

BCKIC FOUNDATION

*Bhubaneswar City Knowledge Innovation Cluster (BCKIC) Foundation
An initiative of the Office of the Principal Scientific Adviser (PSA)
to the Government of India.*

THE MAKING OF A CLUSTER ECOSYSTEM



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Prn.SA/Bhubaneswar Hub/2019
Government of India
Office of Principal Scientific Adviser
to the Government of India**

Vigyan Bhawan Annexe
Maulana Azad Road
New Delhi 110011

Dated: the 20th April, 2022

OFFICE MEMORANDUM

Subject: Bhubaneswar City Knowledge Innovation Cluster (BCKIC) - Establishment of Section 8 Company

The "Office of the Principal Scientific Advisor" to the Government of India has initiated the establishment of City Knowledge and Innovation Clusters in selected cities across the country under the guidance of the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC). Under this initiative, the Bhubaneswar City Knowledge Innovation Cluster (BCKIC), has been set up at Bhubaneswar, to foster growth and development in the region.

The Bhubaneswar City Knowledge Innovation Cluster is now registered as the Bhubaneswar City Knowledge Innovation Cluster Foundation (CIN U85320OR2022NPL038973), a Section 8 company under the provisions of the Companies Act, 2013 on 18th February, 2022. Bhubaneswar City Knowledge Innovation Cluster Foundation (BCKIC Foundation) is the bonafide legal entity of the Bhubaneswar City Knowledge Innovation Cluster, an initiative of the Office of the Principal Scientific Adviser to the Government of India.

The aim of the city cluster is to seamlessly connect R&D institutions, academia, startups, government institutions and foundations to leverage the complementary strengths towards facilitating innovations and knowledge creation with translational impact. The company will work with a multi-sectorial outreach towards creating a Hub & Spoke Model, to drive the translational innovation and deployment of the technologies for larger public good including creation of shared ecosystem, addressing the local and regional challenges as well as working on projects of national and global importance including:

- Harnessing the knowledge and expertise available in partnering academic, R&D institutions and industries
- To address the various local, regional and national challenges through science and technology interventions
- To stimulate manufacturing and commercialization of research discoveries
- Channelizing interventions and innovation for social impact in close collaboration with academia, industry, government bodies and philanthropic organizations
- To engage in industry oriented applied research to help industries stay competitive and sustainable
- Creating innovation pipeline and pathways for entrepreneurs at institute level
- To support and drive start-up ecosystem through incubators, R&D institutions, industry linkage and capacity building programs
- To promote Atmanirbhar Bharat and nurturing local manufacturing through collaborations and consultancy services.



(Jitendra R Gaikwad)
Deputy Secretary to the Government of India
Tel. No. 011-23022112

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Fostering Collaborative Innovation: BCKIC's Vision for Societal Impact

The Bhubaneswar City Knowledge Innovation Cluster (BCKIC) Foundation, established as a Section 8 company, is a flagship initiative led by the Office of the Principal Scientific Adviser to the Government of India, under the visionary guidance of the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC).

BCKIC is not merely an organization; it represents a driving force committed to creating profound social impact. Our mission is to establish seamless connections between research institutions, academia, industry partners, startups, MSMEs, NGOs, philanthropic foundations, state governments, and international organizations, all within a Hub & Spoke Model.

Our primary objective is to address regional and global challenges through consortium-based collaborations. We believe in leveraging the collective strengths of our diverse stakeholders, uniting their expertise and technical know-how under a single umbrella. BCKIC nurtures a collaborative ecosystem, fostering innovation, technology development, and deployment, while respecting the autonomy of each participant. Furthermore, BCKIC in Bhubaneswar is not an isolated entity; it is an integral part of a network of seven S&T Clusters across India, including Bengaluru, Delhi NCR, Hyderabad, Jodhpur, Chandigarh, and Pune. These clusters serve as global technology hubs, facilitating the entire spectrum from technology development to the commercialization of solutions. Through our collaborative endeavors, we aspire to drive the growth of the social economy, create livelihood opportunities, and leave a lasting impact on society.



The Need for BCKIC Foundation in Odisha

Odisha, with its diverse challenges and untapped potential, requires a concerted effort to drive socio-economic development. The Bhubaneswar City Knowledge Innovation Cluster (BCKIC) Foundation emerges as a strategic initiative aimed at leveraging scientific expertise and resources to address these challenges effectively. With a significant population and various socio-economic disparities, Odisha faces obstacles such as poverty, natural disasters, and health issues. BCKIC recognizes the need for collaborative innovation to tackle these challenges head-on.

BCKIC serves as a platform for collaboration among entrepreneurs, research institutions, investors, industries, and government bodies. By fostering partnerships and synergy, BCKIC aims to translate research findings into practical solutions that benefit society. Bhubaneswar hosts several renowned research institutions, including the BRIC-Institute of Life Science and IIT Bhubaneswar, CSIR-Institute of Minerals and Materials Technology, National Institute of Science Education and Research Bhubaneswar, ICMR-Regional Medical Research Centre, Bhubaneswar, All India Institute of Medical Sciences, Bhubaneswar, and many state Universities like Utkal University, Ramadevi, KIIT University, OUAT, SoA, Ravenshaw, etc which possess advanced research capabilities. However, these efforts often operate independently, leading to fragmented innovation landscapes. To bridge this gap, BCKIC facilitates collaboration and knowledge sharing among stakeholders.

By pooling resources and expertise, BCKIC accelerates the translation of research outcomes into impactful solutions. Through strategic partnerships and targeted support for startups, BCKIC promotes the commercialization of innovative ideas. This, in turn, drives economic growth and creates employment opportunities across the state. Furthermore, BCKIC provides essential training and capacity-building initiatives to empower stakeholders with the skills needed to thrive in the innovation-driven economy.

In summary, BCKIC's mission is to catalyze socio-economic growth in Odisha by facilitating collaboration, innovation, and knowledge exchange. By harnessing scientific expertise and fostering a culture of innovation, BCKIC aims to create a brighter future for the people of Odisha.

GEOGRAPHICAL FOCUS

Empowering East & North East India for Inclusive Growth



BCKIC is committed to addressing regional disparities and promoting inclusive growth, with a particular focus on the East and North East regions of India. These areas, including states such as Odisha, West Bengal, Assam, Manipur, Mizoram, Nagaland, Arunachal Pradesh, Tripura, Sikkim, and Meghalaya, possess immense potential in terms of cultural heritage, natural resources, and human capital. By harnessing these assets and prioritizing initiatives in these regions, BCKIC aims to drive sustainable development and social impact. However, BCKIC recognizes the importance of collaboration and integration on a national scale. Therefore, while initially focusing on specific geographical areas, BCKIC will actively engage with other innovation clusters across India. Through cross-cluster collaboration and knowledge exchange, BCKIC seeks to scale its impact nationally, leveraging synergies and unlocking opportunities for innovation-led growth across diverse geographic regions.



Establishment of BCKIC Foundation

The Bhubaneswar City Knowledge Innovation Cluster (BCKIC) Foundation was initiated on April 12, 2019, during a foundational meeting convened at KIIT University under the leadership of the Scientific Secretary at the Office of the Principal Scientific Adviser to the Government of India.

Attended by representatives from prominent institutions in Bhubaneswar, including the Institute of Life Science, Institute of Physics, and State Higher Education Department, among others, the meeting aimed to assess the city's existing knowledge and innovation potential and identify key challenges.

The discussions underscored the need to broaden research and development metrics beyond conventional indicators such as publications and patents, emphasizing the importance of fostering technological innovations with commercialization potential. Recognizing the significance of regional clusters as drivers of economic growth and innovation, the committee highlighted Bhubaneswar's emergence as a burgeoning startup hub and emphasized leveraging existing infrastructure to propel the city's innovation ecosystem. The unanimous agreement to establish BCKIC underscored the commitment to fostering cross-disciplinary collaborations and creating an enabling environment for innovation and product development.

Subsequent meetings and brainstorming sessions among key stakeholders further solidified the framework for BCKIC's establishment, aiming to systematically translate knowledge, technology, and innovation into tangible outcomes.



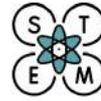
Focus Areas



Healthcare/
Public Health



Energy and
Environment



STEM



Agritech and
Nutrition



Sustainable
Livelihood



Water and
Sanitation



Circular
Economy



Blue Economy
and Wetland
Bioprospecting

Objectives of BCKIC Foundation

Catalyst for Industry-Academia Supporting Startup Partnerships:

- ▶ Facilitate strategic partnerships between industries and academia.
- ▶ Translate industry needs into actionable research for researchers.
- ▶ Mobilize funding and commercialization support for research breakthroughs.

Supporting Startup Post-Incubation Deployment:

- ▶ Aid startups in deploying solutions through government and corporate partnerships.
- ▶ Streamline regulatory compliance and procurement processes.
- ▶ Facilitate partnerships and funding opportunities for scalability.

Need-Based Capacity Building:

- ▶ Conduct workshops and capacity-building training programs tailored to identified needs.
- ▶ Promote best practices among key stakeholders.
- ▶ Establish entrepreneurship support programs to nurture startup ecosystem.

Economic Growth Catalyst in Odisha:

- ▶ Spearhead the development of state-specific scientific infrastructure.
- ▶ Establish scalable and replicable models for infrastructure expansion.
- ▶ Attract higher investments and generate large-scale employment opportunities.

Key Benefits for All Stakeholders

For Industries:

- ▶ Access to customized R&D solutions addressing industry-specific challenges.
- ▶ Deployment of technologies in CSR projects for societal benefits.
- ▶ Licensing opportunities for innovative technologies from startups and R&D labs.
- ▶ Engagement in themed challenges and hackathons to collaborate with innovators.
- ▶ Implementation of fair IP sharing framework in joint projects.

For NGOs/Philanthropic Organizations:

- ▶ Collaboration with a diverse network to magnify social impact.
- ▶ Forming strategic alliances with socially-driven startups and research institutions.
- ▶ Access to cutting-edge social innovations and initiatives addressing societal challenges.
- ▶ Extending social programs to marginalized communities through wider outreach.
- ▶ Participating in collaborative learning and knowledge exchange within the cluster.

For Academia:

- ▶ Engaging in strategic leadership discussions and comprehensive partnerships.
- ▶ Leveraging incubator strengths to fortify the entrepreneurship ecosystem.
- ▶ Facilitating interdisciplinary R&D projects and knowledge exchange.
- ▶ Contributing to and benefiting from infrastructure enhancement initiatives.
- ▶ Establishing global research collaborations and receiving support for team building.

For Startups:

- ▶ Leveraging incubator strengths and accessing R&D facilities.
- ▶ Collaborating with other startups and MSMEs for piloting and commercializing technologies.
- ▶ Networking with state leadership and accessing IP & licensing assistance.
- ▶ Exploring funding opportunities and enhancing visibility through cluster-led events.
- ▶ Leveraging industry connections for market access and scaling up

Scope of Collaborative Work with Social Impact & Sustainable Development Focus



FACILITATING STRATEGIC PARTNERSHIPS

BCKIC fosters collaborations among research institutions, academia, industry, and NGOs to address societal challenges like healthcare accessibility, women empowerment, agritech & nutrition, education, and sustainable livelihood development.

Partnerships prioritize innovation and technology to create scalable solutions benefiting marginalized communities and promoting inclusive growth.

NURTURING INNOVATION-DRIVEN ENTREPRENEURSHIP

BCKIC supports startups and innovators focusing on solutions promoting environmental conservation, social equity, and economic resilience.

Mentorship, incubation programs, and funding access encourage the development of socially responsible businesses contributing to the circular economy and sustainable livelihoods.

TECHNOLOGY DEVELOPMENT AND DEPLOYMENT

Emphasis on technology development targeting pressing societal challenges such as healthcare disparities, food insecurity, environmental degradation, and economic inequality.

Facilitates technology transfer, promotes open innovation, and fosters academia-industry collaboration to adopt sustainable technologies improving quality of life and enhancing resilience.

CAPACITY BUILDING PROGRAMS

Conducts programs on sustainable business practices, social entrepreneurship, circular economy principles, and community-led development.

Empowers individuals and organizations with tools and resources to implement sustainable solutions, fostering a culture of innovation, resilience, and inclusivity.

INITIATING IMPACTFUL PROJECTS

Executes projects prioritizing social impact, sustainability, and circular economy principles in areas like renewable energy, waste management, sustainable agriculture, climate resilience, and inclusive economic development.

Demonstrates feasibility and scalability of sustainable solutions to inspire adoption and contribute to positive social change.

ESTABLISHING INNOVATION HUBS

Establishes innovation hubs and centers of excellence fostering social innovation and sustainable development.

Provides infrastructure, resources, and support services to entrepreneurs, researchers, and community organizations promoting social impact, environmental sustainability, and circular economy principles.

PROMOTING CROSS-SECTOR COLLABORATION

Facilitates networking events, innovation challenges, and collaborative projects integrating social impact, sustainability, and circular economy principles.

Encourages interdisciplinary collaboration and knowledge exchange to co-create innovative solutions addressing complex societal challenges holistically.

WHAT WE DO

HEALTHCARE

With an unwavering dedication to enhancing healthcare accessibility, BCKIC is putting all its efforts to improve maternal, newborn, child, and adolescent health through collaboration with communities, governments, and partners in India. One remarkable initiative is the Population Health Screening program, powered by smart medical devices, real-time dashboards, and health analytics in partnership with MedTel Startup. This program has screened health parameters for 40,000 individuals annually, providing critical data on blood pressure, pulse rate, ECG, glucose levels, and more. Additionally, digital diagnostic services have been extended to over 60 sub-centers in Balangir, Odisha, benefiting thousands. Door-to-door health screening, conducted in partnership with the Berhampur Municipal Corporation, has further targeted the health needs of slum dwellers, focusing on non-communicable diseases and raising awareness about early detection and management. BCKIC's initiatives extend to safe pregnancy surveillance through SPARSA, digital diagnostic kits for maternal health through MedTel startup.

BCKIC Foundation, along with its R&D partners, is crafting eco-friendly sanitary napkins to promote menstrual hygiene, entrepreneurship, and skill development in economically disadvantaged areas. This initiative combines environmental sustainability with social impact, empowering communities and fostering women's well-being.

Furthermore, the foundation has nurtured innovations like IoT-enabled point-of-care blood testing devices, cardiac health monitoring systems, and solutions addressing infectious diseases.

The Academic Health Science Network, Yorkshire and Humber, along with BCKIC Foundation and KIIT-TBI, organized a fully funded 3-day bootcamp for 25 Indian healthcare companies. Subsequently, 6 startups were chosen for a 5-day UK NHS Immersion program in Yorkshire, UK, focusing on commercialization and deployment within the healthcare sector.

Additionally, the BCKIC Foundation, in collaboration with DST Centre of Excellence at KIIT-TBI, has initiated the Clinician Peer Support Program (CPSP). This pioneering effort aims to create a dynamic platform uniting clinicians, surgeons, and medical professionals from various disciplines to foster healthcare innovations, emphasizing the social impact of healthcare advancement.



AGRITECH & NUTRITION

At BCKIC Foundation, our agricultural and nutritional interventions are driven by a deep commitment to social impact. We actively engage in initiatives that not only safeguard regional agri-biodiversity but also empower local communities. By collaborating with the Department of Agriculture & Farmers' Empowerment and other partners, we preserve indigenous aromatic paddy varieties in Odisha.

Through training and demonstrations, we empower farmers, enhance value chains, and ensure traceability, positively impacting their livelihoods. Furthermore, our collaboration with Kotak CSR and Pro-BioKem Pvt Ltd focuses on converting rice husk into valuable products, reducing pollution from agricultural residue burning, and contributing to a cleaner environment. Also, BCKIC Foundation is working with KARMA, a startup company of Odisha for deploying portable solar water pumping systems for use in irrigating the large number of small farms.

These initiatives underscore our mission to promote sustainable agriculture, empower communities, and create a lasting social impact that extends beyond farming and nutrition, touching the lives of those in our region.



EDUCATION

In the realm of education, BCKIC Foundation is passionately dedicated to driving positive social change through various impactful initiatives. One notable program is the Bayer Fellowship Program - MEDHA, which extends critical financial aid to students hailing from economically disadvantaged backgrounds, ensuring their access to higher education. Moreover, BCKIC Foundation's collaboration with the Science & Technology Department of the Government of Odisha for empowering aspiring entrepreneurs and promoting economic empowerment and self-reliance within the community.

BCKIC Foundation also runs several capacity-building training programs for students like "Spark-O-Thon," where the focus is on nurturing innovation and entrepreneurship among students, thus fostering a new generation of socially-conscious innovators. Additionally, BCKIC Foundation collaborates with the Science and Technology Department to raise awareness about Intellectual Property Rights in Odisha, ensuring that the benefits of innovation and creativity are shared equitably among all sections of society. These initiatives exemplify BCKIC Foundation's unwavering commitment to leveraging education as a powerful force for positive social transformation in Odisha.



WETLAND BIOPROSPECTING & SUSTAINABLE LIVELIHOOD IN COASTAL ODISHA



BCKIC Foundation's interventions in the coastal regions of Odisha, particularly in the Chilika Lake wetland ecosystem, have had a profound social impact. Chilika, the largest brackish water lagoon and a designated Ramsar site, faced significant environmental challenges, including invasive weed infestations and habitat degradation. BCKIC Foundation has stepped in to not only address these ecological issues but also create sustainable livelihoods for the local community. By utilizing *Phragmites karka*-based technological interventions, BCKIC Foundation aims to develop Chilika Bioresource Centre for containing and managing invasive weeds by developing particle boards, kraft paper, corrugated paper, and pellets, benefiting over 500 fishermen and women from six coastal villages.

This initiative will not only improve the ecosystem's health but also empower the local community through self-help groups (SHGs) and skill development programs. Through capacity building and market linkages, BCKIC Foundation's work in Chilika will not only revitalize the wetland but also transform lives, demonstrating the profound social impact of its interventions in coastal Odisha.



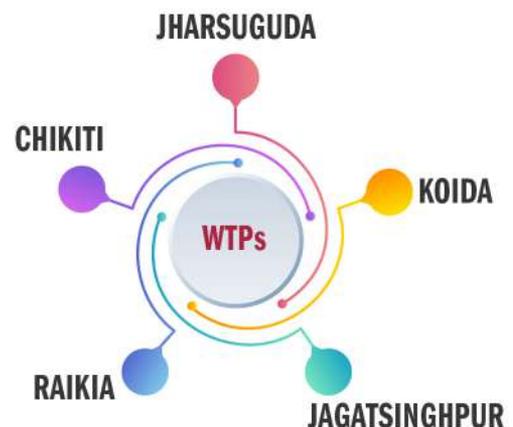
WOMEN EMPOWERMENT

We work to establish The Women Technology Park (WTP) dedicated to empowering women in technology and innovation. Its core objectives include providing skills development, supporting women-led startups, fostering collaboration, promoting research and innovation, advocating for gender inclusivity, and engaging with the community to inspire and support women pursuing careers in technology. WTP aims to break down gender barriers and create opportunities for women to excel in STEM fields, ultimately driving innovation and diversity in the technology sector.



IMPACT	5 Districts Covered	8 Blocks Covered	
	1500+ Total Trained	35 Micro Enterprise Established	5 Funding Partners
	6500+ Participants Reached	1220+ SHGs Associated	5 Number of WTPs

WTP Implementation Sites



BCKIC FOUNDATION
CREATING
SOCIAL IMPACTFUL
CHANGE ———



Bayer's Fellowship Program "MEDHA"

Implemented by:  **BCKIC**
Bhubaneswar City
Knowledge Innovation
Cluster Foundation

"Fellowship support for Masters and PhD students of Economically Weaker Section of Society pursuing Master's/Doctoral studies in Life sciences / Biotechnology / Pharma with special selection criteria being 60% for the female students and 10% for the PWD students."

In order to foster and support the next generation of young scholars to learn and grow, Bayer Foundation India in association with Bhubaneswar City Knowledge Innovation Cluster (BCKIC) Foundation, an initiative led by the Office of the Principal Scientific Adviser to the Government of India has launched the flagship initiative Bayer's Fellowship Program "MEDHA" with an aim to provide financial assistance to students from economically weaker section of the society to pursue higher studies such as Master's and Doctoral programs in the field of Life-sciences / Biotechnology / Pharma. After a meticulous selection process, 125 scholars—60% of whom were women and 10% differently-abled—were awarded scholarships for Master's and PhD programs.



Mentoring and Capacity Building

Mentorship: The scholars have been anchored with eminent mentors from both academia and industries for continuous monitoring and mentoring.

Capacity Building: Bayer Foundation India & BCKIC Foundation have been regularly conducting various capacity building programs and workshops like – proposal writing, scientific writing, sensitization on funding opportunities, design thinking, IPR, etc. to develop the skill sets of the supported scholars.

Collaboration: Session on scope of research and study opportunities in Germany cum mentoring session was conducted in collaboration with DAAD.

IMPACT HIGHLIGHTS	21 States Representation	54 Total Mentoring Hours
	INR 8.4 CR Fellowship Outlay	INR 1.8 CR Fellowship Disbursed

Timeline and Outreach

Application Period: 24th Dec '22 to 13th Jan '23

Outreach: 200+ Institutions, 10,000+ Students, 500+ Faculty

Applications Received: 3186

Selection and Benefits

Selected Scholars: 125 (100 Master's, 25 PhD)

Monthly Scholarship: INR 20,000 (Master's, 2 years), INR 40,000 (PhD, 3 years)

Demographics: 60% female scholars, 10% differently abled

Restore Promise of Water “RPOW” 2023

Implemented by:



Chandrapur is a town in Chandrapur Tehsil in the Rayagada District of Odisha State, India. It is located 79 KM east of the district headquarters of Rayagada. Chandrapur is endowed with extraordinarily diverse and distinctive traditional waterbodies found in different parts of the block commonly known as ponds, tanks (bandha, pokhari in odia), etc.

However, the people of Chandrapur block are facing a water crisis in summer/pre-monsoon due to low rainfall or delayed rainfall, severely impacting their agriculture and livelihood. In light of the water crisis, it is vital to develop long-term solutions. The BCKIC Foundation with support from IIT-IIT, a pan-IIT alumni network implemented the ‘Restore the Promise of Water’ program to address water scarcity by increasing the water holding capacity of the tanks. Furthermore, the effective utilization of silt will increase the fertility of fields, further benefiting farmers.

Acknowledgement of Funding Support:

India Humanity Foundation

Is involved in “National Building ” activities through various initiatives in Health, Water, Disaster Management, Environment etc. It focusses on community development across India and delivers its work done in coordination with Rotary Clubs, NGOs, Governmental organizations, etc. In Water & Sanitation (WASH), it has initiated multiple collaboration projects, (including BCKIC) towards water conservation & developing integrated infrastructure like lake Desilting / rejuvenation, rain-water harvesting structures, etc., thereby benefiting underprivileged communities in water-scarcity regions like Raygada District.

Rotary Club of Raygada

Is one of the co-sponsors of the project, and has implemented a wide range of socio-development projects for benefit of the community, in Chandrapur District and beyond, and keen to work in more such meaningful projects across Odisha. Rotary District 3262 represented by Rotary Club of Raygada, has been leading this project from Rotary side, and Rotary Club has coordinated regularly with the implementing NGO, monitored & inspected the project site. They have also arranged for the formal project inauguration, by the local BDO.

Rotary India Water Conservation Trust

Is one of the co-sponsors, actively promotes water conservation across India, and is noted for building rainwater harvesting structures like Checkdams, Lake Desilting / waterbody rejuvenation, etc., leading to increased agricultural incomes and reverse-migrations from such semi-arid villages.

NBAW Foundation (IIT-IIT, litians for Influencing India's Transformation)

Is one of the co-sponsors of the project, also they are key to the overall strategic conceptualization and bringing in all the stakeholders to the single platform for successful execution of the project.

Implementation Sites & Impact

Harishankar Tank (Turiguda Gram Panchayat)

Location: Between Dhelapada, Mado, and Bangaroda villages.

Work: 79 farmers from the surrounding villages carted silt from the tank to their fields.

Work Duration: From 28-02-2023 to 13-03-2023

79	7139	19989 CUM
Total Farmers Taken Silt	Total Load Carted	Total Silt Carted



BEFORE



AFTER

Kaparagangi Tank (Piskapanga Gram Panchayat)

Location: Between Aliganda and Ghugupadar villages.

Work: Farmers from Piskapanga, Aliganda, and Ghugupadar carted silt to their fields.

Work Duration: From 27-02-2023 to 09-03-2023

87	7141	19994.80 CUM
Total Farmers Taken Silt	Total Load Carted	Total Silt Carted



BEFORE



AFTER

Jugapadar Tank (Dangasorada Gram Panchayat)

Location: Between Jugapadar and Nauduguda villages.

Work: 55 farmers carted silt to their fields.

Work Duration: From 27-02-2023 to 06-03-2023

55 Total Farmers Taken Silt	3571 Total Load Carted	9998.80 CUM Total Silt Carted
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Teperima Tank (Piskapanga Gram Panchayat)

Location: Between Gadadi, Tangedipa, Sundhiriba, Juba, and Kalahati villages.

Work: 93 farmers participated in silt removal.

Work Duration: From 22-03-2023 to 01-04-2023

93 Total Farmers Taken Silt	7137 Total Load Carted	19983.60 CUM Total Silt Carted
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Bangaroda Tank (Turiguda Gram Panchayat)

Location: Between Bangaroda and Hemburu villages.

Work: 41 farmers carted silt to their fields.

Work Duration: From 25-03-2023 to 01-04-2023

41 Total Farmers Taken Silt	3565 Total Load Carted	9982 CUM Total Silt Carted
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Chakra Tank (Dangasorada Gram Panchayat)

Location: Between Nauduguda and Dangasorada villages.

Work: 94 farmers participated in silt removal.

Work Duration: From 02-04-2023 to 14-04-2023

94 Total Farmers Taken Silt	7132 Total Load Carted	19969.60 CUM Total Silt Carted
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Conversion of Rice Husk/Stubble to Value Added Products

An Inclusive Approach to Address Environmental Concerns and Livelihood Challenges

Implemented by:



India is the second largest rice growing country in the world. Rice plant shoot is composed of Straw 50 to 60 % and Paddy 40 to 50%. Paddy is composed of Brown rice (5 to 10%) Rice husk (~20%) and 70 % rice grain, which is extracted and the remaining husk and straw parts are discarded, used as land fill, burnt, or used as fuel. A large quantity of rice husk is also generated as a by-product in Rice mills during the milling process, which is difficult to manage and is used as a land-fill or as fuel, which leads to pilferage/wastage of a naturally produced valuable Biochemical and fine chemical products like cellulose and amorphous silica.

Acknowledgement to the Funding Agency:

KOTAK CSR wing has funded us for the project and currently the pre-pilot facility is under setup in association with Probiokem India Pvt. Ltd. KOTAK CSR is actively involved in various CSR projects across India in varied segments of interventions like Education, Livelihood augmentation programs.

Process

The project is envisioned to create wealth out of the waste while simultaneously addressing the various challenges posed by rice husk and straw disposal. The developmental process includes treating of feed stock, which is rice husk, to generate cellulose pulp. The rice husk pulp slurry is further separated into solid and liquid fractions. The solid fraction is hydrolyzed both chemically and biochemically to generate microcrystalline cellulose whereas liquid fraction is processed to isolate amorphous silica by chemical treatment of hydrolysis derived liquor. Product identity and purity is confirmed by analysis of the final and powdered product through laboratory tests. The final effluent would be repurposed as soil nutrients in the agricultural fields.



Present Status & Intervention of Kotak

The technology is demonstrated at the lab scale and a with a pre-pilot project with the support from BIRAC-BIG grant from Department of Biotechnology, Government of India. Kotak is strongly supporting the scaling up of the process with Semi-Pilot plant capacity of 200 Kg rice husk processing/day, at KIIT-TBI, Bhubaneswar, Odisha. The ultimate objective is to develop the know-how for setting up a manufacturing unit with capacity to process 5 to 10 tons of Rice husk per day.

Social and Economic Advantages

The products (e.g., cellulose and silica gel) are currently being used as specialty chemicals/fine chemicals in diverse Industrial sectors (Food, Pharma, Cosmetics, Textiles, Rubber, Specialty paper, Composite materials, Construction materials etc.), are in continuous increasing demand. These products can be sold in the open market through distributors, exporters, E-marketing or directly sold to the customer in a B2B marketing model, for Revenue generation.

This will also impact the society and the environment in a better way as compared to the current scenario, where both rice husk and stubble are burned. The value-added products generated from rice husk and stubble, used as feed stock, shall ensure long term financial sustainability of the project.

Present Technologies & Advantages of this New Initiative

- ▶ Current Process for cellulose production is Highly Polluting.
- ▶ Currently available Cellulose powder is largely produced from wood pulp, using KRAFT Process, which is highly polluting and utilizes wood as a feed stock. This, leads to deforestation.
- ▶ Greater Energy demand and health hazard in Current synthetic silica production plants.
- ▶ Currently available synthetic amorphous silica is manufactured from sand (crystalline silica) containing metallic impurities. Sand is processed at very high temperatures to generate silicate salt and further processed to generate amorphous silica. Sand in crystalline powder form is a well-known health hazard (Silicosis) for operating personnel and poses health hazard to the nearby localities.

Benefits of Repurposing Rice Husk Utilization

- ▶ The proposed process will generate cellulose and amorphous silica, to add value to the otherwise wasted rice husk, while minimizing environmental foot print.
- ▶ Agro waste such as rice husk and Stubble can act as an alternate feed stock to reduce wood use and reduce Pollution and Deforestation.
- ▶ Agro-waste processing using proposed process can be used in a sustainable manner to produce high quality cellulose powder.
- ▶ Rice husk (containing amorphous silica) can be used as feed stock and needs less energy for silica isolation using least no of processing steps. The Silica present in rice husk being amorphous in nature, causes no health hazard for operating personnel or for nearby localities.



Eco-friendly Polymer-based Feminine Hygiene Products for Tribal Blocks of Odisha

Implemented by:



BCKIC
Bhubaneswar City
Knowledge Innovation
Cluster Foundation



Women health and hygiene have become prime concerns over the years across the globe. Menstruation and menstrual practices still face many social, cultural, and religious restrictions which are a big barrier to menstrual hygiene management. The menstrual hygiene practices are still unsatisfactory in the tribal/rural areas as compared to the urban area. As part of the 'Ujjwala Sanitary Napkin Scheme 2022,' the central government has launched an initiative to provide all women in Odisha with hygiene products and employment opportunities. Although these pads are low-cost, their low wicking capacity is a barrier to their adaptability and recommendation in semi-urban and urban areas.

Alternatively, synthetic pads laced with artificial fragrances, odor neutralizers, and good wicking capacity have become more popular and in demand. In recent years, several limitations have

become more popular and in demand. In recent years, several limitations have been reported, revealing that prolonged use of synthetic-based hygiene products could result in genital fungal infections, urinary tract infections (UTI), toxic shock syndrome (TSS), cervical cancer, infertility, and other health problems. Another disadvantage of synthetic sanitary products is that they are deodorized and chlorine-bleached, which contain chemicals such as organochlorines which when buried in the soil disturb the soil microflora and decomposition takes too long. So, it's high time to get switch over to organic hygiene products made of 100% organic cotton that is not chlorine bleached, is non-carcinogenic, is a biodegradable material, and has super absorbency.

The usage of biodegradable sanitary products is promoted these days, not only because of health reasons but also because of environmental concerns. Biodegradable sanitary pads are made from natural materials, making them more hygienic and safer than regular pads. They are also more environmentally friendly since they reduce plastic waste. Further, the material used for biodegradable materials is chemical-free, so they tend to decompose quickly. Hence, the need of the hour is to develop 100% biodegradable sanitary napkins that are equally as cost-effective as the low-cost sanitary pads, but with superior wicking properties. We, therefore, proposed developing 100% biodegradable sanitary pads by incorporating superabsorbent particles (SAPs) derived from organic cotton fibers and biocompatible polymers from natural sources (e.g., wheat gluten). Further testing on the pilot scale before implementing it in rural and tribal SHGs at large. This technology will result in the advancement/betterment of low-cost sanitary pads. The dissemination of developed technology to women-led sanitary pad units will enable them to sell quality products and generate more profits.



Objectives

- ▶ Pilot testing of eco-friendly sanitary pads made from 100% cotton sourced from tribal areas of Odisha that incorporate superabsorbent particles (SAPs) derived from Wheat Gluten (WG) and Pripol.
- ▶ Creation of awareness of hygiene and sanitation among the women and girls in the tribal districts through awareness programs, mass communication, etc.
- ▶ Deployment of technology to multiple women-led sanitary pad manufacturing units to increase profits.

Activities

- ▶ Incorporation of Superabsorbent Particles (SAPs) in sanitary pads, Process Optimization, and Product characterization.
- ▶ Collaboration & contract with the third-party manufacturer.
- ▶ Piloting and distribution: Product feedback. Compilation of inputs for product refinement planning.
- ▶ Awareness Program: Menstrual Hygiene and Sanitization.

Acknowledgement to the Funders

Modulus Housing has funded BCKIC Foundation for execution of this project. Modulus housing is a Start-up based out of IIT Madras and is keen to handhold various R&D pilots which are directly beneficial to the communities at scale. Ecofriendly approaches are a major thrust area for their CSR funding paradigm.

Impact

- ▶ Development of Odisha-based sanitary pads with an absorbent core which are biodegradable, skin-friendly, and eco-friendly.
- ▶ The major raw material ingredients are derived from local resources (e.g., wheat, Gluten, Cotton) which shall drive sustainability and improve cost structure with profitability during scaleup.
- ▶ User feedback shall help assist in efficacy of the product, both as an absorbent as well as fit (to understand the ease of use).



In Future

- ▶ Women and girls in tribal districts of Odisha would experience better personal hygiene and general sanitation by learning about hygiene and sanitation.
- ▶ Integrating local women's self-help groups shall further address local concerns and shed hesitancy.
- ▶ Technology dissemination in tribal/rural sanitary pads-making SHGs, will boost the tribal economy and ecosystem.
- ▶ With the improved products, women SHGs in the sanitary pad manufacturing business would be able to compete and sustain themselves against various brands already present in the market.
- ▶ The improved product by technology integration, would be more adaptable and hence more sellable, which would assist tribal/rural entrepreneurs in becoming socially and economically more stable.
- ▶ Further job opportunities would be created as the demand scales up.
- ▶ Furthermore, the project's potential for replication would provide the possibility for its expansion at multiple locations where wheat is cultivated extensively.



Other Socially Impactful Projects

Smart Ambulance Initiative: Extending the reach of critical care, no matter the distance

The Smart Ambulance Initiative, spearheaded by Clinohealthinnovation Pvt. Ltd., addresses critical challenges in emergency medical services by leveraging IoT technology for real-time monitoring and communication. This innovative system ensures real-time monitoring of ambulance and patient conditions, including vital signs and environmental factors, day and night. It integrates advanced features such as live movement tracking, speed limit monitoring, and breath analyzers for alcohol detection, along with telemedicine capabilities and 24x7 connectivity to hospitals. The objectives include real-time communication, telemedicine integration, and advanced diagnostics, aiming to bridge the gap between rural and urban healthcare support and reduce response times. The initiative promises swift decision-making, enhanced patient care, & optimized resource utilization. By implementing this solution, it aims to improve emergency healthcare access, reduce mortality rates, and alleviate the burden on existing healthcare infrastructure. The implementation plan includes technology deployment, staff training, testing, and optimization, culminating in the launch of the Smart Ambulance in Western Odisha in collaboration with the State Government and National Health Mission. Impact indicators will track deployment, response time reduction, patient outcomes, and community feedback to assess the initiative's effectiveness and social impact.



Transforming Water Quality Monitoring with Decentralized IoT Analyzers

BCKIC introduces a portable digital water quality analyzer, CLUIX C011, which streamlines water testing processes and delivers swift results for crucial parameters. Currently measuring 8 parameters, it aims to expand its capabilities to meet IS 10500 standards, incorporating fluoride, nitrate, arsenic, and microbiological factors through software updates. CLUIX C011, utilizing IoT technology, evaluates water quality parameters, offers geolocation capabilities, and transmits results to a Web Dashboard for real-time monitoring. Validated by NABL approved labs for results within the standard deviation as per APHA guidelines with over 98% accuracy, these analyzers ensure safe drinking water, mitigating health risks and promoting sustainable development. Key differentiators include portability, real-time monitoring, multi-parameter analysis, affordability, community engagement, and a Web Dashboard with Mobile App. The significance of decentralized water quality monitoring lies in addressing global demands for safe water, offering a user-friendly solution accessible even in rural areas. This approach leads to faster detection of contamination, reduced operating costs, prevention through early intervention, and scalability for impactful and cost-effective solutions. The detailed work plan involves project planning, deployment, training, monitoring, and evaluation, ensuring effective implementation and assessment. The project, implemented collaboratively, aims to improve public health, empower communities, promote environmental sustainability, and build local capacity while community engagement and project advocacy.



Population Health Screening

The burden of non-communicable diseases (NCDs) in India presents a multifaceted challenge with far-reaching consequences. These chronic conditions, encompassing diabetes, cardiovascular diseases, cancers, and anemia, have surged to alarming levels, constituting over 63% of deaths and nearly 70% of the disease burden nationwide. According to the World Health Organization (WHO), NCDs are responsible for a staggering 4 million deaths annually in India, with 1.7 million occurring prematurely, before the age of 70. Within the state of Karnataka, despite its economic progress, NCDs remain a formidable health threat, contributing over 60% to the disease burden.

In the bustling urban landscape of Bangalore, Karnataka's capital, the convergence of rapid urbanization and persistent health challenges exacerbates the NCD crisis. Here, a double burden emerges, as NCDs coexist alongside communicable diseases, particularly impacting densely populated low-income settlements, including slum communities. Within these vulnerable enclaves, factors such as limited health awareness, inadequate sanitation, and unhealthy dietary practices fueled by poverty and restricted access to fresh foods compound the risks associated with NCDs. For instance, only 27.4% of slum dwellers possess good health awareness, highlighting the urgent need for targeted interventions. Focusing on two prevalent NCDs—*anemia* and *diabetes*—underscores the urgency of addressing these health issues within Bangalore's slum communities. *Anemia*, characterized by iron deficiency, exacts a heavy toll, particularly on women and children, with India bearing one of the highest burdens globally, affecting over half of women and children under five. Similarly, *diabetes*, a rapidly growing epidemic, presents daunting projections, with a projected 172% rise in cases by 2045. In Bangalore's urban milieu, marked by sedentary lifestyles and unhealthy dietary habits, the prevalence of diabetes surpasses the national average, posing grave health risks to residents.

Recognizing the imperative for targeted intervention, corporate social responsibility (CSR) initiatives offer a pivotal pathway to address the NCD crisis, especially within underserved communities like Bangalore's slums. By focusing



on *anaemia* and *diabetes* prevention and awareness, CSR endeavors can play a transformative role in raising health literacy, fostering healthy behaviors, and bolstering healthcare access. Through a well-structured CSR program, initiatives can proactively educate residents on NCD risk factors, promote dietary changes and physical activity, and facilitate screening camps and diagnostics, paving the way for early detection and timely interventions.

Our collaborative project, in partnership with MedTel, embodies this ethos by offering end-to-end, customized, connected care solutions aimed at empowering healthcare delivery. Leveraging an innovative All-in-One Health Kit, trained health workers conduct door-to-door screenings for NCDs, ensuring accessibility and convenience for residents. Through comprehensive health check-ups and instant reporting, abnormalities in NCDs are promptly identified, enabling timely referrals to hospitals or specialized facilities for further evaluation and treatment. Furthermore, the centralized dashboard provides actionable insights for stakeholders, facilitating program planning and progress tracking.

With clear program objectives to detect NCDs early, ensure affordability and accessibility, educate communities, and continuously enhance screening and diagnostic services, our initiative strives to make a tangible impact. By leveraging the power of data-driven decision-making, meticulous needs assessments, and robust SOP development, we aim to implement effective door-to-door health screenings, followed by rigorous data analysis to gauge impact and inform future expansions.

The project holds promise for replication in rural areas across India, guided by a baseline assessment to ensure optimal resource allocation. The benefits of IoT-enabled screening extend beyond mere detection, promising scalability and broader outreach. By adapting to local needs, forging partnerships, and securing diverse funding, our program aspires to bridge healthcare gaps, empower communities, and chart a course toward a healthier future for all.

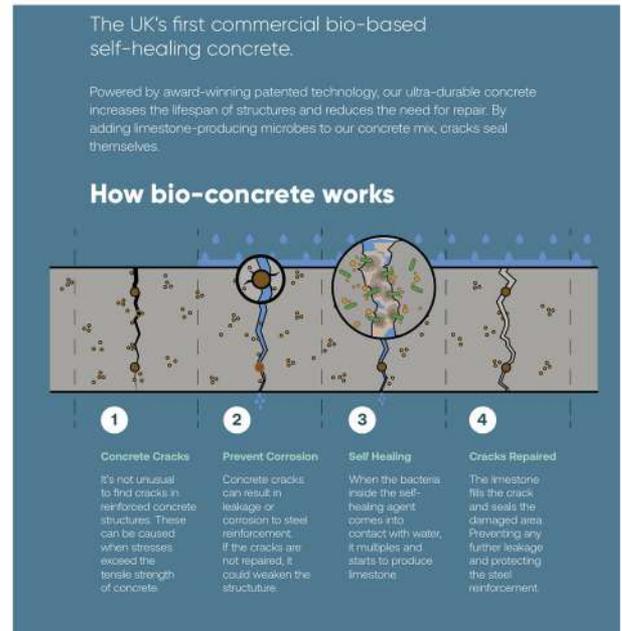


Self healing Concrete Technology from Fly Ash for Shoreline Management

Bhubaneswar City Knowledge Innovation Cluster Foundation (BCKIC) proposes to protect the cost line of eastern India with innovative, patent-protected bio-based self-healing concrete structures.

We aim to construct shoreline protection structures along the coastline to prevent erosion and promote marine biodiversity by building resilient structures utilizing fly ash generated from industries, otherwise considered as waste. Bulk utilization of fly ash in the structures will address the problem of fly ash accumulation as well. We use the lowest proportion of cement possible in our products reducing the amount of embedded carbon in retaining structures by half of the conventional structures. The structure is tested to have enhanced sustainability and durability. The self-healing property extends the lifespan of the structures, significantly reducing maintenance costs. We focus on creating eco-engineered, resilient marine structures that not only withstand harsh marine environments but also promote biodiversity.

The project involves a comprehensive survey, including shoreline vulnerability assessment, tidal patterns analysis, and coastal geomorphology study, coupled with an Environmental Impact Assessment (EIA) to evaluate ecological implications and water quality impacts. Utilizing field surveys, remote sensing, and GIS for data collection. We emphasize stakeholder engagement, incorporating inputs from local communities, government agencies, and NGOs to improve the society as whole.



International Partnership

towards

ENABLING

TECHNOLOGY

DEPLOYMENT



Catapulting HealthTech Business from India to the UK

BCKIC Foundation in collaboration with British High Commission in India is implementing the UK - India Healthtech Bootcamp 2024 to catapult healthcare businesses from India to UK. The program served as a launchpad for Indian companies to gain insights into the UK's health ecosystem, develop robust market access strategies, and establish potential overseas partnerships.

Following the resounding success of last year's programme where 147 applications were received and 6 startups got an opportunity for immersion at UK NHS, this year the program got astounding response with 263 startup applications across all the regions of the country.

The program aims to empower Indian startups and companies with the ecosystem knowledge and connections needed to grow their respective businesses in the UK's health market, and to continue their product refinement and global expansion journey.



UK-India Industry-Academia scoping workshop on Critical Minerals

The UK-India Critical Mineral Partnership Workshop held 26-28 February 2024, in Bhubaneswar, Odisha, had over 70 participants from both countries. The workshop brought together a diverse array of UK-Indian stakeholders from academia, startups, industry and policy makers.

The workshop emphasized the importance of collaboration to identify and address grand challenges and leverage expertise for solutions. The workshop saw engaging sessions highlighting challenges and opportunities in critical mineral exploration, extraction, and surveying methods for the transition to green energy and the imperative of sustainable supply chains while aligning with ESG principles. Discussions revolved around, novel approaches to surveying, exploration, recycling innovation, and the role of government in fostering industry-academia partnerships and investment opportunities.

It highlighted the need for promoting junior mining concepts, Environment Social and Governance approaches, improving supply chain resilience, bridging industry-academia gap to commercialize technologies, initiating research programmes, and building skills and capacity in the areas of mining and geology science.



Forming Innovation Bridges: Bhubaneswar's Partnership with the Netherlands

Recently, BCKIC Foundation partnered with the Netherlands Innovation Network India for a groundbreaking event titled "Unveiling Synergies: Pioneering Innovation Excellence in Bhubaneswar." hosted by BCKIC Foundation and KIIT-TBI.

The event was attended by a distinguished delegation from the Netherlands Embassy in India, including Dr. Dhoya Snijders - Innovation Counsellor for India, Ms. Sandra Kalidien - Attaché for Science, Technology, and Innovation, Dr. Nutan, PhD - Senior Policy Advisor, Mr. Arun Thekkedath - Senior Policy Advisor, Ms. Aleena Joseph - Netherlands Innovation Network, and Mr. Naman Agarwal, Policy Advisor. Their presence marked a significant step towards exploring collaboration opportunities with various institutions and incubators across Odisha.

This collaboration aims to position Bhubaneswar as a leading Innovation Hub/Centre, fostering global partnerships and driving innovation excellence. This event initiated discussions on mutual goals in diverse sectors including Water, Agriculture, Health, Energy, and Key Enabling Technologies (KETs) such as semiconductors, quantum technology, space tech, and AI.

The focus of the discussion also revolved around **projects related to Green Hydrogen**, spanning from their development to deployment, between BCKIC Foundation and the Netherlands. The discussions aligned with the triple helix approach involving government, business/industries, and academia to achieve mutual goals.



Technologies Pivotal

towards

SOCIAL IMPACT

MedTel Healthcare Pvt Ltd

Karma Tech Pvt Ltd

Bariflo Labs Pvt Ltd

Clinohealth Inovation Pvt Ltd

Cluix Pvt Ltd

Pro-Biokem India Pvt Ltd

EzeRx Health Tech Pvt Ltd

Tan90 Thermal Solutions Pvt Ltd



MedTel Healthcare Pvt Ltd



iLAB & iRPM: Remote Patient Monitoring System

FOUNDERS' NAME:

Lalit Manik

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Revenue generation stage)

INTELLECTUAL PROPERTY

NA

Healthcare: Devices

APPLICATION

The tele-health platform can be used for remote health monitoring of patients in hospitals, remote locations, etc.

PROBLEM ADDRESSED

Increasing burden of chronic diseases like – diabetes, hypertension, heart diseases, etc. have resulted in 70% deaths worldwide. The major gap is in the constant real time health monitoring of chronic diseases which results in delay in the treatment procedures and eventually leads to death. Only 25% of hospitals are equipped with remote health monitoring system. Furthermore, the rural PHCs are not at all equipped with any health monitoring system through which the doctors can remotely treat the patients.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC LEAP Investment fund worth INR 50 lakhs
- Pre Series A: INR 5 Cr raised already. INR 2.5 Cr to be raised
- Singapore based institutional funding
- HNIs and Angels from Australia, USA and Europe
- Majority of funds to be utilized in Business Development & Product Improvement

END USERS/CUSTOMERS

B2B & B2B2C Model

- Devices one time buy and Platform on Subscription
- Devices + Platform on rental subscription
- Sell to hospitals, polyclinics, healthcare organizations and others

ABOUT THE TECHNOLOGY

MedTel's RPM platform incorporates connected diagnostic devices, a smartphone app, and a web-based dashboard for hospital access and review. These devices include the digital blood pressure machine, body composition monitor, glucometer, pulse oximeter and many more. Our advanced solutions manage diseases like diabetes, hypertension & obesity and endeavor timely interventions. We also provide remote pregnancy care which reduces physical clinic visits and monitors complication parameters. In the COVID-19 pandemic, connected healthcare and remote patient monitoring are important tools for hospitals, poly-clinics and individual practitioners.

USP

- 15+ Point of Care Devices
- Personalized Tele Health App
- Automated Prescription & Reports
- Emergency Management Module
- Integrated Payment Gateway

PRODUCT IMAGE



Karma Tech Pvt Ltd

(Kalinga Renewable Energy Manufacturers)



Solar Micro Pump- Affordable Solar Power for Small and Marginalized Farmers

FOUNDERS' NAME:

Saroj Nayak

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue generation phase)

INTELLECTUAL PROPERTY

NA

Clean Energy

APPLICATION

The first solar micro pump certified by Ministry of New and Renewable (MNRE) provides a game changer for more than 75 % of farmers with 2 hectares or less land.

PROBLEM ADDRESSED

More than 50 % of farmers do not have access to year around irrigation thereby restricting their full potential income while farmers with diesel powered pump spend more than 30 % of total input cost as recurring expenses. Earlier solar pumps were targeted for farmers with 5 hectares or more. In addition, KARMA solar micro pump uses surface water and does not exploit ground water. KARMA introduced portable solar water pumping systems for use in irrigating the large number of small farms- it is *Unerization of Irrigation*.

FUNDS RAISED/ACHIEVEMENTS

- More than INR 10 crores so far raised from different ministries and investor groups.

END USERS/CUSTOMERS

Farmers, small shop owners, individual households for multiple uses such as pumping water and using solar power for reducing electricity bills. About 200 million farmers could use such pumps to provide year round irrigation with affordable price.

ABOUT THE TECHNOLOGY

The portable solar panel uses Copper Indium Gallium Selenide (CIGS) and uses AC/DC power through patented technology which minimizes solar panel cost. The light weight and foldable panel allows total pump system as portable unit useful for multiple farmers and pumping at various locations. When pump is not used panels are used to charge battery, provides power to other items such as small flour mill, etc.

USP

- First solar micro pump certified by MNRE and Industry standard.
- With flexible and light panels pump goes mobile.
- Tie up with Kirloskar service is provided within 48 hrs.
- With patented technology uses beyond pumping.

PRODUCT IMAGE



Bariflo Labs Pvt Ltd



Intelligent waterbody management system for water body rejuvenation and inland shrimp aquaculture

FOUNDERS' NAME:

Mrutyunjaya Sahu

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Deployed units in close collaborations with government bodies)

INTELECTUAL PROPERTY

PCT Application No.
PCT/IN2021/050611

Agritech

Indian Patent Application No.
202031026797, 202031026796,
201831031000, 34443-(1-6)

APPLICATION

The management system have huge application in rejuvenating the water bodies, brackish water inland aquaculture, urban water body rejuvenation.

PROBLEM ADDRESSED

The approach of novel invention focused on farmers who are unable to produce a profitable output because of hypoxic circumstances caused by excess feed and excreta accumulation in the sediment in moderate density shrimp farming. Also, traditional farmers use a time-consuming manual procedure of tying a rope in the middle of a pond and spraying feed by traveling around it in a dinghy, which prevents farmers from providing feed precisely in the habitable space. To address the issue, an intelligent mobile multipurpose feed spraying dispenser AIMSD for feeding shrimps and probiotic administration in a livable space has been developed.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC BIG grant of INR 50 lakhs
- BIRAC SEED fund of INR 25 lakhs
- DST NIDHI PRAYAS fund of INR 7 lakhs
- MeitY TIDE 2.0 grant of INR 7 lakhs
- MeitY SASACT grant of INR 20 lakhs
- Startup Odisha fund of INR 15 lakhs
- RKVY RAFTAAR Grant of INR 20 lakhs
- Recognized as top 10 Agri-startup in Agri-Udaan
- TDB, DST Debt Investment of INR 89.00 lakhs

END USERS/CUSTOMERS

- Brackish water farmers
- Freshwater aqua farmers
- FPOs
- Contractors
- Govt bodies

ABOUT THE TECHNOLOGY

The invention discloses an intelligent maneuvering hypolimnetic aerator with an internet of things monitoring system that can autonomously navigate to different coordinates and aerate the hypolimnetic region of a water body to improve dissolved oxygen demand (DO) and thus maintain water quality standards.. The generated data then transmitted and then can be used to rebuild a 3D image of the bathymetry, temperature distribution, DO distribution, and ORP distribution of the waterbody. Furthermore, the aeration system oscillates vertically in a sinusoidal way, resulting in the generation of standing waves horizontally, resulting in wave propagation to transmit DO farther from the device position and It also improves mixing at the sediment-water interface, allowing DO to penetrate into the sediment.

USP

- Intelligent Sediment aeration system
- Intelligent weather and water quality monitoring system
- Intelligent nutrient control module
- Auto-corrected dissolved oxygen, Un-ionized ammonia, phosphate sensors, carbon dioxide, methane sensors
- Disease and water quality prediction DSS

PRODUCT IMAGE



Clinohealth Inovation Pvt Ltd

A complete IOT & IT enabled Product for Smart Ambulance Management System



FOUNDERS' NAME:

Dipti Sundar Mohanty

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue Generation)

INTELLECTUAL PROPERTY

Patent No. 202331026899 & 202131003720

Copy Right: SW-15249/2022
ISO: 9001/27001/13485

Healthcare

APPLICATION

AMTeK & AMTeK-V are complete IOT with IT Dynamic Dashboard for Ambulance Management with Hospital Cloud Support System. The technology has been developed with support of complete IOT devices which has been integrated to the Cloud dashboard for different segment of the Client for Proper Monitoring.

PROBLEM ADDRESSED

The current problems with ambulance services at the hospital level and fleet level is immense with response to delays in response time, availability of the nearby ambulance to the patient for pick up, Limited Pre-Hospital Care Capabilities, Communication and Coordination Challenges, Lack of Technology Integration for cloud support on wheels and at same time Traffic congestion create big problem even if we sort all the problem.

FUNDS RAISED/ACHIEVEMENTS

- Funds Raised So Far: INR 5.0 Cr
- Revenue Run Rate: INR 3.3 Cr per Year
- Employment Generated: 50+

END USERS/CUSTOMERS

Private Hospital/Ambulance fleet/Industry and corporates /Govt. Agencies

ABOUT THE TECHNOLOGY

Mo Ambulance is technology driven emergency healthcare platform to provide the Support service during the Golden hour for cloud monitoring of the health parameters along with ambulance environment (Air Quality, Temp., Breathanalyzer, Live patient, Oxygen In Cylinder etc.) and to minimize the Paramedical Staff support during the Treatment. The technology is integrated with hybrid technology of IT, IOT in all the above Product & services. HAMS linked to the Ambulance and linked to the IOT devices within the Ambulance.

USP

- Low Cost IOT Devices for Cloud Monitoring of the Oxygen Level of Cylinder, AQI, Vital Parameter, Patient Condition from the Ambulance
- Dynamic Dashboard for End User
- Ambulance Traffic Organisation Management System using IT & IOT Integration within Ambulance and Traffic Post

PRODUCT IMAGE



Cluix Pvt Ltd



Cluix- Strip based water quality testing device

FOUNDERS' NAME:

Robin Singh
Chitaranjan Singh

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue Generation Phase)

INTELLECTUAL PROPERTY

Filing in progress

Clean Water

APPLICATION

This new portable water quality testing device is used to test a variety of parameters related to drinking water and can determine whether water from a given source is suitable for consumption or not. It can test various parameters such as pH, turbidity, color, total hardness, free residual chlorine, TDS, lead, chromium, and copper.

PROBLEM ADDRESSED

Due to the limited drinking water resources, intensive money requirements, growing population, urban change in rural areas, and the excessive use of sea resources for salt extraction has significantly worsened the water quality available to people. The high use of chemicals in manufacturing, construction and other industries, fertilizers in farms and also directly leaving the polluted water from industries into nearby water bodies have made a huge contribution to the global water quality reduction, which has become an important problem. Even due to containment water various water born are increasing day by day, due to which many human beings are losing their lives.

FUNDS RAISED/ACHIEVEMENTS

- INR 24.45 lakhs grant-in-aid from National Jal Jeevan Mission challenge.
- INR 35 lakhs under SISFS Scheme

END USERS/CUSTOMERS

- Domestic Household customers
- Government agencies to monitor water quality
- Industrial bodies

ABOUT THE TECHNOLOGY

This innovative technology entails the reader circuit can measure the change in conductivity and excess charge caused when a drop of sample and an oxidase are mixed on the strip. The reaction on the strip is recorded and shown on the screen by a reader similar to a glucose meter. The meter also indicates if the test sample is permitted or not. They evaluated the known levels of lead by mixing Dimethyl Sulphoxide water with the test sample, and the oxidation reaction was recorded by the reader, which precisely displayed the quantities.

USP

- Multiple parameter testing with no reagent which makes it more user friendly.
- Easy to use device with one step method.
- AI Analysis of result with permissible levels.
- Portable hand held device- Can be carried across the field.
- IoT based data storage transfer.
- Low cost device for mass adoption of technology.

PRODUCT IMAGE



Pro-Biokem India Pvt Ltd



Value added products (Cellulose and Amorphous Silica) from rice husk

FOUNDERS' NAME:

Mahhamad Gulebahar Sheikh
Baisun Nesha

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue Generation Phase)

INTELLECTUAL PROPERTY

A process for cellulose or silica extraction/isolation from raw rice husk

Waste Management

Application No: 201831027208

APPLICATION

Pro-biokem has developed a process to extract cellulose and silica from raw rice husk. The cellulose powder can be used as Processed food texturizer, Instant Beverages gelling agent, Cosmetics fat substitute, Tablet manufacturing binder, etc.

PROBLEM ADDRESSED

India is the second largest rice growing country in the world. A large quantity of rice husk is generated as a by-product in Rice mills during the milling process, which is used as solid fuel, which leading to wastage of naturally produced valuable Biochemical/ fine chemical products like cellulose and amorphous silica. Burning rice husk has a greater environmental footprint. Currently available cellulose powder is largely produced from wood pulp, using KRAFT Process, which is highly polluting and utilizes wood as a feed stock leading to deforestation. Currently available synthetic amorphous silica is manufactured from sand (crystalline silica). Sand in crystalline powder form is a well-known health hazard (Silicosis) for operating personnel and poses health hazard to the nearby localities.

FUNDS RAISED/ACHIEVEMENTS

- BIRAC BIG Grant of INR 50 lakhs
- BIRAC SEED fund of INR 25 lakhs
- Startup Odisha Product Development Fund of INR 12.5 lakhs

END USERS/CUSTOMERS

Processed food industries, Pharmaceutical industries, Feed industries, Construction and paint industries, Breweries, etc.

ABOUT THE TECHNOLOGY

Pro-biokem has developed a process to extract cellulose and silica from raw rice husk. The proposed process has already been developed in pilot scale, to isolate Cellulose and amorphous Silica in homogenous form with high purity and yield. The feed stock was processed to generate cellulose pulp. The cellulose pulp was further processed Bio/chemically to generate Microcrystalline cellulose. Silica was isolated from the pulp filtrate liquor. The proposed technology will also be effective if rice stubble is used as a feed stock since the composition (qualitative and quantitative) of rice husk and rice stubble are very similar.

USP

- Multi-product Isolation from single feedstock with wider applications
- Non-Wood/ Non-Cotton derived products
- Low pollution compared to currently used process technology
- Products derived from Agro residue/waste
- Offer better margin to supply chain
- Lower cost of feedstock and Production cost

PRODUCT IMAGE



EzeRx Health Tech Pvt Ltd



EzeCheck: India's First ICMR Validated Non-Invasive Hemoglobin Screening Device

FOUNDERS' NAME:

Mr. Partha Pratim Das
Mahapatra

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 9 (System Proven and Ready for Full Commercial Deployment)

INTELLECTUAL PROPERTY

One Indian Patent and PCT granted

Healthcare: Devices

APPLICATION

To tackle the prevalence of anemia, mass scale screening in across the age groups are very crucial. Specially on the adolescent, school going children along with the pregnant and lactating mother, time-based intervention is required. EzeCheck will be useful for deploying in Government programs/ schemes, Hospital and Clinics, Blood Banks, CSR, NGOs, Pharma and Insurance companies, for detecting anemia within less than a minute and without pricking a single drop of blood from the human body.

PROBLEM ADDRESSED

- Globally two billion, in India more than 50% women and child are anemic.
- 2 out of every 3 women in India are anemic.
- Due to unavailability of noninvasive screening device, adolescent and school going children are not screened as expected.

FUNDS RAISED/ACHIEVEMENTS

- Funds Raised So Far: \$2.18 Million
- Revenue Run Rate: \$0.85 Million in FY 22-23
- Employment Generated: 27
- EzeCheck screened 23 lakh individuals, detecting anemia in 7.5+ lakh people across 17+ states, 386+ districts, and seven international markets. Our partnership with Sun Pharma, the fourth-largest global specialty generic pharmaceutical company and Indian Oil Corporation, has strengthened our position. We remain committed to serving the healthcare industry with Next-gen technology to save lives and create a social impact.

ABOUT THE TECHNOLOGY

EzeCheck employs absorbance spectroscopy, a sophisticated technique for signal analysis and processing. This, combined with advanced artificial intelligence algorithms, enables accurate evaluation of hemoglobin levels with unparalleled precision and efficiency.

USP

- Non Invasive, Infection free and painless.
- Affordable and accessible.
- Portable and rechargeable battery operated.
- Easy to train for semi-skilled manpower.
- IoT enabled, easy to integrate any third party application for quick treatment plan.
- Sustainability and Environment friendly.

END USERS/CUSTOMERS

End Users: People suffering from anemia, pregnant and lactating mother, adolescent and school children
Customers: Government programs/ schemes, Hospital and Clinics, Blood Banks, CSR, NGOs, Pharma

PRODUCT IMAGE



Tan90 Thermal Solutions Pvt Ltd



Portable Cold Storages with Proprietary Phase Change Material for Cold Supply Chain

FOUNDERS' NAME:

Mr. Soumalya Mukherjee

TECHNOLOGY READINESS LEVEL (TRL)

TRL: 8 (Early Revenue generation phase)

INTELLECTUAL PROPERTY

Fast freezing of PCM Aat -4 degrees centigrade

Agritech

Patent No: 201941028298

APPLICATION

The eutectic solution has a lifespan of 500 cycles. From the business model point of view, it would replace the thermal batteries after the specified time at a minimal cost. This technology has applications in field of logistic solution for agricultural products, food products and beverages, drugs and vaccine supply.

PROBLEM ADDRESSED

Given the COVID19 scenario, the demand for refrigerated transport and storage exploded globally, with customers preferring retail food to restaurants. Hence, it is important for building infrastructure that can limit the food wastage along the supply chain and cold storage is one of the solutions. However, in most cases, a centralized cold storage model is followed where farmers and aggregators have to come to local cold storage. This model leaves out a majority of the small scale and marginal farmers.

FUNDS RAISED/ACHIEVEMENTS

- Received BIRAC BIG Grant worth INR 50 lakhs
- Equity fund from INVENT Program and Social Alpha worth INR 90 lakhs
- Received CSR funds worth 60 lakhs from CISCO & CINI (IAIN)
- Raised INR 5 Cr from Blue Ashva Capital and 3i Partners

USP

- Portable storage capacity.
- Gets frozen thrice as fast as compared to existing product.
- Portable cold storages can extend the shelf life of greens to 2.5 to 3 days in transit.
- Being modular, users can stack these boxes and convert any room or vehicle to cold storage infrastructure.

ABOUT THE TECHNOLOGY

The portable cold storage capacity of 58 liters that are run by proprietary thermal batteries. As compared to other solutions available in the market, the proposed thermal batteries can be charged twice as fast, resulting in giving the users a faster turnaround time. Since, each of the boxes have self-standing cooling solutions, they can be stacked on top of each other and any logistics services can be used for transporting temperature-sensitive perishables. It can be a two-wheeler, three-wheelers or even scaled up in trucks. This negates the need for refrigerated trucks and reduces the operational costs by 32. In order to further increase the shelf life of the perishables, Tan 90 is introducing a hydantoin based anti-microbial polymers that can increase the lifetime of the perishables without a cold solution. This will further decrease the operational costs involved.

END USERS/CUSTOMERS

Agricultural practitioners, Food industries, Govt. agencies

PRODUCT IMAGE



Transforming Tomorrow

Support for Creating a first of its kind Innovation & Impact Hub in Eastern and Northeastern India

A transformative innovation hub that transcends mere infrastructure to become a beacon of positive change in our region.

Floor for Deep Tech Innovation

On the first floor, we envision the creation of a cutting-edge facility dedicated to deep tech innovation. This space will house the prestigious BCKIC Think Tank Club, serving as a hub where experts and innovators converge to tackle society's most pressing challenges. Additionally, we plan to establish a state-of-the-art hall for product showcases, providing startups and entrepreneurs with a platform to exhibit their innovative products. A Technology Readiness Level (TRL) maturation center will also be established to facilitate product testing, refinement, and validation. Moreover, an Intellectual Property (IP) & Tech Transfer office and an Office of Regulatory Affairs will streamline the transition of innovations into the market.

Floor for Technology Showcase

The fourth floor of our innovation hub will be dedicated to showcasing cutting-edge technologies and innovative products developed within our ecosystem. This floor will serve as a dynamic platform for stakeholders to experience firsthand the transformative power of innovation across various sectors. From healthcare to agriculture, waste management to circular economy solutions, visitors will have the opportunity to interact with working prototypes, demos, and exhibits, gaining insights into the practical applications and benefits of these innovations. Additionally, this floor will facilitate collaboration and knowledge exchange, enabling stakeholders to leverage these technologies for further research, development, and implementation in their respective fields.

Floor for Societal Innovation

Moving to the second floor, we aim to create a catalyst for societal innovation, empowering communities and preserving cultural heritage. Here, initiatives such as the Women Technology Park (WTP) training center and the preservation of tribal knowledge and art will take center stage. By providing skill development and support for women in technology and innovation, as well as preserving the rich cultural heritage of our region, we aim to create sustainable livelihood opportunities and bridge the gap between innovative solutions and potential markets.

Floor for Manufacturing Hub

Recognizing the importance of translating innovation into tangible products, the third floor of our innovation hub will house a state-of-the-art manufacturing hub. This hub will cater to the development and manufacturing of Make in India innovative products aimed at addressing pressing challenges in healthcare, agriculture, waste management, food security, and circular economy. Equipped with advanced manufacturing technologies and facilities, this floor will serve as a launchpad for turning innovative ideas into scalable solutions that positively impact society. From prototype development to mass production, the manufacturing hub will support startups, entrepreneurs, and innovators in bringing their ideas to fruition, driving economic growth and job creation in the process.

Measuring Impact and Sustainability:

Key Metrics for BCKIC's Social, Environmental, and Economic Contributions



1 Social Impact Metrics

- ▶ Reduction in healthcare disparities and improvement in health outcomes among underserved communities.
- ▶ Empowerment of women and marginalized groups through skill development, entrepreneurship opportunities, and access to resources.
- ▶ Strengthening of social cohesion and community resilience through collaborative initiatives and capacity-building programs.
- ▶ Enhancement of educational opportunities and academic achievement, particularly in STEM fields, leading to socioeconomic mobility.

2 Community Engagement & Outreach

- ▶ Expansion of community participation in decision-making processes and project implementation, fostering a sense of ownership and empowerment.
- ▶ Facilitation of dialogue & collaboration between stakeholders from diverse backgrounds, promoting inclusivity and social cohesion.
- ▶ Provision of platforms for community-driven initiatives and grassroots innovation, amplifying local voices and addressing unique community needs.
- ▶ Establishment of community centers and outreach programs to promote awareness, education, and advocacy on pressing social issues.

3 Environmental Impact Metrics

- ▶ Mitigation of environmental degradation through sustainable land use practices, reforestation efforts, and habitat restoration projects.
- ▶ Reduction in greenhouse gas emissions and carbon footprint through the adoption of renewable energy solutions and energy-efficient technologies.
- ▶ Conservation of natural resources, biodiversity, and ecosystems through habitat preservation, conservation initiatives, and sustainable resource management.
- ▶ Promotion of waste reduction, recycling, and circular economy principles to minimize environmental pollution and resource depletion.

5 Technology Readiness Level (TRL) Progression

- ▶ Advancement of technology readiness levels through research, development, testing, and validation of innovative solutions.
- ▶ Transition of promising technologies from early-stage prototypes to market-ready products through TRL maturation centers and validation programs.
- ▶ Collaboration with industry partners and regulatory agencies to navigate the path to commercialization and regulatory approval.
- ▶ Monitoring of TRL progression metrics to track the maturity and viability of technologies, guiding investment decisions and resource allocation.

4 Number of Startups Supported

- ▶ Acceleration of entrepreneurial growth and innovation ecosystem development through support for startups and SMEs.
- ▶ Provision of mentorship, funding, infrastructure, and networking opportunities to enable the growth and success of early-stage ventures.
- ▶ Cultivation of a diverse portfolio of startups spanning various sectors, including healthcare, agriculture, renewable energy, and technology.
- ▶ Facilitation of market access and commercialization support to help startups scale their innovations and reach wider audiences.

6 Number of Innovations Developed

- ▶ Creation of a pipeline of innovative solutions addressing key societal challenges such as healthcare accessibility, agricultural productivity, and environmental sustainability.
- ▶ Development of novel technologies, products, and services with the potential to disrupt industries, drive economic growth, and improve quality of life.
- ▶ Promotion of interdisciplinary collaboration and knowledge exchange to catalyze innovation and foster cross-sectoral solutions.
- ▶ Identification and prioritization of high-impact innovation opportunities based on market demand, technological feasibility, and social relevance.

7 Employment Generated

- ▶ Generation of direct and indirect employment opportunities across various sectors, including technology, healthcare, agriculture, and environmental management.
- ▶ Creation of skilled jobs in emerging industries such as renewable energy, digital health, sustainable agriculture, and green manufacturing.
- ▶ Empowerment of youth, women, and marginalized communities through training, capacity-building, & job placement programs.
- ▶ Contribution to economic resilience and inclusive growth by diversifying the labor market and reducing unemployment rates.

9 Long-term Sustainability

- ▶ Integration of sustainability principles into project design, implementation, and evaluation processes to ensure long-term viability and resilience.
- ▶ Adoption of holistic approaches that balance economic prosperity, social equity, and environmental stewardship in decision-making and planning.
- ▶ Engagement with stakeholders and communities to foster a culture of sustainability and shared responsibility for natural resource management and conservation.
- ▶ Development of governance structures, policies, and incentives that promote sustainable development practices and mitigate risks associated with climate change and environmental degradation.

8 Sustainability Assessment

- ▶ Evaluation of projects and initiatives based on their adherence to sustainability criteria, including environmental impact, social equity, and economic viability.
- ▶ Monitoring of key performance indicators and impact metrics to assess progress towards sustainability goals and identify areas for improvement.
- ▶ Implementation of monitoring and evaluation frameworks to track the long-term effects of interventions on ecosystems, communities, and economies.
- ▶ Collaboration with stakeholders, experts, and regulatory bodies to conduct regular audits, reviews, and assessments of sustainability performance and compliance.
- ▶ By prioritizing these impact metrics and assessments, BCKIC Foundation can maximize its contributions to social development, environmental conservation, and economic prosperity, while ensuring the long-term sustainability and resilience of its initiatives.



“BCKIC nurtures and deploys technologies which are adaptable, affordable and scalable”

Driving Sustainable Development

BCKIC's Core Change Strategies



1 Ecosystem Integration

Foster collaboration and integration across diverse stakeholders including research institutions, academia, industry partners, startups, MSMEs, NGOs, and government agencies to create a cohesive innovation ecosystem.

2 Sustainable Development Goal Alignment

Align initiatives and interventions with the United Nations Sustainable Development Goals (SDGs) to ensure that BCKIC's activities contribute directly to global efforts for sustainable development.

3 Innovation Acceleration

Implement strategies to accelerate innovation and technology deployment across various sectors, driving economic growth, social progress, and environmental sustainability.

4 Capacity Building

Focus on capacity building initiatives to enhance the skills, knowledge, and capabilities of individuals and organizations, empowering them to drive innovation-led growth and create sustainable livelihoods.

5 Entrepreneurship Promotion

Promote entrepreneurship and startup culture by providing support, mentorship, and funding to aspiring entrepreneurs, fostering a conducive environment for innovation and economic empowerment.

6 Partnership and Collaboration

Forge strategic partnerships and collaborations with local, national, and international entities to leverage resources, expertise, and networks for maximum impact and scale.

7 Inclusive Innovation

Prioritize inclusive innovation by ensuring that technological advancements benefit all segments of society, particularly marginalized communities, and address pressing challenges such as poverty, inequality, and climate change.

8 Policy Advocacy

Advocate for supportive policy frameworks and regulations that facilitate innovation, entrepreneurship, and technology deployment, creating an enabling environment for sustainable development and growth.

9 Impact Measurement & Evaluation

Establish robust systems for measuring and evaluating the impact of BCKIC's initiatives, using data-driven insights to continuously improve strategies and optimize resource allocation.

10 Scale and Replicability

Design initiatives with scalability and replicability in mind, aiming to expand successful models and interventions to new geographic areas and sectors, maximizing reach and impact for sustainable change.

11 Systems Strengthening

Strengthen existing systems and develop new mechanisms to ensure that no one is left behind, particularly focusing on marginalized communities and vulnerable populations, to promote equity and inclusivity in all aspects of BCKIC's work.



BCKIC Foundation Stakeholders

INDUSTRY & CORPORATES



PHILANTHROPIC



PUBLICATION HOUSE



INSTITUTES



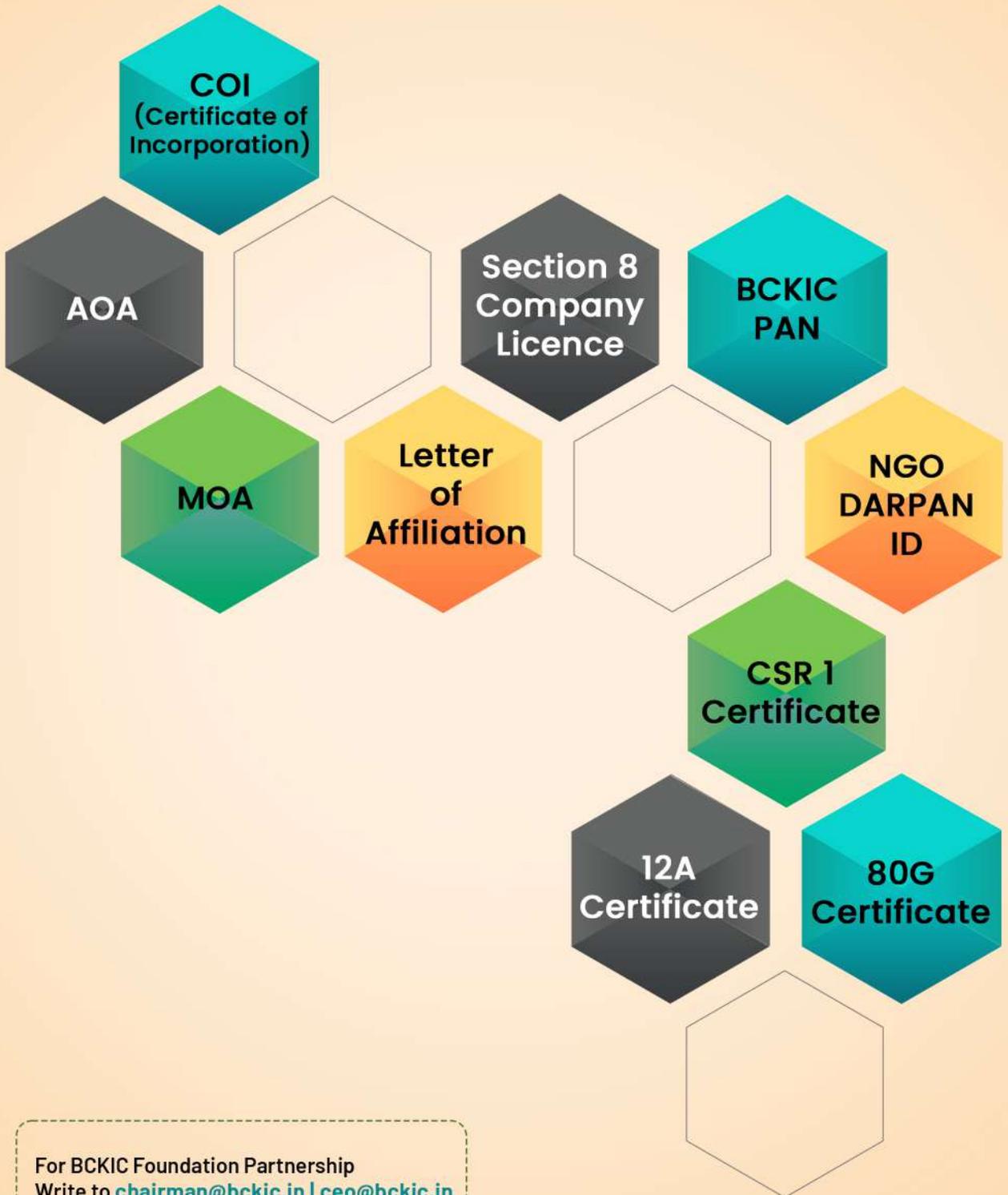
GOVT COLLABORATIONS



INTERNATIONAL COLLABORATIONS



Statutory Documents of BCKIC Foundation



For BCKIC Foundation Partnership
Write to chairman@bckic.in | ceo@bckic.in



BCKIC
Bhubaneswar City
Knowledge Innovation
Cluster Foundation

BCKIC Foundation, Section 8 Company is the bonafide legal entity of Bhubaneswar City Knowledge Innovation Cluster, an Initiative of the Office of the Principal Scientific Adviser to the Government of India.

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