YI IDS 4- GREENOVATION CHALLENGE PHASE SHARE SUBMISSION

TITLE: CoolEarth A Holistic Approach to Sustainable Urban Cooling

BY: TEAM PHOENIX !

Challenge: Low cost cooling solutions for warming cities !

ISSUE TO BE RESOLVED:

- **PRODUCTION OF TOXICANTS AND CARBON COMPOUNDS**
  - Environmental and Health Concerns Via (HCFCs) and chlorofluorocarbons (CFCs)

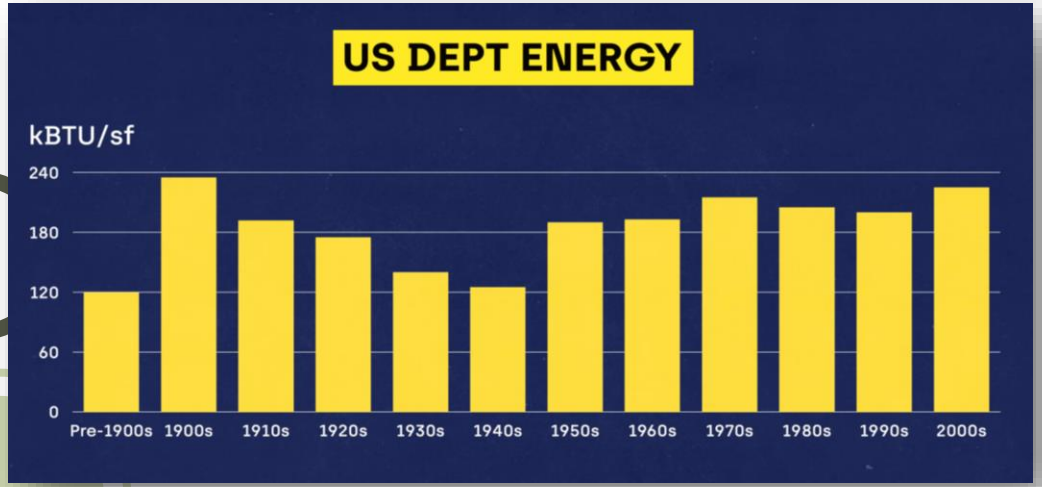
- **EXTREME POWER AND LOAD CONSUMPTION**
  - Increased power use leads to higher electricity bills and strains on servers, networks, and power grids.

- **GLOBAL WARMING AND TEMPRATURE RISING**
  - The environmental damage caused by increased production cannot be easily mitigated, leading to significant carbon footprints.

- **INCREASING COSTS AND LIMITED AVAILABILITY**
  - Air conditioning and other cooling devices are becoming more expensive to use, especially in urban areas.

- **INCREASED DEMAND OF INDIVIDUAL CHILLERS AND ACs**
  - High demand for cooling devices results in shortages, prompting increased production and carbon emissions.

- **EXCESSIVE USAGE REQUIRES MORE MAINTENANCE**
  - Frequent usage necessitate excessive maintenance, exacerbating system reliability issues.



Facts are collected from different research papers, news, data on internet, and market

Presenting CoolEarth For Sustainable Cooling.

CoolEarth An urban cooling solution using subterranean pipes for energy-efficient cooling, inspired by ancient Indian methods. Supports carbon neutrality goals and local economies with sustainable materials and expertise.

Objectives:

- Reduces energy consumption and associated costs while utilizing natural materials for evaporative cooling.
- Minimizes carbon emissions and environmental impact, providing a scalable solution for urban areas.
- Easily integrated into existing structures without significant technical expertise required, and can be outsourced effortlessly.
- Manufactured with durable materials, requiring minimal additional application and maintenance, and can be utilized with obsolete technologies for extended periods across various environments with little modification needed.

DEVICES	CARBON EMMITION	TEMPRATURE
Cool Earth	0.01 Gm/day	20-40% drop constant and significant

Facts are collected from different research papers, news, data on internet, and market research etc

Feature Of Sustainable Cooling System.

Design Aesthetics

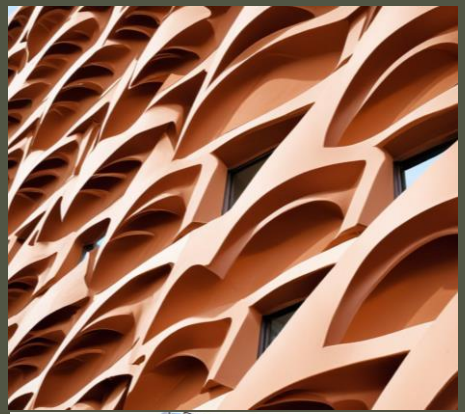
Giving Structure Modern design with stunning looks.

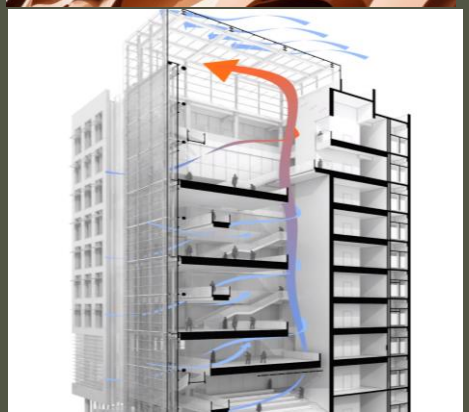
Cost-effective

Lower operational costs by reducing energy use.

Easy Availability

Straightforward and designed to be easily transported and manufactured anywhere.





Easy Integration

Designed to work with existing structures without major modifications.

Targeted User

Both commercial and residential buildings in metropolitan areas.

Upgradability

Can be enhanced with further research and market opportunities.

COOLEARTH's BREAKDOWN DETAILS

SUB PARTS	WORKING OBJECTIVE	ELECTRICITY CONSUMPTIONS	WORKING COST	CARBON EMMITION	TEMPRATURE REDUCTION
LETTERITE LOUVERS	Louvres improve cooling by increasing airflow and evaporation, while cool water flows inside to regulate basic ventilation and cooling.	N/A	N/A	0.01 Gm Per Day	20-40% drop constantly and significantly for longer period
GEOTHERMAL COOLING	Uses the earth's consistent subsurface temperature to efficiently cool buildings via a network of subterranean pipes and heat exchange fluids.	4-6 UNITS/DAY	Rs.60-80/DAY		
PHASE CHANGING MATERIAL (PCM)	Absorbs heat during the day, transitioning from solid to liquid, and releases stored heat at night by returning to the solid state, thereby maintaining temperature equilibrium.	N/A	N/A		
DESIGN AND ARCHITECTURE	Buildings and spaces are constructed to allow hot air to escape and cold air to enter through louvres, therefore optimising ventilation and improving indoor cooling effectiveness.	N/A	N/A		

Key Points:

1. Utilizes natural elements for cooling, reducing reliance on energy-intensive systems.
2. Operates efficiently with minimal environmental impact, leveraging subsurface temperature and natural winds.
3. Promotes sustainability through local materials, contributing to India's carbon neutrality goal.

THE YEARLY SAVINGS OF 1 ACARE SPACE INTEGRATED WITH COOLEARTH

SAVE UPTO 20000Kw energy/year

SAVE UPTO 204280ℓ water/year

SAVE UPTO 70-80% of bill

LIFE CYCLE UPTO 100 Years

Can Reduce Temperature :

From: 30-27°C (avg in bpl)

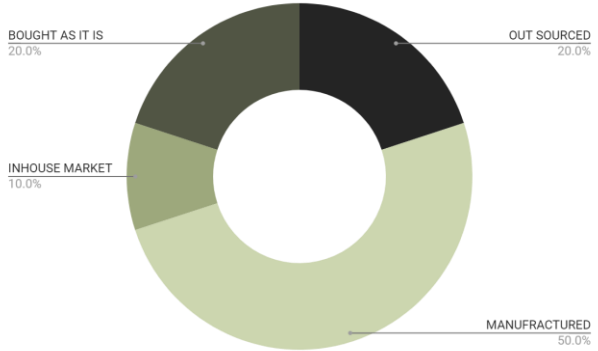
To: 20-24°C (Constantly)

Facts are collected from different research papers, news, data on internet, and market research etc

THE MATERIAL SPLIT AND OUTSOURCING

MANUFRACTURING
Most Of The Material Is Made In House, Made In India On Order And Customized Accordingly

OUTSOURCING
20% Of Materials Are Either Patented Or Manufactured By Other Companies.



OUTSOURCED
PRESSURE PUMP

INHOUSE/ONORDER
GRID/WEB OF PIPES

INHOUSE/ONORDER
INSULATING PIPES

GEOTHERMAL SYSTEM

OUTSOURCED
PHASE CHANING MATERAL SHEETS

PCM SHEETS AND MATERIAL

INHOUSE/ONORDER
HOLLOW/NORMAL LOUVERS

LATERITE CLAY LOUVERS

INHOUSE/ONORDER
METAL FRAME AND CONNECTOR

INHOUSE/ONORDER
INSULATOR PIPES

WORKING SYSTEM

Facts are collected from different research papers, news, data on internet, and market research etc

MARKET SIZE OVERVIEW

Expected Market Growth

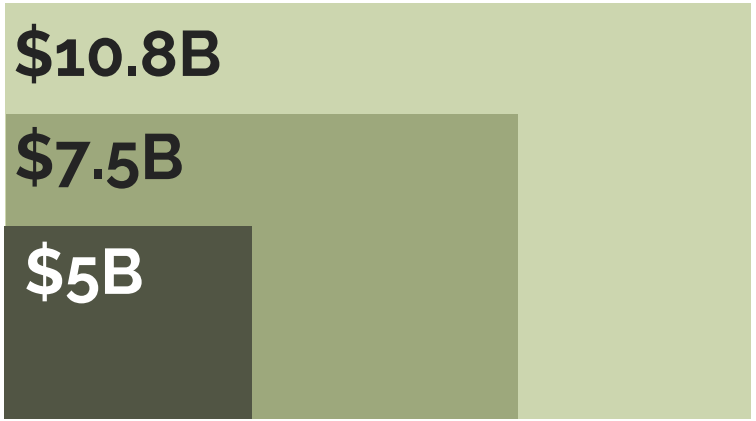
Include the overall market size, which reflects the complete possible client base for the product or service.
For the next 3–5 years.

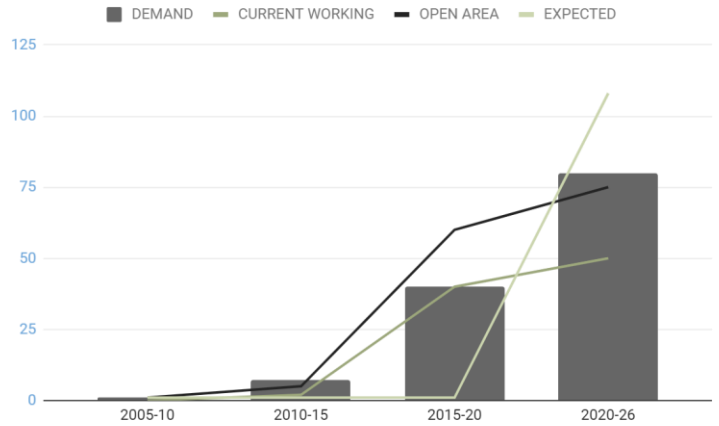
Ready To Enter Market

Determine the target market for the product or service, which may be a subset of the larger market. This is based on demographics, location, or special needs and may be caught if accomplished correctly.

Currently Fulfilled Market

Indicates the current market size, which is the proportion of fulfilled demand in the target market that the companies has effectively acquired.





Facts are collected from different research papers, news, data on internet, and market research etc

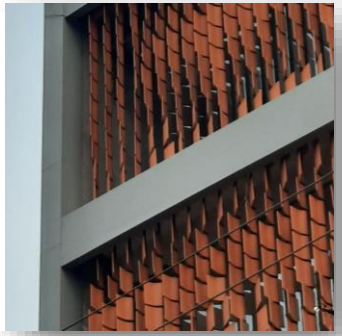
COMPETITION COMPARISON

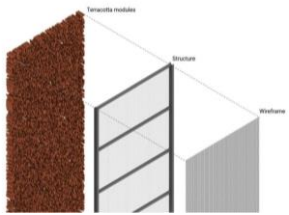
	BASED	PRODUCT	PRICINGS	OPERATIONAL IN INDIA	IMPACT ON ENVAROMENT	RELIABILITY
Urban Cooling	FARMING	ROOF TOP PLANTS AND DESIGNS	Rs.2,50,000+	YES	LOW	10%-30%
ENGIE	SOLAR & WIND	SOLAR FARMING AND WIND PROJECTS	Rs. 1,70,000+	NO	MODERATE	50-60%
The Urban Greening	FARMING	GREEN FARMING ON SURFACES OF BUILDING	Rs. 2,55,000+	NO	MODERATE	10%-30%
Cooling ToolBox	SHADES AND COMPRESERS	CUSTOMIZE SHADES AND SHAPE DEVLOPMENT	Rs. 1,70,000+	NO	LOW	30%-50%
AWLV	SOLAR, SHADES & VENTILATION	SOLAR SHADES, VENTILATION DESIGNS	Rs. 2,00,000+	YES	MODERATE	40%-60%
CoolEarth	Geothermal, PCM, louvers, designing	COMBINATION OF THREE SEPARATE APPROACHES TO EFFECTIVELY COOL THE SURROUNDINGS OF THE FITTED SPACE.	Rs. 1,00,000+	YES	VERY LOW	90-95%
GIBSS	GEO COOLING	GEOTHERMAL COOLING	Rs. 5,00,000+	YES	MODERATE	75%-95%

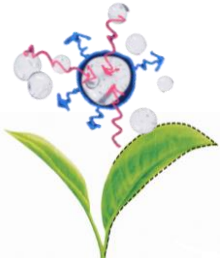
Facts are collected from different research papers, news, data on internet, and market research etc

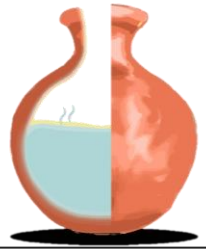
MAIN ELEMENTS AND RELATED PICTURE

TERRACOTTA & LATERITE LOUVERS

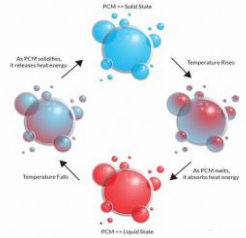


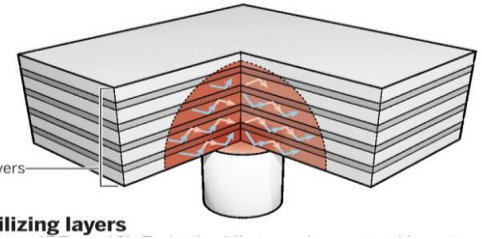




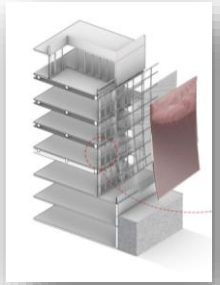


PCM SHEETS AND MATERIAL

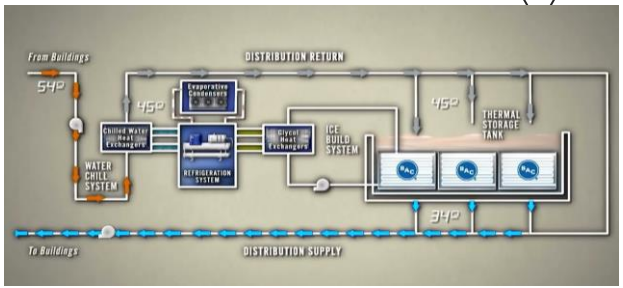


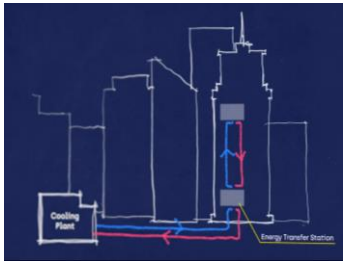


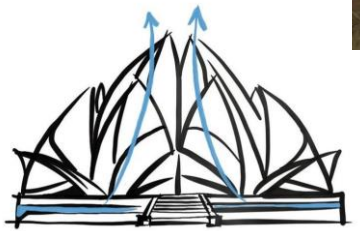
DESIGN AND ARCHITECTURE

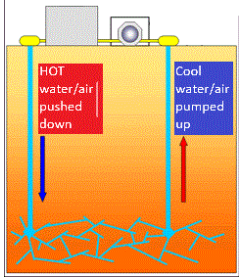


GEOTHERMAL COOLING









Facts are collected from different research papers, news, data on internet, and market research etc

IMPLEMENTATION PROCESS

Assembling The Pre-designed System Components On-site As Needed

Integrating The Components And Positioning Them According To The Structure

Testing The Combined Operation And Airflow, And Checking For Errors

Finally Evaluating The Potential Performance And Energy Efficiency Of The Setup

1. Assessment and Planning

- Conduct a thorough assessment of the building's current cooling system and structure.
- Develop a detailed implementation plan tailored to the specific needs of the building.

2. Material Procurement

- Source high-quality, sustainable materials, including geothermal pipes and heat exchange substances.
- Ensure all materials meet the necessary environmental and safety standards.

3. Integration with Existing Systems

- Seamlessly integrate the new cooling system with the existing infrastructure.
- Minimize disruptions by coordinating with skilled workers for installation.

4. Installation and Setup

- Install the geothermal cooling pipes and heat exchange system with professional supervision.
- Ensure proper setup and connection to existing HVAC systems.

5. Installation and Setup

- Conduct comprehensive testing to ensure the system operates efficiently.
- Calibrate the system to optimize performance and energy efficiency.

6. Ongoing Maintenance and Support

- Provide ongoing maintenance to ensure long-term functionality.
- Offer support and training to building management for effective system operation.

FEEDBACKS AND OUR TEAM

The solution is pretty good and energy efficient it also works every time in regard of electricity - Parth

The design is simple and the idea is taken from our own desi jugaad was best part - Kritika

the whole system together is very elegant and seemlessly science and idea was perfectly aligned - Anushka

The idea of transpiration was so scientific and energy saver all nice product - Santosh

The geothermal system which produce minimal carbon emission in atmosphere is best - Yuvraj

The idea and design was best the long tearm usage and longger life was soo good and replace ACs - Aniket

Lakshya Khare(lead)

Team lead Lakshya oversees all aspects of our project during this phase. His leadership and vision drive our progress. With a keen eye for detail, he ensures that every piece falls into place seamlessly.

TO GET CONNECTED DROP A MESSAGE ON:

MAIL: lakshyakhare226@gmail.com

PORTFOLIO: https://lakshya-khare.github.io/Portfolio/

LINKEDIN: www.linkedin.com/in/lakshyakhare

Janvi Jain:

Information compiler and coordinator, essential for organizing and coordinating team efforts, serving as the backbone of operations.

Bivek Kumar Sharma:

Research specialist and team glue, unmatched in research skills, diving deep into data to uncover insights that guide decisions and ensuring smooth collaboration within the team.

Inshu Jat:

Solution and prototype architect, renowned for analytical mind and problem-solving skills, bridging the gap between theory and practical implementation through elegant solutions and prototypes.

Mayuri Bodade:

Prototyping wizard, known for expertise in building prototypes, turning concepts into tangible designs with coding prowess and creativity.

THANKS!

This presentation is a part of the pitch submission for the IDS 4-Greenovation Challenge, which is being prepared and submitted by the first year CSE DS Branch students of TEAM PHOENIX from LNCT Group of Colleges in Bhopal.

Part Of Ending Cover Please Do Not Include This In Pitch