GLED Life time

GLED

LIGHT BULBS

*Brightening your world, **sustainably***

UNESCO · Goverment Of India · Diamond Challenge · Global Innovation Exchange · Honey Bee Network · Future Designer · IIDA · Carbon Zero Challenge · Run the future · vivo Ignite Technology & Innovation Awards

Ideation story

It all begine when the shopkeeper denied replaxcement of failed bulbs citing they carried 1 year waranty and our buls were just 18 months old.

Compared Present LED bulbs with Earlier

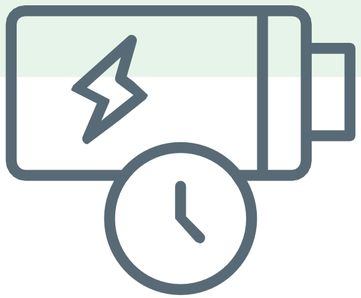
Reduced Price with unnoticed Reduced Claims

Feature	Earlier LED Bulbs	Present Day LED Bulbs
Type of Circuit	Separate Driver & LED	On Board Driver and LED
Life claim	50000 Hours	10000 Hours
Warranty	3-5 years	1 year
Cost of Bulb	Rs.300 - 400	Rs 60-100
Weight	100-150gm	40-70gm
Size	12cm x 6cm	8cm x 5cm
Heat Sink	Heavy Sheet	Paper Thin
Recommend Use	Open & Close Lamps	Only Open Lamps

LED Bulbs :Not the Complete Solution

Poor Life Span

Bulb manufacturers cut costs by reducing bulb lifespans. Current LEDs claim to last only 10,000 hrs, but cheaper options **fall short**



Cost

Purchasing new bulbs becomes the only option for customers when **LED bulbs fail after just a year**, adding an unnecessary **economic burden.**

Burning our pockets and the earth

E-waste

Traditional LED bulbs add **100 million kg** of e-waste in India, as components can't be separated from the bulb

Plastic Waste

90% of LED bulbs is plastic and rest PCBA, 2030 onwards, they will be adding 2 billion kg of e-waste to landfills yearly.

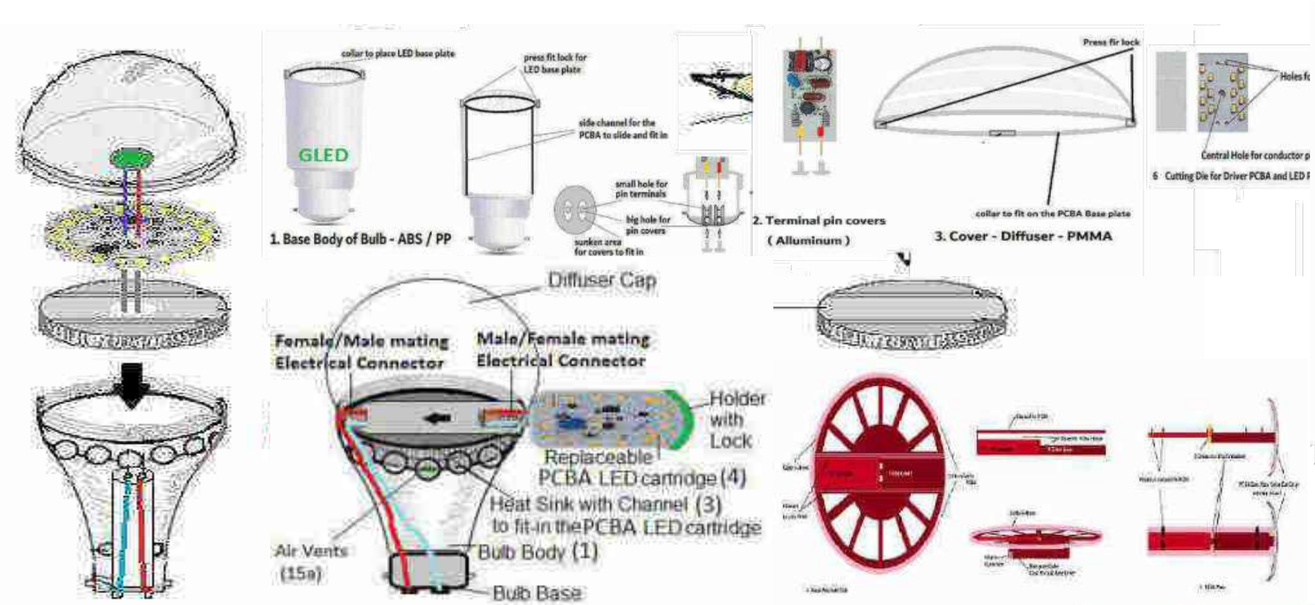
CO2 emissions

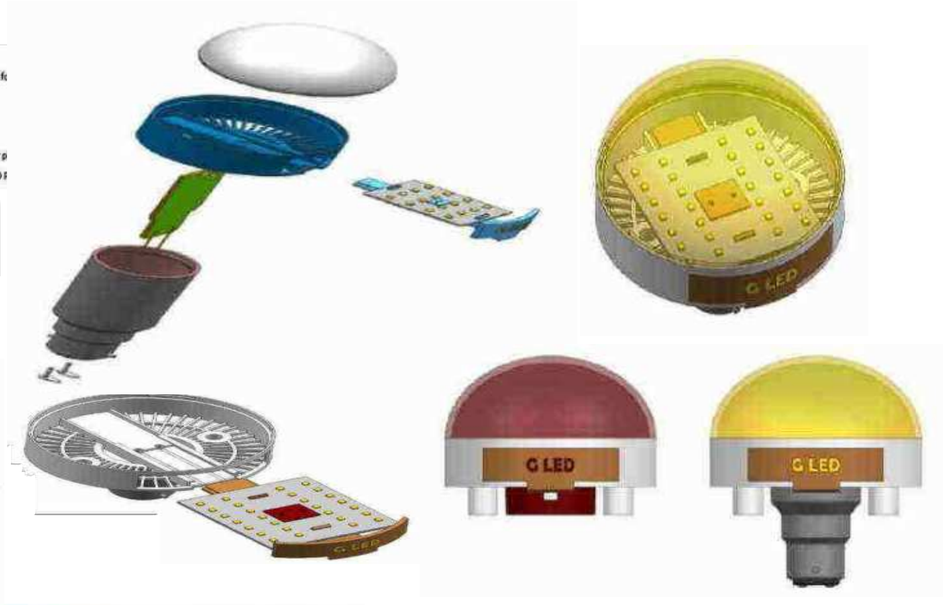
The production and disposal of bulbs annually contribute **10 billions kgs CO2** emissions

Non-recyclable

LED bulbs are neither **Repairable nor recyclable**, as all its components are glued, screwed, soldered and machine pressed

..pen down ideas and discussions to drawings,
.. made rough to 3D print functional prototypes..





Introducing GLED

Reusable LED Bulbs with Replaceable Cartridges
Every time the bulb fails, just replace the PCBA-cartridge while retaining the body of the bulb.

https://youtu.be/Qmwq3aS1-sg

CHEAPER

LIFE Time Warranty:
GLED **cuts Replacement cost for a failed LED bulb by 75%** with its replaceable PCBA cartridge, retaining the body of the bulb

SUSTAINABLE

An eco-friendly solution by
reducing waste,
extending product life,
circular economy,
efficient e-waste segregation,
lowering carbon emissions

GLED Range of Lights

- GLED all purpose Bulb
- GLED Slider Wall / Ceiling
- GLED Square Bulb
- GLED Tube
- GLED Concealed Bulb

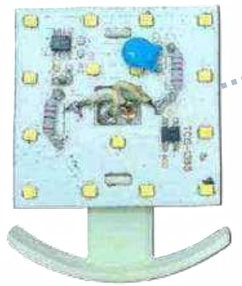
High End
Premium Priced
GLED
will also be launched

Our Product is a Luminaire

Components

BULB BODY

- Can last for Life Time
- No need of bulb batten Installs directly on walls / ceilings, with batten holes



CARTRIDGE

- Replaceable cartridges, reducing waste and cutting costs by 75%
- Same body can have different watts PCBA - cartridges.

Features

EASY INSTALLATION

The bulb fits into standard batten holders and does not need special fixtures to install

EXTENDED LIFESPAN

It is designed with air vents for natural cooling, which prevents overheating and extends the bulb's life

Competitive Advantage

Features	GLED	PHILIPS	OSRAM	SURYA	HAVELLS	SYSKA
Energy Efficiency	✓	✓	✓	✓	✓	✓
Reusability	✓	✗	✗	✗	✗	✗
Holder not required	✓	✗	✗	✗	✗	✗
Life long Warranty	✓	✗	✗	✗	✗	✗
Cost Effectiveness	✓	✗	✗	✗	✗	✗
Waste Reduction	✓	✗	✗	✗	✗	✗
MRP / Discounted	100	155 / 80	249 / 80	130 / 75	150 / 75	199 / 80

- **Invested in automated setup**
- **GLED needs low cost manual setup**

- **Reducing bulb quality to sustain profits**
- **GLED has Strong and heavier Luminaire Body**

- **Higer profits from rechargeable & smart bulb**
- **GLED reusability becomes more worthy**

- **Government Procurements (Ujala Scheme)**
- **GLED offers 75% cheaper replacement cost**

- **Claims to consume less power consumption**
- **GLED actually reduces carbon footprints**

Online Market Interest Survey

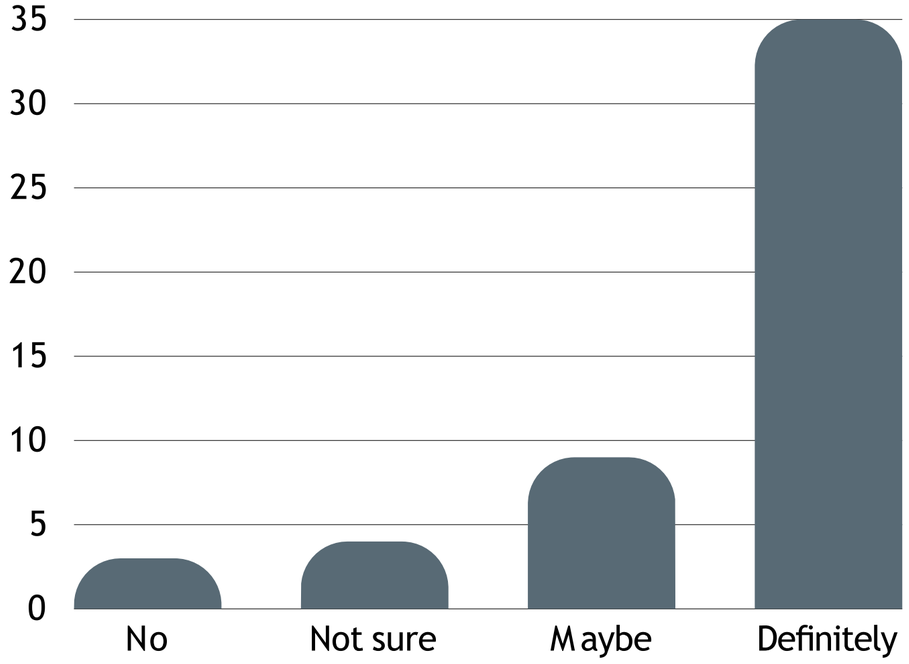
Would you be interested in a reusable lightbulb where only the internal technology is replaced?

50 respondents

Total number of survey responses received

33 out of 51

respondents are responsible for making purchasing decisions for lightbulbs



43%

of all respondents identify as women

63%

of all respondents are above the age of 25

Survey Inference at Exhibitions

Will you and why will you buy GLED Bulbs?

1000+ Respondents

100%

Respondents want the GLED to be available at the earliest

Affordability
Responsibility
Eco friendly

Consumers
Age : 20 to 60

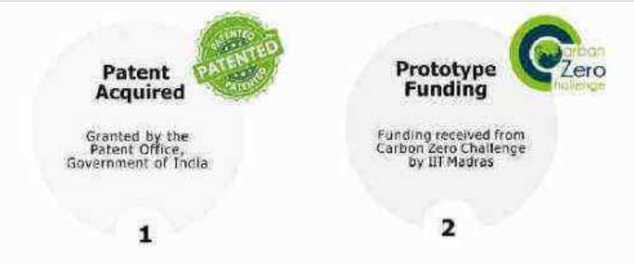
Same profit on less investment
Smart Warranty
Happy Customers

Sellers
Age : 25 t0 60

Small Budget
Early Breakeven
Easy Scale up
Carbon Credits

Investors/ Juries
Age : 40 to 60

Road covered ✓



- Participated in national and International events, earning appreciation and cash awards.
- Indian Patent Granted on Method of Reusability of LED Bulbs and claiming carbon credits, thereon.
- To keep overheads low, a partnership company has been formed to get DPIIT registration, later it will be incorporated as Pvt Ltd.
- Funding received from IIT Madras used to develop functional market ready prototype of GLED
- 3D designs and prints developed for range of GLED lights
- On board advisors from government energy sectors, holding high positions.

Prototype Funded by IIT Madras – Carbon Zero Challenge

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12th April 2024

To Whomsoever Concerned,

Subject: **Congratulations on Being Selected as One of the Top 25 Teams of CZC 4.0 and Training Details**

Greetings from Carbon Zero Challenge - IIT Madras!

Congratulations! We are delighted to inform you that your team, "G-LED,", Team Members- Ms. Shreya Chopra and Mr. Aditya Chopra under the mentorship of Mr. Naveen Chopra has been selected among the top 25 teams of Carbon Zero Challenge 4.0.

You are now entering the next exciting phase, spanning six months, during which your team will be funded up to INR 500,000 for prototype development. Additionally, you will benefit from one-on-one mentorship and participate in an extensive capacity-building program aimed at refining your skills in business model development, customer discovery, and sustainability metrics.

As the first part of this program, you are required to attend the mandatory training program on business models, customer discovery, and sustainability metrics for the selected 25 teams at IIT Madras from the 22nd to the 24th of April 2024, culminating in an Embarkation Ceremony on the morning of the 25th of April 2024 from 9am- 11am. During this event, we will announce the winners to the public. Teams will receive instructions, and you will need to submit the CZC Agreement, which outlines all the protocols of CZC 4.0.
Please do not hesitate to contact us if you have any further questions or concerns.

Yours sincerely,

(Dr. Indumathi M Nambi)

GLED International Traction & Accomplishments

GLED Life time

UNESCO · RISE · Global Innovation Exchange · Diamond Challenge · Future Designer · IIDA · Run the future

GLED National Traction & Accomplishments

GLED Life time

Honey Bee Network

सत्यमेव जयते
Goverment Of India

Azim Premji Foundation

Initiative for Research & Innovation in STEM
IRIS
NATIONAL FAIR

Carbon Zero Challenge

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

INDIAN INSTITUTE OF TECHNOLOGY DELHI

vivo Ignite
Technology & Innovation Awards

Road Map further

A stable demand and deliver model by 2026

Phase 1 ✓

[1-6 months]

HedronArc
Partnership company which will be a Pvt. ltd as deemed necessary.
Get DPIIT registered Startup
Get Incubated

Raise 15 lacs Funds / Grant

Functional prototype is ready and now we need to funds to develop saleable product.

Phase 2

[7-12 months]

Product Ready for sales
Testing and Certifications
Govt Approval for purchase

Raise 30 lacs Funds / Grant

For
Pilot lot sales and
Dies / Molds for tube-light, concealed-light, wall-light and smart rechargeable bulb

Phase 3

[13-18 months]

Range of GLED Ready for sales
Focus of production, online sales through Amazon, Flipkart etc. and Government Tenders

Raise 100 lacs Funds / Grant

For
Production scalability

Phase 4

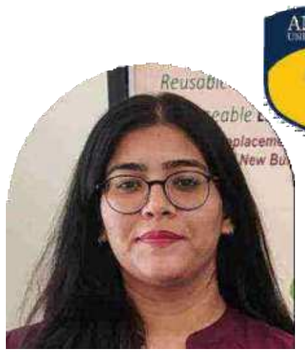
[18-20 months]

Focus on scalability by opening assembly units in each state. And introducing the product in 3rd world countries.

Raise 100 lacs Funds / Grant

For
Production scalability

Founders & Advisors



SHREYA CHOPRA
Founder
4th Year Law Student and Environmentalist

NAVEEN CHOPRA
Co Founder & Mentor
25 years experience in Marketing and Manufacturing

RENU NARANG
Advisor
CEO, NVVN
(A WoS of NTPC)

NIDHI KUMAR NARANG
Advisor
Director - Finance (UPPCL)

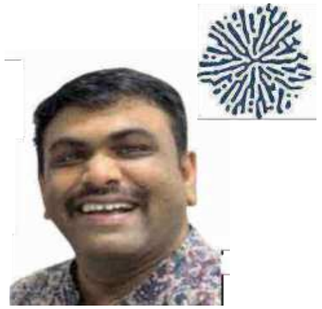
Our Mentors

LAKSHMI VAIDEESWARAN

Analytics Consultant,
IIT-M

NAGARAJAN B

Chief Operating Officer at
Lloyd Power Systems Co.



CHANDRASHEKAR BHAT

SusVentures
Knowledge Partner -
Carbon Zero Challenge

SHAJAN SRITHARAN

Mentor
JD/MBA,MA,HBA

KANIKA SAINI

Mentor
HBSc, MMGT, MBA

B.K. SETHI

Mentor
President of B. K. Sethi
Marketing Ltd.

RICK SHEA

Mentor
President, Optiv8 Consulting

RANJINI RAO

Mentor
upGrad / Deakin University -
Design Thinking Leader

SHANTANU ROOJ

Mentor
Founder & CEO at
SchoolGuru Eduserve

GLED and Sustainable Development Goals

Circular Economy by Exchange offer

CSR – NGO – Events – Government

Credit of Rs10 for any LED light

Discount redemption up to 40%

Scrap purchase value of

- 20 bulb @ 50 g @Rs.10 = Rs.200 / kg
- Fresh Plastic Price = Rs.200 / kg

Blend up to 40% of this scarp plastic with fresh plastic to make GLED bulb body will:

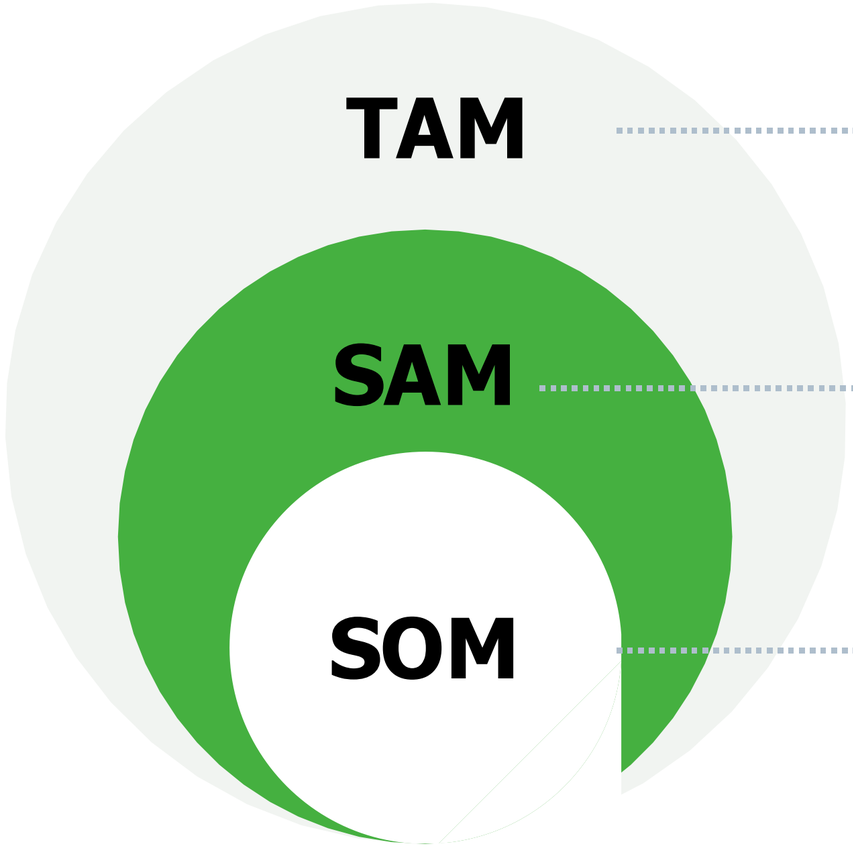
- Neutralize the discount
- Reduce 200 g CO_2e / returned bulb

GLED and Sustainable Development Goals

Each GLED Cartridge sold will save ½ kg CO_2e & 10 L water

UN SDG	GLED Impact
13	**Climate Change** : Saves 12 billion kWh of electricity, 10 billion kg of CO2 emission
12	**Responsible production and consumption:** saves 2 billion kg plastic **Circular Economy**: Exchange option reduces e-waste into landfills.
11	**Sustainable cities and Communities** by Sustainable lighting through GLED
10	**Reduce Inequalities:** Sustainable lighting public areas improves social interactions
9	**Lighting Industry, Innovation & Infrastructure:** GLED cost-effective lighting option.
8	**Sustainable Employment**: Manual non-skilled, low cost assembly units of GLED
6	**Water ecosystems**: betters by reduced requirement of over 400 billion gallon water
4	**Quality Education**: Sustainable Lighting increases physical learning environment.
3	**Healthy Lives & Well-being:** Sustainable light encourage social activities which improves mental health and stables BP, Increase work hours improving skills

Market Size

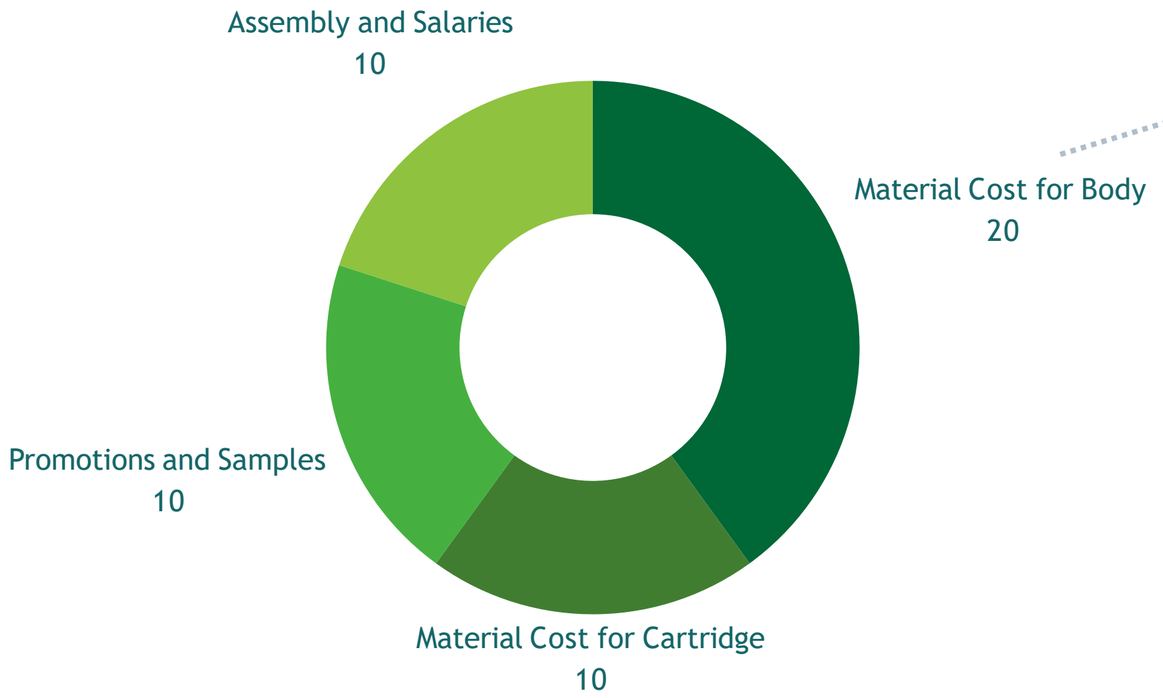


$73.1 BILLION USD
Global Light Bulb Market

$3.2 BILLION USD
Indian Light Bulb Market

$32 MILLION USD
GLED @1% market Share
(2.656 billion INR)

Cost Structure and Price Breakdown



Total Cost:

Based on the 4 cost components, this is **50 INR**.

E-commerce platform margin

At 30% on MRP, this is **30 INR**.

Target Gross Profit

The aim is to have a margin of **20 INR** after costs.

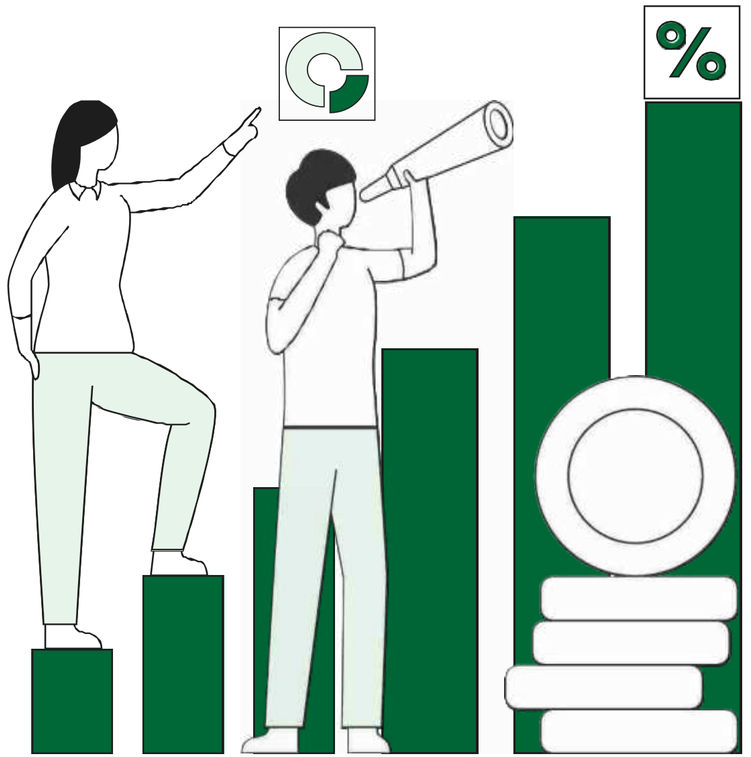
Subtotal:

50 + 10 + 20 + 20 = 100

Final Product Price (MRP) = **100 INR Only**

Target Breakeven in 12 Months

Month	Bi- Monthly Bulb Sales	Bi-Monthly Gross Profit @Rs.20	Bi- Monthly Expense over manufacturing cost (Rs)	Bi - Monthly Net Profit (Rs)
1-2	10,000	2,00,000	10,00,000	- 8,00,000
3-4	20,000	6,00.000	10,00,000	- 4,00,000
5-6	60,000	12,00,000	12,00,000	0
7-8	80,000	16,00,000	14,00,000	+2,00,000
9-10	100,000	20,00,000	16,00,000	+4,00,000
11-12	120,000	24,00,000	18,00,000	+6,00,000
1 Year	4,00,000	80,00,000	80,00,000	0



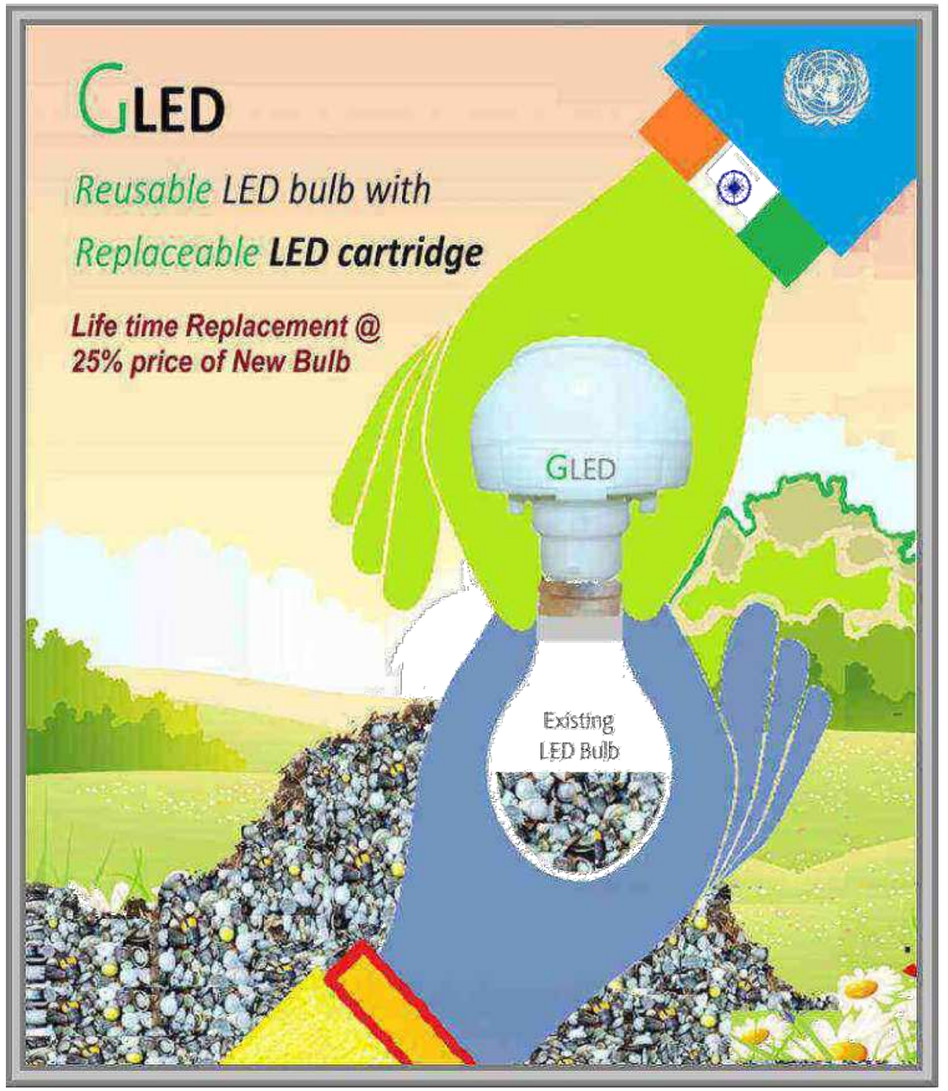
GLED Bulb

is not a product but a concept

GLED has been praised by each person who happen to see it once. We are targeting a huge market beyond our current capabilities and need support from VCs to make it happen.

Lets say no to single use LED bulb
I use GLED, will you ?

ThankYou
Shreya Chopra



References:

Carbon dioxide equivalent" or "CO2e" all greenhouse gases equivalent for global warming impact.
EBITDA, earnings before interest, taxes, depreciation, and amortization
Amortization cost of intangible assets, eg patents, software licenses, trademarks, etc
Depreciation to calculate the cost of tangible assets, buildings, machinery, inventory, equipment
1 Kg of Polycarbonate releases how much CO2e 5.5 to 6 kg
Low Global Warming Potential Polycarbonate. | HighLine Polycarbonate (highlinepc.com)
Plastic bags and plastic bottles - CO2 emissions during their lifetime - Time for Change
1 Kg of Aluminum production releases how much CO2e 16 to 6 kg
A low carbon footprint - European Aluminium (european-aluminium.eu)
Aluminum in landfill
(PDF) Aluminum Reactions and Problems in Municipal Solid Waste Landfills (researchgate.net)
Carbon Footprint of Recycled Aluminium - Climate Action
1 kg plastic in landfill produce 253 g CO2e
(PDF) Plastic waste as a fuel – CO2-neutral or not? (researchgate.net)
1 kg of PCB in land fill release CO2e 100-250 gram
Municipal waste landfill as a source of polychlorinated biphenyls releases to the environment - PMC (nih.gov)
CO2 based co-gasification of printed circuit board with high ash coal - ScienceDirect
Greenhouse Gas Emission Calculation Model of Printed Circuit Board for Power and Industry System (the second report) (jst.go.jp
Carbon Foot Print
United Nations online platform for voluntary cancellation of certified emission reductions (CERs) (climateneutralnow.org)
How to calculate carbon foot prints
How to Calculate Your Carbon Footprint: A Guide for Businesses | GBB® (greenbusinessbenchmark.com)
carbon footprint - total amount of greenhouse gases
What is your carbon footprint? | Carbon Footprint Calculator (nature.org)
1 carbon credit = 1000 kg of CO2e (1 metric ton)
[Solved] One Carbon credit is accepted equivalent to- (testbook.com)
Electricity required for polycarbonate
Decarbonisation options for the Dutch polycarbonate industry (pbl.nl)
Kilowatt-hours (kWh) and megajoules (MJ) is direct,it is given as: 1 kWh = 3.6 MJ
Water foot print , 150 to 200 liter water required for 1 kg plastic
The water footprint of plastics | RWSci (wordpress.com)
Coal based electricity 1kwh – 800g CO2e, wind and others 20 to 200g
KWH-to-CO2 (rensmart.com)

https://www.unep.org/news-and-stories/story/seeing-light-leds-power-indias-drive-household-energy-efficiency
https:/sustainablesuccessstories.org/overview-of-sustainable-success-stories/india-led-bulb-replacement/
https:/www.cencepower.com/blog-posts/led-bulbs-dont-last-as-long-as-advertised
https:/www.livecopper.co.za/blogs/knowledge-base/5-reasons-why-your-led-lights-arent-lasting-as-long-as-youd-expect?srsltid=AfmBOoqqSGKi6p3DCUe15Nz3EwaBmTqEIMBt7HXJvSVkf2dR3QrEvIkw

Consumer Behavior Towards Reusing

- **High Recycling Participation**: Around 47-60% of plastic waste is recycled, largely driven by informal recycling networks.
  - Source: CSIRO Research
- **Consumer Shift to Reusables**: The Indian government's Plastic Waste Management Rules (2016, amended 2022) encourage reducing single-use plastics in favor of reusable and recyclable products.
  - Source: CSIRO Research
- **Urban-Rural Divide**: Urban consumers, particularly in metropolitan areas, are more likely to adopt reusable products due to increased awareness and initiatives, while rural areas rely more on informal reuse systems like repairing and repurposing.
  - Source: CSIRO Research
- **Circular Economy Influence**: Indian consumers are increasingly participating in the circular economy by using recycled materials and practicing waste segregation at home.
  - Source: India CSR

As sustainability becomes a major focus for consumers, governments, and industries, the demand for eco-friendly products will grow exponentially.

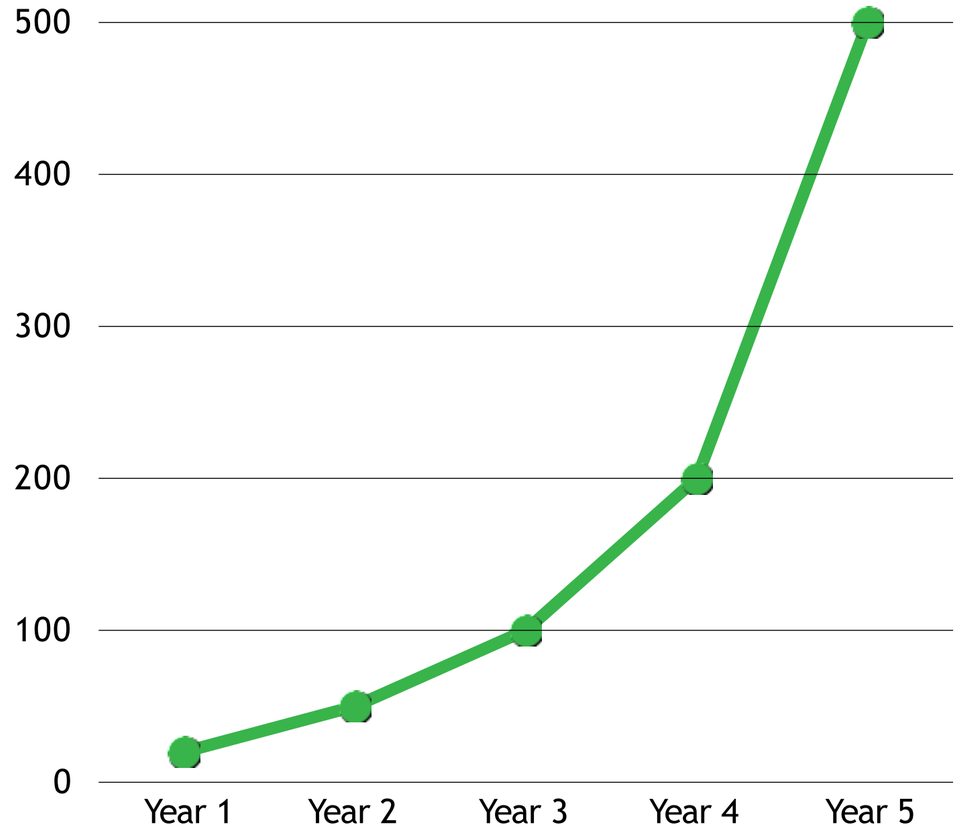
Sources:
https://www.teriin.org/article/towards-circular-plastics-economy-indias-actions-beatplasticpollution
https://research.csiro.au/circulareconomy/circular-economy-roadmap-for-reducing-plastic-waste-in-india/
https://indiacsr.in/plastics-recycling-market-to-reach-53-72-bn-by-end-2023/
https://www.csiro.au/en/news/All/News/2023/December/New-circular-economy-roadmap-reveals-how-to-reduce-plastic-waste-in-India

Financial Projection Worksheet

Year	Funding													
	Preceding Year	Spending Division			times INR40 can		GLED	Revenue	Gross Profit	Cartridge	Revenue	Gross Profit	Total	Gross	Net
					cycle in a year		Qty	60 INR	20 INR	Qty	25 INR	15 INR	Revenue	Profit	Profit
	(million)	Blub	Cartridge	Fixed	(lac)	Times	Units	(million)	(million)	Units	(million)	(million)	(million)	(million)	(million)
									33%			60%			
1	10	5	0	5	1.25	3	375000	23	8	0			23	8	0
2	10	7	3		3	3	900000	54	18	200000	5	3	59	21	5
3	20	10	5	5	5.5	3	1650000	99	33	800000	20	12	119	45	20
4	30	15	10	5	9.25	3	2775000	167	56	1200000	30	18	197	74	40
5	60	60	0	0	24.25	3	7275000	437	146	3000000	75	45	512	191	100

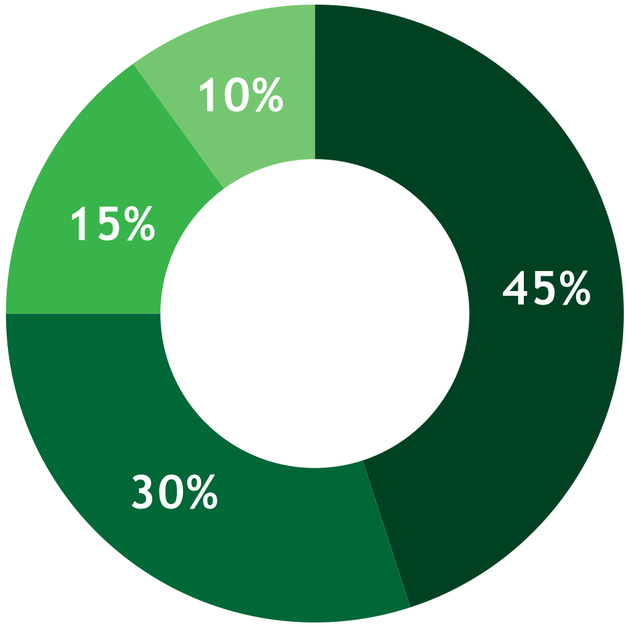
Financial Projection

YEAR	Revenue (million INR)	Funds Required Preceding year (million INR)
Year 1	20	10
Year 2	50	10
Year 3	100	20
Year 4	200	30
Year 5	500	60



The Ask

10 million INR for 10% equity



Working Capital, Salaries Misc. production expenses	Working Capital for 90 days with 1000 bulbs daily production @ INR 50 / unit
Operations Manufacturing & Equipment	Dies and Molds cost. Trials and Samples Production set up Equipment
Regulatory Compliance & Certifications and EMI	Company formation, Trade Mark, Patents, Testing, Certifications and 6 EMIs of loan
Monthly fixed and variable expenses for 6 months	Rent , Electricity , Travel , Advertisements, and Office Infrastructure