## **PHILIPS** sense and simplicity

## LED Lighting Scenario in India

Nirupam Sahay Philips Lighting On behalf of ELCOMA

## LEDs Are the Lighting Source for Tomorrow

**Conventional Lighting Sources** 

Incandescent





Fluorescent



 Gas-discharge (example: neon)



LED Lighting Sources



### Benefits of LED Lighting

- Ultra long source life
- Low power consumption
- Low maintenance
- No moving parts
- No UV radiation
- Cool beam of light
- Digitally controllable
- Sustainability

## The future is brighter than ever

Unleashing new possibilities with LED



# New innovations are radically transforming the way we consume energy



## The LED revolution

#### Digital lighting is transforming the entire landscape\*



\*Source: Philips Lighting global market study 2009, updated for 2010

## LEDs are reshaping the lighting industry

## traditional lighting

- technical life < economic life</li>
- limited number of options
- standardized products
- economies of scale
- traditional market channels
- limited number of light points

## LED lighting

- economic life < technical life
- → infinite number of options
- customized products
  - economies of scope
    - completely new channels
      - huge number of light points



## Evolution of White LEDs - efficiency



## Haitz Law - LED Performance, Im/\$



Life Cycle Analysis of 3 competing technologies

	ndescent	CF	LED
	Incal	rornado	JuraLED Warm White
Technology	Incandescent	Compact Fluorescent	LUXEON rebel LED
Other commercial Names			Master LEDbulb MV (220V)
Wattage [W]	60	14	12
Lumen [lm]	890	800	806
Efficacy [Im/W]	14,8	57,1	67,16
lamp [gram]	24,3	95,0	179,0
box [gram]	14,5	15,8	46,0
Lifetime [hr]	1 000	8 000	25 000

## Life Cycle Analysis of 3 competing technologies

Comparison basis Number of lamps needed for 25k hr of usage

EnduraLED 12W (25k hr)



Tornado T2 14W (8k hr)







## Life Cycle Analysis of 3 competing technologies

## LED is best option on environment

User phase is the dominant characteristic



• EI = Eco Indicator

• mPt = millipoint, a relative holistic indicator for environmental impact / consumption (an average European uses 1000 mPt per year)

## Indian LED Lighting Market 2010-2015 (estimate)

- Estimated at USD 73.3 Million in 2010
- Expected to reach USD 470 Million by 2015
- Street Lighting to account for approximately 60% of the LED market in 2015
- Higher acceptability by the Government and energy efficiency will be a crucial success factor for quick adoption



# Indian LED Lighting market estimated to grow at >40% till 2015!

## **Growth Drivers**

- Investment by the government in energy efficient lighting systems
- Decline in the average prices of LEDs
- Quick Rol to drive adoption
- Improvement in technology addressing new applications
- Global mandate to arrest global warming and migration to technologies like LED



## Energy efficiency is the top driver



- Lighting consumes 17% of the total energy
- More than 80% of current lighting used is based upon antiquated technology
- Use of more efficient LED technology will not only save energy but also lead to reduction in the emission of greenhouse gases

## Lumen/pack and lumen/rupee driving penetration

- Lumen/pack has doubled consistently every 18 months for the last 30 years
- As lumen/pack increases, more and more applications become meaningful
- Overall LED penetration in India is low but gaining momentum rapidly in certain applications eg. down lighting, accent lighting and to a certain extent in low wattage street lighting



# Government encouraging energy efficient procurement - a key driver of LED penetration

- Pilot projects started in some states
- Some tenders for low wattage street LED street lighting awarded
- Lack of proper standards can lead to concerns about reliability
- Standardization activity already started at BIS
- BEE guidelines in circulation







## Meaningful LED solutions for Home Lighting

- LED lamp designed and manufactured in India launched in 25, 40 & 60 watt equivalents
- LED Home Decorative Lighting range launched



## Meaningful LED solutions in Office & Retail Lighting

- Remote phosphor LED down lights which offer 50% energy saving when compared with CFL down lights
- LED accent lighting solutions which offer 80% energy saving when compared to halogen spotlights
- Light quality comparable and attractive TCO
- · Good momentum seen in offices, retail and hospitality





## Meaningful LED solutions in Outdoor Lighting

- Low wattage street lighting LED solutions designed and developed in India launched for A2, B1 and B2 category roads
- Some momentum already seen though many customers are still tentative when committing
- Inability to differentiate between good and bad solutions is the major deterrent. Availability of standards is key
- High wattage street lighting LED solutions available in global ranges ... however need higher customer commitment before taking a decision on localization
- LED city beautification range











# Meaningful LED SOLAR street lighting solutions

- Locally designed and developed solutions for off-grid and on-grid applications launched
- Solution specifically developed for MNRE specifications also launched
- Key applications in rural as well as secondary urban roads, industrial complexes and townships



## **ELCOMA – Spreading LED Awareness**

- Workshops / Seminars
- Conclaves/Exhibitions
  - May 2010 in Delhi
  - April 2011 in Hyderabad
  - Jan 2012 in Mumbai
- Publication of LED Street lighting guide for Municipalities and Public Works Departments
- Articles and advertisements in special magazines
- Media publicity

## Support required from the Government

- Implement recommendations of "The Economic Case to stimulate LED Lighting in India" white paper issued by the Ministry of Power
- Drive standards
- Create environment for manufacturers to invest in production of LED chips in India:
  - Offer land at subsidized rates; government funding participation; soft loans; tax holidays
- Bring in notifications:
  - All showrooms or show windows using Incandescent Lamp or halogen lamps to replace them with LED down lighters
  - Mandatory use of LED streetlights for secondary roads, parks and parking areas etc.
- Government bulk procurement
  - Preparing bulk requirement of Railways, Airport authority, Urban Housing, Highways & other large development projects to create a large demand to encourage the industry to expand
- Test Labs
  - Government subsidizing establishment of LED test facilities at existing Test Lab (~ Rs. 25 Crores)
  - Need higher investment for many more Test Labs

