International Water Management Institute

Nature-Positive Solutions for Shifting Agrifood Systems to More Resilient and Sustainable Pathways

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CIRCULAR BIO ECONOMY-INNOVATION HUB (CBE-IH), INDIA

Round table discussion and stakeholder on-boarding workshop

BAIF Development Research Foundation

Pune, Maharashtra

Introduction

The Round Table Discussion and Stakeholder Onboarding Workshop was held on 20th December 2024 at the BAIF Head Office in Pune. The event aimed to bring together key stakeholders to deliberate on scaling up activities under the **Circular Bioeconomy Innovation Hub (CBE-IH)** and to onboard them onto the platform for joint action. The workshop served as an interactive platform to share the vision of the Hub, highlight achievements, explore collaborative opportunities, and seek inputs for future activities.

The event brought together a diverse group of stakeholders in India, including representatives from research institutions, potential scaling partners, incubation hubs, startups, and other like-minded organisations who joined both physically and virtual during the meeting. The diverse composition of the participants was strategically chosen to ensure comprehensive coverage of expertise and resources necessary for the success of the initiative. The stakeholder meeting provided a platform for each participant to showcase their capabilities and express their commitment to contributing to the initiative.

Figure 1: Participants of stakeholder meeting

Overview of the Circular Bioeconomy Innovation Hub (CBE-IH)

The **CBE-IH** is envisioned as a collaborative and inclusive platform that brings together diverse stakeholders, including:

- Startups
- Entrepreneurs
- Innovators
- Research Institutes
- Financial Agencies
- Policymakers
- Academic Institutions
- Non-Governmental Organizations (NGOs)

The Hub is designed to foster knowledge sharing, networking, and partnerships to advance sustainable circular bioeconomy models and ecosystems. It aims to serve as a catalyst for innovation and the scaling of circularity solutions.

Objectives of the Workshop

The primary objective of the meeting was to gather key stakeholders who could contribute to the conceptualization of the CBE-IH. The hub aimed to foster collaboration and innovation for sustainable solutions in resource recovery and reuse, aligning with the broader goals of the Nature Positive Solution Project.

The workshop focused on the following key objectives:

1. Present the overarching vision and planned activities of the CBE-IH to stakeholders.
2. Showcase key accomplishments under the **NATURE+ Initiative** in India and partner countries.
3. Explore potential areas for collaboration among stakeholders.
4. Gather valuable insights and suggestions on focus areas and future activities of the Hub.

The Round Table Discussion served as an opportunity to inform stakeholders about various initiatives undertaken by the Circular Bio-Economy Innovation Hub on a global level. The initial part of the discussion was dedicated to presentations by leads from partner countries under the Nature+ initiative, showcasing key efforts to advance circularity and resource recovery. These presentations provided a comprehensive overview of the progress made and set the stage for collaborative discussions on future strategies.

Introduction to the Circular Bio-Economy Innovation Hub, India

Dr. Mansi Tripathi, Researcher in Resource Recovery and Reuse at IWMI, began with an introduction to the Circular Bio-Economy Innovation Hub in India. She highlighted the Hub's significance in promoting sustainable resource management through circular economy practices and detailed its ongoing efforts under the Nature+ initiative. Her presentation emphasized the Hub's role in fostering innovative solutions to advance circularity, laying the foundation for discussions on its scope and future activities.

Overview of WP4 Activities: Advancing Circularity through the Nature+ Initiative

Mr. Viswadev V. S., Senior Project Officer at BAIF, presented an overview of activities under Work Package 4 (WP4) of the Nature Positive Solutions initiative in India. His presentation covered training and capacity-building initiatives, field-level implementation of various circularity solutions, and the upscaling of activities such as the Innovation Challenge conducted through the Innovation Hub. This tone for discussions on future actions and collaborations.

Experience Sharing: Innovations Hub Initiatives in Vietnam

Dr. Avinandan Taron, Environmental and Resource Economist at IWMI, shared insights from the Innovation Hub in Vietnam. This hub, established in collaboration with UNDP, has catalyzed circular economy initiatives across sectors such as agriculture, textiles, chemicals, and metals. Dr. Taron detailed the hub's focus on agro-waste, including rice and coffee husks, aligning with government priorities. He described key activities, including capacity-building workshops for extension agents, field visits to model cooperatives, and business model co-design. A significant achievement of the hub has been the development of a Decision Support Tool, which integrates spatial and economic parameters to assess site suitability and feasibility for agro-waste-based plants. These outputs are designed to support policy-making and entrepreneurial ventures in circular economy practices.

Pioneering Circular Solutions: Insights from Colombia's CE Innovation Hub

Dr. Susanne Bodach, Research Group Leader in Integrated Circular Economy Transformations at IWMI, presented pioneering solutions from Colombia’s Circular Economy Innovation Hub, known as the Recycle Plus Network. She explained how the hub promotes circular entrepreneurship through partnerships with SENA, universities, incubators, private sector initiatives, and other stakeholders. The hub’s flagship initiative, the Circular Economy Innovation Challenge, attracted 120 applicants and culminated in a boot camp for 22 teams to refine their innovations. The program showcased solutions such as bioenergy, bioplastics, and waste valorization, fostering scalable innovations through collaboration with investors and stakeholders. Dr. Bodach highlighted the hub’s focus on training, knowledge exchange, and business modeling to support startups and SMEs in the circular economy space.

CBE Innovation Hub Ghana: Science to Impact

Ms. Dzifa Agbefu, Innovation Hub Coordinator in Ghana, provided an overview of the Circular Bio-Economy Innovation Hub in Ghana. She described the hub’s role as a multi-stakeholder platform aimed at addressing fragmented sustainability efforts by fostering collaboration and leveraging shared resources. Key achievements this year included contributing to the review of Ghana's national Environmental Sanitation Policy, training over 12,000 schoolchildren on waste segregation and reuse, and initiating living labs for demand-driven research and business optimization. Additionally, the hub organized peer-to-peer learning events, developed tailored research topics, and trained public sector workers to support large-scale composting initiatives. Ms. Agbefu emphasized how the hub's annual evaluations and planning workshops have facilitated knowledge exchange and alignment of activities with strategic focus areas, ensuring meaningful progress.

Key participants

Research and Academic Institutes	**Upscaling partners / Incubation centres**
1. CTARA, IIT Bombay 2. Symbiosis Centre for Waste Resource Management 3. Centre for Sustainable Development 4. Science and Technology Park, SPPU 5. BAIF Central Research Station	1. Venture Centre, Pune 2. Vigyaan Ashram 3. STARS Forum 4. World Resources Institute (WRI) 5. Indian Network on Ethics and Climate Change (INECC) 6. Ekonnect Knowledge Foundation 7. Vaayu Biogas 8. Samuchit Enviro Tech 9. CLEAN (Clean Energy Access Network)

A brief overview of the partners and Potential Roles

1. **Centre for Technology Alternatives for Rural Areas (CTARA), Indian Institute of Technology, Bombay**

The **Centre for Technology Alternatives for Rural Areas (CTARA)** at the **Indian Institute of Technology (IIT) Bombay** is a research and development center dedicated to addressing the technological challenges faced by rural communities in India. Established in 1982, CTARA focuses on creating and promoting affordable, sustainable, and context-specific technologies that can improve the quality of life in rural areas. The centre engages in interdisciplinary research in areas such as water management, energy, rural infrastructure, agriculture, and sanitation, aiming to bridge the technology gap between rural and urban India. CTARA collaborates with local communities, government agencies, and NGOs to design solutions that are practical, scalable, and aligned with the socio-economic realities of rural life, fostering inclusive development and empowerment.

Dr. Anant Rao, Head of CTARA, emphasized the institution's role in providing interdisciplinary solutions to rural challenges. CTARA, with its strong academic presence and access to UG, PhD students, and faculty, offers significant expertise in technology and development. Their new green energy and sustainability hub, coupled with their faculty and student strength, positions them as a valuable knowledge partner for the Innovation Hub. CTARA's capacity to work on sustainable solutions for rural areas, alongside a center for policy studies, makes them a strong contender for engaging in policy advocacy within the project. Dr. Rao noted that while finance is a critical missing element in the circular bio-economy space, CTARA can contribute substantially to technology development and entrepreneurship.

2. **Centre for Sustainable Development, Gokhale Institute of Politics and Economics**

The **Centre for Sustainable Development** at the **Gokhale Institute of Politics and Economics** (GIPE) in Pune is an academic research center focused on promoting sustainable development practices through interdisciplinary studies and policy analysis. Established with the aim of addressing pressing environmental, economic, and social challenges, the center conducts research on various aspects of sustainability, including natural resource management, climate change, poverty reduction, and the integration of sustainability into economic growth. The center works closely with government agencies, non-governmental organizations, and academic institutions to foster the development of policies that promote equitable and sustainable development. Through its educational programs, research, and outreach activities, the center plays a key role in shaping sustainable development strategies in India and beyond.

Gurudas Nulkar, Director, Centre for Sustainable Development, highlighted their work on biomass-based energy models and the challenges related to feedstock supply, seasonality, and market resistance. CSD's research in sustainable practices aligns with the Innovation Hub's objectives, particularly in overcoming barriers related to business profitability and market acceptance of bio-based solutions. The center also focuses on policy-driven approaches to promote circularity and sustainability, which could support the hub's development and help streamline market access for bio-based businesses.

3. Science and Technology Park, Savitribai Phule Pune University

The **Science and Technology Park** at **Savitribai Phule Pune University (SPPU)** is a leading innovation hub and technology business incubator in India. Established with the aim of fostering research, entrepreneurship, and industrial collaboration, the park provides a platform for knowledge-driven enterprises to grow and thrive.

STP focuses on promoting technology-based innovations, supporting startups, and facilitating the commercialization of research and development. It offers services like business incubation, funding assistance, mentorship, and infrastructure support to startups and established companies. The park also collaborates with academic institutions, industries, and government agencies to drive innovation and address societal challenges.

Vikram Saraph, Group Director - Innovation, Entrepreneurship & Sustainability, provided insights into the Science and Technology Park's role as a business incubator. Their long-standing expertise in technology commercialization, waste recycling, industrial decarbonization, and sustainability initiatives makes them a potential partner for scaling the Innovation Hub's activities. With a strong focus on business models, funding arrangements, and policy advocacy, the Science and Technology Park can offer critical support in accelerating the commercialization of circular economy technologies. However, Mr. Saraph stressed the importance of a clear differentiator and business focus for the hub, noting that without a clear target group and business angle, the hub could face challenges in achieving its goals. He also emphasise the need to focus more on ensuring clarity on the target audience the Hub is planning to cater and to ensure that the technologies or solutions supported are future-oriented considering the future needs of the agricultural sector.

4. Symbiosis Centre for Waste Resource Management

The **Symbiosis Centre for Waste Resource Management (SCWRM)**, established under the Symbiosis International University, is focused on sustainable waste management and circular economy practices. Based in Pune, the center aims to address critical challenges related to waste management through innovative research, education, and capacity-building programs.

SCWRM collaborates with academic institutions, industries, municipalities, and community organizations to develop practical and scalable solutions for managing solid, liquid, and hazardous waste. Its activities include waste auditing, designing resource-efficient systems, promoting recycling and upcycling practices, and creating awareness about sustainable waste management.

Dr. Pooja Singh from SCWRM shared their extensive experience in waste management, particularly in bio-methanation and waste diversion. Their focus on research, consultancy, and outreach activities, particularly in the Maharashtra region, aligns well with the goals of the Circular Bio-Economy Innovation Hub. SCWRM's expertise in waste-to-energy solutions, center's access to student communities and their involvement in societal outreach positions them as a valuable partner.

5. Vigyan Ashram, Pabal

Vigyan Ashram, located in Pabal, Maharashtra, is a pioneering center for rural technology and education operates as a center for experiential learning and innovation, promoting grassroots-level technological solutions to improve rural livelihoods.

The Ashram integrates education, skill development, and hands-on training through its unique "Earn While You Learn" model, enabling students to work on real-world projects while gaining technical knowledge. It focuses on areas such as appropriate technology, agriculture, energy, food processing, and water management.

Vigyan Ashram also serves as a hub for the Fab Lab (Fabrication Laboratory) network, offering tools for prototyping and developing low-cost technologies. Its initiatives have empowered countless rural youth with entrepreneurial skills and have made significant contributions to sustainable rural development by promoting self-reliance and community-based problem-solving.

Dr. Arun Dixit, representing Vigyan Ashram, shared valuable insights on their experience in fostering entrepreneurship through their support systems. He highlighted examples of successful startups working on biogas and Black Soldier Fly projects as prime illustrations of how incubation support can drive the creation of thriving enterprises. Dr. Dixit emphasized that early-stage enterprises require comprehensive support, including research, technology, finance, and networking, to navigate challenges and scale effectively. Vigyan Ashram offers budding entrepreneurs a conducive environment by providing technical guidance, workspace, and hands-on support, helping them translate their innovations into practical, field-based solutions.

6. STARS Forum

The STARS Forum (Science and Technology Awareness, Research, and Services Forum) is a prominent platform dedicated to promoting science and technology-based initiatives for societal benefit. Founded with the mission to bridge the gap between scientific innovation and its practical applications, the forum fosters research, innovation, and community outreach in diverse areas of science and technology.

The STARS Forum focuses on Organizing workshops, seminars, and events to spread scientific literacy and inspire interest in technology among students, researchers, and the public, Supporting collaborative research projects addressing real-world challenges in fields like energy, environment, healthcare, and agriculture, Providing technical expertise, consultancy, and support to industries and communities for sustainable development.

By acting as a conduit between academia, industry, and society, the STARS Forum contributes to knowledge dissemination, capacity building, and the advancement of technology for inclusive growth

Mr. Chaitanya Nadkarni emphasized the role of STARS Forum as a dynamic networking platform that fosters collaboration, knowledge sharing, and experience exchange. The platform brings together a diverse range of members, including NGOs, for-profit social enterprises, academic institutions, and research and development organizations. The core objective of STARS Forum is to facilitate the cross-sharing of knowledge, experiences, and best practices, enabling members to learn from each other and implement new, innovative approaches in their respective fields.

7. World Resources Institute (WRI)

The **World Resources Institute (WRI)** is a global non-profit organization committed to promoting sustainable development and environmental protection. Founded in 1982, WRI works across critical areas such as climate, energy, forests, water, cities, and food systems, aiming to create a balanced relationship between people and the planet. Renowned for its data-driven approaches, WRI develops innovative solutions to global challenges, supports policy advocacy, and collaborates with governments, businesses, and communities to drive transformative change. Its initiatives, such as the Global Forest Watch and Climate Watch platforms, provide actionable insights, helping build a more equitable, sustainable, and resilient future for all.

Ms Sweta Lamba from WRI briefed about current initiative of WRI focusing on reducing food loss and food waste, in Maharashtra and Madhya Pradesh. The initiative works on a crop-specific strategy for food loss, targeting crops like onion, soybean, and custard apple. WRI collaborates with Bayer to assess the supply chains and identify ways to reduce losses. For food waste, a city-specific approach is adopted, working closely with the Pune and Indore Municipal Corporations to reduce food waste at the source, following the waste hierarchy. This includes waste reduction, food rescue for donation, and composting, with landfill as the last resort. WRI also engages in behavioral change campaigns and is part of the "Friends of Champions 12.3" network, promoting collaboration, knowledge sharing, and pilot projects to reduce food loss and waste.

8. Indian Network on Ethics and Climate Change (INECC)

The Indian Network on Ethics and Climate Change (INECC) is a voluntary network of organizations and individuals committed to addressing climate change from a justice and equity perspective. INECC focuses on amplifying the voices of marginalized and vulnerable communities, emphasizing their role in climate action and the disproportionate impacts they face due to climate change. The network engages in advocacy, awareness-building, and capacity development, linking grassroots realities with national and international climate discourse. By promoting sustainable practices and ethical approaches to climate action, INECC aims to ensure that climate policies and solutions are inclusive, participatory, and aligned with principles of social justice and environmental sustainability.

Mr Rohit Chawla and Dr Karve from the Indian Network on Ethics and Climate Change (INECC), highlighted the importance of incorporating both climate mitigation and adaptation benefits into the bioeconomy plan. Documenting these benefits for each activity to assess the climate impact at the grassroots level, an area often overlooked. INECC can assist in developing the assessment methodologies and support third-party evaluations. Also emphasized linking climate discourse with bioeconomy initiatives, which could open avenues for climate finance and carbon credits. INECC can also provide educational support to local bankers to encourage funding for such projects.

9. Samuchit Enviro Tech

Samuchit Enviro Tech is a Pune-based social enterprise dedicated to promoting sustainable living through eco-friendly technologies and solutions. Established with the goal of empowering individuals, households, and communities to adopt environmentally responsible practices, the organization offers innovative products and services in areas such as renewable energy, waste management, and sustainable urban development. Its flagship products, like improved cookstoves and biogas systems, aim to reduce dependence on fossil fuels and improve energy efficiency. Samuchit also engages in capacity-building initiatives, awareness programs, and consultancy services, advocating for sustainable lifestyles and contributing to the global movement toward a low-carbon, resource-efficient future.

Dr. Priyadarshini Karve, Founder Director of Samuchit Enviro Tech shared insights on biochar technology and its potential. Samuchit Enviro Tech has been working on biochar production from agricultural waste, garden waste, and forest plants for over 25 years, with kilns of varying capacities in operation across India. Biochar is used as fuel or for soil enrichment. Dr. Karve highlighted the potential for biochar-based products to gain traction in urban areas, where higher prices can cover costs, and eventually, these products may reach rural areas. She also discussed the addition of biochar in the Indian carbon market, suggesting that BAIF's international projects like Nature+ could explore the potential of carbon sequestration through biochar. Samuchit also works on improved cookstoves and household thermal energy solutions, particularly in rural areas, using biomass and biomass-solar hybrid systems.

CLEAN (Clean Energy Access Network) an industry association of decentralized renewable energy players, advocates for policy development and supports businesses working in biomass energy. Dr. Karve suggested a roundtable with biomass energy companies and the project team to explore opportunities for mentorship, internships, and business models in rural areas.

10. Vaayu Biogas

Vaayu Biogas is an innovative company specializing in decentralized biogas solutions for sustainable waste management and renewable energy generation. The organization focuses on converting organic waste into biogas, which can be used as a clean cooking fuel or to generate electricity, contributing to reduced carbon emissions and resource efficiency. Vaayu Biogas designs and implements customized biogas systems for households, communities, and industries, offering an eco-friendly alternative to conventional waste disposal methods. By integrating technology with environmental sustainability, Vaayu Biogas empowers individuals and organizations to adopt circular economy practices while addressing critical challenges in waste management and energy access. Mr Pradip Devkate Operations Manager, Vaayu Biogas joined the meeting and presented briefly on the technologies developed by their startup and how they are providing solutions to increasing issues of waste management through sustainable approach.

Conclusion

The round table discussion highlighted the transformative potential of Circular Bio-Economy Innovation Hubs in advancing sustainability and resource recovery across diverse contexts. The presentations from India, Vietnam, Colombia, and Ghana showcased an impressive range of initiatives under the Nature+ initiative, including capacity building, policy support, business model innovation, and the promotion of circular entrepreneurship. These efforts reflect a shared commitment to addressing pressing challenges such as agro-waste management, resource inefficiency, and waste valorization, while fostering sustainable livelihoods and environmental stewardship. By leveraging partnerships, innovative tools, and multi-stakeholder collaboration, these hubs have not only achieved significant progress but have also laid a strong foundation for scaling up circular economy solutions globally. This round table served as a vital platform for knowledge sharing, inspiring collective action, and charting a clear pathway for future endeavors in the pursuit of a circular and sustainable future.

The discussions underscored the multifaceted potential of bioeconomy initiatives in addressing critical challenges across sustainability, climate action, and rural development. Key stakeholders, , highlighted diverse strategies and potential for upscaling the Circular bio economy concept and integrating climate mitigation and adaptation measures. The collective insights emphasized the importance of data-driven approaches, grassroots-level interventions, innovative business models, and robust. The discussion brough together the diverse stakeholder and created a forum for these like minded to align to the common goal. Moving forward CBE IH has the potential to serve as a common platform Collaboration, knowledge sharing, and documentation of outcomes will play pivotal roles in achieving the overarching goals of a sustainable and equitable bioeconomy.

Annexure 1

Photos Gallery

1. **Stakeholder meeting, presentations and detailed discussion**






Annexure 2

Participant list

Sl No	Name	Organisation	Mode
1	Dr. Priyadarshini Karve	Samuchit Enviro Tech	Offline
2	Dr Gurudas Nulkar	Centre for Sustainable Development	Offline
3	Dr Mugdha Lele	Venture Center	Online
4	Mr Chaitanya Nadkarny	STARS Forum	Offline
5	Dr Anand Rao	CTARA, IIT Bombay	Offline
6	Dr. Manikprabhu Dhanorkar	Symbiosis Centre for Waste Resource Management,	Online
7	Mr Vikram Saraph	Science and Technology Park Savitribai Phule Pune University	Offline
8	Dr Arun Dixit	Vigyaan Ashram	Offline
9	Dr. Pooja Singh	Symbiosis Centre for Waste Resource Management,	Offline
10	Myron Mendes	INECC	Online
11	Sweta Lamba	WRI, India	Online
12	Mugdha Lele	Venture Center	Online
13	Rohan Chawla	INECC	Online
14	Dr. Mansi Tripati	IWMI	Offline
15	Dr. Avinandan Aaron	IWMI, Vietnam	Online
16	Ms. Dzifa Agbefu	IWMI, West Africa	Online
17	Dr. Susanne Bodach	IWMI, Colombia	Online
18	Shrinivas Kulkarni	BAIF, HO	Offline
19	Pramod Takawale	BAIF, CRS	Offline
20	Sadashiv Nimbalkar	BAIF, CRS	Offline
21	Deepak Patil	BAIF, CRS	Offline
22	Dr Rajashree Joshi	BAIF, HO	Offline
23	Mr Mahesh Lade	BAIF, HO	Offline
24	Mr Viswadev V S	BAIF, HO	Offline
25	Mrinal Arya	BAIF, HO	Offline
26	Manish Meshram	BAIF, HO	Offline
27	Rakesh Warrior	BAIF, HO	Online
28	Chetan Dubey	BAIF, HO	Online
29	Ganesh Bedare	BAIF, HO	Online
30	Santarpana Chaudhary	BAIF, HO	Online