



# India Update

**Shyam Sujan**

*ELCOMA*





# ELCOMA

Electric Lamp & Component Manufacturers' Association of India

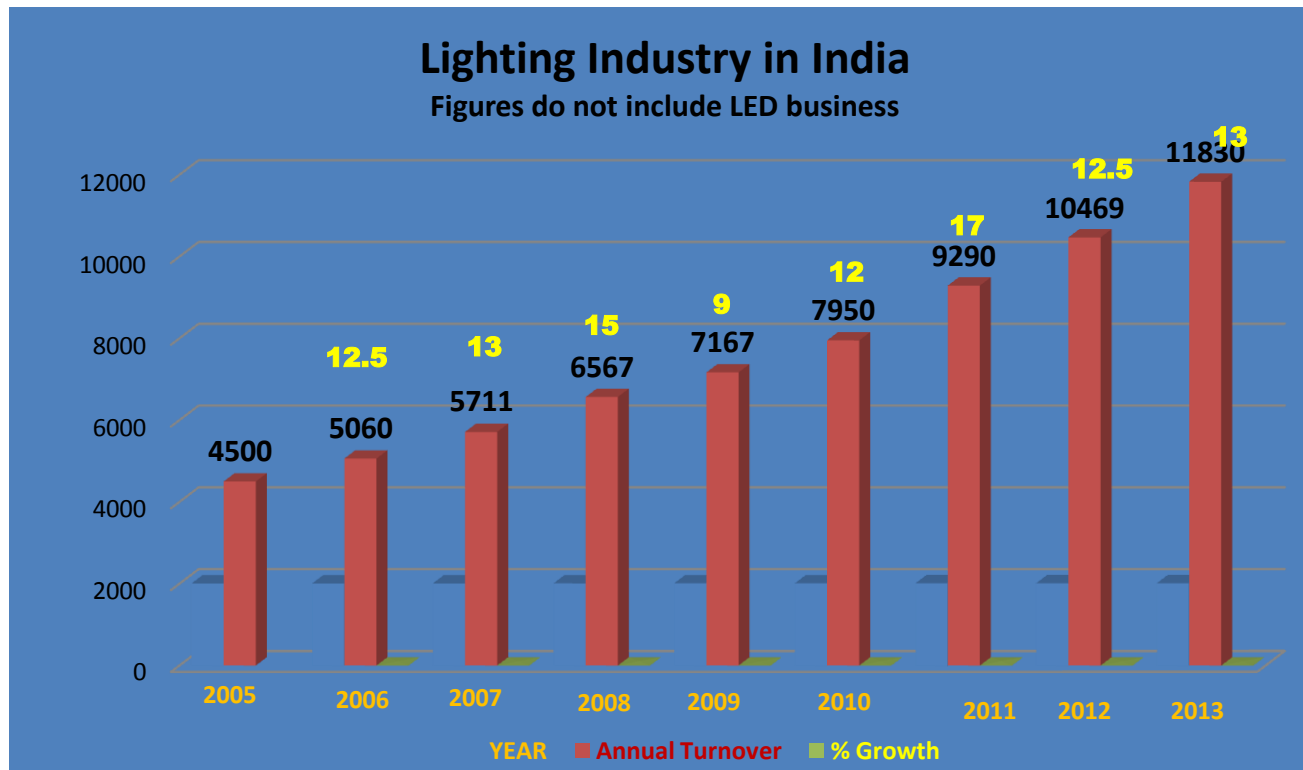
## Towards Energy Efficiency in Lighting



[www.elcomaIndia.com](http://www.elcomaIndia.com)

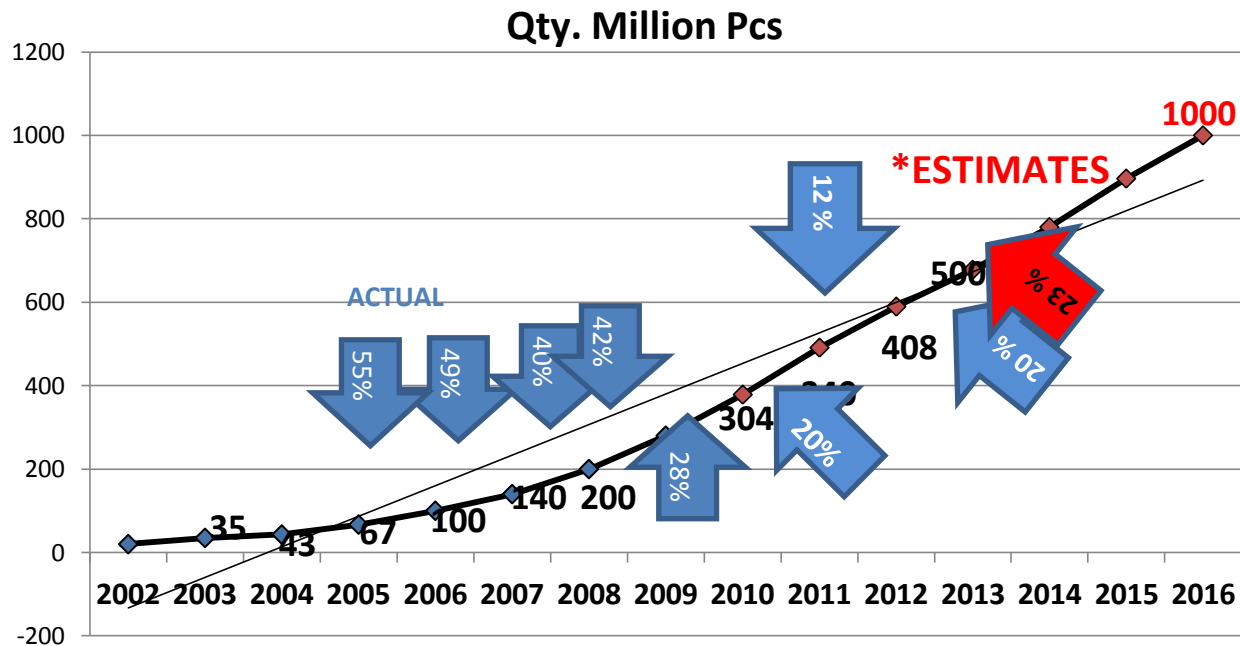
# Industry growth

Growth per annum

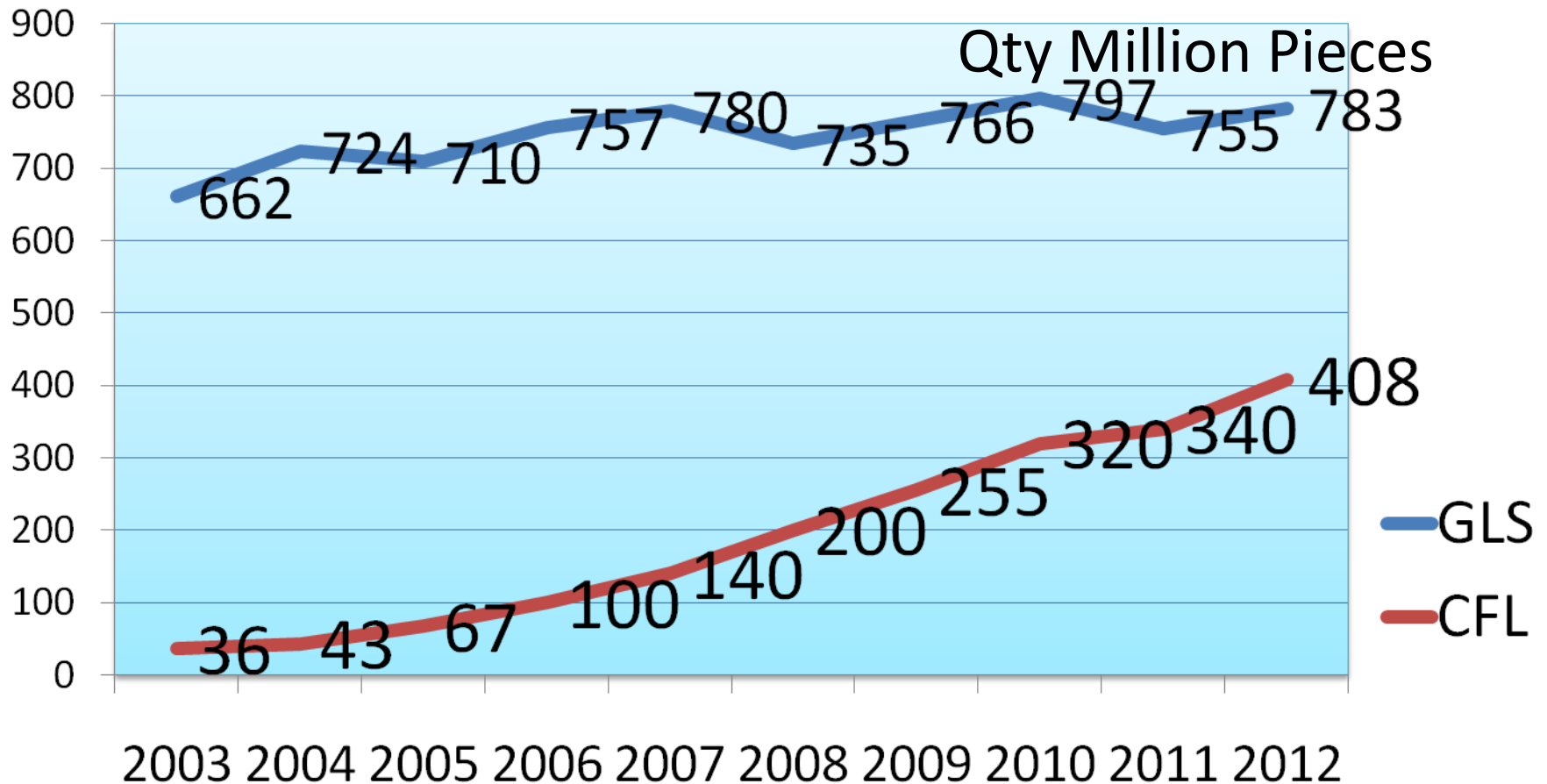


US \$ > 2 Billion

# Growth of CFL in India



# Growth – GLS Vs CFL



# Growth of CFL manufacturing capacity in India

YEAR	No of Manufacturers	Manufacturing capacity (Million pieces p.a.)
2002	5	19
2003	7	22
2004	10	29
2005	12	50
2006	13	80
2007	16	130
2008	20	200
2009	32	350
2010	45	500
2011	52	730
End 2013 (Estimate)	60	1000

# Bringing LED to India: Barriers identified and actions initiated

Appointment of Core Committee by Min. of Power – National Plan prepared

## Barriers Identified

- Limited availability of LED technology in India
- High initial cost of LEDs that makes the pay-back period very long
- Absence of National standards for LEDs as a result industry is prone to import sub standard products
- Consumer awareness very low
- Lack of testing protocols, facilities and accredited laboratories at the national level
- No incentive either to set up manufacturing facilities in India as is the case with China
- Govt. to generate demand

## Actions taken

- Education programs – workshops, seminars, news/magazines
- Production started in India of various components to reduce cost
- Standards prepared and printed for execution
- 5 Test Labs established, 1 Lab funded by Govt. another 7 Labs will be ready by end 2014
- Government reduced duties – state governments reducing VAT
- Govt. procurement for LED Lighting initiated

# LED Focus Area

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## **Self Ballasted LED Lamp**

- Domestic
- DSM Schemes
- CDM Schemes



## **Down Lighters for show rooms & Show windows**

- Show Rooms
- Show Windows
- Office General areas



## **Road Street Lights**

- Highways
- Medium Roads
- Smaller Roads
- By lanes
- Parks
- Service Roads



# Street Lights

- Presently haphazard installation of streetlights by small and medium municipalities
- Industry gearing up for designing LED street lights
- Government (Bureau of Energy Efficiency) initiative to provide LED streetlights to > 130 municipalities as per program
- ELCOMA prepared streetlight specifications for government procurement and end users
- Street lighting guideline prepared by BEE
- Ministry of Urban Dev initiative to change all street lights with LED in phased manner
- Elcoma LED workshops in State Capitals
- One Page specification made for Street Lights for Government Procurement

# Self Ballasted LED Lamp

- As an introduction for domestic application, attention provided for self Ballasted LED Lamp
- Specifications prepared by ELCOMA for government to use it for procurement
- BIS prepared standards for Self ballasted lamp
- PRODUCTION Started in India by at least 4 manufacturers
- Price reduced from Rs. 1200 last year to Rs. 650. Likely to further reduce to Rs. 350 to Rs. 400 by the end of this year



## ELECTRIC LAMP AND COMPONENT MANUFACTURERS' ASSOCIATION OF INDIA

202 Tower A, DLF Towers, Jasola, New Delhi – 110 0 India

Specification	EL 1101
Release date	26 Oct 2013
Version	2

### **SPECIFICATIONS FOR LED STREET LIGHTING LUMINAIRE**

1. SCOPE: To promote energy efficiency by phasing-out inefficient Luminaires using Light sources like HPSV, HPMV, Halogen, Metal Halide or other inefficient lamps with an efficient alternative in the form of LED Street Lights
2. Luminaire Terminology: Complete lighting unit, consisting of one or more lamps (bulbs or tubes that emit light), along with the socket and other parts that hold the lamp in place and protect it, wiring that connects the lamp to a power source, and a reflector that helps direct and distribute the light. Fluorescent fixtures usually have lenses or louvers to shield the lamp (thus reducing glare) and redirect the light emitted. Luminaires include both portable and ceiling- or wall-mounted fixtures.
3. Technical Requirement: The LED Module used in the Luminaire should comply with IS 16103 (Part 1) for safety requirements. The test protocol for performance shall be as per IS 16103 (part 2). The performance requirements shall be as specified in the following table.
4. Luminaire Specifications

Sr. No.	Tests Parameters	Requirements	Referred standard IS/IEC
1	Lumen per Watt	Low Output (<9000 lm) 65 lm/W; Mid Output (9000 to <23000 lm) 80 lm/W; High Output (≥23000 lm) 100 lm/W	16103 (Part 2)
2	C R I	≥ 60	16103 (Part 2)
3	Minimum rated life (L70 /B50 )	50,000 h	16103 (Part 2)
4	Rated voltage	Upto and including 250 V, Operating range 140V to 270V AC, 50 Hz	IS 16103 (Part 2)
5	Power Factor	> 0.9	IS 16103 (Part 2)
6	T H D	Not more than 20%	14700 (Part 3/Sec 2)
7	Driver	Accessible for easy replacement.	-
8	CCT	3000K (3045±175) 3500K (3465±245) 4000K (3985±275) 5000K (5028±283) 5700K (5665±355) 6500K (6530±510)	IS 16103 (Part 2), IS 16105 and IS 16106
9	Junction Temperature	Less than 90° C @ ambient 25 degrees C. To be calculated by measuring at solder point and adding thermal resistance.	-
10	Capacity to withstand surges	Upto 4 KV	IEC 61000-4-5
11	Warranty	2 years	-

**FINAL SPECIFICATION**



## ELECTRIC LAMP AND COMPONENT MANUFACTURERS' ASSOCIATION OF INDIA

202, Tower A, DLF Towers, Jasola, New Delhi – 110 0 India

Specification	EL 1203
Release date	26 Oct 2013
Version	2

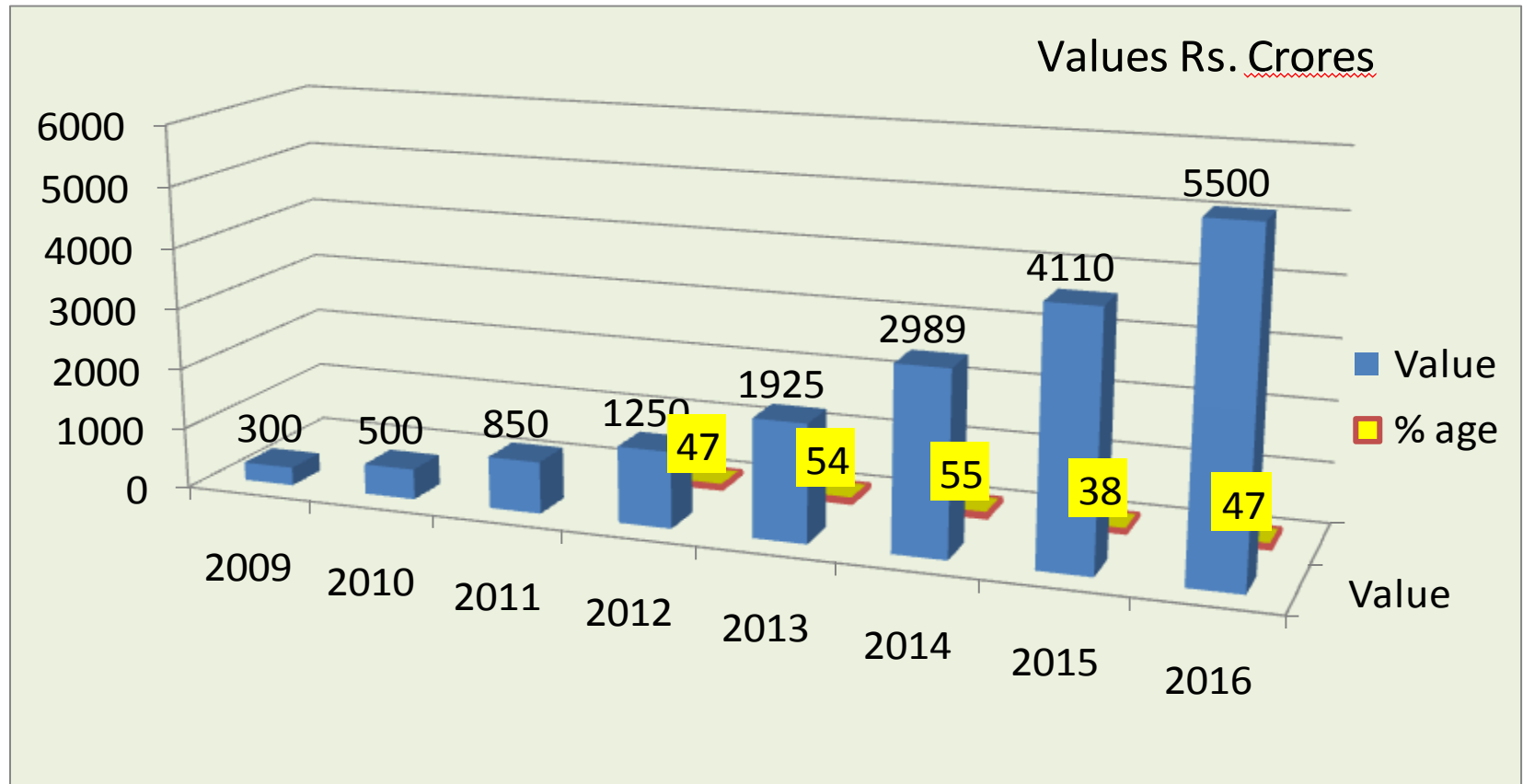
### SPECIFICATIONS FOR LED SELF BALLASTED LAMPS

1. SCOPE: To promote energy efficiency by phasing-out incandescent lamp with an efficient alternative in the form of retrofit LED lamp
2. Lamp Terminology: Self Ballasted LED Lamp retrofits for GLS lamp, cap size B22 and E27.
3. Technical Requirement: The lamps shall conform to IS 16102(Part 1) for safety requirements. The test method for performance requirements shall be as per IS 16102 (Part 2). The performance of lamps shall be as specified in the following table.
4. LED Chip conformity should be as per LM80 and should be made mandatory
5. Lamp Specifications

Sr.NO	Test Parameters	Requirements	Referred Standard IS/IEC
1	Rated Wattage	Upto and including 60 W	IS 16102 (Part 2)
2	Rated Voltage	Upto and including 250 V, ac	-do-
3	CCT	2700K (2723 ± 82) 3000K (2940 ± 98) 3500K (3397 ± 125) 4000K (4036 ± 154) 5000K (4991 ± 220) 5700K (5665 ± 270) 6500K (6432 ± 340)	-do-
4	Cap Type	B22/E27	IS 16102 (Part 1)
5	Power factor	≤ 5W – no requirement > 5W - 0.85 minimum	IS 16102 (Part 2)
6	Efficacy (lm/w)	Up to 5W - >55 lumen/watt >5 W - >60 lumen/watt	IS 16102 (Part 2)
7	CRI	>80%	IS 16102 (Part 2)
8	Lumen Maintenance	70% at 15000 hrs.	IS 16102 (Part 2)
9	Life	25,000 hrs	IS 16102 (Part 2)
10	Temperature Cycling test and supply voltage switching test	Product must survive one cycle for every hour of rated	IS 16102 (Part 2)
11	Harmonics	Shall comply with Table 5A and 5B	IS 16102 (Part 2) and 14700 (Part3/sec.2)

FINAL SPECIFICATION

# Development of LED business in India



# Segment-wise potential for LED Lighting

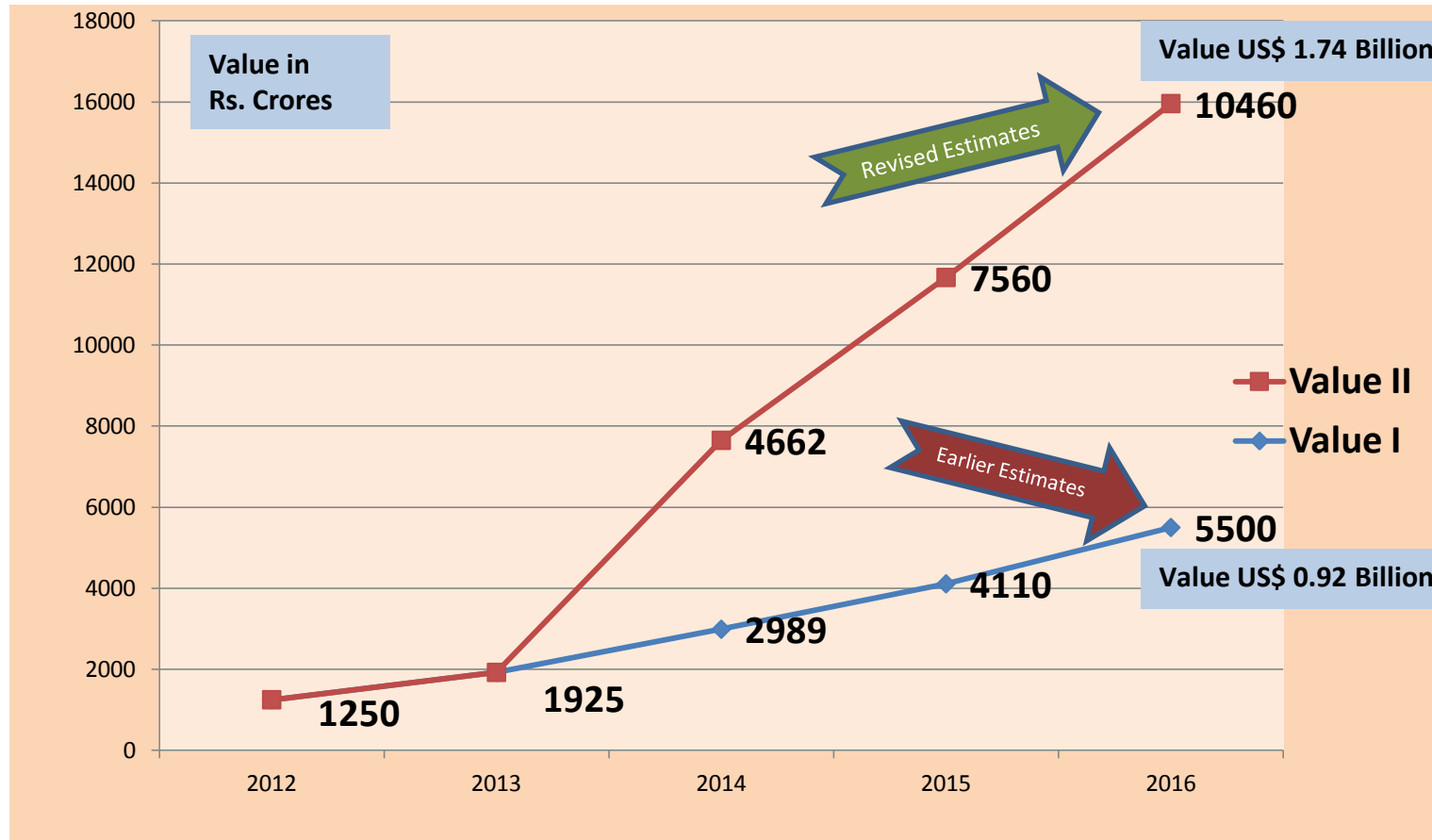
- Street Lights
  - Street Lights with Fluorescent Lamps – 25,000,000
  - Street Lights with HID, Gas Discharge - 2,250,000
    - *Energy saving up to 40%*
- Down Lights
  - Retail Outlets in India – 5,000,000
  - Average 10 DLs per outlet = 50,000,000
    - *Energy Saving up to 80%*
- Retrofit LED Lamps
- - Government procurement under RGGVY – 35 million pcs
- - Other Government DSM and CDM schemes - > 100 million pcs.

# LED Segment-wise New Estimates for next 3 years

Value Rs. Crores

YEAR	RETROFIT LAMPS	DOWN LIGHTS	STREET LIGHTS	LUMINAIRES	TOTAL
<b>2013</b>	<b>175</b>	<b>380</b>	<b>920</b>	<b>450</b>	<b>1925</b>
2014	562	400	3000	700	4662
2015	1814	746	4000	1000	7560
2016	3066	1094	5000	1300	10460
<b>TOTAL</b>	<b>5442</b>	<b>2240</b>	<b>12000</b>	<b>3000</b>	<b>22682</b>

# Changed Scenario of LED Estimate after Government Initiatives





# light

INDIA

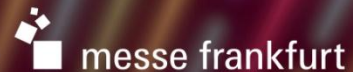
Featuring  
green lighting technology

18 – 21.9.2014

Pragati Maidan, New Delhi, India



[www.light-india.in](http://www.light-india.in)



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# Thank you !

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