KeraLink INTERNATIONAL

Eradicating Corneal Blindness

KeraLink International's (KLI) mission is to eradicate corneal blindness by providing innovative and affordable solutions and technologies to underserved populations in low- and middle-income countries (LMICs).

WWW.KERALINK.ORG

KLI helped eradicate corneal blindness in the U.S.

Now, we're ready to help the rest of the world.

Proven Success

Our track record speaks volumes as a testament to our **expertise and effectiveness in the field.**

Global Expert Collaboration

We not only partner with industry experts but also engage **top professionals worldwide.**

Dedication to Equality

Our commitment prioritizes inclusivity and equity, **ensuring that our new technologies reach LMICs.**

Original U.S. Mission:
Complete

Eliminated waiting lists for cornea transplants nationwide.

Today We Aim To Help LMICs
Starting With India

In India, reports show an estimated 7 million people have corneal blindness in at least one eye. We want to start here.

Corneal Blindness Is a Globally Neglected Public Health Issue

Corneal blindness is **preventable, treatable, and reversible.** Nonetheless, there are at least 12.7 million people needlessly living with corneal blindness, and millions more are at risk of becoming blind.*

We can change that – with your help.

98% of people with corneal blindness live in LMICs

99% of people who need a cornea transplant in LMICs will not get one

Barriers to effective management of corneal disease and injury in LMICs include **accessibility, affordability, and reliability.**

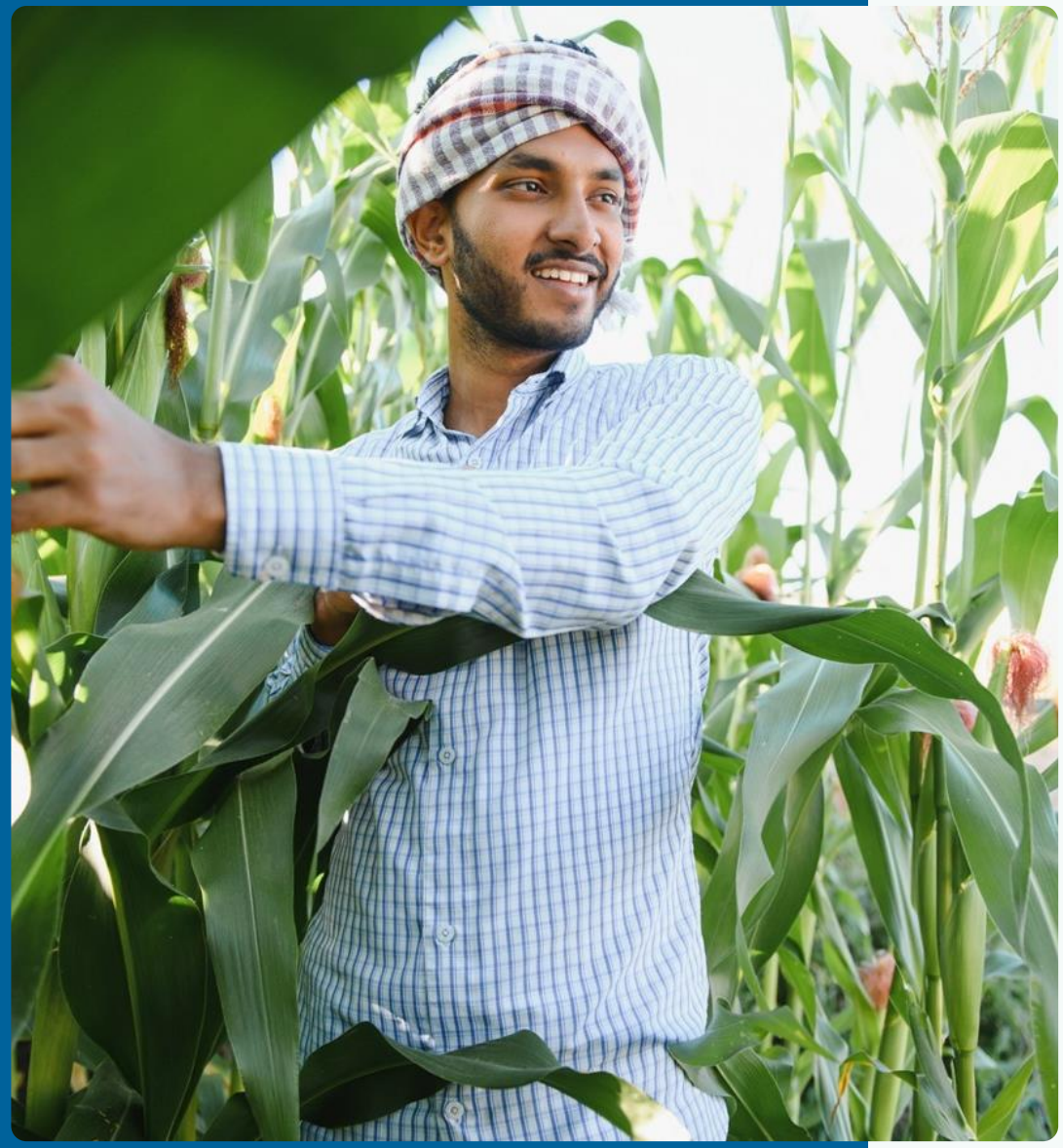
Corneal Blindness Has Far-Reaching Socio-Economic Consequences

- Reduced Quality of Life
- Increased Healthcare Costs
- Loss of Productivity
- Educational Barriers
- Gender Disparities

Achieving Sustainable Development Goals (SDGs)

The 17 SDGs are a universal call to action to end poverty, protect the planet, and ensure peace and prosperity.

KLI's work to eradicate corneal blindness will directly and measurably contribute to achieving 7 SDGs.



We Envision a World Free of Corneal Blindness

Where cutting-edge, affordable solutions reach every corner of the globe, ensuring no individual is denied the right to sight. By uniting **clinicians, technology innovators, governmental and non-governmental organizations, social entrepreneurs,** and **donors,** we aim to make this vision a reality, making comprehensive cornea care accessible and sustainable for all.

No one needs to be blind due to corneal disease or injury.

Our History & Evolution

1962

KLI was founded as the **Medical Eye Bank of Maryland**.

1980s

KLI became **Tissue Banks International** and assisted in opening 48 eye banks in 24 countries. KLI became the world's largest ocular tissue supplier.

1990s

Mission accomplished: KLI helped eliminate waiting lists for cornea transplants in the US, effectively **eradicating untreated corneal blindness in the U.S.**

2010s

KLI realized that what worked in high-income countries to eradicate corneal blindness would not work in LMICs.

2019

KLI **sold its eye banks to focus solely on harnessing the power of new and emerging technologies** to eradicate corneal blindness globally in ways not possible before.

2023

KLI launched **Pantheon Vision** to develop bioengineered corneal implants for use in LMICs and other countries to reduce reliance on human donor tissue.

2024

Today, KLI is the **only organization** bringing clinicians, technology innovators, healthcare providers, philanthropists, and investors into a coordinated, **collaborative effort to eradicate corneal blindness in LMICs.**

Corneal Blindness in India

- An estimated **7 million people** in India have corneal blindness in at least one eye.[1]
- Corneal injury, infection, and blindness **disproportionately affect the poor in rural areas.**[2]
- Corneal disease is a **leading cause of blindness among children** living in developing nations.[3]
- India reports **1.6 million new cases** of infectious corneal injuries each year.[4]
- **Farmers and laborers** face a higher risk of eye injuries.[5]

The Economic Impact

- The net loss of Gross National Income (GNI) due to blindness is estimated at **$38.4 billion (USD).**[6]
- The **per capita loss** of GNI per blind person is **$7,756 (USD).**[6]
- The potential **loss of productivity** due to vision impairment is **$29.4 billion (USD).**[6]

+100
Additional Partners

PEN Strategy

We use a collaborative three-pronged approach for holistic cornea care:

Prevention

Preventing injuries and infections that can lead to corneal blindness

Injury | **Infection**

Protective Eyewear
Far-UVC: Anti-Fungal & Antibiotic

Early Detection & Rapid Treatment

Stopping corneal conditions from advancing to visual impairment and blindness

Keratoconus | **Keratitis**

Diagnostic Devices & AI Algorithms

Novel Therapeutics

Preserving and restoring sight using novel treatments that can be priced affordably and produced sustainably

Far-UVC	**Sterile Tissue**	**Bio-engineered Implants**
Anti-Fungal & Antibiotic	Irradiated Corneal Tissue	Awaiting FDA Approval

Responsible and Innovative: Diversifying Beyond Donations

Creating diverse revenue streams and reducing our reliance on public donations is a part of our DNA.

- Launching an online eyewear line in the beginning of 2025
- Ongoing evaluation of all technologies to determine if they can be sold in high-income countries to generate revenue.

OUR NETWORK ---------> YOUR SUPPORT ---------> SOCIAL IMPACT

We seek to **discover, develop, and deploy** sustainable technology innovations to **accelerate the eradication of corneal blindness.**

1 Discover

- ✓ Top ophthalmology experts vet potential solutions for LMICs feasibility
  - KLI's Clinical Advisory Committee
  - We bring in partners from around the world specific to the technology and/or issue
- ✓ Needs full committee approval

2 Develop

- ✓ KLI's Technology and Finance Committee Specialists review the solution
  - Can we produce it affordably for LMICs?
- ✓ KLI will support the initial technology development
- ✓ Needs full board + Clinical Advisory Committee and Technology and Finance Committee approval.

3 Deploy

- ✓ KLI works with partners to deploy the technology
- ✓ Technology is made accessible and affordable for all in LMICs
- ✓ Self-sustaining solutions have potential for future income generation
- ✓ Innovative products developed for LMICs brought to market in high-income countries

Partner with Us: Sponsorship Opportunities

Optic Angel

$5,000

What's Included:

- ✓ Your name on all Corneatopia materials, video, and website plus a quarter page ad in our event journal
- ✓ Premium seating for four guests at Corneatopia and four invitations to VIP cocktail hour
- ✓ Mention in social media and monthly newsletter, The Cornea Chronicle
- ✓ Opportunities to meet with other key donors and board members

Cornea Guardian

$10,000

All Optic Angel Benefits, plus:

- ✓ Your logo on all event materials, video, and website plus a half page ad in our event journal
- ✓ Premium seating for six guests at our event, six invitations to VIP cocktail hour as well as special recognition
- ✓ Logo in social media and monthly newsletter
- ✓ A special mention in our 2024 annual report distributed to all stakeholders

20/20 Visionary

$20,000

All Cornea Guardian Benefits, plus:

- ✓ Premier logo placement and mention in all press releases plus a full page ad in our event journal
- ✓ Your 15-second video featured at event
- ✓ Premium seating for eight guests at our event and eight invitations to VIP cocktail hour
- ✓ Feature article in our newsletter
- ✓ Invitations to exclusive strategy sessions

Global Sight Leader

$50,000

All 20/20 Visionary Benefits, plus:

- ✓ Title sponsorship status and speaking opportunity at event plus back cover ad in our event journal
- ✓ Your 30-second video featured at event
- ✓ Reserved premium table for 10 guests and 10 invitations to VIP cocktail hour
- ✓ Priority access to future sponsorship opportunities
- ✓ Opportunities to participate in a one-on-one briefing with our CEO and invitation to join mission trip

Driving Success: Our Current Initiatives

01 Gamma-Irradiated Cornea Tissue

02 Bioengineered Corneal Implants

03 AI Diagnostic Algorithms for Corneal Conditions

04 Far-UVC Light Treatment

05 Protective Eyewear

Irradiated Cornea Tissue

The Problem

Most eye banks in India rely on short-term (3-4 days) and intermediate-term (14 days) storage of corneas. Donor corneas beyond 14 days cannot be utilized for transplantation. The national discard rate is 50%, and nearly 40% of retrieved corneas are non-optical grade. It is crucial for eye banks to adopt methods of very long-term corneal preservation.

- A cornea transplant can restore vision, but demand is so high that only about one in 70 patients receive one.
- The need is greatest in rural or economically developing countries, like India, where there's a shortage of corneas due to a lack of eye banks with cold storage.

Our Intervention

KLI developed a groundbreaking method of using irradiation to preserve cornea tissue, VisionGraft. The process of irradiation virtually eliminates the risk of infection while enhancing the allograft's stability and shelf life. Irradiated cornea tissue can be stored in room temperature for up to two years.

- VisionGraft is a sterile, non-immunogenic, cross-linked cornea successfully used in more than 100,000+ ocular surgeries.
- Irradiation offers additional patient safety, compared to fresh corneas, and virtually eliminates the risk of bacterial or fungal disease.

Gamma-Irradiated Cornea Tissue

Our Partners

Dr. Shroff's Charity Eye Hospital
Caring for the community since 1922...

CTSOE

CorneaGen™

Development Timeline

2024

- Train staff at an Indian eye bank to prepare tissue for gamma-irradiation.
- Support training of eye surgeons from Burundi to perform keratoplasty.
- Supply gamma-irradiated corneal tissue to surgeons trained in Burundi.

2025

- Expand the program to other eye banks in India.
- Explore expanding the program to LMICs.

Gamma-Irradiated Cornea Tissue

Sustainability

The process of irradiating cornea is not aimed at maximizing profit but rather to provide safe and effective corneal transplants to patients who might not otherwise have access to them. Gamma irradiation can preserve tissue that would otherwise have to be discarded and provide additional revenue to eye banks in LMICs.

- Gamma-irradiated cornea tissue can be used in settings where there is limited access to specialized storage facilities.
- Gamma irradiation sterilizes the corneas, making them safe from a wide range of bacterial, viral, fungal, and contaminants.
- Gamma-irradiated corneal tissue can be used in glaucoma and other ophthalmic procedures.
- Eye banks in LMICs can reduce the amount of tissue lost to spoilage using gamma irradiation.

Our Impact

- Increased Quality of Life
- Increase in Productivity
- Decreased Healthcare Costs
- Revenue Generation

Bioengineered Corneal Implants

The Problem

There are more than 12.7 million people suffering from corneal blindness whose condition could be corrected by a corneal transplant. Despite significant efforts to enhance access to sight-restoring surgery, transplantation with donor tissue is not always practical, successful, or even possible.

- For every cornea that becomes available, there are 70 people in need of a transplant.
- Lack of ties and surgeons means that over half of the global population has almost no access to corneal transplantation.

Our Intervention

KLI is formed and provided initial funding to a start-up, Pantheon Vision, to develop advanced bioengineered corneal implants to treat corneal blindness and restore vision for people worldwide. Bioengineered corneal implants can be a safer and simpler method than donor cornea transplantation while delivering equivalent outcomes.

- Pantheon Vision is an early research-stage organization developing bioengineered solutions to reduce the reliance on donor tissue to address corneal blindness.
- Bioengineered corneas are substitutes for human donor tissue designed to replace part or the full thickness of damaged or diseased corneas.

Bioengineered Corneal Implants

Our Partner

PANTHEON VISION

Pantheon Vision is a KLI-founded and funded research-stage organization developing bioengineered solutions to reduce the reliance on donor tissue to address corneal blindness.

Development Timeline

2024

- Select the best candidate product to develop
- Submit breakthrough application to FDA
- Submit premarket submission to FDA

2025

- File an investigational device exemption (IDE) with FDA
- Initiate clinical study

2026

- File global product registrations.

2027

- Enter market with first product(s)

Bioengineered Corneal Implants

Sustainability

Pantheon Vision is working with the U.S. Food and Drug Administration (FDA) to guide its product development. While Pantheon Vision's products are being developed so that they can be sold affordably and sustainably in LMICs, FDA approval of Pantheon Vision products will provide KLI with long-term investment returns that can support future innovation.

- Bioengineered corneal implants are a cost-effective alternative to human tissue as a treatment for corneal conditions.
- Bioengineered corneal implants can revolutionize the treatment of corneal conditions.
- There is a global market for bioengineered corneal implants.
- Returns on KLI's investment in Pantheon Vision can fund future innovation.

Our Impact

- Increased Quality of Life
- Increase in Productivity
- Decreased Healthcare Costs
- Revenue Generation

KLI's Distinguished Board: Leaders in Action

Pamela Hall

Board Chair
VP Marketing Enovis

Douglas Furlong, Esq

Board Vice Chair
Principal, Owner Furlong ADR

Christopher Helmrath

Founder and Managing Director
SC&H Capital

Mark Jensen, Esq

Partner, Bowie and Jensen, LLC

David Green

Chief Technology and Investment Officer,
KeraLink International

Sonya Maria Hadrigan

APRN, CIP, Associate Provost for Research Integrity and Compliance, The George Washington University

Fasika Woreta, M.D.

Director – Ophthalmology Residency Program, Associate Professor of Ophthalmology, Johns Hopkins University

Ellen Koo, M.D.

Associate Professor of Clinical Ophthalmology
Bascom Palmer Eye Institute

Roberto Pineda II, M.D.

Director of The Keratorefractive Surgery Service, Massachusetts Eye and Ear Infirmary

C. Thomas Vangness, Jr., M.D.

Dept. of Orthopedic Surgery, Professor of Orthopaedic Surgery (RET), University of Southern California,

Joined by Our Global Network

Our extensive network of **top-tier specialists are scattered across the globe** and equipped with intricate expertise.

AI Diagnostic Algorithms for Corneal Conditions

The Problem

Properly treating corneal conditions that can lead to blindness depends on rapid and accurate diagnosis. In LMICs, it is often difficult for people to travel to vision centers to see an ophthalmologist, and lab testing can be slow and unreliable.

- Infectious keratitis can lead to severe complications if not diagnosed and treated rapidly in LMICs.
- Limited access to diagnostic tools is causing the underdiagnosis of keratoconus in LMICs.

Our Intervention

KLI is developing algorithms and handheld diagnostic devices to allow minimally trained medical technicians to detect cornea abnormalities and diseases. For example, the algorithms will detect the cause of infectious keratitis (inflammation of the cornea) or early signs of keratoconus (the coning of the cornea).

- Quickly and accurately determining the cause of infectious keratitis will help ensure effective treatment in LMICs.
- Detecting and treating keratoconus early can improve quality of life and reduce the impact of the disease in LMICs.

AI Diagnostic Algorithms for Corneal Conditions

Our Partners

Dr. Shroff's Charity Eye Hospital
Caring for the community since 1922...

The Poona Blind Men's Association's
H.V. Desai Eye Hospital
EYE CARE INSTITUTE

ARAVIND
EYE CARE SYSTEM

LVPEI
So that all may see
LV Prasad Eye Institute

SADGURU
SEVA SANGH

VISILANT

OREGON
HEALTH&SCIENCE
UNIVERSITY
OHSU

Development Timeline

2024

- Continue developing and refining algorithms.
- Develop an image library to train and test algorithms.
- Identify new partners for image collection.

2025

- Complete initial Keratitis algorithm development.
- Integrate keratitis algorithm on handheld imaging device.
- Continue image collection for other corneal conditions.

2026

- Seek regulatory approval for handheld device and keratitis algorithm.
- Prepare to bring approved device to patients in LMICs.
- Continue image collection for other corneal conditions.

AI Diagnostic Algorithms for Corneal Conditions

Sustainability

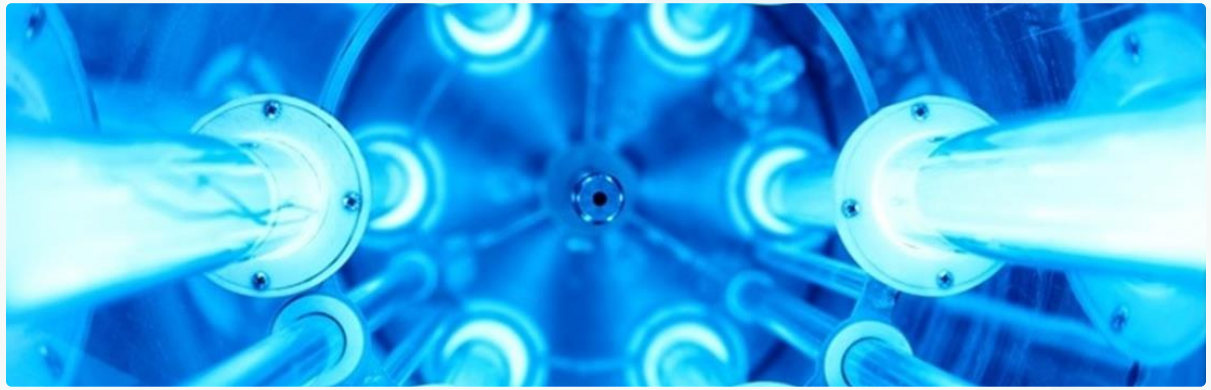
Once algorithms prove effective in diagnosing corneal conditions, KLI expects to cover the minimal cost of further development and potentially recover initial costs through license agreements. KLI also expects to generate revenue from the handheld diagnostic devices equipped with the algorithms that it will develop for market in LMICs.

- License agreements can cover Initial costs of developing algorithms and image libraries to train them are recoverable.
- There is a global market for handheld diagnostic devices equipped with AI.
- Ongoing costs of maintaining the further developing the algorithms will be minimal.
- Fees can be charged for access to the image libraries developed to train algorithms.

Our Impact

- Increased Quality of Life
- Increase in Productivity
- Decreased Healthcare Costs
- Empowering Women

Far-UVC Light Treatment



The Problem

Keratitis is a condition that causes inflammation of the cornea, the clear dome on the front of the eye that covers the pupil and iris. Keratitis may be caused by bacteria, viruses, fungi, or injury to the cornea.

- Corneal infections are a leading cause of blindness in humans and prompt medical attention is needed to avoid loss of vision.
- People in underserved areas may lack access to healthcare or may not be able to afford expensive therapeutic eyedrops.

Our Intervention

Far-UVC Light Treatment is a non-pharmaceutical antimicrobial treatment for early keratitis and corneal infection. This technology involves a non-contact 5-second treatment that emits low dose UVC light at a targeted area to kill bacteria, fungi, and viruses while not harming the host tissues.

- The device is easy-to-use and delivers simple, safe, and effective non-contact infection prevention and treatment.
- This novel treatment may also be used with conventional antibiotic drops for added security without risk or reduced effect.

Far-UVC Light Treatment

Our Partners

AUROLAB

remidio

Development Timeline

2024

- Investigate optimal far-UVC wavelengths for use
- Conduct outreach for potential cross funding
- Develop the initial prototype
- Test on bacterial, fungal, and viral keratitis
- Refine the prototype and continue testing

2025

- Conduct animal studies in GLP certified labs in India
- Initiate enrollment in human trials
- Pursue licensing opportunities with manufacturers/distributors
- Deploy affordable far-UVC treatment in LMICs

Far-UVC Light Treatment

Sustainability

The focus will be on creating affordable access to the technology in LMICs and final deployment could involve licensing with royalties to a manufacturer or distributor. The financial benefits for KLI include potential licensing revenues and equity if a spinout is formed.

- KLI can develop this simple, inexpensive technology for LMIC markets without infringing IP or violating trade secrets.
- Outreach to other far-UVC researchers may result in potential cross funding with biosecurity initiatives.
- Far-UVC treatment is a promising way to prevent and treat keratitis and reduce the need for therapeutic keratoplasty surgery.
- The device may be sold in developed countries to generate revenue and help subsize the cost in LMICs in the future.

Our Impact

- Increased Quality of Life
- Increase in Productivity
- Reduced Disease Impact
- Decreased Healthcare Costs

Protective Eyewear

The Problem

Corneal injuries can occur after incidental trauma to the cornea from plant leaves and are common among agricultural workers during harvesting season. Incidences of corneal injury and infection, particularly among young workers, are much higher in low- and moderate-income countries (LMICs).

- Demand for and access to protective eyewear is limited in LMICs., and there are many adoption hurdles to wearing safety glasses.
- Reasons include perceived lack of protection, discomfort, undesirable appearance, interference with visual acuity, slowing down the work pace, and no mandate from employers.

Our Intervention

Wearing sunglasses and protective eyewear can play a key role in the prevention of corneal injury during harvesting season. KLI is developing customizable consumer grade safety eyewear for agricultural workers in LMICs.

- KLI will partner with Shamir Lens Thailand, known for its exceptional craftmanship, to produce prescription and non-prescription glasses.
- KLI Eyewear will meet or exceed the highest available ANSI and IS safety standards and may also include blue light and UV protection.

Protective Eyewear

Our Partner

shamir

AUROLAB

HOYA

Dr. Shroff's Charity Eye Hospital
Caring for the community since 1922...

VISILANT

Development Timeline

2024

- Determine study parameters to test which strategies work best for market uptake of safety glasses
- Work with Shamir Lens Thailand to develop the KLI Eyewear brand
- Explore pilot sites for trialing safety sun wear for Indian farmers with ASPEE Agricultural Research and Development Foundation
- Implement awareness and prevention initiatives
- Explore potential synergies with ongoing work with Aurolab Optical, Hoya, Schroff's and Visilant vision screening proposals

2025

- Develop and launch an online optical store for sales in the U.S.
- Create a cause-based marketing strategy to generate awareness and revenue for KLI

Protective Eyewear

Sustainability

KLI's partnership with Shamir will minimize the start-up costs of launching KLI Eyewear. Shamir's global network of partners in the optical industry will allow KLI to source high-quality, ideally eco-friendly eyewear at wholesale prices in line with those of name-brand lines.

- There will be no initial inventory costs if KLI markets existing frame designs.
- Consumers can round up their purchases by making tax-deductible contributions to KLI.
- KLI will use digital direct response marketing to find its initial customer base.
- KLI will explore potential for revenue generation via more traditional optical sale models.

Our Impact

- Increased Quality of Life
- Increase in Productivity
- Fewer Corneal Injuries & Infections
- Reduced Incidence of Corneal Blindness