

# NATURE+ RECYCLE

## Accomplishments through 2024 and CGIAR Science Programs outlook



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NATURE+ RECYCLE builds circular bioeconomy (CBE) practices, largely based on agricultural and food waste, to create sustainable livelihoods to benefit the conservation, management, and restoration of nature and agrobiodiversity. RECYCLE supports policies to transition to a circular economy. The International Water Management Institute (IWMI) leads the research. This report covers RECYCLE's key work through 2024, and ongoing and future work in the CGIAR Portfolio 2025-2030.



Women in Kisumu County, Kenya, celebrate their new briquettes, which were made as part of a [NATURE+ project that established a circular economy cooperative for the women](#) in collaboration with the CGIAR GENDER Platform. Among many other success stories, the Initiative's RECYCLE work package supported circular bioeconomy startups and piloted sustainable business models from design to implementation. (Photo by Edwin Okoth for NATURE+)

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# NATURE+ RECYCLE

## Country highlights

NATURE+ works in five countries: **Burkina Faso, Colombia, India, Kenya** and **Vietnam**. RECYCLE's accomplishments in these countries include:

**Burkina Faso & Kenya:** Capacity building on CBE practices such as biofertilizer and biochar production; Black Soldier Fly (BSF) larvae farming for animal feed; waste-to-energy solutions.

**Colombia & Kenya:** Accelerating circular innovations by convening country-wide networks of circular bioeconomy entrepreneurs for capacity-building, innovation challenges and increasing collaboration with government entities tasked with increasing sustainable economic activity.

**India:** Accelerating circular innovations through the establishment of the Circular BioEconomy Innovation Hub for multisectoral collaboration; organizing innovation challenge and boot camp for university students; capacity building, piloting and scaling community-level CBE models.

**Kenya:** Scaling circular bioeconomy innovations with women-led informal recycling businesses for improved livelihoods; community-led BSF larvae farming at the NATURE+ aggregated farms and other sites.

**Vietnam:** Training program on circular economy models for the coffee and rice value chains; establishment of circular bioeconomy innovation hub

**All:** Research on the enabling environment for circular bioeconomy; training manuals for capacity building around various CBE practices and the creation and deployment of a decision-support tool for selecting suitable CBE models.

# NATURE+ RECYCLE Key Accomplishments

## Nature-positive solutions for food production and livelihoods

NATURE+ trained hundreds of smallholders across **Burkina Faso, Colombia, Kenya, India** and **Vietnam** on transforming agricultural and food waste into products to support nature-positive farming, improve livelihoods and foster entrepreneurship. Some 400 people adopted these practices through training, the formation of cooperatives, and acceleration programs supported by CGIAR centers, programs and NATURE+. RECYCLE innovations implemented and scaled up include Black Soldier Fly larvae farming for animal feed (see more below), biofertilizer production to recover nutrients and restore soil health, and energy recovery from waste including biogas and briquette production.

## CBE pilots and support for circular bioeconomy entrepreneurs

RECYCLE successfully piloted several CBE business and research models, from design to implementation through establishing innovation hubs and launching innovation challenges for circular bioeconomy entrepreneurs. The work is closely aligned with increasing societal and government demand for waste reduction, improved waste management, and sustainable green business growth.

The Initiative convened, trained and supported dozens of [circular bioeconomy entrepreneurs in Colombia](#) and [Kenya](#) through innovation challenges. In **India, Ghana** and **Vietnam**, the Initiative [established](#) Circular Bioeconomy Innovation Hubs to unite entrepreneurs, policymakers, smallholders and investors in alignment with national environmental policy priorities. In **Kenya**, NATURE+ supported the creation of a [women's group for improved briquette-making](#), establishing evidence that circular bioeconomy models can be replicated and scaled. More than 2,000 people benefitted directly from these activities, while thousands more - including the entrepreneurs' growing client base - were reached through news articles, videos and blogs.

## Training guides to increase circular economy capacities

NATURE+ created training manuals to build the knowledge needed for circular economy growth in **Burkina Faso, Colombia, India, Kenya** and **Vietnam**. Through 2024, these guides have been used to train more than 10 national partners and trainers, who, in turn, have trained more than 2,000 stakeholders.

Activities around capacity building, designing, scaling and accelerating circular bioeconomy innovations will be expanded in the CGIAR Multifunctional Landscapes Science Program to augment the reach of nature-positive and circular economy activities through the established CBE hubs and multistakeholder platforms in target countries.

## Black soldier fly (BSF) farming

One of the most efficient ways to transform food waste into organic fertilizer and marketable protein is through black soldier fly (BSF) farming. The practice is growing into profitable business in **Colombia**, NATURE+ and partners are leading the introduction of the technique in **India**, and BSF units were established at aggregated farms in **Kenya**, serving both the farms and the wider community for training and scaling BSF farming. This work will be expanded within the CGIAR's Multifunctional Landscape Science Program focusing on enhancing dietary diversity and healthy diets by recycling organic waste with BSF larvae to generate sustainable protein sources for livestock and aquaculture.

## RECYCLE in the CGIAR Portfolio 2025-2030

RECYCLE's work will continue and expand under CGIAR's Multifunctional Landscapes Science Program. In collaboration with partners, CBE work will develop bundles of nature-positive practices and innovations to enhance farm-level productivity, resilience and sustainability within multifunctional landscapes. As NATURE+ joins other Initiatives in CGIAR Science Programs, RECYCLE plans to expand its nature-positive CBE work in several other countries while continuing to grow in NATURE+'s initial target countries.

By the end of 2024, many circular bioeconomy interventions launched by NATURE+ and partners already obtained the inertia needed to continue growing. For example, startups in Colombia are becoming profitable, farmers across intervention sites are increasingly turning to nature-positive farming inputs, and governments are adapting policy proposals drawn from the Initiative's research. Yet continued support, research and policy recommendations are needed to ensure growth, measure outcomes, and help make interventions more effective and efficient.

## News, blogs and videos

### Colombia

Blog: [CGIAR Initiative NATURE+ unites circular economy entrepreneurs in Colombia](#)

Blog: [Co-creation and sustainability: waste transformation and traditional maize recovery in Colombia](#)

Video: [BOOTCAMP! CGIAR Initiative unites Colombian circular economy entrepreneurs](#)

Innovation challenge: [CircularEconomy4Colombia Innovation Challenge 2024](#)

### India

Blog: [NATURE+ launches circular bioeconomy hub in India to inspire, innovate and integrate nature-positive businesses](#)

### Kenya

Blog: [How women are leading the agroecology revolution in Kenya](#)

Video: [Women in Kisumu turn waste to wealth](#)

News (KTN News Kenya): [Kisumu farmers discover affordable livestock feed solution through farming of black soldier fly](#)

Innovation challenge: [Agritech4Kenya Innovation Challenge 2024](#)

Blog: [Nairobi ignites for the Consultation Workshop of the AgriTech4Kenya Innovation Challenge 2024](#)

Blog: [From informal to formal: Empowering women in circular bioeconomy business in Kenya](#)

Blog: [Pitching for impact: The journey of agri-tech innovators in Kenya - IWMI](#)

## **Vietnam**

Press release (UNDP): [Joint initiative to upgrade agricultural circular businesses in Viet Nam](#)

Blog (UNDP): [Brewing change: Advancing the circular transition for Son La's coffee sector](#)

Press release (UNDP): [Training Program on Circular Economy & rice straw innovations in the Rice Value Chain](#)

## **Other**

[Introducing Circular Bio-Economy Innovation Hub in Ghana: Co-ownership for Sustainable Impact Facilitation](#)

## **Publication highlights**

[Circular bioeconomy: a pathway to sustainable development in an age of global crisis](#)

[A multi-criteria decision support tool for selecting circular economy business models](#)

[Enabling environment for circular bioeconomy sector in Burkina Faso](#)

[Investment climate assessment for circular bioeconomy sector in India: an assessment of the institutions, policies, regulations and financial environment](#)

[Investment climate assessment for circular bioeconomy - review of national policies and strategies in Kenya](#)

[Assessing the investment climate to promote a circular bioeconomy: a comparison of 15 countries in the Global South \(Includes Colombia and Vietnam\)](#)

[Investment climate for circular economy enterprises in Nigeria: Firm-level insights](#)

[Biomass briquetting: a training module for trainers and practitioners](#)

[Circular bioeconomy business models - energy recovery from agricultural waste: cases from Kenya and Burkina Faso](#)

[Circular bioeconomy business models - recovering food products to reduce agricultural waste: cases from Burkina Faso, India, Kenya and Vietnam](#)

[Promotion of circular economy entrepreneurship in Colombia](#)

[Emerging circular bioeconomy business models - consumer products from agricultural waste: cases from Kenya and India](#)

[Report on the monitoring, evaluation, learning and impact assessment \(MELIA\) of the circular bioeconomy innovation hub in Ghana](#)

[Black soldier fly farming for feed and biofertilizer: a practical guide](#)

[Nature Positive Circular Bioeconomy Innovation Hubs: Accelerating collaboration for localized transformative sustainable solutions](#)

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CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. [www.cgiar.org](http://www.cgiar.org)

We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: [www.cgiar.org/funders](http://www.cgiar.org/funders).

To learn more about this Initiative, please visit [this webpage](#).

To learn more about this and other Initiatives in the CGIAR Research Portfolio, please visit [www.cgiar.org/cgiar-portfolio](http://www.cgiar.org/cgiar-portfolio)

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