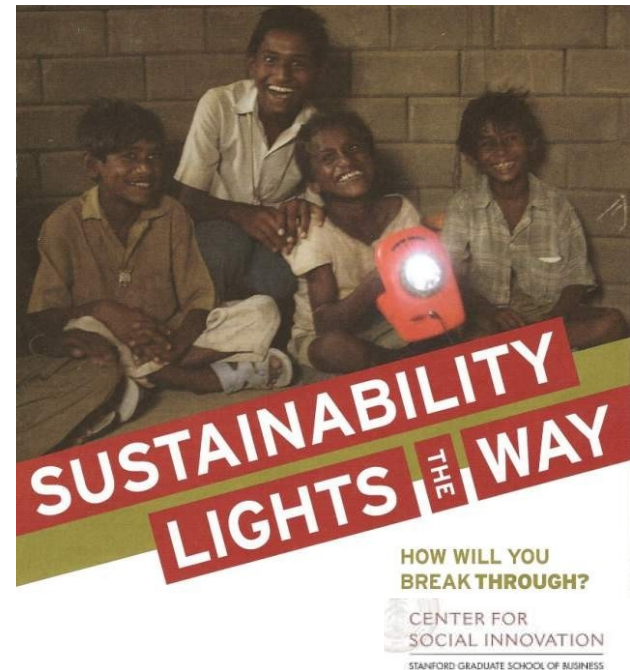


Business Response to Climate Change



Amit Chugh

CEO and Co-Founder

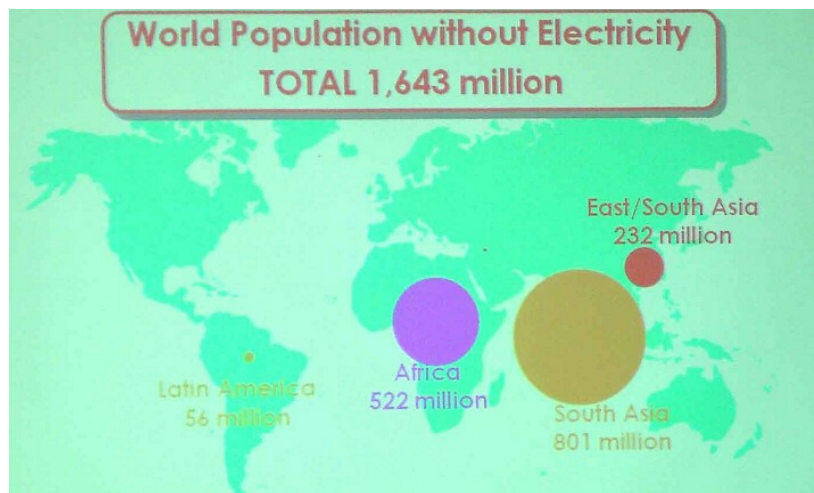
16 March 2009

Light up a Billion Smiles!



The Challenge: Hazardous Fuel based lighting

Over 1.6 billion people spending up to \$20 / month on kerosene



-Dan Kammen, Berkeley Uni:

'a billion people in rural markets have the ability to pay for energy, with many of these billion people spending **\$5 to \$10 a month** exclusively for lights' (NYT 2001)

- UNDP study

'rural households spending as much as **US\$10 per month** on lighting from candles, kerosene and dry-cell batteries'

- Manshard & Morgan (1998)

'survey of Malaysian households; **monthly household kerosene expenditure of \$20'**

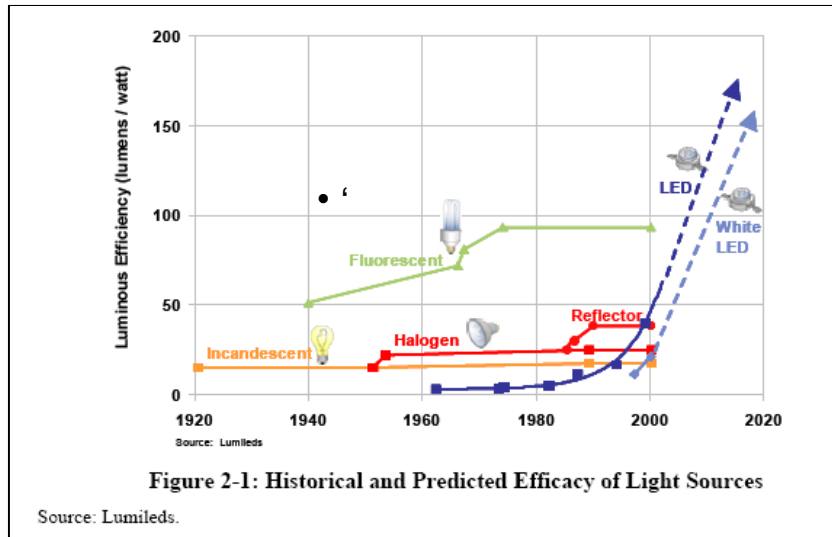
- Lumina Project, LBNL (2007)

'In poor segment (**79% less than \$1 day**), avg household kerosene expenditure **\$27 per year**, of which **91% is used for lighting'**

Kerosene also has wider health, environmental and social costs

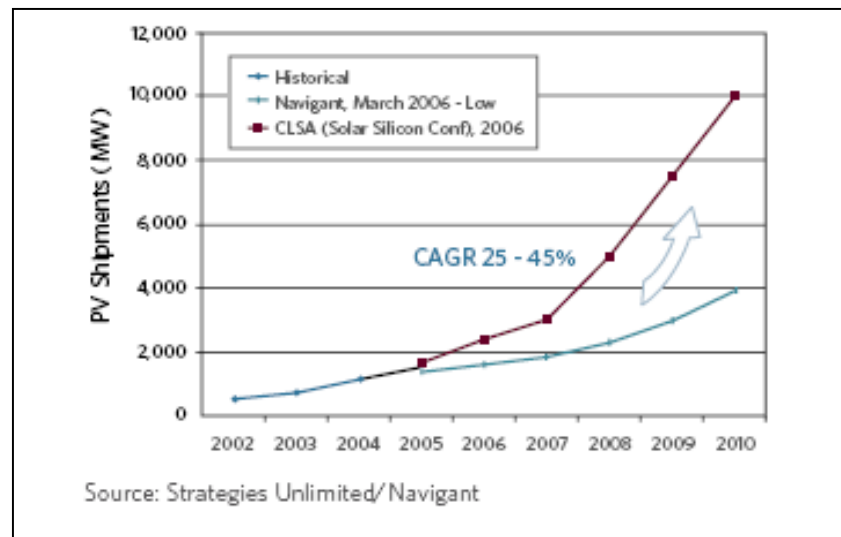
- WHO: Kerosene smoke contains '*a nasty mix of particulates, carbon monoxide and carcinogenic gases*'. Child studying by light of a kerosene lamp = 2 packs of cigarettes / evening
- Respiratory illness is second largest cause of premature death in the world
- Each kerosene lamps emits between 30kg and 250kg CO₂ per lamp, in total fuel based lighting contributes 244m tonnes of CO₂ per year (58% of global CO₂ emissions from electrical lighting)
- Study show that access to quality lighting results in 48mins of extra education per child per night

Cosmos Ignite's Response: Disruptive Technology



LEDs

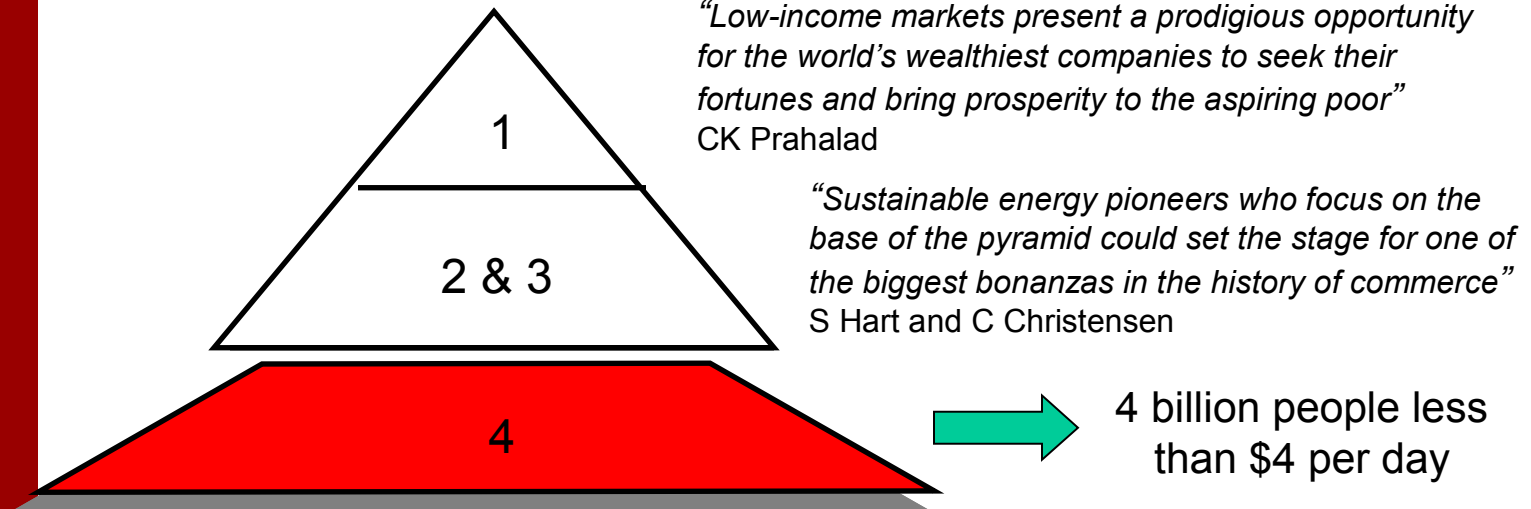
- Cosmos Ignite's MightyLight now 4x brighter than 2003
- 1W of electrical power gives 20x the light of kerosene



Solar

- Massive growth in solar technology is transforming price points & efficiencies
- Thin Film offers potential for 'grid parity' in next 4-5 years or sooner

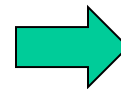
Why Disruptive Technology?



- Energy - BoP Household market of \$433bn (\$351bn in Asia)
 - Indian BoP energy spend per H/hold of \$775 p.a.
- Off grid - 1.6 billion people spending \$38bn on fuel-based lighting
 - 17% of global costs, 0.1% of global output

3 Disruptive Forces

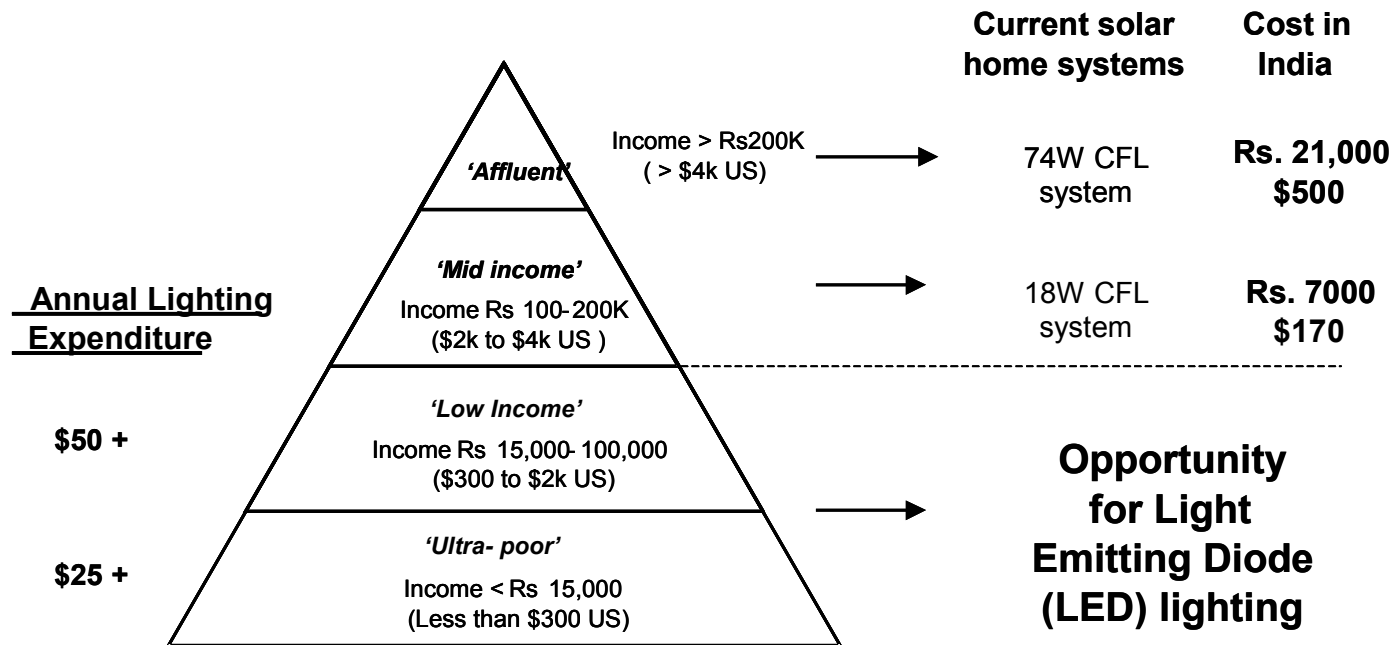
- Technology (LED / Solar)
- Distribution (Microfinance)
- Financing (Carbon Credits)



Opportunity

Need-gaps have not been met!

High efficiency 1W Solar LED lights open up new price points

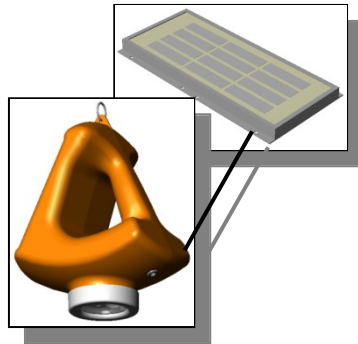


- With Micro-finance, weekly payments of 40-60 Rs equivalent to kerosene expenditure creating affordability even within \$1-\$2 per day segment
- Cosmos-Ignite's MightyLight provides 10-20x more light than kerosene for 50 weekly payments of 40 Rs (50 x 40 = 2000 Rs)
- 2000 Rs price point provides sustainable margins for Cosmos Ignite & MFI plus upside of up to 2000 Rs from carbon financing

What Disruptive Technology?

Wide range of solar products already available

MIGHTYLight
(multiple versions)



MIGHTYCharge



MIGHTYLantern



Additional products will follow

MIGHTYEnergy Box



MIGHTYPower Station

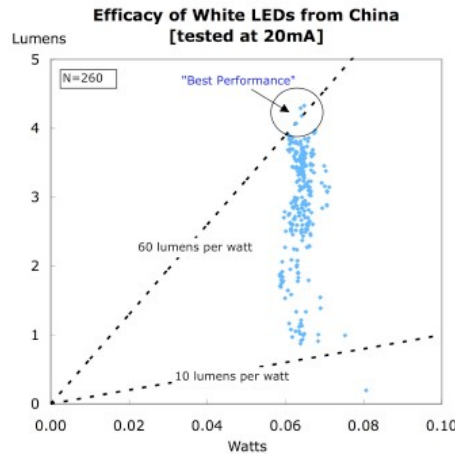


MIGHTYWater Filter



Why it's better?

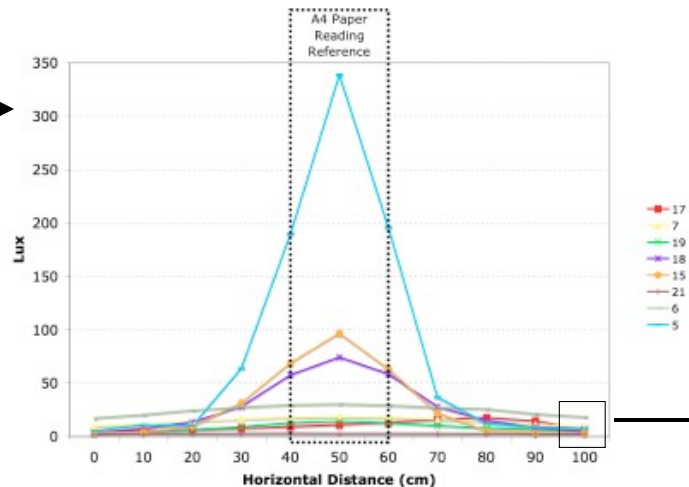
Quality of LEDs on market place can be highly variable



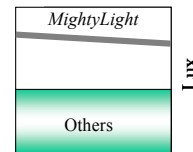
- LEDs available on the market show nearly a 6x variance in light output at the same current
- Cosmos-Ignite focuses on using quality components to build quality brand

MightyLight establishes Cosmos-Ignite as technology leader

300 lux
(min reading standard)

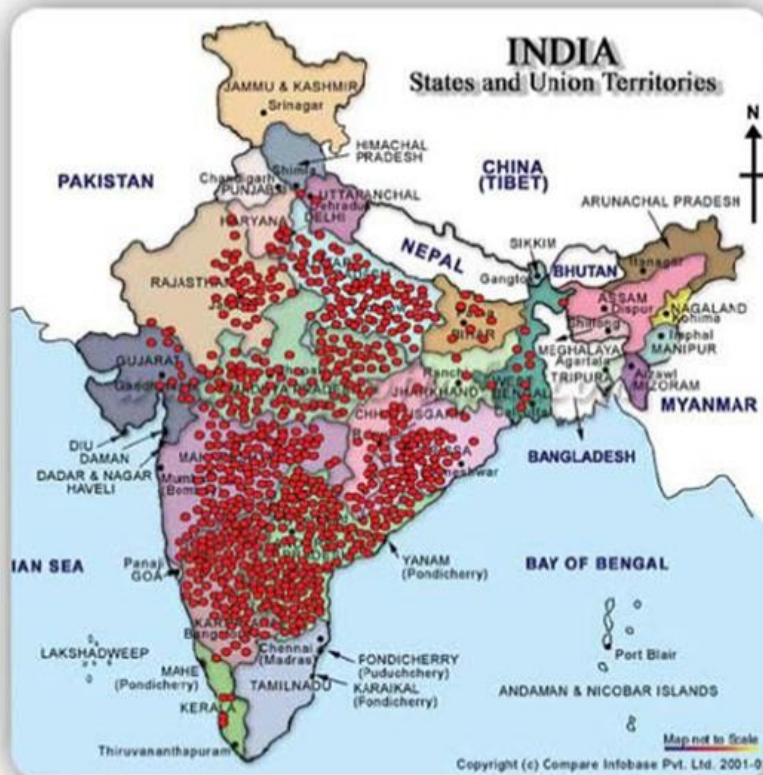


- MightyLight (light 5) has over 3 times the lux of competing products...
- ...as well as the best overall light output in an ambient setting (light 6) as shown in the magnified box below



Source: US Dept of Energy Testing Laboratory

Bringing MICRO-ENERGY to INDIA



Integrated 'Micro-Energy' Entrepreneurs

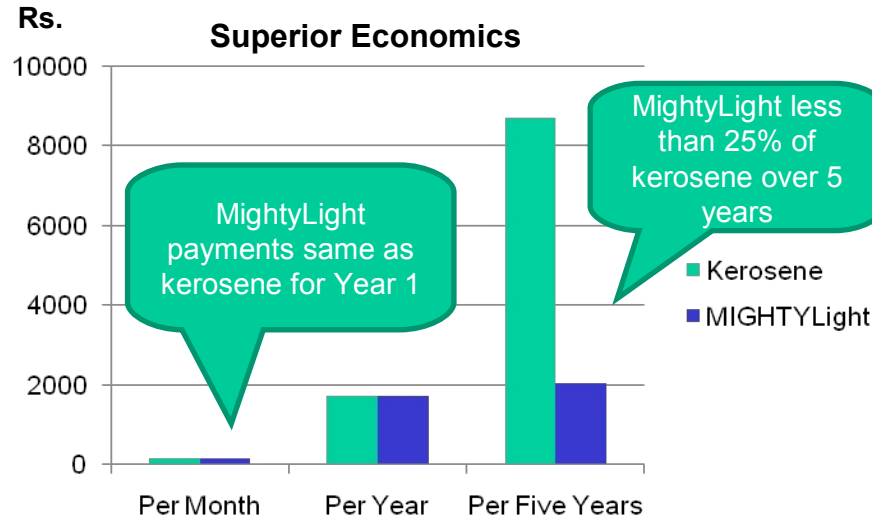
Cosmos Ignite is partnering with existing organizations to create 1000's of micro-energy entrepreneurs across India



By integrating into an existing network, Cosmos Ignite can rapidly gain a significant footprint across rural India

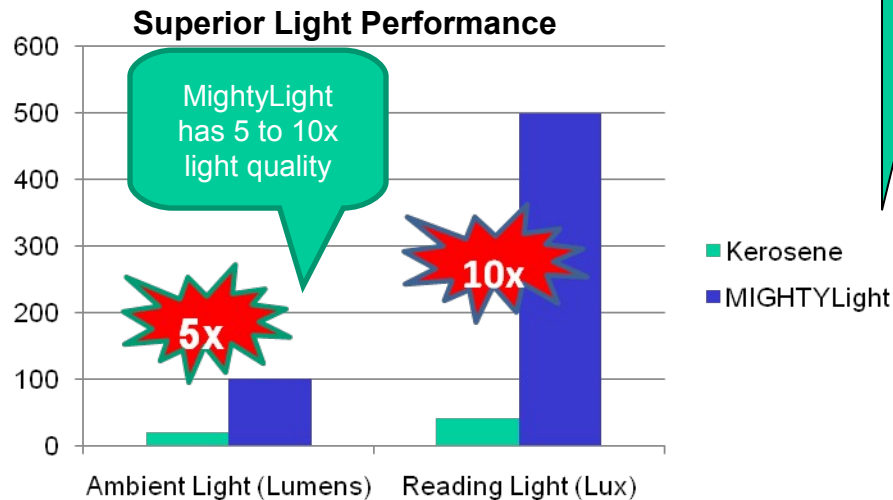
- 'Micro-energy' entrepreneur model initially focusing on partnering with existing organizations to rapidly reach scale, particularly micro-franchising and micro-finance organizations

Affordability & Value



Affordability

- Same monthly payment for MightyLight as spent on kerosene
- Over 5 years, MightyLight is only 25% of kerosene expenditure

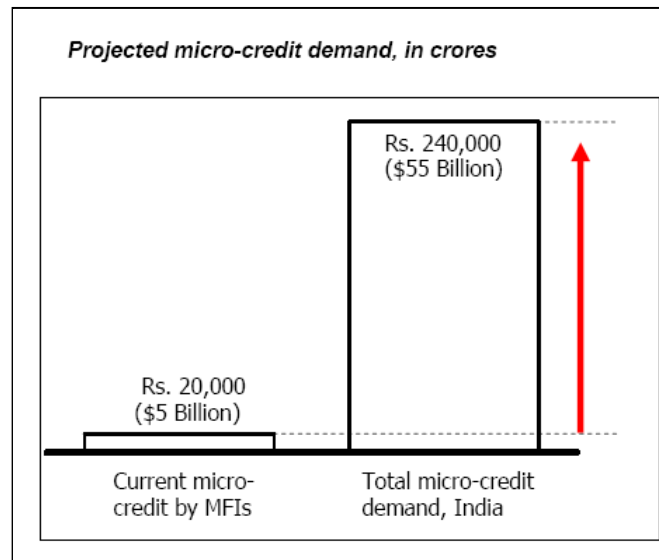


Value

- Existing MightyLight provides 5 to 10x the light of a kerosene lamp (with no CO₂, naked flame or dangerous smoke)
- Future products will be even brighter and multi purpose

Economic Impact of Disruptive Distribution?

Region	Estimated Borrowers - CGAP Africa Report, 2006	Estimated Borrowers - Microcredit Summit Annual Report 2006
Sub-Saharan Africa	3.7m	7.4m
Middle East & North Africa	0.9m	1.2m
Latin America	5.4m	4.4m
Asia & Pacific	53.8m	100.4m



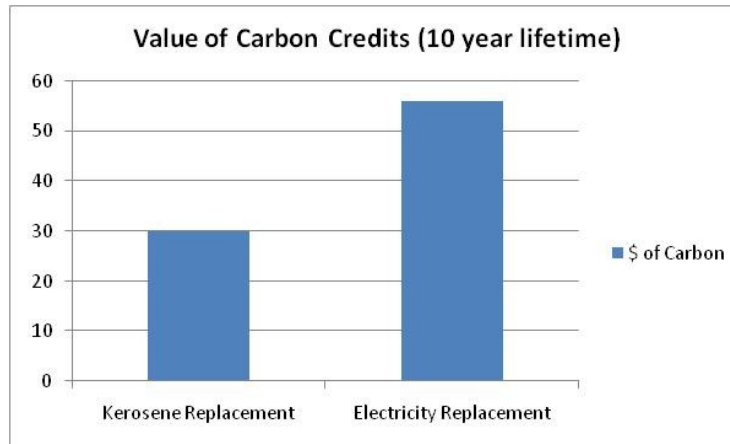
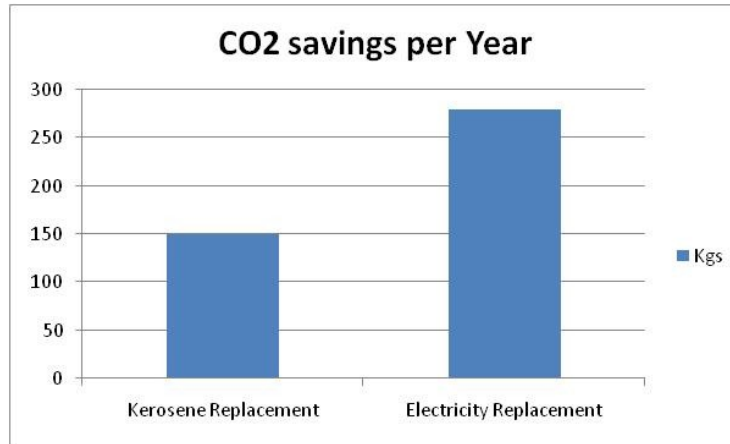
100m on Micro-credit

- Micro-finance now estimated at between 50 and 100m Borrowers in Asia alone
- Ability to finance & distribute products opens up new business models

Rapid Scalability

- However Micro-finance is still in its infancy (only c. 10% of potential in India alone)
- Many MFIs growing at over 100% per year

The Environmental Impact of Disruptive Financing



CO2 Savings

- Fuel Based lighting accounts for c. 2% of global CO2 (250MT per year)
- Each Cosmos Ignite MightyLight can replace upto 280kgs of CO2 per year

Carbon Revenues

- Over a 10 year lifetime at \$20/tonne, Carbon revenues could be as high as \$50 per MightyLight

The Social Impact

Estimated Impact for every 200,000 Lights

Education

- 100m hours⁽¹⁾

Environment

- 280,000 tons of CO₂⁽²⁾

Economy

- Income Generation: \$3m⁽³⁾

- Cost Savings: \$6m⁽⁴⁾

Health⁵ :

- Reduction in serious burns

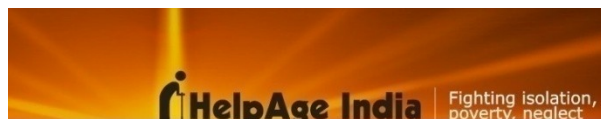
- Reduction in respiratory illness

Assumptions

- (1) Based on study in Philippines; introduction of electrical lighting in rural villages led to 48mins per day per child and 15mins per day per adults in incremental education
- (2) Based on 140kgs of CO₂ replacement per annum per lamp over a 10 year lifetime
- (3) 1 in every 20 lights is used for income generation, 3 hours/day at Rs.10 per hour
- (4) Using lower bound of \$5 to \$10 annual kerosene expenditure estimate (UC Berkeley)
- (5) 2.5m burns per year in India from kerosene (Lutw.org), clear linkages between indoor air pollution and respiratory illness

Partners

Social
Sector




Global
Institutions



The World Bank

Corporate
Responsibility



Existing Commitments to bring safe and
affordable lighting to c. 100,000 people

Global Recognition



Additional:

- Independent (UK)
- Le Monde (France)
- Economic Times (India)
- Hindu
- Wall Street Journal
- '365 Ways to Change the World'
- Stanford Social Innovation Review



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