SYMBIO GREENTECH

PRIVATE LIMITED

An Incubate company

EKTA INCUBATION CENTRE *

Maulana Abul Kalam Azad University of Technology (MAKAUT)

(Formerly West Bengal University of Technology WBUT)

AQ 13/1, Sector V, Salt Lake City, Kolkata – 700 091, West Bengal, India.

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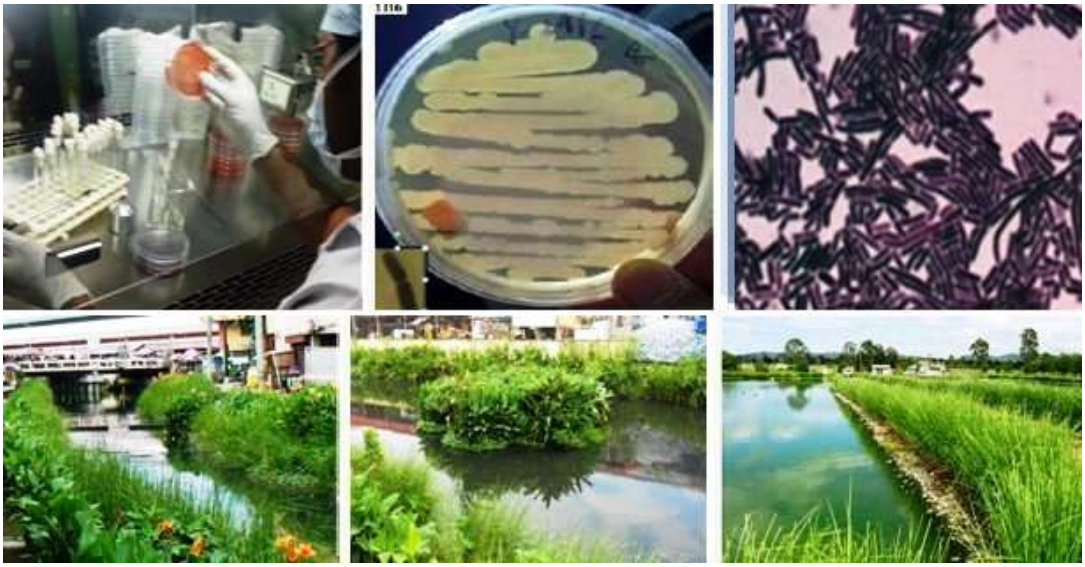


* EKTA INCUBATION CENTRE

Technology Business Incubator (TBI)

Promoted by Maulana Azad Abul Kalam Azad University of Technology (MAKAUT), Kolkata, West Bengal

Recognized and Supported by National Science & Technology Entrepreneurship Development Board (NSTEDB) under Dept. of Science & Technology (DST), Govt. of India.

"Sustainability through Bioinnovation"

SYMBIO GREENTECH PVT.LTD.

"Sustainability through Bioinnovation"

MISSION

Committed to create a sustainable Clean & Green future by improving the Social, Economic and Environmental Excellence.

VISION

Enhancing and Protecting the Ecosystem on which all life depends.

COMPANY PROFILE

SYMBIO GREENTECH Pvt. Ltd. (SGPL) is an Environment Biotechnology company committed to provide innovative sustainable technologies for Environment Protection & Restoration, Urban Renewal, Rural to create a sustainable CLEAN & GREEN Environment.

SGPL is an Incubate Company at **EKTA Incubation Centre – Maulana Abul Kalam Azad University of Technology (formerly WBUT) under Department of Science and Technology and Department of Biotechnology (DBT Govt. of India** for developing the Microbial technology in Beneficial Microbes (BM), sustainable plants, Bioenergy crops through Plant Biotechnology for sustainable environment management solutions

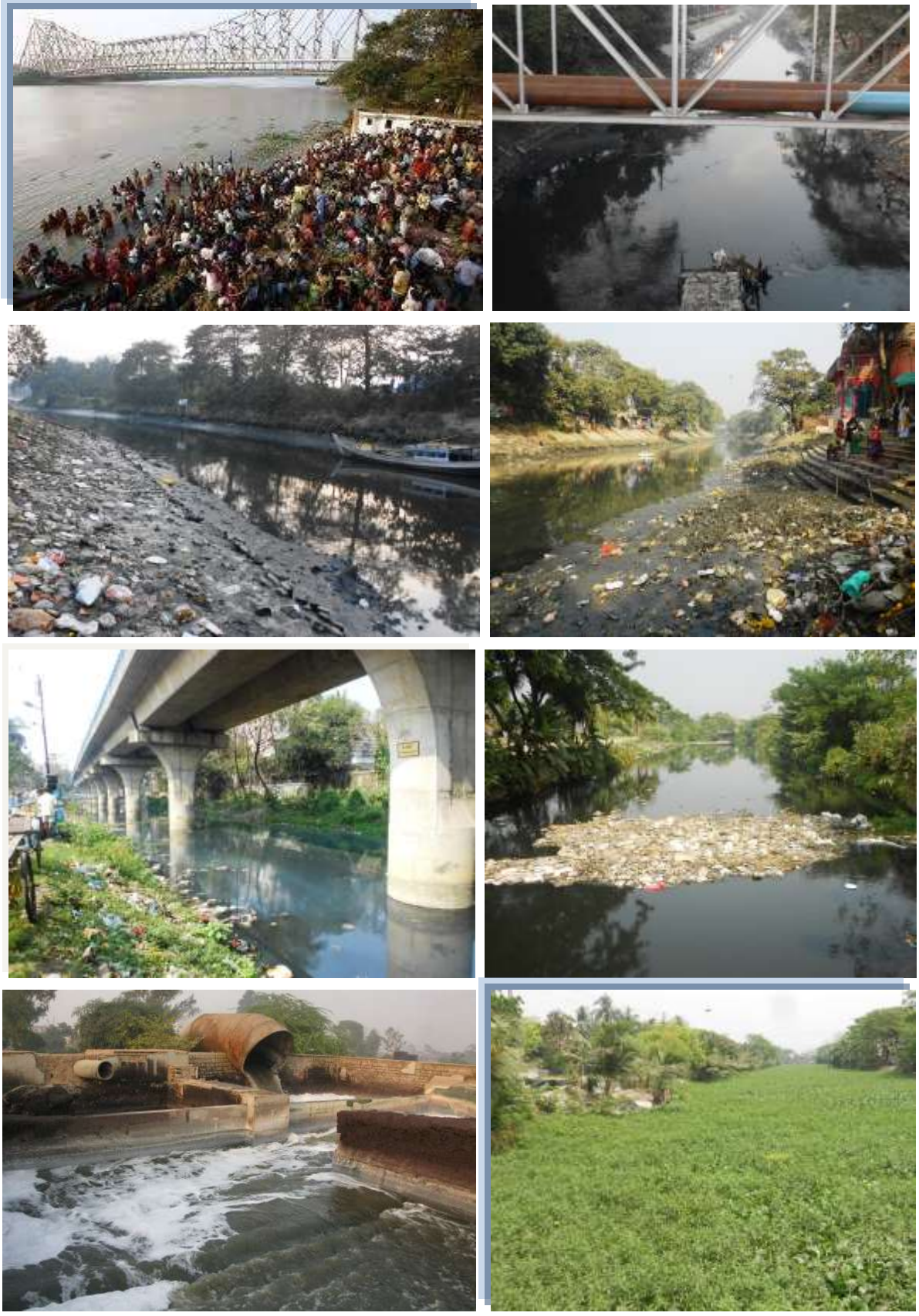
We are developing eco-friendly sustainable technologies for Environment Protection and Restoration by the integration of Plant Biotechnology, Microbiology & Bio-engineering methodologies through effective utilization of natural resources to rebuild the eco-system.

We are focusing on holistic sustainable treatment measures for environment management and bringing technology associates around the world to associate to create appropriate green technologies that are meticulously designed to safeguard our future generations.

MAJOR TECHNOLOGY DEVELOPMENT AND APPLICATIONS

- R&D and Production of Beneficial Microbes (BM) for Environmental Protection & Restorations
- Beneficial Microbes applications in Canal Cleaning, effluent Water Treatment, Coastal wetland and Contaminated site management and restoration through Bio-remediation and Phyto remediation Methodologies
- Application of Coir / Jute geotextiles, sustainable plants and beneficial Microbes in Slope Restoration, river embankments protection and restoration control the soil erosion & landslides through bio-engineering methodologies
- Integrated Solid Waste Management solutions – Odour Control and Rapid Decomposing methodology through Beneficial Microbes
- Community Waste Management - Modular Organic Composting System (OCS)
- Marginal Land & Mining area plantations, Fly Ash dump site Restoration, biomass feed stock and Environmental sustainability
- Biodiversity Park design and Sustainable Greenbelt Developments.

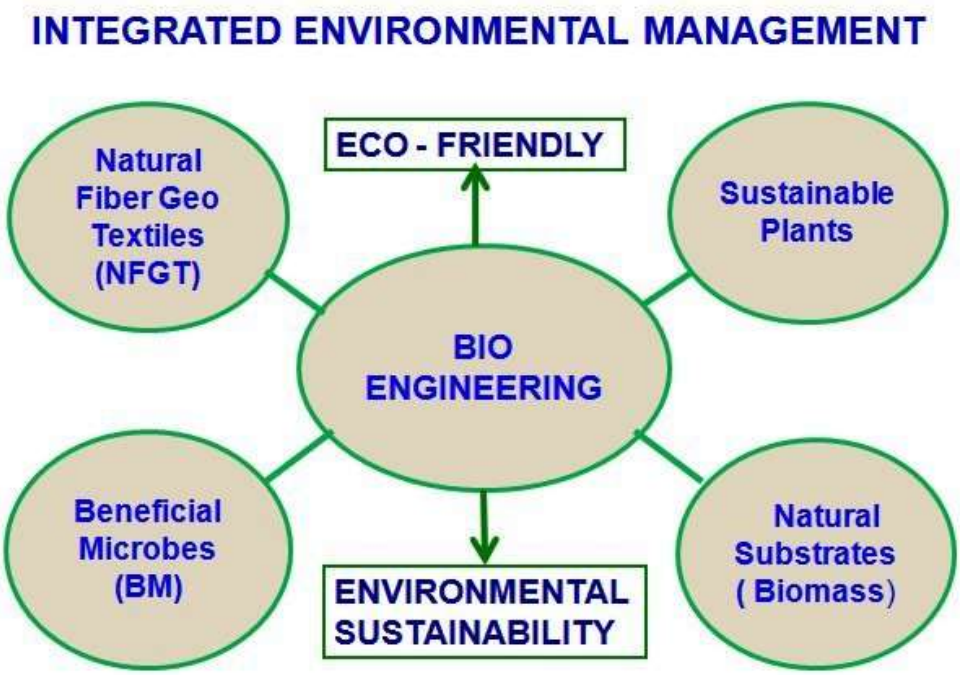
MAJOR ENVIRONMENTAL CHALLENGES



River, Canal & Water body Contamination lead to Environmental & Social Impacts

INDIGENOUS SUSTAINABLE TECHNOLOGIES ACCESSIBLE TO MITIGATE THE ENVIRONMENTAL DEGRADATION

SUSTAINABLE TECHNOLOGIES TO RESTORE CONTAMINATED CANALS, WATER BODIES, RIVER EMBANKMENTS, SOILD WASTE MANAGEMENT, CONTAMINATED SITE MANAGEMENT, MSW DUMP SITE RESTORATION & GREENING



MATERIAL USED FOR ENVIRONMENT ECO RESTORATION & METHODOLOGY

Jute & Coir Geo textile, Jute / Coir Biomass, Sustainable Plants, Bamboo and Beneficial Microbes (BM) isolated from Natural Sources to use in an integrated methodology through Bio-Remediation, Phyto-remediation & Bio-engineering

Application of NATURAL MATERIALS to PROTECT our NATURAL RESOURCES

The Bio-engineering techniques to Create Sustainable Urban Greenery, Ecological Balance and Low Carbon Resilience

SUSTAINABLE ENVIRONMENT MANAGEMENT THROUGH BIO-ENGINEERING TECHNIQUES

JUTE / COIR GEOTEXTILES, GEO LOGS, BAMBOO STICKS, BENEFICIAL MICROBES (BM) AND SUSTAINABLE PLANTS

SUSTAINABLE ECO RESTORATION USING NATURAL MATERIALS TO PROTECT NATURAL RESOURCES

PROJECTS IN ENVIRONMENTAL RESTORATION THROUGH BIO-ENGINEERING TECHNIQUES

CANAL ECO RESTORATION

Howrah Municipal Corporation, Belgachia, West Bengal
Location - HMC Ward No. 8 Howrah

SWM Dump site Leachate Canal Embankment protection & Floating Garden Installation for Water De-contamination

In-situ Bio-Remediation & Phyto-Remediation System

CANAL ECO RESTORATION

Howrah Municipal Corporation, Belgachia, West Bengal
Location - HMC Ward No. 8 Howrah

SWM Dump site Leachate Canal Embankment protection & Floating Garden Installation for Water De-contamination (60 days after Installation)

BIO PHYTOPONIC SYSTEM - Cleaning Water Nature's Way

This *project is notified by ICLEI – Local Government for Sustainability on Initiatives & Innovation of Climate Change Cases from Urban India (http://seas.iclei.org/)*

SYMBIO GREENTECH PVT.LTD.

WATER BODY RESTORATION

GLOSTER LTD.
Location - Jute Mill, Bauria, Howrah Dist, West Bengal.






Floating Garden Installation for Water De-contamination

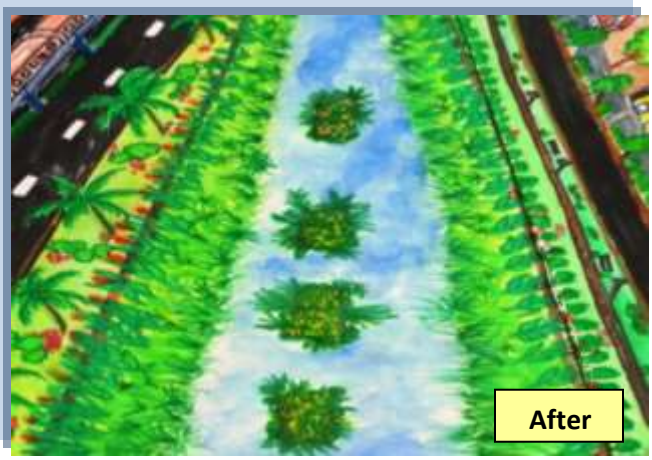
BIO PHYTOPONIC SYSTEM - Cleaning Water Nature's Way

WATER BODY RESTORATION

GLOSTER LTD.
Location - Jute Mill, Bauria, Howrah Dist, West Bengal.

Floating Garden Installation for Water De-contamination

BIO PHYTOPONIC SYSTEM - Cleaning Water Nature's Way



SUSTAINABLE CANAL, WATER BODY RESTORATION & GREENING

Bio Phytoponic System "Cleaning Water Nature's Way"

SUSTAINABLE CONTAMINATED CANAL RESTORATION TECHNIQUES

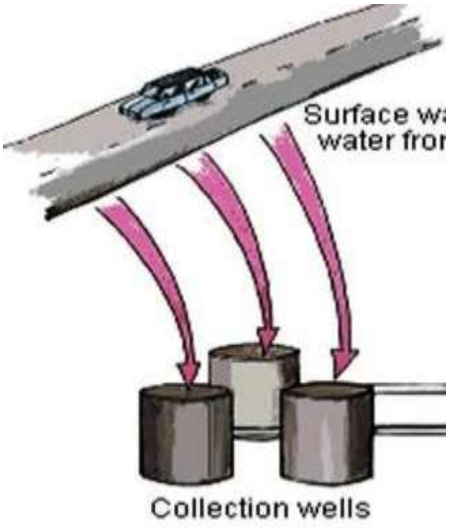
CANAL RESTORATION THROUGH BENEFICIAL MICROBES (BM) COIR / JUTE GEOTEXTILES (NATURALFIBER & SUBSTRATES) AND SUSTAINABLE PLANTS

Bio Phytoponic System "Cleaning Water Nature's Way"

SUSTAINABLE CONTAMINATED CANAL RESTORATION TECHNIQUES

CANAL RESTORATION MODEL USING NATURAL MATERIALS

URBAN AREA OPEN DRAIN PROTECTION AND GREENERY DEVELOPMENT



URBAN AREA STORM WATER HARVESTING WATER BODY AND GREENERY DEVELOPMENT UNDER FLY OVERS

SUSTAINABLE URBAN GREENING TO REDUCE THE LATENT HEAT EFFECT AND LOW CARBON RESILIENCE

COAL BASED THERMAL POWER PLANT FLY ASH DUMP SITE STABILIZATION, RESTORATION & GREENING

National Thermal Power Corporation (NTPC)

Dadri, (Near New Delhi), Uttar Pradesh

Fly Ash dump area restored within 90 days without using soil

"Bio-Phyto Stabilization"

The fly ash dump site area problem like flying of ash in summer season and slurry formation, rain cuts and slurry movement to adjacent areas during rainy season are significantly reduced and lead to control the Air, Water and Soil pollution

The fly ash dump site restoration technique is 100 % Eco-friendly and practically applicable

BIO-ENGINEERING TECHNIQUES ON FLY ASH DYKE & RIVER SIDE PROTECTION

Bakreswar Thermal Power Plant Project (BkTPP)
West Bengal Power Development Corporation Ltd.
Govt.of West Bengal

FLY ASH POND & CHANDRABHAGA RIVER SIDE EMBANKMENT RESTORATION






Sustainable Fly Ash dumpsite protection and Restoration without using Soil to Control Flying of Ash and Slurry movement

A PERMENANT GREEN TECHNOLOGY SOLUTION FOR WATER, SOIL AND AIR POLLUTION CONTROL IN THERMAL POWER PLANTS

Bakreswar Thermal Power Plant Project (BkTPP)

West Bengal Power Development Corporation Ltd.
Govt.of West Bengal

CHANDRABHAGA RIVER SIDE EMBANKMENT RESTORATION

Stabilized River Embankment

River Embankment Stabilization & Restoration through Bio-engineering techniques

VETIVER GRASS

Chrysopogon zizanioides (Vetiver)

A Wonder Grass for Environment Protection and Restoration

Vetiver Plantation for Slope and River Emnabkment Protection and Restoration

Bio-Phyto Stabilization

CANAL & RIVER BANK STABILIZATION THROUGH BIO-ENGINEERING METHODOLOGIES

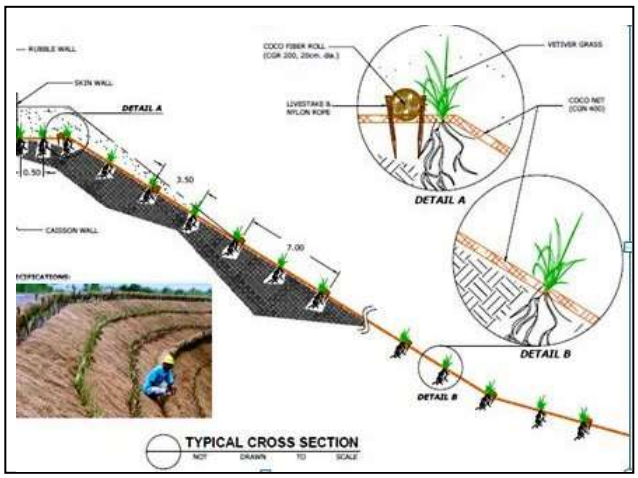
Slope Stabilization and soil erosion control through the application of Jute / Coir Geotextiles, Sustainable plants, Natural substrates, Beneficial Microbes (BM) and Hydro seeding techniques


CANAL EMBANKMENT SOIL STABILIZATION AND RESTORATION




RIVER EMBANKMENT SOIL STABILIZATION & RESTORATION

RIVER EMBANKMENT PROTECTION & RESTORATION



The River Embankment Protection & Restoration through Bio-engineering technologies by using natural substrate like Jute geo textiles, coir geo textiles, coco peat, locally available biomass, Jute logs, Bamboo pegs & poles Beneficial Microbes (BM), Sustainable Plants like Vetiver, Arundo donax etc..

HYDRO SEEDING FOR RAPID GREENERY DEVELOPMENT

Hydro seeding is accomplished by using specialized equipment designed exclusively for the process. Materials used in Hydro seeding are water, seed, fertilizer, tackifier (an organic substance made from guar gum) and wood/fiber mulch. The process will require the mixes of turf or native grass seed and fertilizer with water in a Hydro seeding unit.







SOIL STABILIZATION THROUGH HYDROSEEDING TECHNIQUES

VETIVER SYSTEM (VS) & BIO-ENGINEERING TECHNIQUES

VETIVER PLANTATION - SEA SHORE RESTORATION

Vetiver a high tolerant plant in Arid land, Wet land and Saline soil with extensive Root System

URBAN RIVER BANK RESTORATION

Model of River Bank Restoration through Bio enginneering methodology using Jute / Coir Geotextiles, Sustainable Plants to create a Clean & Green Ambience

Urban Renewal is very important in today's context Sustainable Urban development specifically means achieving a balance between the development of the urban areas and Protection of the Environment.

OUR CITIES NECESSITATE A SUATAINABLE ENVIRONMENT MANAGEMENT COMPLIANCE THROUGH AN ECO-FRIENDLY URBAN RENEWAL TECHNOLOGIES TO CREATE CLEAN & GREEN CLIMATE SMART CITIES

LOW-CARBON AND CLIMATE RESILIENT URBAN DEVELOPMENT THROUGH SUSTAINABLE ENVIRONMENT MANAGEMENT

SYMBIO – ORGANIC COMPOSTING SYSTEM (OCS)

Organic composting System for the rapid decomposing of Organic waste through the application of Beneficial Microbes (BM) to Microbial Compost for Soil Reclamation and use as a soil substitute for Environment Restoration , Agriculture , Horticulture and Floriculture applications

Organic Waste

Shredder

Pulvarizer

Beneficial Microbes (BM

Jute Bags

Plastic Crates

Compost Crate Rack

Compost

Plastic crates with Jute inner lining can be used for stalking the processed waste for mass production

Organic Solid Waste Management through BM Organic Composting System (BM-OCS) leads to a effective recycling of Urban and Rural organic waste to BM-Compost to create a Clean and Healthy Environment.

RESIDUAL WASTE MANAGEMENT

MATERIAL RECOVERY FACILITY (MRF)

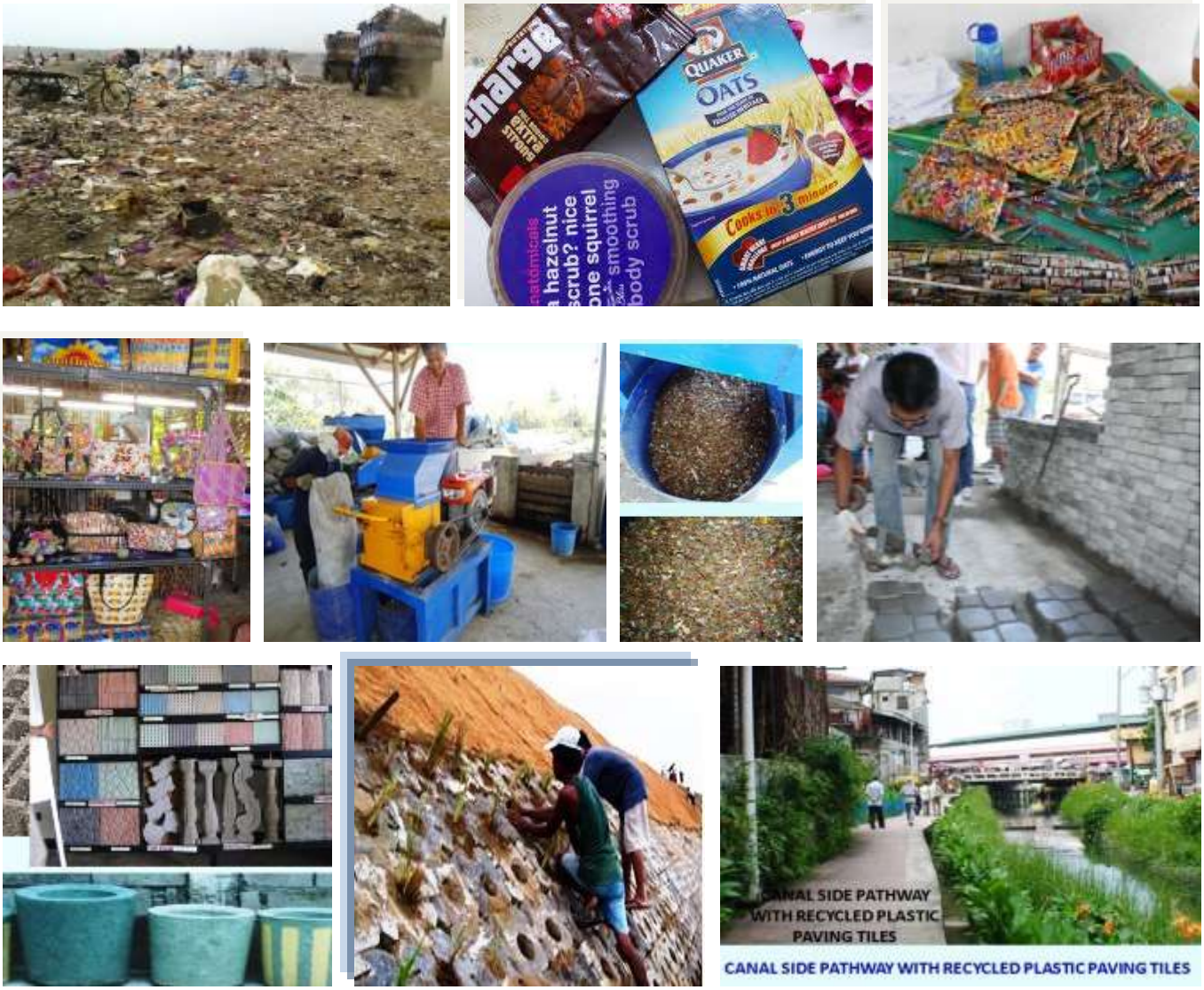
PLASTICS WASTE: ENVIRONMENTAL ISSUES AND CHALLENGES

The quantum of solid waste is ever increasing due to increase in population, developmental activities, changes in life style, and socio-economic conditions, Plastics waste is a significant portion of the total Municipal Solid Waste (MSW)

The plastic waste material to be segregated to prepare for the utilization as per the type of plastic waste. (the recyclable plastic and non-recyclable plastic) the techniques cane applied mostly for non-recyclable plastic to products (Trash to Cash)

Plastic waste can be converted to handicrafts and many useful products like paving blocks, bricks and pots etc.

Plastic Waste Management & Utilization Model



Plastic Waste to Products – Trash to Cash

LOW CARBON & CLIMATE FRIENDLY INTERVENTIONS FOR URBAN MANAGEMENT

Integrated Solid Waste Management & Organic Urban Farming

PLASTIC WASTE TO PLANTER BAGS FOR ORGANIC FARMING

ORGANIC FARMING BY RECOVERY OF ALL ORGANIC & PLASTIC WASTE

Community Participation, Livelihood initiatives & Sustainable Eco-Restoration in a Slum at Kolkata Municipal Corporation Ward No.58

Zero organic Waste, Zero Plastic Waste and Minimal Land fill – Transformation of a Slum to an eco-friendly neighborhood

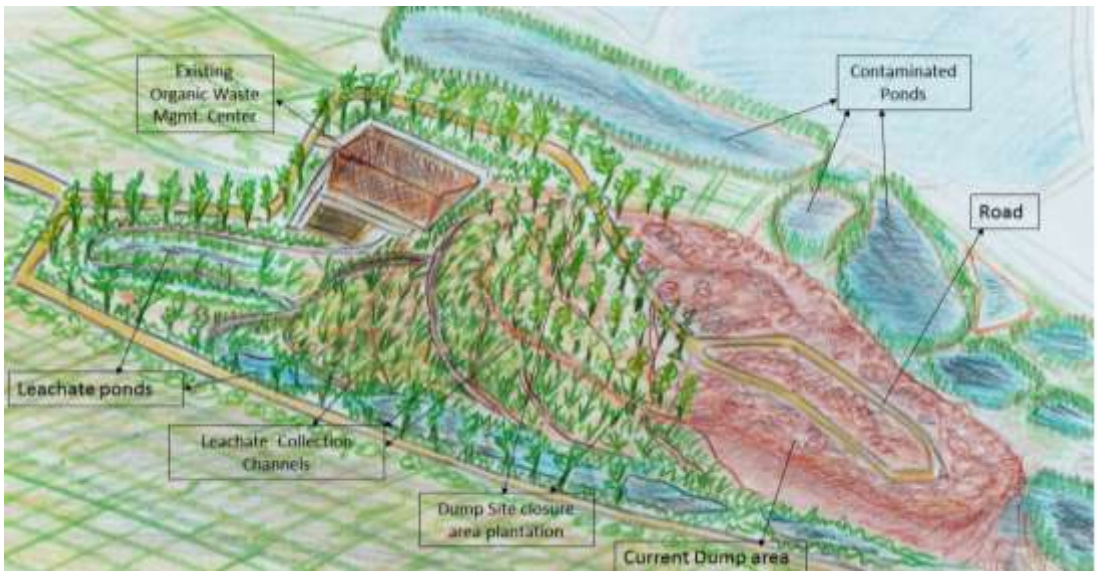
Project Initiated by British Deputy High Commission, Kolkata Municipal Corporation (KMC) & UK- aid under UK- KMC Low Carbon Resilient Kolkata.

Project Implementation Partners – PriceWaterhouseCoopers (PwC)

Project Concept Partners - Symbio Greentech Pvt.Ltd.

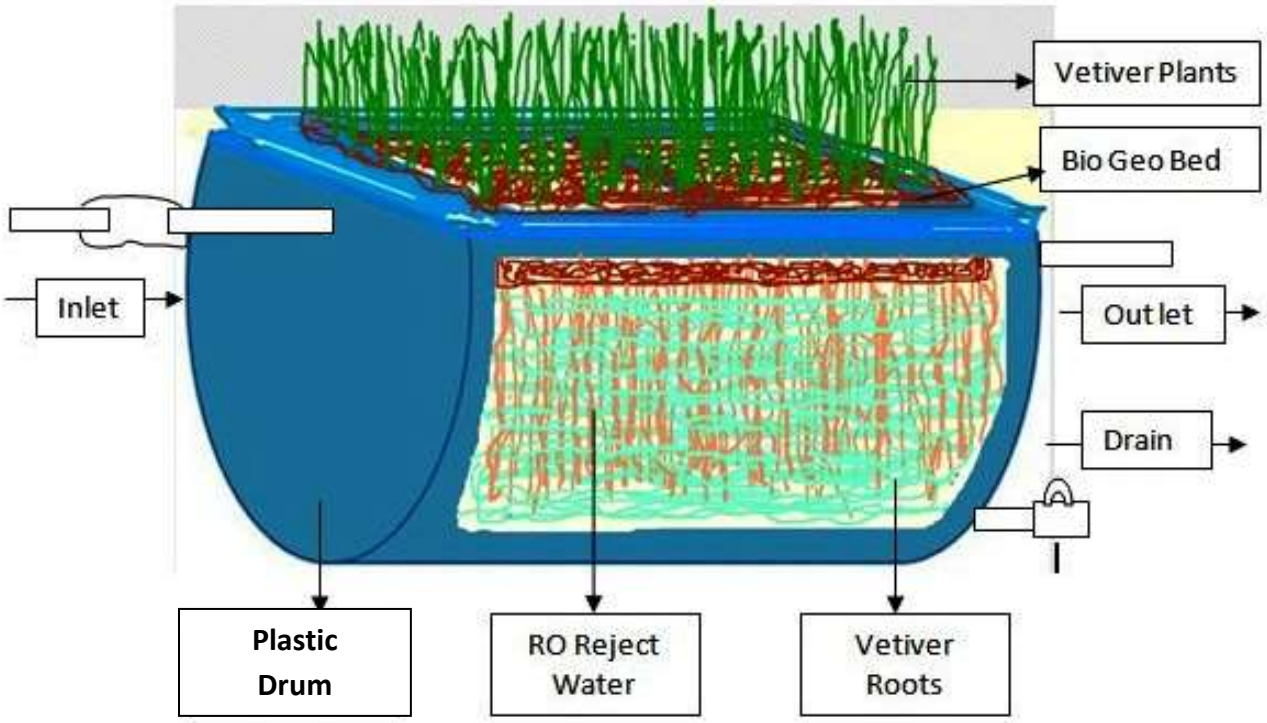
LOW-CARBON & CLIMATE RESILIENCE IN URBAN DEVELOPMENT THROUGH SUSTAINABLE ENVIRONMENT MANAGEMENT

Sustainable Green Interventions to transform a slum to a model Climate resilient neighborhood



Municipal Solid Waste (MSW) Dumpsite Green Capping, leachate Contamination Control & plantation development Restoration through Bio-engineering techniques

REJECT WATER RECOVERY SYSTEM



Innovative RO Reject / ETP /STP Reject Water Recovery

Symbio Greentech Pvt. Ltd has developed an innovative Bio-Phytoponic system for RO reject recovery and reuse. The existing system although has high recovery rate is very energy intensive and adopts complex procedures to recover water from the condensate. Also RO systems have very narrow operational parameters to be maintained for optimal results. Generally, the open or thermal evaporators used for disposals of RO reject to maintain the Zero Liquid Discharge (ZLD) norms.

All these issues enveloping the operations of RO systems with evaporators for water recovery can be overcome by adopting an innovative technique called the Bio-Phytoponic Reject Water Recovery system. The techniques based on Bio-engineering by high efficient Beneficial Microbes (isolated from Natural Sources) for natural degradation of organic and inorganic components. The system integrated with Natural fibers, (Coir & Jute) Biomass and highly sustainable Plants for absorption of heavy metals and other inorganic pollutants. The Plants species are perennial high rapid growth and has the unique ability to thrive in high contaminated water and has smaller gestation period for multiplying its shoots.

The Bio-Phyto system reject RO Water system works on eco-friendly Bio-engineering technological intervention with recovery of 50-60 % of RO reject water by less energy, less space and natural greening of the Installation area with high Carbon sequestration and emission reduction.

Application Area :

Industrial and Domestic Reject water discharge area

Alternative solution for Reject Water Evaporation system to maintain Zero Liquid Discharge (ZLD)

Arsenic & Chemical contamination pre-filter system

RURAL DEVELOPMENT

BIOENERGY CROP PLANTATION & ENVIRONMENTAL SUSTAINABILITY

Bioenergy crop production and plantations for waste land development, road side plantations, Industries Greenery development for Carbon Sequestration and biomass feedstock production

Bioenergy crops plantations in rural area waste land plantations for biomass feed stock for the production of biomass pellets for smoke free cooking fuel, commercial plantations for decentralized power plants for rural lighting and captive Biomass power plants in direct feeding and co-firing with coal.

Miscanthus giganteous , Erianthus and Arundo Donax

RURAL DEVELOPMENT- SMOKE FREE COOKING FUEL BIOMASS PELLETS & GASIFIER STOVES

Advantages

- **Rural Energy needs - Smoke free Cooking fuel**
- **Biomass feedstock for Biomass power plants**
- **Industry Greenbelt development for carbon sequestration and feed stock for captive power plants**

"BIOMASS is the cheap SOLID FUEL available in World derived from PLANT MATTER to Generate CARBON NEUTRAL HEAT and ELECTRICITY"

Technology & Product Development

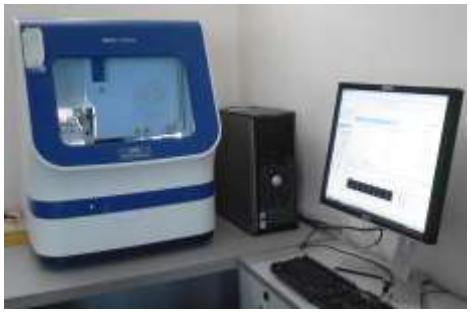
SYMBIO GREENTECH PVT. LTD. is developing technology and production of Beneficial Microbes (BM) and Bioenergy crops for Environment Protection and Restorations applications.

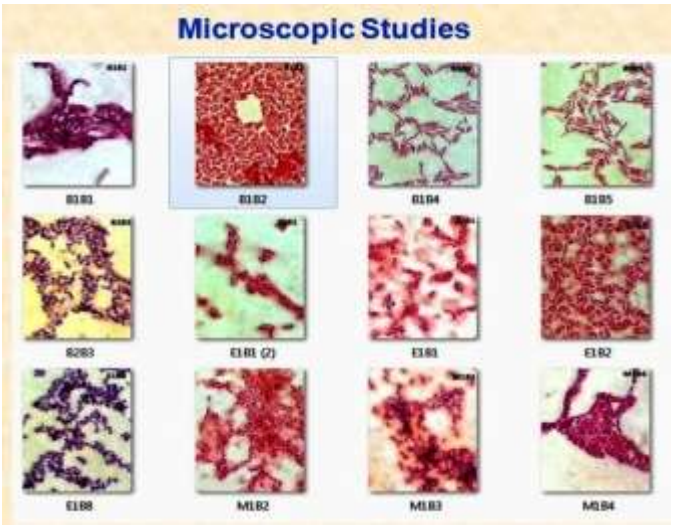
Our Microbiology lab at EKTA Incubation Centre focusing on production of **Beneficial Microbes (BM)** for the application of environment management in the area of River and canal cleaning, Solid Waste Management, Slope Restoration, Degraded land and Mining area reclamation.

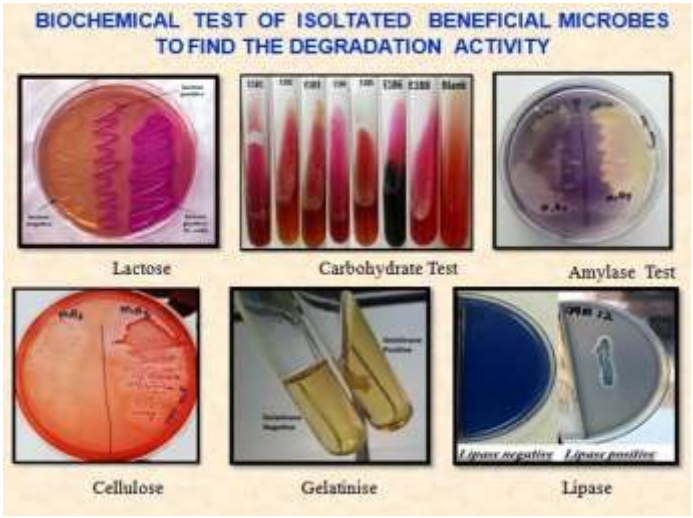
SYMBIO - BENEFICIAL MICROBES (BM) R&D AND PRODUCTION LAB











SYMBIO GREENTECH Pvt.Ltd. - Microbiology Lab at EKTA INCUBATION CENTRE
West Bengal University of Technology (WBUT) Supported by Department of Science and Supported by Department of Science and Technology (DST) Govt.of India

KEY OPERATIONAL AREAS

- ❑ **TECHNOLOGY DEVELOPMENT**
- ❑ **TURN-KEY PROJECTS**
- ❑ **JV PROJECTS**
- ❑ **CONSULTANCY SERVICES**

COMMUNITY PARTICIPATION AND LIVELIHOOD DEVELOPMENTS

Material Preparation Centers for Plants, Jute and Coco fiber, Geo logs & Biomass

- Community Training and technology transfer for larger adaptation and scaling up
- Job creation through community development – Self Help Groups (SHG)
- Bioenergy crops for rural energy for carbon neutral cooking fuel and carbon emission reduction

All the Environmental Restoration Materials produced and site installation through Community Participation and Rural Employment Generation

Supporting Organizations

EUROPEAN BUSINESS AND TECHNOLOGY CENTRE (EBTC),

Indian Exchange Place, Kolkata, West Bengal, India. (www.ebtc.eu)

MoU between two Swedish Companies through European Business Technology Centre (EBTC) on Contaminated Site Management and Clean Water Technologies

MoU between Symbio Greentech Pvt. Ltd. & AQUA –Q AB , SWEDEN

MoU between Symbio Greentech Pvt.Ltd. & Globe Water – AB , SWEDEN

Read more ….. visit **: www.ebtc.eu**
http://www.ebtc.eu/pdf/121207_PRR_EBTC-facilitates-Swedish-technology-in-India.pdf

BENGAL CHAMBER OF COMMERCE & INDUSTRY (BCC&I)

Energy & Environment Committee
Royal Exchange, Kolkata – 700 001, West Bengal

ADMINISTRATIVE TRAINING INSTITUTE (ATI)

Urban Management Centre (UMC)
Govt.of West Bengal
FC Block, Salt Lake , Sector III, Kolkata – 700 106, West Bengal

Address for communication

SYMBIO GREENTECH Pvt.Ltd.

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C.S.PRADEEP KUMAR

Founder & CEO

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COLLABORATIONS & JV PARTNERS

BIOSFERA FOUNDATION
Gouden Boayum 13c, 8621CV Heeg,
The Netherlands

- The BIOSFERA Foundation is geared towards developing a sustainable bio based, circular and creative economy, industry and society
- Indian Partner & Project Associate - Bamboo Bio Based (BBB), Agro-Industrial Metabolism (AIM), CircularCity - Cidade Circular (CC) Sustainable environment Management.

The Bengal Chamber of Commerce & Industry (BCC&I)
Royal Exchange Place, Kolkata, West Bengal.

- Environment Management & JV Projects

Sai Watertech
Vohra House, Dana Bunder, Masjid (E). Mumbai.

- Canal, Water body & River Dredging , Lake Restoration

KNOWLEDGE & TRAINING PARTNERS

Biotech Consortium India Ltd. (BCIL)
An Autonomous organization under DST & DBT
Govt. of India, Aruvrat Bhavan, New Delhi

Administrative Training Institute (ATI)
Urban Management Centre, Govt. of West Bengal,
Salt Lake, Kolkata, West Bengal

India Vetiver Network (INVN)
Kerala.

A Society for Vetiver Selection, Propagation, Green Livelihood development, Environment Management through Self Help Groups In Association with Tamil Nadu Agriculture University (TNAU), Coimbatore, Tamil Nadu.

PROJECT CONSULTANTS

Consultant - Biotechnology & Environmental Sustainability

PricewaterhouseCoopers (*PwC*), Kolkata.

(www.pwc.in)

- **Consulting Services for Climate Friendly Interventions, Policies, capacity building and Sustainability Governance Under UK- KMC MoU on Low carbon & Climate Resilient Kolkata supported by Department of International Development (DFID), British Deputy High Commission, Kolkata & UK aid.**

Technical Consultant - International Council for Local Environment Initiatives (ICLEI)

(ICLEI - Local Government for Sustainability)

Initiatives & Innovation of Climate Change Adaptation & Mitigation in Urban India

(http://seas.iclei.org/)

- **Environmental Restoration proejcts in Adopt Integrtaed Urban Water Management (Adopt IUWM) supported by European Commission.**