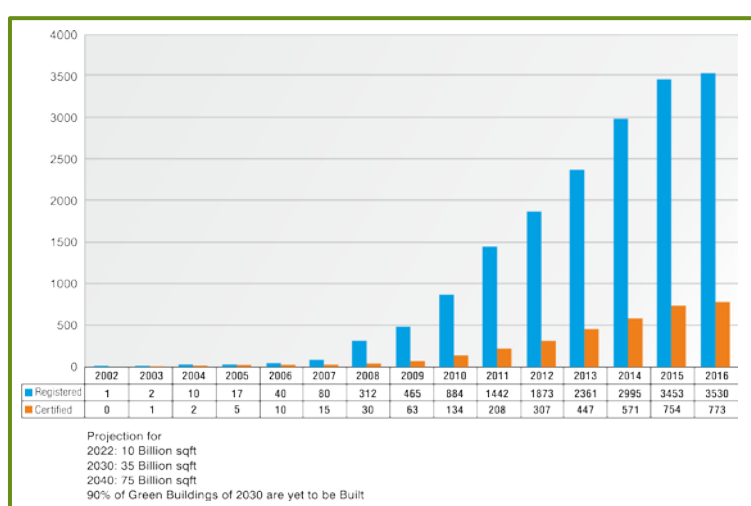




## Green Building Movement



### Green Building Footprint, in mn sq.ft.



# National Building Code

National Building Code of India (NBC) has recently launched the world's first **Code for Sustainable Construction**, as Addendum 1 to NBC 2005, **"Approach to Sustainability"**.

Regulations defined to reduce energy load of building including HVAC services.



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# Growth Drivers - Energy Labelling

- Bureau of Energy Efficiency (BEE), India is Proactive in Reducing Energy Consumption
- Star Labelling Norms Tightened from January 2015
- Inverter ACs Brought Under Energy Labelling from June 2015
- New Common Table for Fixed Speed and Inverter ACs, with ISEER as Parameter
  - Voluntary till December 2017
  - Mandatory from January 2018: Common Table for Fixed Speed and Inverter ACs, with Cooling Seasonal Performance Factor (CSPF) as Common Parameter for Star Rating.

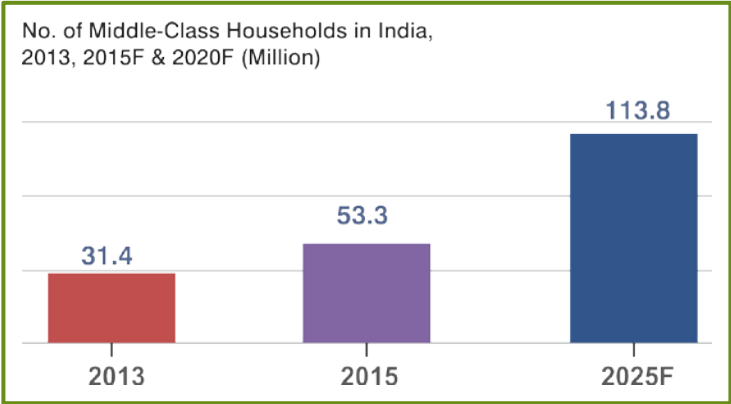
Star Rating Plan from June 2015  
Bewertungsplan vom Juni 2015

Star Rating	Minimum ISEER
★☆☆☆☆	3.10
★★☆☆☆	3.30
★★★☆☆	3.50
★★★★☆	4.00
★★★★★	4.50

- Low Penetration of RACs
  - India is a Huge Untapped Market
  - Sub-tropical Country – Scorching Heat in Summers
  - Penetration of ACs Only 4%

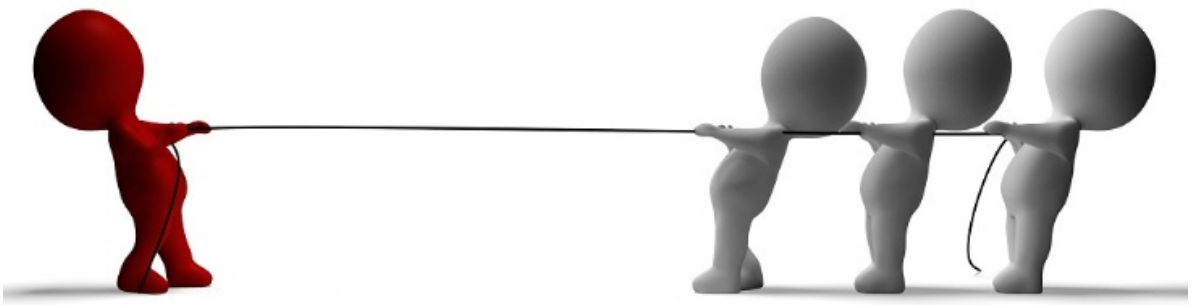
## Rising Middle Class Population

Income Levels of Emerging Middle Class Improving National Council of Applied Economic Research (NCAER) Data- **53.3 Million Middle Class Households only 52% have ACs**



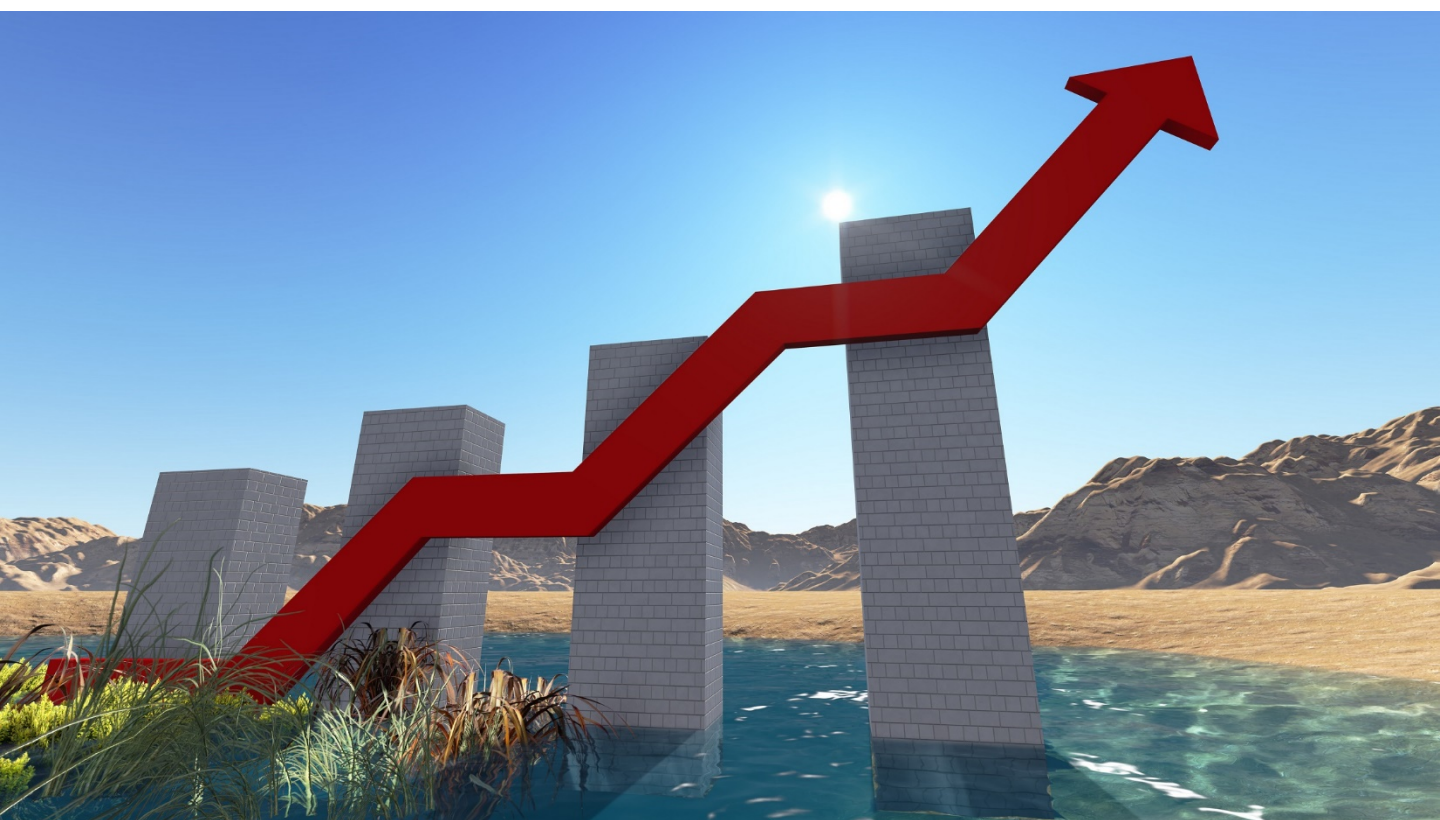
# Challenges

- High Power Consumption By AC's
- 65% Electricity is Coal Based:
- High Cost of Power Generation
- Only 67% Households are Electrified Presently
- Rising Production Costs to meet efficiency requirements





# Emerging Market Trends



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# Emerging Market Trends

- Inverter Based Air Conditioners - Fastest Growing Market Segment: **40% Y-o-Y**
- Currently at 12% of Total Market
- Focus on IEQ
- Increasing Awareness of Environment Quality
- India is Committed to Montreal Protocol
- Refrigerant Trends- CFC's phased out 17 Months before target date (2010)
- Accelerated R-22 Phase-Out in line with MP
- R-410A being used in Inverter ACs
- R-410 Now replacing R-22 in fixed speed ACs
- Also Green and other Chinese Suppliers using R290 (Propane)
- Daikin and other Japanese manufacturers using R32
- Chillers: R134a, R410A and R407C
- Refrigeration- Hydrocarbons (like Propane) for appliances
- Ammonia for Cold Storages
- CO2 Now Being Adopted for Supermarkets



# ISHRAE : Indian Society of Heating, Refrigerating & Air-conditioning Engineers

- Founded in 1980
- Over 12,000 members
- 41 Chapters & Sub-chapters
- Nearly 10,000 student Chapters
- Organizes :
  - ACREX
  - Conferences
  - Training & Certification program
  - Research
  - Standards
  - Student Activities



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# HVAC&R Market in India

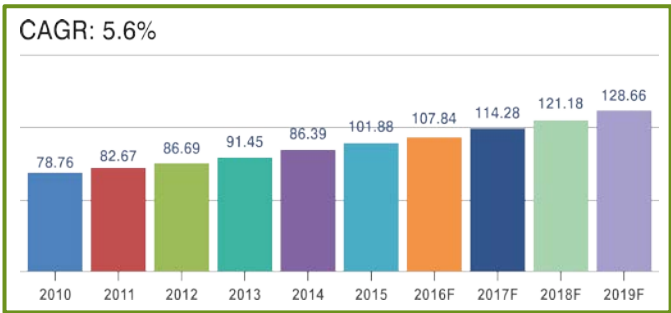
2.74 Billion USD

2.7% of Global Market

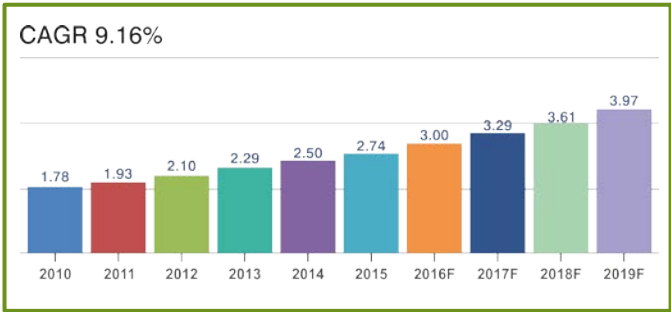
Growing at 9.16% CAGR



Global HVAC Market Size by Value, 2010–2019F (USD Billion)



Indian HVAC Market Size by Value 2010–2019F (USD Billion)



India outperforming the World!



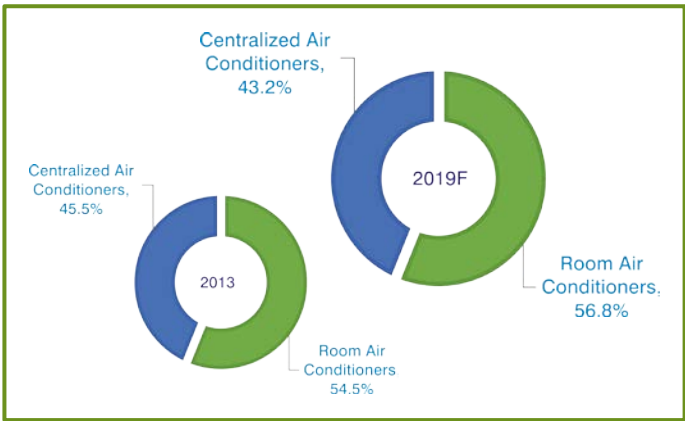
# HVAC&R Market in India

## Major Recent Investments in HVAC&R (USD Million)

Company	Year	Investment (Million USD)	Details
Daikin	2013	55	Increasing RAC Capacity from 0.5 to 1 Million
LG	2013	250	Expand Capacity and Increase Brand Visibility
Hitachi	2013	66.67	New Plant for AC Compressors in Gujarat
Haier	2014	20	Expansion of Pune Plant to Manufacture ACs
	2015	16.67	New Manufacturing Plant in North
Blue Star	2014	25	New Plant for ACs and Deep Freezers in South, 0.5 Million Capacity
Volta	2012	1.15	Condensers, Chiller Technologies and PUs

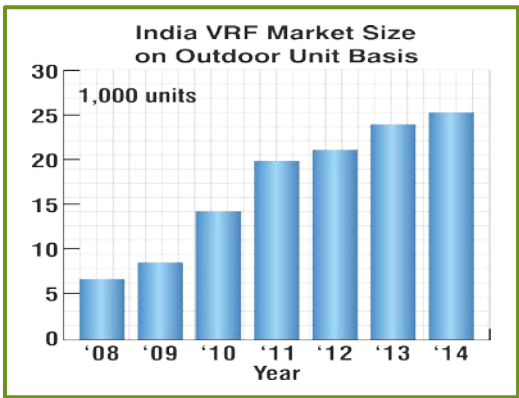
## Die größten aktuellen Investments in HVAC&R

### Indian HVAC Market Share, by Industry Segment, by Value



### VRF Market Size, by no. of ODU's

CAGR: 25.4%

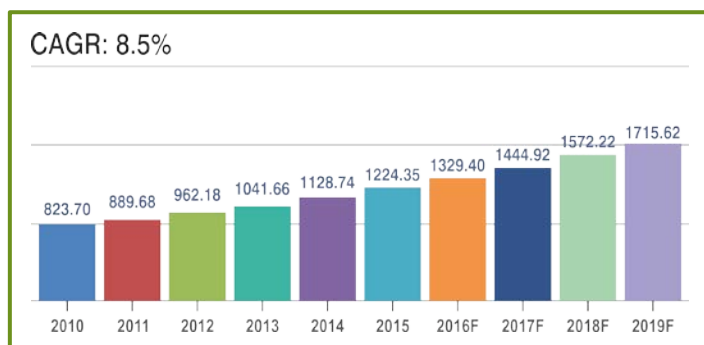




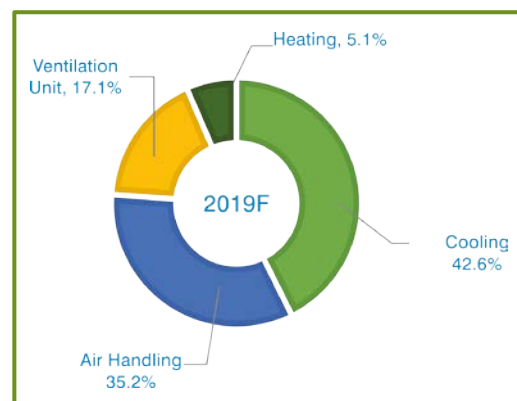
# Central Air Conditioning Market

## Der Hauptmarkt für Klimaanlage

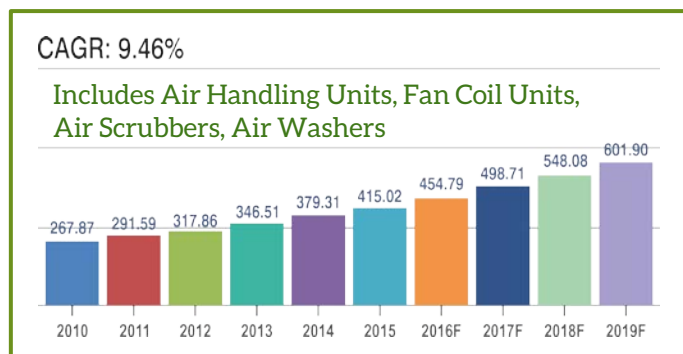
**Market Size by Value,  
2010 – 2019F (USD Million)**



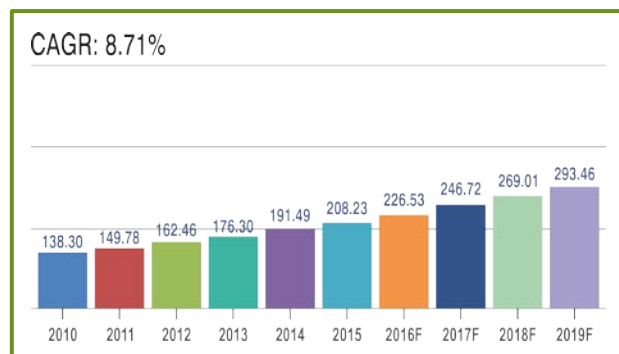
**Market Share,  
by Equipment Type**



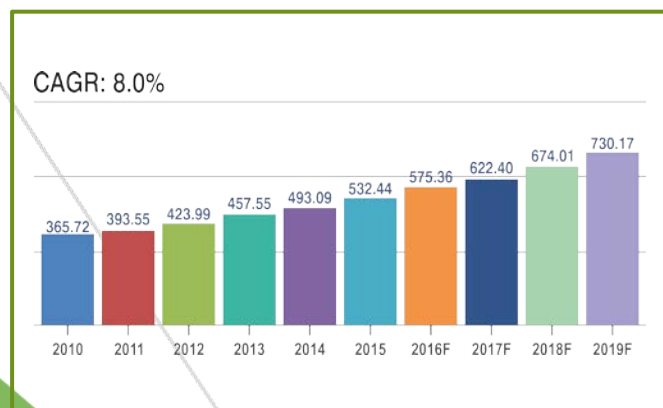
**Air Handling Equipment Market,  
by Value (USD Million)**



**Ventilation Units Market,  
by Value, 2010 – 2019F (USD Million)**



**Cooling Equipment Market,  
by Value (USD Million)**



**Compressor Market  
Scenario 2015, Nos.**

Type (Application)	Market Size 2015	Manufacturers (* Denotes Imported)
Open type reciprocating (for refrigeration)	4,900	ACCEL, Bitzer*, Bock, Freezering, Frick, Kirloskar Pneumatic, Metalex, Mycom, Sea Bird, Superfreeze, Voltas
Semi-hermetic reciprocating (for air conditioning and refrigeration)	6,400	Bitzer*, Bock*, Copeland*, Dorin*, Frascold*, Sea Bird, Voltas
Hermetic reciprocating (for RACs – domestic market)	136,000	Danfoss*, Emerson, Tecumseh
Hermetic reciprocating (for RACs – exports)	920,000	Emerson, Tecumseh
Hermetic reciprocating (for commercial refrigeration)	10,35,000	Emerson, LG, Tecumseh
Hermetic reciprocating (for refrigerators)	52,50,000	Godrej, LG, Tecumseh
Hermetic rotary (for RACs)	30,80,000	GMCC*, Highly, LG*, Panasonic*, Samsung*, Shanghai Highly*, Toshiba*
Open type and semi-hermetic screw (for packaged chillers and refrigeration)	3,300	Bitzer*, Frascold*, Hanbell*, J&E Hall*, Mycom*, Riefcomp*
Hermetic scroll (for air conditioning, and a few for refrigeration)	185,000	Copeland*, Danfoss*, Hitachi*, Panasonic*, Daikin*, LG*, others*





# Refrigeration & Cold Storage Scenario



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# Refrigeration Market

## Industrial Refrigeration

- Pharmaceuticals, Plastics and Chemicals, Oil and Gas:
  - US\$ 110 Million
  - Slow Growth

## Commercial Refrigeration – Cold Chain

- Booming at 15-20% CAGR for Several Years
  - USD 2.8 Billion
  - (Still Only 11.4% of China: RMB158.3 Billion/ USD 24.5 Billion)



## Cold Chain Growth Potential

- **India is an Agrarian Economy:**
  - Largest Milk Producer in World: 132 Million MT
  - Second Largest Fruit and Vegetable Producer: 82 + 165 Million MT
  - Third Largest Fish Producer: 9.6 Million MT
  - Among Top Three Producers of Spices and Poultry
  - Only 10% Perishable Produce is Processed – Huge Potential
- **Cold Chain Industry has Grown, But is Small Compared to Potential now:**
  - 100% Foreign Direct Investment Allowed in Multi-Brand Retail of Locally Sourced Processed Food



# Growth of Cold Stores in India

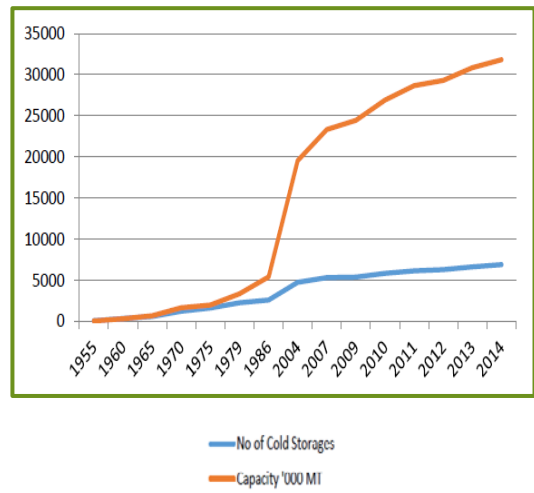
## Over 6400 Cold Storages

131 Million MT Capacity

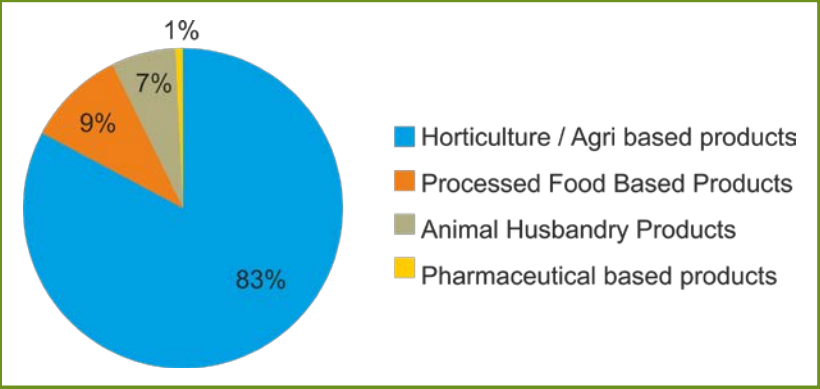
**'Global Cold Storage Capacity Report for 2014'**  
by International Association of Refrigerated Warehouses:

India has Largest Cold Store Capacity in World

India: 131 Million m<sup>3</sup>  
USA: 115 Million m<sup>3</sup>



## Segment wise Distribution



# Cold Chain Infrastructure

Type of Infrastructure	India's Requirement	Existing Facilities	Additional Facilities required by India
Pack-House	70.080110s.	249 nos.	69,831110S
Cold Storage ( Bulk) #	341,64,411 MT		
Cold Storage (Hub)#	9,36,251 MT	318,23,700 MT	32,76,962 MY
Reefer Vehicles	61,826 Nos.	9000 Nos.	52,826 Nos.
Ripening Chamber	9,131 Nos.	812 Nos.	8,319 Nos.

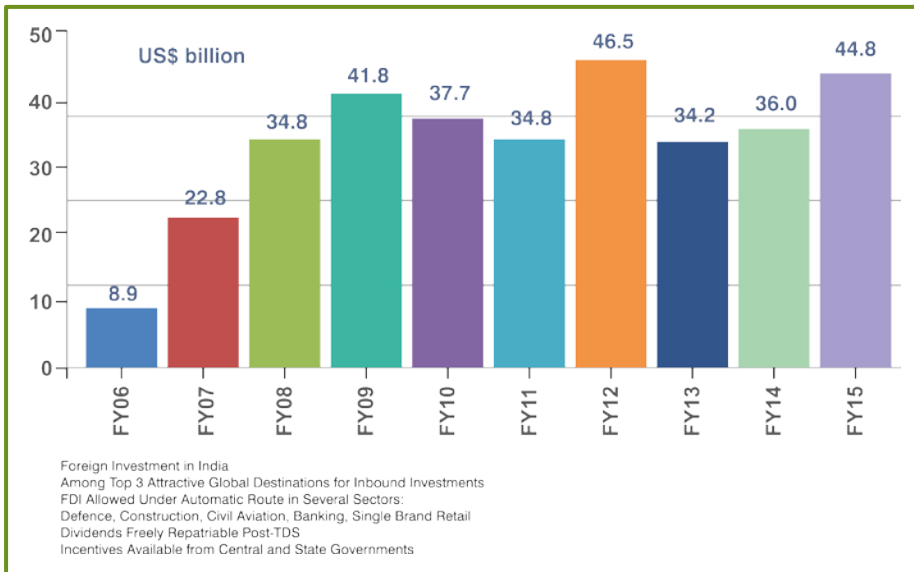




**Being personally  
driven by  
PM Narendra Modi**



# Investment Climate in India



## Ease of Doing Business

- To encourage investment, the Govt of India is taking pro-active steps to improve ease of doing business:
  - Minimizing no of clearances
  - Simplify compliance
  - Online approvals
  - Lesser Documentation
  - More Investor friendly initiatives



## Start-up India

- Tax Exemptions for Three Years
- No Regulatory Inspection for Three Years
- Credit Guarantee
- Single Window for Interactions with Government
- 90 Days for Start-up to Close Down Business
- Fast-Track Mechanism for Start-up Patent applications
- Mobile App to Register Start-up in One Day





# **RISING INDIA: ENTERPRISING & COOL**

**Witness 'Global Cooling'**



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