THE SIRIMB A SCHOOL AND ENERGY HUB MODEL

A SUSTAINABLE APPROACH TO EDUCATION, ENERGY, AND COMMUNITY DEVELOPMENT

BY KARIBU KWETU SOLAR TRADING LTD

www.solarkwetu.org

1. INTRODUCTION

"TRANSFORMING EDUCATION AND ENERGY IN NAMIBIA"

A SUSTAINABLE APPROACH TO EDUCATION, ENERGY, AND COMMUNITY DEVELOPMENT

The Sirimba School and Energy Hub Model Project Abstract:

- This proposal outlines the establishment of a hybrid-style school in Ovitoto, Namibia, aiming to provide high-quality education to 2000 children.
- The school will be a collaborative effort between foreign and Namibian teachers, combining international educational practices with local expertise.
- The operational costs will be financed through the sale of electricity generated by a **40 MWh** solar power plant, complemented by a **10 MW/50 MWh** battery storage system.
- **School Infrastructure:**
  The school will feature state-of-the-art facilities, including modern classrooms, libraries, computer labs, greenhouses, sports fields, and recreational areas. The design will reflect both global educational standards and local Namibian culture.
- **Teachers and Staff:**
  The faculty will consist of highly qualified teachers from various countries and Namibian educators, fostering cultural exchange and a holistic educational approach.
- **Solar Plant:**
  A **40 MWh** solar power plant with a **10 MW/50 MWh** battery storage system will be implemented in Okonjira, Namibia. This sustainable energy solution will address electricity demand and bring social, economic, and environmental benefits to the region.

2. PROJECT OVERVIEW

"TRANSFORMING EDUCATION AND ENERGY IN NAMIBIA"

A SUSTAINABLE APPROACH TO EDUCATION, ENERGY, AND COMMUNITY DEVELOPMENT

Project Name:
Sirimba School and Energy Hub Model
Location:
Ovitoto, Namibia

Project Type:
Integrated Education and Renewable Energy Initiative

Key Components:

1. **Educational Facilities** – Modern learning spaces equipped with digital and scientific tools.
2. **Solar Energy Hub** – A **40 MWh with 10 MW/50 MWh battery storage** solar plant to generate revenue and power the school.
3. **Sustainable Agriculture** – Aquaponic greenhouses producing food for students and the community.
4. **Healthcare Center** – On-site medical support for students and residents.
5. **Community Engagement** – Multi-purpose facilities for skills training and local development.

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3. OBJECTIVES

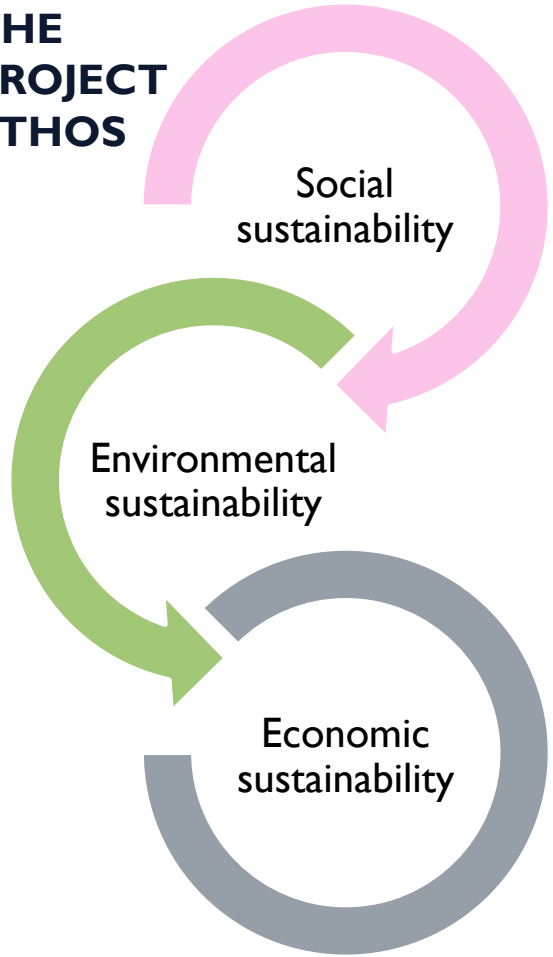
"WHAT IS THE SIRIMBA SCHOOL AND ENERGY HUB?"

A SELF-SUSTAINING MODEL FOR EDUCATION FUNDED BY RENEWABLE ENERGY

Objectives

1. Provide free education to approximately 2,000 children.
2. Create a hybrid school encompassing a learning center, health center, and community-centric facilities.
3. Establish an energy hub to fund school operations.
4. Promote sustainable practices (environmental, social, and economic) locally and nationally.
5. Mitigate energy shortfalls in the region.
6. Transform education in Ovitoto

THE PROJECT ETHOS



Sustainability is built on three interconnected pillars: social, economic, and environmental sustainability.

- **Social sustainability** focuses on improving quality of life through education, healthcare, equity, and strong community networks, ensuring inclusive participation and long-term well-being.
- **Economic sustainability** emphasizes financial resilience, job creation, and responsible resource management, enabling stable growth without compromising future needs.
- **Environmental sustainability** aims to protect natural ecosystems, reduce carbon footprints, and promote renewable energy, ensuring a balanced coexistence between human development and nature.

Together, these three dimensions create a holistic and self-sustaining model for long-term progress and resilience.

4. SCHOOL INFRASTRUCTURE AND DESIGN

"INNOVATIVE AND INCLUSIVE LEARNING SPACES"

FACILITIES FOR MODERN EDUCATION AND COMMUNITY ENGAGEMENT

The Proposal: KJ Kapeua Combined School and Energy Hub

Functions and Functionality:

- Usable by all, including differently-abled individuals.
- Simple and comprehensible layouts.
- Flexible and adaptable spaces.
- Proper thermal comfort and security.
- Foster a fully inclusive and cohesive community.
- Achieve social capital and value for money.

The Sirimba School and Energy Hub Model is a ***hybrid approach that integrates education, renewable energy, economic empowerment, and environmental sustainability into a self-sufficient ecosystem.*** Instead of addressing a single issue, it takes a multifaceted approach to solving multiple challenges simultaneously, creating a scalable and sustainable impact.

Energy HUB

- A Learning Centre
- A Healthcare Centre
- A Community Centre

4A. SCHOOL INFRASTRUCTURE AND DESIGN:THE LEARNING CENTRE

"INNOVATIVE AND INCLUSIVE LEARNING SPACES"

FACILITIES FOR MODERN EDUCATION AND COMMUNITY ENGAGEMENT

Energy HUB

- A Learning Centre
- A Healthcare Centre
- A Community Centre

Administration Block

- Office block
- Classes *1:25 student teacher ratio*
- Resource centre
- Science Laboratories
- Tech Laboratories
- Storage
- Sports facilities (swimming pool, fields etc)

Accommodation

- Teachers and trainers accommodation
- 1000 Pax student accommodation
- Support facilities i.e. laundry, storage, study rooms etc.

Agricultural Facilities

- Greenhouses
- Animal husbandry
- Beekeeping
- Other

4B. SCHOOL INFRASTRUCTURE AND DESIGN:THE HEALTH CENTRE

"INNOVATIVE AND INCLUSIVE LEARNING SPACES"

FACILITIES FOR MODERN EDUCATION AND COMMUNITY ENGAGEMENT

Energy HUB

- A Learning Centre
- A Healthcare Centre
- A Community Centre

Thearapy and Treatment rooms

- Occupation therapy
- Speech therapy
- Physical therapy
- Multi sensory room
- Development Classes
- Toilets
- Sensory Gardens

Medical Support Spaces

- Assessment areas
- Consultation rooms
- Family areas
- Multi purpose Hall
- Parent Resource center
- Counselling rooms
- Toilets
- Courtyards

Administrative Spaces

- Office spaces
- Staff break areas
- Storage
- Training Hall
- Toilets
- Staff outdoor spaces
- Conference Rooms
- Reception areas

4C. SCHOOL INFRASTRUCTURE AND DESIGN:THE COMMUNITY CENTRE

"INNOVATIVE AND INCLUSIVE LEARNING SPACES"

FACILITIES FOR MODERN EDUCATION AND COMMUNITY ENGAGEMENT

Energy HUB

- A Learning Centre
- A Healthcare Centre
- A Community Centre

Vocational Training Centre

- Multipurpose hall
- Adult resource centre
- Storage spaces
- Vocational training classrooms

Recreational Spaces

- Sports facilities
- Restaurant with supporting kitchen areas
- Amphitheatre for performing arts
- Daycare
- Cultural centre
- Shops/Minimart
- Cultural centre

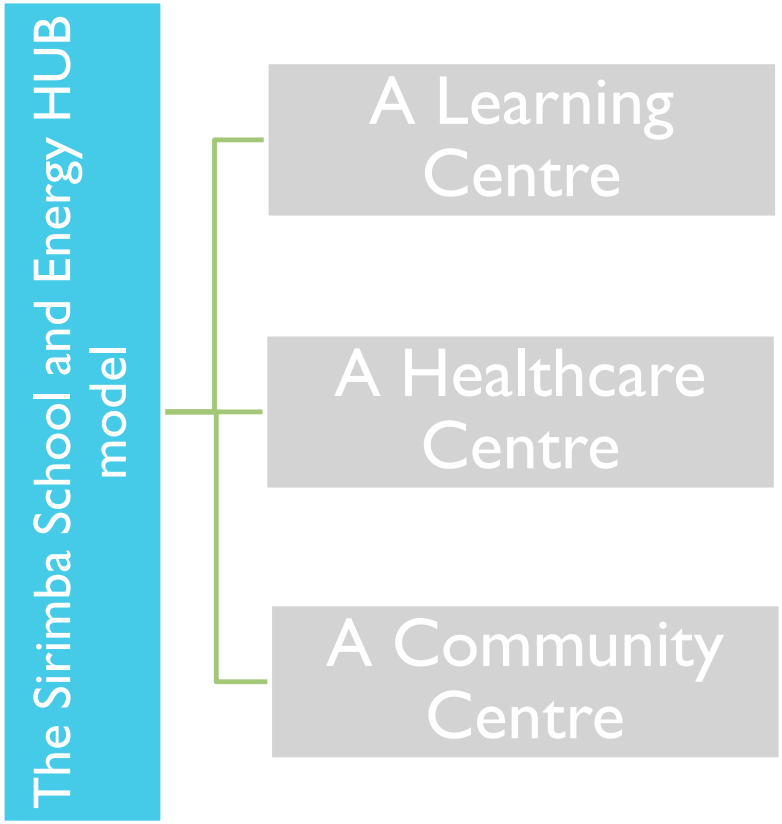
Community Agriculture

- Renewable Energy demonstration lab
- Urban farming labs

4C. SCHOOL INFRASTRUCTURE COSTS

"INNOVATIVE AND INCLUSIVE LEARNING SPACES"

FACILITIES FOR MODERN EDUCATION AND COMMUNITY ENGAGEMENT



Assumed Construction Costs and Area Needed:

Facility	Cost (Mio €)	Area (m²)
School	30	16,000
Teacher Housing	16	4,100
Kitchen & Dining Hall	10	4,000
Boarding Home	20	12,000
Sports Facilities	8	8,000
Swimming Pool	4	2,000
Greenhouses	20	30,000
Total	**108**	**76,100**

5. SOLAR POWER PLANT FINANCIAL MODEL

"HOW THE SOLAR POWER PLANT SUSTAINS THE SIRIMBA SCHOOL'S OBJECTIVES"

SUSTAINABLE ENERGY FOR EDUCATION AND COMMUNITY GROWTH

The **40 MW solar power plant with 10 MW/50 MWh battery storage** is the financial backbone of the Sirimba School and Energy Hub Model, ensuring long-term ***financial sustainability, educational accessibility, and community empowerment***.

Revenue generation through Power Purchase Agreements to suitable off takers ensuring a long term stable source of revenue

The revenue from the PPA's cover the core operational costs of running the Sirimba School and Energy HUB

This further reinforces sustainability (economic, environmental and social) through energy efficiency. A battery storage ensures continuous supply. Excess energy is stored or sold.

The revenue further invests in wholesome education for children and adult vocational training while also providing early and adult healthcare ensuring community empowerment.

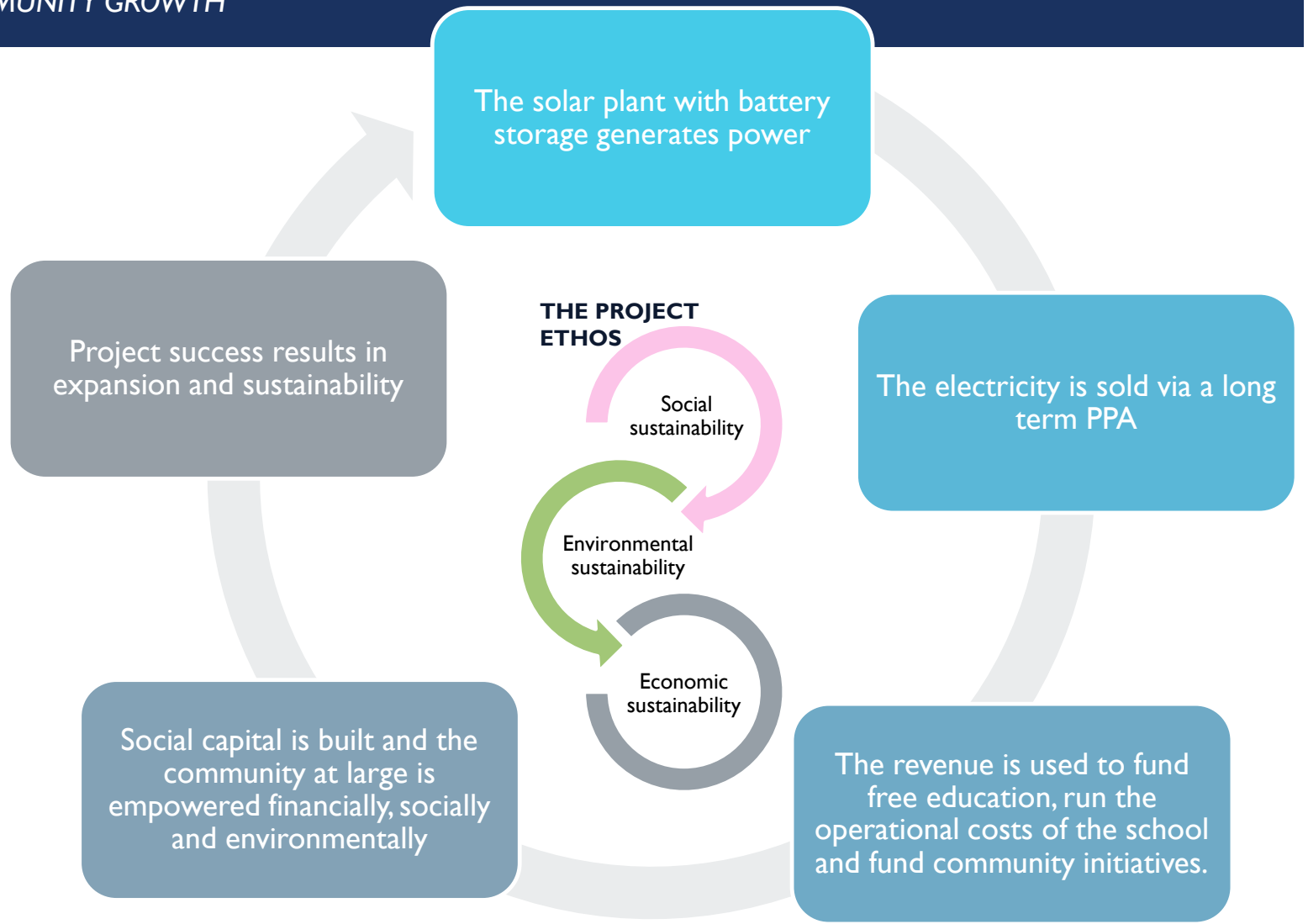
Profits can be reinvested to build additional schools, expand vocational training and establish more community-based initiatives. The project's success provides a blueprint for other schools in Namibia and across Africa.

5. SOLAR POWER PLANT FINANCIAL MODEL

"HOW THE SOLAR POWER PLANT SUSTAINS THE SIRIMBA SCHOOL'S OBJECTIVES"

SUSTAINABLE ENERGY FOR EDUCATION AND COMMUNITY GROWTH

Unlike traditional funding models that rely on donations or government subsidies, this initiative ***creates a self-sustaining revenue stream*** through the sale of electricity, securing consistent funding for the school's operations.



Aquaponic Farming:
- Reducing Water Usage
- Nutrient Recycling
- Providing a Year-Round Food Supply:

Greenhouse Operations: .
- Water Pumping Systems
- Artificial Lighting for Crops
- Food Processing and Storage:

How the solar plant Supports sustainable agriculture

result

Economic and Social Impact on Food Security
The solar plant's energy support for agriculture brings multiple economic and social benefits:
- School Meals & Nutrition: The greenhouses provide fresh vegetables, herbs, and fish to the school cafeteria, ensuring students have access to nutritious meals.
- Community Food Supply: Surplus food production from the greenhouses can be sold or distributed to nearby communities, improving local food security.
- Job Creation: Local farmers and community members will receive training in solar-powered farming techniques, creating new employment opportunities.

Climate Resilience and Sustainability
- Drought Resistance: Namibia faces severe droughts; solar-powered aquaponics offers a low-water solution for consistent food production.
- Reduced Carbon Footprint: The use of solar energy eliminates reliance on fossil fuels, making agricultural operations more sustainable.
- Education and Innovation: The school can serve as a learning hub for students and farmers to explore modern agricultural practices, integrating solar energy with food production.

Efficient and Well-Managed School Infrastructure

- Reliable power supply for administration, security, healthcare and student services
- Improved student welfare with solar-powered dormitories, cafeterias, and healthcare facilities
- Sustainable water management with solar-powered water pumps for sanitation and agriculture

result

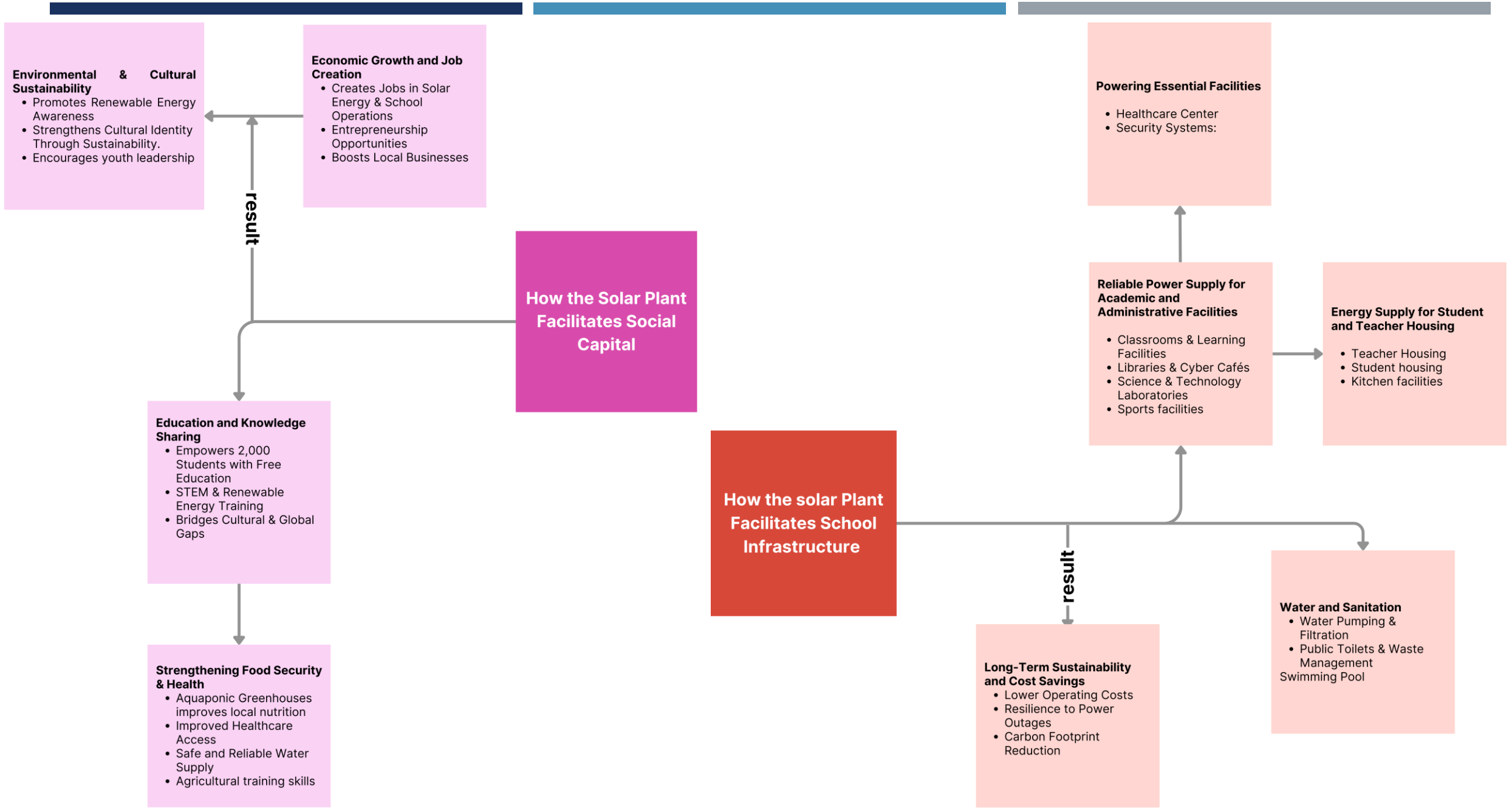
How the Solar Plant Facilitates School Operations at the Sirimba School and Energy Hub

Financial Sustainability for Operational Costs

- Teacher and Staff Salaries
- Student Meals and Nutrition Programs
- Facility Maintenance & Repairs
- School Supplies and Learning Materials

Powering Daily Academic Operations

- Classroom Activities and digital learning tools.
- Powers science & Technology Labs
- Provides vocational Training


Environmental & Cultural Sustainability
• Promotes Renewable Energy Awareness
• Strengthens Cultural Identity Through Sustainability.
• Encourages youth leadership
Economic Growth and Job Creation
• Creates Jobs in Solar Energy & School Operations
• Entrepreneurship Opportunities
• Boosts Local Businesses
result
How the Solar Plant Facilitates Social Capital
Education and Knowledge Sharing
• Empowers 2,000 Students with Free Education
• STEM & Renewable Energy Training
• Bridges Cultural & Global Gaps
Strengthening Food Security & Health
• Aquaponic Greenhouses improves local nutrition
• Improved Healthcare Access
• Safe and Reliable Water Supply
• Agricultural training skills
Powering Essential Facilities
• Healthcare Center
• Security Systems:
Reliable Power Supply for Academic and Administrative Facilities
• Classrooms & Learning Facilities
• Libraries & Cyber Cafés
• Science & Technology Laboratories
• Sports facilities
Energy Supply for Student and Teacher Housing
• Teacher Housing
• Student housing
• Kitchen facilities
How the solar Plant Facilitates School Infrastructure
result
Long-Term Sustainability and Cost Savings
• Lower Operating Costs
• Resilience to Power Outages
• Carbon Footprint Reduction
Water and Sanitation
• Water Pumping & Filtration
• Public Toilets & Waste Management
Swimming Pool

5. SOLAR POWER PLANT

"THE FINANCIAL MODEL: HOW THE SOLAR POWER PLANT SUSTAINS THE SIRIMBA SCHOOL'S OBJECTIVES"

SUSTAINABLE ENERGY FOR EDUCATION AND COMMUNITY GROWTH

- The solar power plant transforms Sirimba School into a financially independent, energy-secure, and socially impactful institution.
- By leveraging renewable energy as a funding mechanism, the project not only ensures long-term financial sustainability but also drives economic empowerment, food security, and educational excellence.
- This innovative model bridges the gap between **energy and education,** creating a lasting impact for future generations.

6. THE CONTROL AND MANAGEMENT OF THE SCHOOL AND POWER PLANT

"GOVERNANCE AND SUSTAINABILITY: MANAGING THE SCHOOL AND SOLAR POWER PLANT"

INTEGRATING EDUCATION AND RENEWABLE ENERGY MANAGEMENT

School Management:

- The school will be governed by a **Board of Trustees**, which will oversee its operations, financial management, and strategic direction.
- The Board will consist of representatives from the local community, educational experts, and stakeholders from the energy sector. They will appoint the principle and Operational Manager of the power plant.
- Day-to-day operations will be managed by a **School Principal**, supported by a team of administrative staff and department heads.
- The school will implement a **participatory management approach**, involving teachers, parents, and students in decision-making processes to ensure inclusivity and community ownership.

Power Plant Management:

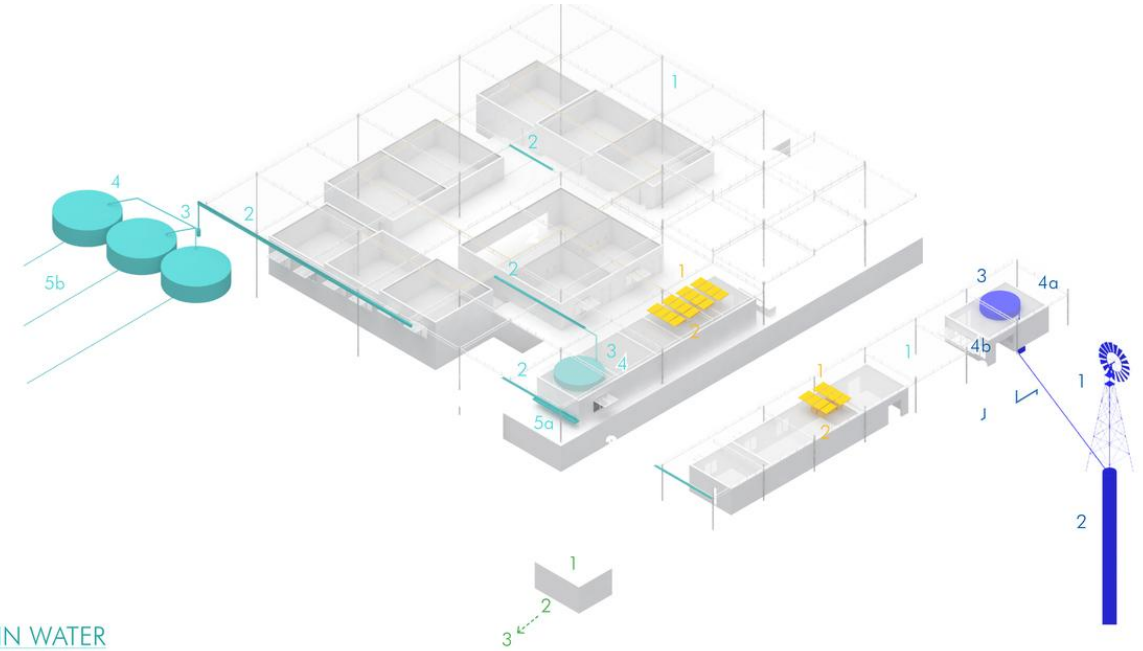
- The solar power plant will be managed by a **dedicated energy management team**, responsible for the operation, maintenance, and optimization of the solar plant and battery storage system.
- The energy team will work closely with **NamPower**, Namibia's national power utility, to ensure the smooth integration of the solar plant into the national grid.
- A **Power Purchase Agreement (PPA)** will be established with NamPower, ensuring a steady revenue stream from the sale of electricity to fund the school's operations.
- The energy hub will also provide training opportunities for local community members in renewable energy technologies, creating jobs and fostering skills development.

7. CASE STUDY

"SUCCESS STORIES IN SUSTAINABLE EDUCATION AND ENERGY"

INSIGHTS FROM THE MWABWINDO SCHOOL AND OTHER INITIATIVES

- The **Mwabwindo School**, designed by **Selldorf Architects**, is a primary educational facility located in rural southern Zambia. Developed by the **14+ Foundation**, a non-profit organization dedicated to enhancing educational access in rural African communities, the school addresses the significant challenge of long travel distances that impede quality education for local children.
- Architecturally, the school's design draws inspiration fr the solitary trees dotting the Central African Plateau's savanna, which naturally serve as communal gathering spots offering respite from the sun.
- This concept is realized through a large, corrugated m roof canopy that shelters a series of compressed earth brick classrooms arranged around courtyards and an internal walkway. The facility accommodates 200 stude and includes housing for eight teachers, a community vegetable garden, and playing fields.



7. CASE STUDY

"SUCCESS STORIES IN SUSTAINABLE EDUCATION AND ENERGY"

INSIGHTS FROM THE MWABWINDO SCHOOL AND OTHER INITIATIVES

- Sustainability is a cornerstone of the Mwabwindo School's design. The project achieved net-zero energy consumption by incorporating rainwater harvesting systems for the community gardens, solar panels to supply electricity to both the school and teachers' residences, and a windmill to pump well water for the facilities.

- Construction methods emphasized local materials and labor; the classrooms were built using handmade compressed earth bricks fabricated on-site by local masons, providing employment and skill development opportunities within the community.

- The Mwabwindo School exemplifies how thoughtful design and sustainable practices can create an inspiring learning environment that not only addresses educational needs but also promotes resource conservation and serves as an economic catalyst in rural regions.

7. CASE STUDY: LESSONS LEARNED

"SUCCESS STORIES IN SUSTAINABLE EDUCATION AND ENERGY"

INSIGHTS FROM THE MWABWINDO SCHOOL AND OTHER INITIATIVES

- The Mwabwindo School provides valuable insights into the integration of sustainability, community engagement, and innovative design in educational infrastructure.
- The following lessons can inform the Sirimba School and Energy Hub Model.
- The Mwabwindo School stands as a proven example of how sustainability, local engagement, and innovative architecture can create a transformative, self-sufficient educational model—one that Sirimba School can replicate and enhance to fit the Namibian context.

Sustainable design enhances learning environments. Paasive cooling and climate adaption enhances thermal regulation reducing costs of energy use. Indoor and outdoor learning fosters interactive learning.

Renewable Energy ensures energy security thereby ensuring sustainable positive impact on the community at large.

Community involvement strengthens the impact. Local construction and employment ensures job creation, on site skill training .

Modular and scalable model for replication for an adaptable school design model can be replicated in other rural settings. Intergarted social spaces allows for community use strengthens community ownership and pride.

Bridging of traditional and modern educational approaches. Respect for the local culture empshasies cultural acceptance and relevance. Cross sector partnerships drive success and enhance project feasibility.

8. PARTNERSHIPS AND STAKEHOLDER SUPPORT

"COLLABORATING FOR A SUSTAINABLE FUTURE"

GOVERNMENT, NGOS, AND PRIVATE SECTOR INVOLVEMENT

Letters of Support

- **Republic of Namibia, Ministry of Education, Arts and Culture:** Supports the establishment of the KJ Kapeua Combined School and Energy Hub, emphasizing its potential to transform education and provide sustainable energy solutions.
- **Blue Monsoon Capital:** A financial advisory firm expressing interest in providing development services for the project, citing its potential benefits for Namibia's power system and educational needs.
- **Archstorming** is an international architectural platform that connects social impact projects with a global community of designers, architects, and creatives. As a proud supporter of the Sirimba School Model, Archstorming brings its expertise in organizing socially-driven design competitions to mobilize visionary talent for our cause.

8. GLOBAL PARTNERSHIPS AND EXPANSION POTENTIAL

"COLLABORATING FOR A SUSTAINABLE FUTURE"

GOVERNMENT, NGOS, AND PRIVATE SECTOR INVOLVEMENT

Scaling the Model Across Africa

- Positioning the project as a replicable prototype for sustainable schools and energy hubs in similar regions to showcase circular economy and sustainable Business Models for funding education, social Impact and community development.
- Corporate and Development Partnerships – Engaging tech companies, green energy firms, and global education networks for funding and innovation support.
- Sustainable Tourism Integration – Creating learning tours that generate revenue while showcasing the model globally on
    - Technological Innovation and smart infrastructure
    - Climate resilience and disaster preparedness

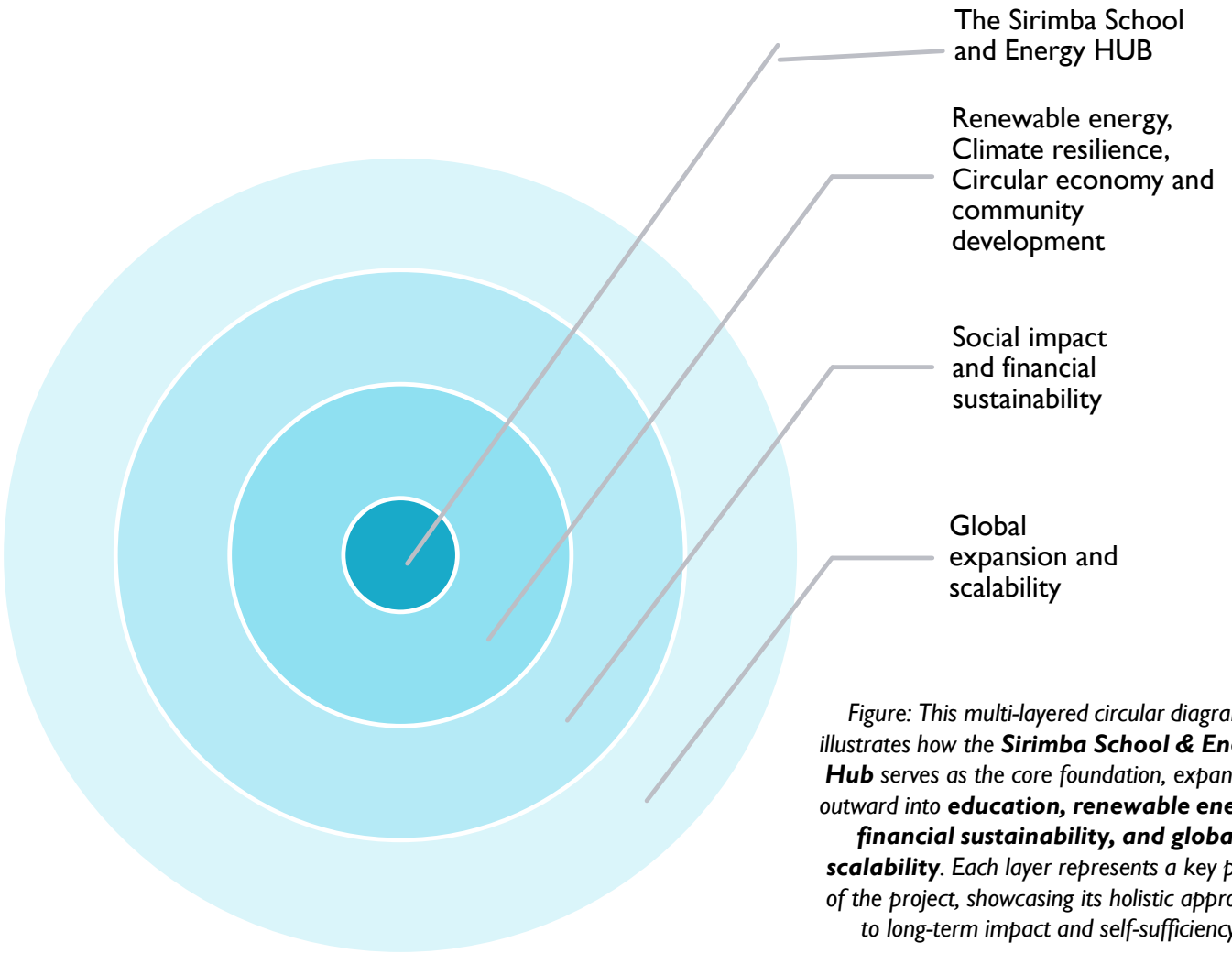


*Figure: This multi-layered circular diagram illustrates how the **Sirimba School & Energy Hub** serves as the core foundation, expanding outward into **education, renewable energy, financial sustainability, and global scalability**. Each layer represents a key pillar of the project, showcasing its holistic approach to long-term impact and self-sufficiency*

8. PICTURE GALLERY: EXPLORE THE POSSIBILITIES

Disclaimer:

- All images in this presentation are AI-generated and are designed to **invoke imagination and visualize the possibilities** of the Sirimba School and Energy Hub Model.
- These artistic renderings serve as **conceptual representations** of the project's vision, showcasing its potential impact on education, renewable energy, and community development.
- While they do not depict actual construction, they offer a glimpse into the future we are building—one where sustainable infrastructure, innovation, and social transformation come together to create a brighter future for all.

The Sirimba School and Energy Hub serving as a blueprint for integrating education, energy, and economic empowerment across Namibia.

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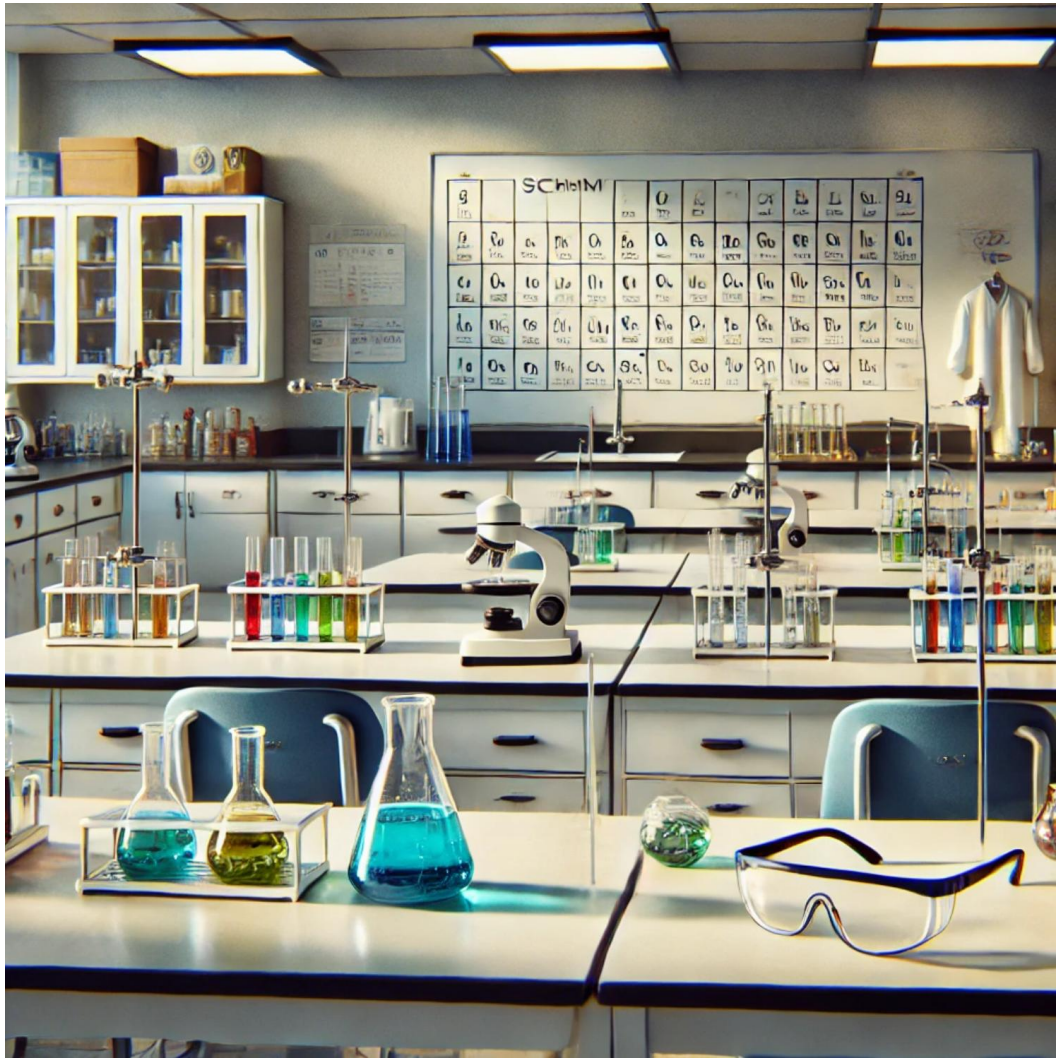

Fully equipped classrooms designed with digital learning tools, inclusive seating, and natural ventilation for optimal student engagement.

Teacher and student housing, ensuring a safe and comfortable learning environment for educators and learners from remote areas.

The Sirimba School and Energy Hub serving as a blueprint for integrating education, energy, and economic empowerment across Namibia.

The Sirimba School and Energy Hub serving as a blueprint for integrating education, energy, and economic empowerment across Namibia.

A thriving 30,000m² aquaponic greenhouse producing fresh vegetables and fish for student meals and the local community.

Acknowledgements

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All letters of support from the above mentioned institutions are available on request via email.

KARIBU KWETU
SOLAR TRADING LIMITED