

# URBAN AGRICULTURE

# UA MAGAZINE

40



Pathways towards  
resilient urban food  
systems

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Informal food vendors: an ignored opportunity for resilient urban food systems

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Towards resilient cities: strengthening business skills of small food vendors in Metro Manila

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Youth-led resilience: the impact of Generation Food in the DRC

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Green Cities Initiative: integrated support for more resilient and food secure cities

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## Editorial

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# Inspiring action and knowledge exchange on resilient urban and city region food systems

Jess Halliday  
Etienne Claereboudt  
Simon Heck  
Silvia Alonso  
Martha Awino Otieno

The world is facing unprecedented challenges. Sudden climate shocks and prolonged stresses are occurring more regularly, while global warming causes complex feedback loops that affect the intensity and impacts of other natural events. The UN predicts more pandemics to come due to humans' exploitation of nature. Geopolitical events and political instability are disrupting communities and economies.

People, assets and infrastructures are vulnerable to the impacts of these hazards throughout food supply chains, from production to consumption and waste management, and the natural resources and ecosystem services on which they depend. The consequences for food and nutrition security, livelihoods and economic development,

and social equity throughout urban and city region food systems can be dramatic. Rapid urbanisation (particularly in Africa and Asia) only increases the pressure; there are more mouths to feed, and many new arrivals reside in informal settlements where basic services, viable livelihoods, and access to safe, affordable, nutritious food are limited.

Shocks and stresses of all forms have a disproportionate impact on the most vulnerable people. The impacts of each shock or stress can magnify and compound those of previous crises. Within this unstable context, there is an urgent need to build urban and city region food systems that are both sustainable and resilient to all challenges they may face.



Peter Kalale, a farm hand at Daniel Kemboi's dairy farm, pours fresh milk into a metal container for transport to market near Eldoret, Kenya. © Kabir Dhanji



Nicole Mutai pours milk for a customer at her shop near Eldoret, Kenya. © Kabir Dhanji

A growing number of cities are keenly aware of this need and are putting in place actions to shore up supply chains, resources, and governance (often with the support of international organisations and research institutes). Yet in most places food systems are not yet on the policy agenda – let alone viewed as a crucial component of urban resilience and disaster risk reduction. This oversight persists despite the impacts of COVID-19 on supply chains all over the world, which brought heightened awareness of their fragility.

In light of this, it is critical to harness the experiences of cities and city regions that are prioritising food systems resilience, to support knowledge transfer and co-learning over what actions can help build resilience, and how they can be put in different contexts.

### Actions throughout urban food systems

The 40th issue of Urban Agriculture Magazine, part-funded by the CGIAR Resilient Cities Research Initiative, showcases innovative approaches, actions, and initiatives for strengthening all aspects of urban and city region food systems. The articles are drawn from across research priorities of the Resilient Cities initiative and supplemented by selected experiences from RUAF Global Partnership and other strategically-aligned organisations.

The collection includes a focus on resilient food **production**, with an article on piloting and scaling innovative urban gardening technologies in Dhaka, Bangladesh (p. 11). In Nairobi, Kenya, Danny Coyne and

co-authors report on efforts to enable UPU growers to understand the benefits of healthy tray seedlings in Kenya, Nairobi (p. 8).

Dzifa Agbefu and colleagues from the International Water Management Institute (IWMI) focus on the **circularity and natural resource management**, sharing how a new Innovation Hub in Ghana is bringing together diverse stakeholders to jointly promote existing CBE approaches



Lois Jemutai at her shop in Mosormbor, Kapsaret, outside of Eldoret, Kenya. © Kabir Dhanji

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Accra, Ghana : Everyday life of local Ghanaian people in the biggest and most popular market - Makola Market. © Dixon Lee, IFPRI

through training, advice, demonstrations, and research, while fostering the development of new, accessible innovations (p. 27). Two articles from the Urban Eats campaign of the Resilient Cities Network (RCN) showcase food waste management measures in Sydney, Australia, and Milan, Italy, respectively (p. 47 and 49).

On the **processing** side, Angela Fuentes and Willy Pradel of the International Potato Centre explain how a collaboration between the CGIAR Resilient Cities initiative and the Incubagraria business incubator in Lima, Peru, is supporting start-ups to develop and prototype innovative products to address urban food system challenges tackling food system challenges faced by rapidly growing cities (p. 34). Meanwhile, the Generation Food programme of Rikolto, a RUAF Partner, is supporting young agrifood entrepreneurs in the Democratic Republic of Congo, who are at the heart of urban food system challenges – and efforts to address them (p. 38).

The article by Silvia Alonso and Gordon Prain introduces Vendor Business Schools (VBS) in Nairobi, Kenya, and Quezon City, Philippines to help **informal market vendors** professionalise their businesses through improved capacity, and to stimulate future investment in the sector (p. 14). Lisa van de Biezen and colleagues explain how the curricula of these VBS are informed by the needs and desires of the vendors themselves (p. 18).

When it comes to understanding **consumption and the food environment**, Aulo Gelli, Amy Margolies, and Deanna Olney



Accra, Ghana: Unidentified Ghanaian people at the market in Ghana. People of Ghana suffer of poverty due to the unstable economic situation. © Dixon Lee, IFPRI



Kevin Kibet tests a jug of milk at his shop in Majengo, Turbo, outside of Eldoret, Kenya. © Kabir Dhanji

of the International Food Policy Research Institute (IFPRI) report on tests with AI-assisted apps for cost-effective collection of dietary information, as well as a toolkit to help select tools to assess and understand dietary challenges in different contexts (p. 31). A photo competition launched by ICLEI, under the AfriFOODLinks project, celebrates traditional food cultures that are rooted in regional ecosystems and agricultural biodiversity (p. 43).

Finally, support organisations such as CGIAR institutes and UN agencies must **adopt good practices to ensure they provide appropriate, joined-up support** to cities that are actively building food systems resilience. A conversation between Emmanuel Hugh “Nonong” F. Velasco II and Francis Ian L. Agatep, key actors in food systems transformation in Quezon City, the Philippines, and Resilient Cities Advisor Gordon Prain, underscores the importance of research and evidence-based policy (p. 23). An interview with Guido Santini and Simone Borelli, meanwhile, shows how the FAO Green Cities Initiative is breaking down institutional silos and forging integration across the agency’s urban food systems portfolio (p. 50).

This magazine provides a snapshot of the state of the art of efforts to strengthen food systems resilience in 2024, but it is by no means the final word. We hope this collection of articles will inspire actors in other cities and city regions to take action, and that collective knowledge base will both expand and deepen.

About the CGIAR Initiative on Resilient Cities

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The CGIAR Resilient Cities Research Initiative generates evidence, technologies, and capacities to improve urban food systems while securing inclusive jobs and create business opportunities. The initiative promotes healthy diets but also aims at reducing the carbon footprint of urban and peri-urban food systems while focusing on soil health. So far, our work spans six countries- Bangladesh, Ethiopia, Ghana, Kenya, Peru, and the Philippines where urban and peri-urban areas are struggling to keep pace with the consequences of rapid urbanisation and are demanding technically sound, equitable and scalable solutions in the agrifood sector.

The CGIAR Resilient Cities initiative recognises the urgency brought on by the swiftly growing urban population and the imperative for solid evidence to tackle the complex challenges in urban agrifood systems, intensified by climate change and urbanisation. Despite its extensive research, innovative solutions, and potential for scaling, the initiative has not fully realised its capacity and, thus, invites collaborative efforts.

For more information about the CGIAR Resilient Cities initiative, please visit <https://www.cgiar.org/initiative/resilient-cities>.

# Resilient cities need resilient food production systems: getting it right from the start!

Danny Coyne  
Ivy Nyambura  
Ralph Roothaert  
Mary Kibira

**As urban populations in Africa's cities continue to rapidly expand, the spectre of how we can continue to effectively feed them with safe, nutritious, yet affordable food is consistently raised. This is being addressed by the CGIAR Resilient Cities initiative, together with a range of partners, to identify implementable, manageable options for safe production of fresh, nutritious vegetables in urban settings. Improving the productivity of urban and peri-urban vegetables is a key component of this initiative.**

Nairobi is a key regional hub for East Africa and is among the fastest growing cities in Africa. The city's alarming growth rate presents a multitude of challenges on how to feed its population, especially the poorer residents, many of whom live in informal settlements with limited infrastructure and consequently, reduced access to perishable food.

The availability of fresh, perishable, nutritious vegetables and fruit is critical to the wellbeing of these residents and their ability to meet the minimum dietary recommendation of 400 grams of fruits and vegetables per day<sup>1</sup>. A critical point, however, is the availability of *safe* fruit and vegetables that are not excessively contaminated with chemical pollutants, heavy metals, human pathogens or nano-plastics.

Under the CGIAR Resilient Cities initiative, a range of options to determine suitable urban and peri-urban (UPU) production systems are being evaluated. This involves combining the efforts of, and aligning ongoing activities from, a broad spectrum of partners, especially the Nairobi City County. One key focus is the promotion of healthy seedlings by UPU growers, and getting it right from the start. This is key to improving the productivity and safety of vegetable production. It is being developed as a foundation upon which to build all UPU farming activities, be it roof-top gardens, school gardens, back-yard plots, or commercial/ semi-commercial peri-urban systems. We have worked with growers across Nairobi, linking them with seedling propagators, and connecting numerous organisations towards raising awareness on the benefits of using healthy planting materials<sup>2</sup>.



Children from Mwiki Secondary School learning about the benefits of using healthy seedlings, and how to propagate them. © International Institute of Tropical Agriculture.

## Seedling systems

Within vegetable production systems, the use of seedlings is commonplace and a familiar practice by farmers. Farmers may grow their own in a corner of their plot, or buy 'bare root' seedlings from the local market. The use of seedlings propagated in seedling trays in clean potting media in protected screenhouses is not commonplace, however. In Kenya, a number of seedling propagators supply various vegetable, fruit and herb seedlings to progressive farmers. The concept of using 'tray' seedlings and their advantages is well known by those who use them, but an alien concept for most growers<sup>3</sup>.

Our initial aim has been to work with UPU growers to enable them to understand the benefits of tray seedlings, to see for themselves, and to know how or where to access them – then, encourage them to use them.

To achieve this, we have actively conducted demonstration trials with growers, physically engaging them in a participatory manner. We initially worked with popular crops that farmers were familiar with, mostly leafy vegetables, such as kales, amaranthus and spider plants, before moving to other crops. These demonstrations enabled growers to appreciate the differences between tray seedlings and farmer seedlings. Seeing is believing!

*"They didn't suffer after transplanting, we harvested sooner and they produced more leaves. They were also less damaged by pests!"*

- Farmer from Kiambu

## Climate smart agriculture

Unlike infected roots, healthy roots are efficient and more capable of accessing available water and nutrients. Healthy tray seedlings deliver plants with healthy, vigorous root systems. By definition, this provides a climate smart means to improve agricultural productivity through more efficient use of resources and water.

Tray seedlings are less prone to climate-induced stress, but additionally experience less transplant shock and establish much faster than bare-root seedlings. They yield faster and lead to greater harvests over time, often out-living their comparative bare root seedlings. They also become less infected with diseases, reducing losses but also reducing the need for pesticides. The economic returns of using tray seedlings are substantially greater, compared to bare root seedlings. Despite this, just a small proportion of growers currently use them.

*"My capsicum plants stopped producing and died after six months, while the capsicum from tray seedlings were hanging with fruits and lasted 12 months."*

- Sammy from Nairobi

## The Resilient Cities initiative

Our philosophy is that knowledge is power, and that the more growers know about the advantages of using tray seedlings, the more they will use them. Although more costly, their use results in much greater financial returns to the grower. As it becomes ever more important to conserve and use efficiently resources such as water and fertiliser, so tray seedlings play an additional role as a climate-smart technology.

The Resilient Cities initiative is increasing awareness of healthy tray seedlings across the Nairobi agricultural spectrum. Importantly, this work is creating a network of partners, linking the seedling propagators with growers and streamlining distribution channels. To this end, a mobile phone app is being developed to enable growers to readily determine where and how to access tray seedlings in Nairobi, what is available by whom, and how prices compare. By generating greater use of healthy, propagated seedlings, which have strong vigorous root systems, the productivity of fresh, safe UPU vegetables will similarly be greater across Nairobi and other urban centres.

With technologies and know-how, and by creating channels of communication and developing networks to improve urban gardening and agriculture, the Resilient Cities initiative and its partners help to address the numerous challenges of cities, such as Nairobi, to access fresh and healthy foods, while combatting the effects of a changing climate.



Do it right from the start. Propagating healthy tray seedlings at Mkulima Ndogo, Kenya. © International Institute of Tropical Agriculture

Healthy seedlings



The difference between spinach 'tray' and 'bare root' seedlings is clearly visible in this farm plot in Nairobi. © International Institute of Tropical Agriculture

Bare root seedlings



Healthy seedlings



A healthy tray seedling showing the strong, vigorous root system vs ground seedlings showing bare root system. © International Institute of Tropical Agriculture

Bare root seedling



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# Building resilient cities, one garden at a time

Sandhya Kumar  
Md. Abdus Salam  
Lukas Pawera  
Debashish Chanda  
Pepijn Schreinemachers

**Over two-thirds of the global population is projected to live in urban areas by 2050, straining global and local agri-food systems to meet urban demand for nutritious foods sustainably. In Bangladesh, the CGIAR Resilient Cities initiative is working towards sustainable vegetable production through piloting and scaling innovative urban gardening technologies.**

Dhaka is a megacity that is expected to grow to over 27 million residents by 2030<sup>1</sup>. Many of its residents are poor and most of the population is not meeting the minimum dietary recommendation of 400 grams of fruits and vegetables per day<sup>2</sup>. Many households across a broad socioeconomic spectrum try growing fruit and vegetables for their own consumption on riverbanks, rooftops, and in small gardens.

To what extent can gardening provide a solution for healthier diets and more sustainable urban food systems?

This is one of the questions addressed by the CGIAR Resilient Cities initiative, which more broadly looks to harness urban capacities for innovation and support the development of urban and peri-urban agri-food systems to generate technological, institutional and social change to secure food and livelihoods for future urban generations.

In Bangladesh, the central government has embraced urban agriculture in its current 5-year plan (2020-2025) which promotes rain-fed rooftop and vertical farming for both its environmental benefits and to meet the nutritional needs of its growing population. The Dhaka Food Systems (DFS) project<sup>3</sup>, led by the Food and Agriculture Organization of the United Nations (FAO) and funded by the government of the Netherlands, aimed to train and support 6,000 residents across Dhaka to jumpstart their gardening activities between 2021-2023.

The Resilient Cities initiative is evaluating the impact of this urban gardening programme on a broad range of outcomes, including fruit and vegetable consumption<sup>4</sup>. To do this, a random sample of 700 participants and non-participants was selected, and data were collected before and after the training. Initial results show that within just three months of the intervention rollout, households increased the physical space devoted to gardening, adopted improved gardening practices, and



Self-watering sack bag gardening. © Pepijn Schreinemachers, World Vegetable Center and International Potato Center

were able to harvest more often. Moreover, over 90% of households reported additional benefits such as their house looking prettier and the family working together. While most participating households did some gardening previously, the evaluation shows that the productivity of gardens can be improved quickly with training and support.

### Innovations in urban gardening

There is much potential for urban gardens in Dhaka because most houses have flat roofs suitable for rooftop gardens. The DFS project estimates that just in Dhaka North 1,170 hectares are suitable for rooftop gardening. The Resilient Cities initiative, in collaboration with Bangladesh Agricultural University, is therefore also designing and piloting low-cost innovative urban gardening technologies for the Dhaka setting. The research involves scientific and

participatory experiments on rooftops and conventional gardens with popular vegetables such as Malabar spinach, chilli, and red amaranth. Technologies being tested include aquaponics with tilapia fish, Kratky hydroponics, nutrient film technique (NFT) hydroponics, self-watering geobags and sacks, as well as traditional container gardens. All technologies use water efficiently and prevent mosquito breeding. The initiative also analyses water, soil and vegetable samples for contamination with heavy metals and microbial pathogens. The initiative plans to identify promising technologies that can be scaled.

### Gardening ecosystem

Across all city corporations of Bangladesh, government policy already provides a 10% tax rebate for those who undertake rooftop gardening. Beyond household consumption and savings, urban gardening can offer new



Roof gardening various techniques. © Pepijn Schreinemachers, World Vegetable Center and International Potato Center

income generating activities. As a study commissioned by the Resilient Cities initiative on vegetable seedling systems shows, seedlings and nurseries in Dhaka have growing demand among urban residents but are constrained by physical space and regulatory bottlenecks.

### Conclusion

Urban gardening in Dhaka and similar urban settings holds great potential to address many of the challenges of growing cities: access to fresh and healthy foods, income generation and livelihoods, recycling nutrients/food waste and water, and combatting the effects of a changing climate. The evidence and technologies developed through the Resilient Cities initiative and its partners can bolster ongoing gardening and greening efforts locally, and strengthen urban agri-food system resilience to future shocks.

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Woman in her rooftop garden. © Pepijn Schreinemachers, World Vegetable Center and International Potato Center

# Informal food vendors: an ignored opportunity for resilient urban food systems

Silvia Alonso  
Gordon Prain

The CGIAR Resilient Cities initiative is implementing Vendor Business Schools in Nairobi, Kenya, and Quezon City, Philippines, to help food businesses in the informal sector professionalise their practices through improved capacity. The intervention helps to increase recognition of the importance of these vendors in urban food systems governance, and to stimulate future investment in the sector.



Kevin Kibet tests a jug of milk at his shop near Eldoret, Kenya. © Kabir Dhanji

Most employment in cities of the Global South is informal. This means it usually occurs in small economic units that are unregistered by national social security, sales or tax authorities and which escape formal bookkeeping and regulation. These make up between 50% and 80% of employment in the majority of countries across Africa and Asia<sup>1</sup>. Most of these informal economic units are 'own account businesses', individual women and men working on their own or with some family help. A huge proportion of own account workers is involved in the retail trade, and especially in food retail<sup>2</sup>. Although the composition by sex of the informal sector varies globally, women are more highly represented in food retail.

The millions of informal food vendors in the markets and streets of cities in the Global South face a precarious work environment because the sector is currently neglected, under-invested and often criminalised<sup>3</sup>. This is especially serious for women because of their wide involvement in the sector and their greater vulnerability to harassment. This situation is especially tragic since these food vendors are the main source of food security for the largest and poorest parts of urban populations. The poor mostly get their food from wet markets and street corners where these vendors operate<sup>4</sup>.

There is therefore an urgent need for improved recognition of this contribution in urban food systems governance and for investment to improve its functioning<sup>5</sup>. Investment could generate huge benefits for the large vendor population itself through increased livelihoods and empowerment as business owners, especially for women.



Lois Jemutai tests a sample of fresh milk from a farm in her village over a flame in her shop near Eldoret, Kenya © Kabir Dhanji

It can also benefit consumers through providing better access to nutritionally-dense foods like vegetables and animal source foods that these vendors sell.

However, there are two important challenges that need to be urgently addressed in order to maximise the services the sector provides to cities: 1) ensuring the safety of the food sold through these channels; and 2) helping to expand the entrepreneurial mindset of vendors, especially for women juggling multiple responsibilities.

## Vendor Business School

To stimulate governments to address these challenges, the CGIAR Resilient Cities initiative has designed a pilot intervention with food vendors in the informal sector called 'The Vendor Business School' (VBS). The VBS is a capacity development scheme grounded on current evidence from vendors and other food system stakeholders about what is needed to professionalise informal food businesses. Multi-agency research-development teams are establishing VBS in Nairobi, Kenya and Quezon City, Philippines.

The VBS in Nairobi draws on prior experience with dairy vendors in a medium-sized city in Kenya known as 'the MoreMilk project'<sup>6</sup>, and will concentrate on women milk vendors, who provide a vital role supplying milk to low-income consumers in the capital city but face major challenges with business practices and compliance with national regulations.

In Quezon City, the VBS draws on prior experiences with adult learning innovations with farmers in the Philippines known as the Farmer Business School<sup>7</sup>. The focus will be on vegetable vendors from markets, temporary outlets and street sellers, among whom approximately two-thirds will be women. A total of 300 vendors will benefit from the pilot programme across both cities.

In the VBS, training sessions are built around relevant content developed and validated by local experts and then translated by specialists into an adult-appropriate and learning-centred interactive curriculum. Sessions include business thinking and planning, book-keeping, product promotion, and professionalisation through respect, empowerment and incentive-based compliance with



A recent delivery of fresh milk at Kevin Kibet's shop near Eldoret, Kenya © Kabir Dhanji

formal regulations. A strong emphasis is placed on food safety practices, including personal hygiene and food handling. The scheme is highly motivated to help participants understand and address the gender context of their work, especially the impact on women's businesses of household and child-rearing responsibilities. The first on-boarding session invites spouses to join and participate in exercises to understand the gender context of the food businesses with the expectation that they can help make the VBS a success. Facilitator-coaches are identified through a rigorous selection process and participate in an intensive Training of Facilitators involving the adult-teaching approach and subject matter.

The VBS is an example of an innovation that responds to current global calls for governments to embrace informal markets towards more resilient food systems. The African Union (AU), in collaboration with the CGIAR, is spearheading an effort to develop guidelines for AU Member States<sup>9</sup> to engage the informal sector towards improved food safety management in their food systems.



Winnie Cheronon decants a supply of fresh milk at her shop near Eldoret, Kenya. © Kabir Dhanji

The guidelines are formulated under three overarching principles: **recognition** of the societal services the informal sector offers, **engagement** with informal sector actors for equitable and inclusive participation in policy processes and **investment** to strengthen capacities.

Through focusing attention on professionalising the underattended and underappreciated informal food vendors, the VBS will encourage recognition of their importance and strengthen engagement with them by local authorities. This, in turn, will stimulate further investments, so that this pilot can be the catalyst for the inclusion at scale of the informal food sector in urban food systems to increase their resilience.

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Lois Jemutai at her shop near Eldoret, Kenya. © Kabir Dhanji

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# Towards resilient cities: strengthening business skills of small food vendors in Metro Manila

Lisa van der Biezen  
Phoebe Ricarte  
Matty Demont

**Within the rapidly urbanising landscape of Metro Manila, small food vendors operating in urban food markets encounter a host of obstacles. We conducted focus group discussions with small food vendors in two cities in Metro Manila to support the design of curricula aimed at increasing their resilience by enhancing their business skills and capabilities. Our study underlines the vital role of targeted business programmes that prioritise the unique entrepreneurial context of their beneficiaries, including a supportive political environment for long-term decent work opportunities.**



Female and male vegetable hawkers in Pasay  
© International Rice Research Institute

The crowded food markets of Metro Manila bustle with activity and offer a rich array of commodities. Thriving small food vendors serve a central role in this rapidly-growing metropolis, given their indispensability in providing food to urban dwellers and their essential contributions to the economy. Globally, small food vendors are vital contributors to food security, yet they are often overlooked by policymakers and urban planners, resulting in inadequate attention to their development. Lingering

colonial policies have left small vendors in a state of uncertainty, without a clearly defined status. A paradigm shift is needed to recognise the potential of informal activities as a viable pathway towards the empowerment of small food vendors.

In addressing the multifaceted challenges arising from rapid urbanisation, it is imperative to work with the growing number of small food vendors to foster economic empowerment, promote social inclusion, and ensure equal access to affordable food. We convened small food vendors from Quezon City and Pasay City in Metro Manila – spanning from small vendors operating in both public and private markets, to those running mobile vending businesses on the streets. We conducted 16 focus group discussions with these different types of vendors (with a total of 47 women and 41 men) to gather comprehensive insights about their daily challenges and identify specific requirements for a capacity building programme to enhance their business skills and capabilities.

## Business hurdles in the world of small food vendors

It is clear that food vending provides livelihood opportunities, particularly for marginalised and unemployed individuals. However, the small food vendors who took part in the focus group discussions reported various challenges. The prevailing challenge, faced by a significant majority, revolves around unstable income. This

means that their earnings at times only cover immediate daily expenses, making it difficult to save or invest.

As gleaned from the perspectives of these vendors, the main factors contributing to this financial strain include a decline in regular customers and a rise in product prices. These challenges are intertwined with evolving urban market dynamics, including the proliferation of online selling platforms, delivery services, and competition with unregistered vendors operating in the vicinity. Additionally, seasonal variations in weather add further strain on their businesses. During the dry season, the intense heat causes vegetables to spoil quickly and results in limited sales opportunities. On the other hand, the rainy season and cyclones deter people from going out, leading to both price increases and spoiled produce.

Compounding these difficulties is the lack of essential infrastructure, materials, and knowledge among vendors to effectively deal with climatic stresses. In many cases, they resort to informal money lenders, falling into a cycle of debt repayment. This financial burden exacerbates the challenges they face, making it increasingly critical to find sustainable solutions.

Furthermore, small food vendors fall foul of regulatory issues due to minimal support from local government units (LGUs) and the national government. This lack of support results in dualistic policies (i.e. emphasising the divide between the formal and informal sectors), insufficient access to utilities (e.g. water and electricity), clearing operations, and a sense of distrust. Notably, exceptions exist when a market is affiliated with a cooperative or association, which may provide some forms of assistance, including financial support.

## Significance of inclusive capacity building for small food vendors

Based on the focus group discussions, it is apparent that by offering targeted training, mentorship, and greater access to business support services, the CGIAR Resilient Cities initiative can contribute to boosting the entrepreneurial capacities of small food vendors. This, in turn, will foster inclusive economic growth and bolster the overall resilience of the urban food system.

We found that many small food vendors are highly motivated to increase their profits, driven by a deep-rooted commitment to providing their children with a quality education and ensuring a better future for the next generation. Vendors consider meeting the needs of their families to be a meaningful benchmark of success. Many of them recognise their lack of skills in financial management and express a desire to acquire more knowledge on how to enhance and invest their capital effectively. Although articulating specific areas of knowledge improvement can be challenging, common topics include saving money, strategies to attract regular

customers (such as product arrangement and improving the visual appeal of their stalls), better communication with suppliers, and resourcefulness to explore additional income opportunities through product expansion. In addition to these, there is a need for increased LGU support.

Small food vendors tend to mention two motivations for entering their line of work: the absence of registration fees associated with more formal occupations and the high degree of flexibility inherent in being a food vendor. On the other hand, a significant number express a desire to transition to a more registered status, primarily because of the support they can receive from LGUs. Encouraging small vendors to attend capacity-building activities could therefore play a pivotal role in promoting their registration.

It is worth noting that there is often considerable overlap between registered and unregistered vendors, with individuals shifting between various forms of registration as opportunities arise. However, it is vital to acknowledge the existence of structural barriers, including discriminatory practices, that often hinder small food vendors' access to established employment options.



Public Murphy market in Quezon City. © International Rice Research Institute

Previous capacity development programmes that prioritised ‘formalisation’ rather than decent work have proven to be ineffective. Therefore, an approach that encourages vendors to obtain permits and promotes participation in cooperatives, coupled with the improvement of business skills, has the potential to enhance the long-term position and prospects of small food vendors in Metro Manila.

### Empowering small food vendors through Vendor Business Schools

As part of the CGIAR Resilient Cities initiative, the development of Vendor Business Schools (VBS) is being explored (see article by Alonso and Prain, p. 14).

For effective capacity building to foster decent work opportunities, as defined by the International Labour Organization, it is important to understand the specific context in which small entrepreneurs operate and to develop tailored solutions. Informal entrepreneurs are frequently categorised as ‘necessity entrepreneurs’, and their potential for entrepreneurial growth is underestimated. Moreover, entrepreneurship is often still portrayed as a predominantly masculine pursuit, despite the significant presence of female small vendors.

In light of this, the study provided us with important insights that helped shape the curricula of the VBS in Metro Manila.

VBS encompasses an array of modules, all working towards an event at which food vendors can engage in discussions about their newly acquired skills, knowledge, and selling strategies. The majority of these modules are ideally conducted in a face-to-face format, as food vendors greatly

value direct interaction and the opportunity to learn from one another through sharing their real-life experiences.

Key modules need to prioritise the enhancement of **practical business skills** that can be applied by the vendors themselves. Examples include vegetable preservation, diversification of product offerings, digital literacy, and selling strategies to cope with varying weather conditions. To be adaptable to the ever-changing market conditions, particular emphasis should be placed on attracting new customers, rather than relying solely on a small group of regulars. To effectively convey these topics, workshops and interactive lectures are valuable teaching methods.

Another emphasis, identified as a primary need by small food vendors themselves, is **financial management**. This includes saving, developing investment strategies, and gaining access to formal credit providers, all of which can significantly benefit their businesses. Moreover, it is essential to educate vendors about the **advantages of registration**, while acknowledging and respecting the social and cultural capital embedded within their existing practices. Recognizing the value of their unique traditions and networks is pivotal in strengthening their business skills.

The curriculum should encompass the concept of **business ethics**, including the significance of food safety measures and nutritional knowledge for gaining and maintaining customers, as well as for enhancing relationships with suppliers. Ensuring fairness in the market is also key, addressing issues such as competition, bribery, and theft. Promoting a healthy transition to registration is especially



Public Murphy market in Quezon City. © International Rice Research Institute



Talipapas private markets in Pasay. © International Rice Research Institute

relevant here, as vendors with proper business permits often prioritise business ethics more. To further enhance interactions with suppliers, VBS needs to provide clear and comprehensible information about the value chain, thereby improving vendors’ understanding of price fluctuations. Within this topic, competition with other retailers and evolving market conditions should be presented as drivers for creativity. This can help small vendors identify their unique selling points, such as their close customer interactions and flexibility, which can set them apart in the urban landscape.

To promote **inclusivity and address gender-specific needs**, the curriculum should primarily consist of gender-segregated modules, occasionally interspersed with gender-inclusive modules to facilitate mutual learning and foster open discussions on aspects such as work-family dynamics. This is crucial because female and male vendors demonstrate distinct perspectives on business skills, and different challenges. While male vendors often mention challenges related to maintaining customer relations, female vendors require more support in balancing their work responsibilities with household management, underscoring the need for VBS to address feminine entrepreneurship. Similarly, the curriculum could benefit from discussions between men and women sharing experiences on financial management, since women vendors are often the financial lead within the household. Additionally, it is recommended to incorporate the consent of the husband or main household lead, involve them in the initial stages of the curriculum, and inform them about

the potential benefits that the training can offer. This can increase the likelihood of female vendors completing the entire course.

Lastly, it is essential that all modules are designed to be **time-efficient**, with each session not exceeding a maximum duration of 90 minutes and the entire weekly commitment limited to 2.5 hours. This acknowledges the demanding nature of street vending and the limited availability of time. Considering that women, in particular, often face challenges in securing childcare, the option of allowing other family members to attend the training should be made available. Ideally, training sessions should be scheduled in the afternoon when foot traffic is typically lower, allowing vendors to participate without compromising their crucial selling hours.

### The importance of an enabling environment

In Metro Manila, pilot VBS programmes were scheduled to commence in December 2023 through collaboration with the LGU in Quezon City. In light of inclusive development, close collaboration with city officials is important. Authorities need to consider the limitations of problematizing informality and focus on a transition, rather than rapid formalisation. This is pivotal to ensure that all potential participants are given the chance to enhance their business capabilities, irrespective of whether they currently hold permits or not, avoiding favouritism between formal and informal business. Furthermore, it is crucial to acknowledge the hierarchy within street dynamics, including potential power

structures between VBS facilitators and its beneficiaries, ensuring that the programme empowers vendors rather than creating dependency. This necessitates the involvement of local authorities in promoting a paradigm shift around decent work. A more nuanced understanding of entrepreneurship is required, taking into account the potential for capacity building initiatives to address structural hurdles by the establishment of vendor cooperatives.

### Lessons learned

The results of our study make a valuable contribution to the field of inclusive and tailored development programmes. For VBS to succeed as an activity for strengthening business skills in Metro Manila, it is crucial to recognise the specific entrepreneurial context of small food vendors, avoiding a global definition of entrepreneurship. While it may not be possible to draw sweeping conclusions for other urbanised regions, this study offers a valuable comparative case to conduct rapid validation for each city where the VBS will be implemented.

Five important lessons were learned from our study:

- 1) Vendors hailing from diverse market backgrounds – be it public, private, or street hawking, from selling street food to fresh vegetables – encounter distinct challenges. These challenges demand unique solutions tailored to their specific circumstances.
- 2) One of the critical factors influencing these challenges is the varying degrees of support and regulatory frameworks that apply to unregistered vendors across different cities. This is paramount, especially when contemplating the enduring establishment of VBS.

- 3) Officials must be cognizant of how they perceive informality, as this significantly influences how the struggles of small food vendors are approached and resolved.
- 4) It is imperative to recognise the gender-specific hurdles faced by male and female vendors. Each gender possesses its own set of challenges and strengths. Therefore, it is essential to provide customised support through gender-segregated training modules.
- 5) The focus of VBS should be on improving practical skills. These skills must align with the evolving landscape of globalisation and urban market modernization.

As a conclusion, building resilient cities requires continued exploration of alternative strategies. Fostering innovative perspectives from previously less-involved actors, such as urban planners and authorities, is crucial in upcoming effective decision-making. Only in this way can VBS contribute to our understanding and appreciation of the role of small entrepreneurship and foster innovation in the management of urban food systems.

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Public Murphy market in Quezon City. © International Rice Research Institute (IRRI)

# Policy insights on evidence-based transformation of food systems in Quezon City, the Philippines

Emmanuel Hugh “Nonong” F. Velasco II and Francis Ian L. Agatep, in conversation with Gordon Prain

Quezon City is located just northeast of the capital, Manila, and is an important entry point for food supply to the greater Metro Manila area. As such, it plays a pivotal role in ensuring that citizens in the capital region have access to safe, nutritious, and affordable food. However, this crucial function is facing several challenges related to climate change that disrupt not only the production, but also the supply of food into the urban area.

Quezon City is on a remarkable journey to strengthen its food systems and build resilience against these challenges. Stakeholders, including local government officials, farmers, vendors, researchers, and urban planners, are joining forces to strengthen Quezon City's food systems. On October 16, 2023, the Local Government of Quezon City (QC-LGU) and CGIAR Resilient Cities initiative joined forces by signing a historic Memorandum of Agreement (MOA). The agreement, signed by Dr Simon Heck, Director General of the International Potato Center (CIP) and the Lead of the CGIAR Resilient Cities initiative, and Quezon City Mayor Hon. Maria Josefina G. Belmonte,

promises to help make agrifood systems in Quezon City resilient and sustainable, contributing to improved food security in the city and greater climate resilience. Dr. Heck was represented at the ceremony by Dr Gordon Prain, Senior Advisor to the initiative. Other Resilient Cities initiative witnesses to the event included Dr Pepijn Schreinemachers, Senior Scientist at the World Vegetable Center, and Ms. Arma Bertuso, Focal Person (Philippines), CGIAR Resilient Cities initiative as well as Quezon City's executive and legislative leaders.

Following the signing ceremony, Gordon Prain held a conversation with Mr. Emmanuel Hugh “Nonong” F. Velasco II, Sustainable Development Projects Officer and Co-chairperson and Action Officer of the Food Security Task Force (FSTF), and Mr. Francis Ian L. Agatep Consultant, Sustainable Development Affairs, Quezon City Food Security Task Force, Quezon City Government, Philippines. The participants explored in more depth the food systems challenges faced by Quezon City Government and the timely role of evidence-driven solutions in mitigating and



CGIAR Resilient Cities senior advisor Dr. Gordon Prain and Quezon City Mayor Hon. Maria Josefina G. Belmonte sign Memorandum of Agreement (MOA) at the Quezon City Hall in commemoration of World Food Day. © Bertuso Arma, International Potato Center, CIP

adapting to these challenges. The discussion revolved around several thematic areas that shed light on the critical issues faced by the city's food system and the potential contributions of research and innovation. It included insights and suggestions regarding the impacts of climate change on urban food systems, incentives for food businesses and consumers, and the significance of collaboration with CGIAR Resilient Cities initiative in supporting evidence-based solutions.

**Gordon Prain (GP): What are the major threats of climate change affecting the food system in Quezon City/Metro Manila and how can research help with mitigation/adaptation responses?**

**Mr. Emmanuel Hugh “Nonong” F. Velasco II (EHV):** Climate change, particularly strong rains, more frequent typhoons, and flooding not only affect food production but also lead to a spike in food prices. The ability of typical buyers to reach their regular food sources is hampered, due to decreased availability and supply delays. Without proper production and post-harvest facilities, vegetables perish faster in wet conditions, leading to food waste. Additionally, the timing of the rainy season in the Philippines normally occurs at the end of the third or at the beginning of the fourth quarter, which then coincides with increased food demand due to the Christmas season, exacerbating food supply & demand challenges. These climate change events have significant implications for the city's food system, causing disruptions and food losses.

**GP: What kind of information or data can help support better decision-making on food systems planning and management. Can CGIAR Resilient Cities initiative play a role in this?**

**Mr. Francis Ian L. Agatep (FIA):** Research can play a crucial role in understanding consumption behaviours and patterns, the kind of food that is easily affected by climate change, and how food sources can be better managed. By regularly gathering data on the nutritional needs and food preferences of different population segments, research on consumption preferences can guide policymakers in creating targeted and efficient food policies. This information is critical for better governance and improving the flow of food at both local and regional level.

**EHV:** Quezon City aspires not only to create policies, but also to invest in impactful programmes that can serve as models for others to follow. However, relying solely on local government revenue resources may not be sufficient to address the complex and multifaceted issues within the food system. The availability of up-to-date data will present a clear picture of the city needs. Research and data can be used as support for the development of proposals by the government to attract external funding and projects. Key investments in cold chains, and the development of urban peri-urban partnerships, can significantly transform and improve our food systems.

**GP: What incentives to food businesses and consumers can local governments use to make the local food system fairer or more equitable, safer and healthier? With reduced levels of waste? Can research contribute to designing effective incentives?**

**EHV:** With Quezon City's commitment to provide better services to its people, there is now pressure to generate more taxes to support this. But we are still exploring how to provide tax and non-tax incentives. An example of a non-tax incentive is the city's creation of contests and awards, such as the Barangay Kontra Gutom 2.0 (Barangay Against Hunger 2.0) Awards through the Barangay and Community Relations Department. This recognition programme encourages local units to establish Barangay-led community urban farms. The city's Climate Change Environmental Sustainability Department also recently launched the Green Awards to promote better care of the environment. Some of the winning entries were related to food waste reduction and urban agriculture food production. These awards aim to motivate and document best practices that contribute to a more resilient food system. I truly hope other Barangays and citizens will be inspired to follow these award winners.

**FIA:** Food safety is paramount in all steps of the food system. It may be on the production side, or the consumption side, which is the city's major role, because we are essentially the end user. But we need to communicate this better because encouraging healthy diets and nutrition means safe and nutritious foods, and the Quezon City Mayor advocates for this. Our City Mayor has set multiple policies such as the healthy food public procurement policy, as well as trying to enact a calorie labelling policy, because she understands that these will enable an environment that can eventually incentivise healthier living in healthier diets and welfare of the people. Research should play a part because it shows that good social services must be reflected by better health in nutrition. And that should be backed up by data and evidence-based research that can push for policies and



Dr Simon Heck, Director General of the International Potato Center (CIP), and the Lead of the CGIAR Resilient Cities initiative involvement in the Memorandum of Agreement (MOA) signing ceremony highlights the strong commitment of both CIP and the CGIAR Resilient Cities initiative to the collaborative efforts.  
© Bertuso Arma, CIP

say,. 'if you do eat better, if you have a healthier diet, you will have more productive cities and more productive urban areas'.

**GP: How can the recently signed MOA between Quezon City and Resilient Cities help to strengthen the city's food system, which depends on flows of food from local production, from different Philippine regions and internationally, and which is marketed through multiple local markets?**

**EHV:** Research is instrumental in providing the clear evidence needed not only to draft policies but also to translate them into tangible programmes that directly benefit the citizens. The Memorandum of Agreement (MOA) between Quezon City and Resilient Cities emphasises evidence-based policy creation and programme development as the cornerstone of good governance. The work packages outlined in the MOA will serve as valuable contributions to the ongoing efforts to construct a comprehensive food security plan. As the city continues to refine and develop this plan, the insights gained from the research outputs from various sources, including collaborative research initiatives, are expected to play a pivotal role in creating a holistic and effective



Participants during CGIAR Resilient Cities initiative and the Local Government of Quezon City (QC-LGU) historic Memorandum of Agreement (MOA) at Quenzon City Hall.  
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food security strategy for the city. This collaborative effort aims to bring together all relevant research findings to help craft a comprehensive and sustainable food security plan for the city.

**FIA:** Investing time and attention to data and research is a reflection of the city's commitment to good governance. It's about adaptive leadership, where in the case of food systems, it is the city and the City Mayor herself taking a step forward, showing how highly urbanised cities must play a role in food systems. Food is a public policy that must also be overseen by local government. If the Resilient Cities initiative will be able to show and allow Mayor Joy and the city to have that platform of showing the example of how food systems must move forward, then I think we're moving in the right direction.

**GP: Any final thoughts on how your city government can be more innovative to ensure just access to healthy food by all citizens under conditions of climate change for future generations?**

**EHV:** Meeting Sustainable Development Goals and the assurance of access to healthy foods through improved food systems, given climate challenges, requires a



Stakeholders pose for a photo after signing of the MOA held on October 16, 2023. © Philippine STAR

long-term commitment. However, Local Government Units (LGUs) are constrained with short government tenure, and this must deliver results within a short-term period. We hope that when we conduct research, the approach will strike a balance between the larger and long-term vision and the achievement of short-term wins. The approach to research should be regular and frequent rather than a one-time exercise.

We can learn from other groups, seek assistance and guidance from partners, and work collectively towards common goals. As our local food security initiatives transition from a focus on urban farming to addressing a reliable food supply in the face of disruptions – be they related to climate, health, or other disruptors, we are now investing more effort in medium to long-term solutions rooted in improving our food systems. The improvement of food systems, however, demands greater information gathering, more collaboration from stakeholders, additional resources, and a stronger political will to be realised. These are just some of the steps we are taking. By attaining small victories that address larger challenges, we aim to ensure continuity of access to healthy foods. We hope that we will be able to institutionalise the efforts of our food security task force so that even if we have a change in leadership, our food security initiatives will continue.

**FIA:** Indeed, you brought up the critical aspect of food safety, a concern that permeates every stage of the food system, from production to consumption. As a city, we hold a pivotal role, primarily as end-consumers. However, it's essential that we enhance our communication on this matter, as promoting healthy diets and nutrition hinges on the availability of safe and nutritious foods. Our City Mayor is a strong advocate for this cause.

It is the citizens who bear the brunt of the effects of climate change that affects each one of us. Therefore,

there is a need to invest in programmes that enable the city to involve a broader spectrum of food stakeholders, extending beyond manufacturers or producers to encompass the most food-vulnerable individuals, including urban farmers and market vendors. This innovation has to be seen. The country has good laws. There are good policies in place. But we have to look not just outwards, but also inwards, in understanding how these policies can really make a difference in people's lives. If evidence-focused efforts can provide the data for that kind of innovation, then I think the city is going in the right direction to improve and become a more resilient city.

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Contributions by **Arma Bertuso**, Focal Person (Philippines), CGIAR Resilient Cities initiative and **Martha Awinoh**, Senior Communication Specialist, CGIAR Resilient Cities initiative.

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# United for progress: Ghana's multi-institutional circular bioeconomy Innovation Hub

Dzifa Agbefu  
Pay Drechsel  
Philip Amoah

**After years of fragmented efforts to create circular approaches to waste management in Ghana, the new circular bio-economy (CBE) Innovation Hub in Ghana is bringing together diverse stakeholders to jointly promote existing CBE approaches through training, advice, demonstrations, and research, while fostering the development of new, accessible innovations.**

Across the Global South, rapid urbanisation is triggering significant waste management challenges. Given that organic waste constitutes the largest share of these challenges, while farm soils are constantly depleted of their nutrients to produce food for urban centres, closing the resource loop through composting towards a circular economy has been a top recommendation for many years<sup>1</sup>. This may seem simple in theory, but there are numerous logistical, financial and institutional challenges to putting this recommendation into practice<sup>2,3</sup>. These challenges have led to calls for a multi-disciplinary business approach to resource recovery for reuse<sup>4</sup>.

While significant steps have been taken towards viable solutions, these have not translated into increased capacities and more implementation on the ground<sup>5</sup>. As organic waste ending up in landfills makes a non-negligible contribution to global warming<sup>6</sup>, there is an urgent need to explore new and innovative pathways for capacity development to accelerate viable circularity.

#### The Hub

In Ghana, various stakeholders from both the private and public sectors, as well as those in research and education, are actively working on different circular models, including those related to agriculture. However, their efforts have not been linked. Internal and external knowledge sharing, and coordination for scientific evidence generation or economics of scale, have been missing. This fragmented

approach has sometimes resulted in solutions that don't match actual needs, repetition of past errors, competition, and unnecessary duplication of efforts. These issues have had a negative impact on the long-term sustainability of projects, resulting in avoidable failures and slowing progress within the sector.

The International Water Management Institute (IWMI) is seeking to change the game, supported by the CGIAR Resilient Cities and Nature Positive Solutions<sup>7</sup> Initiatives. Sixteen institutions from various sectors (see Box 1) have pooled resources to support the CBE through the formation of an Innovation Hub as a one-stop-shop for training, advice, demonstrations, and research. This initiative marks a significant shift towards collective thinking, giving priority to a common vision over silos and individual interest. It paves the way for widespread adoption of CBE approaches through school and university programmes, peer-to-peer learning, tailored research, and training sessions.

The model of co-ownership was developed during a series of workshops and aims at co-design and co-implementation, guided by jointly-defined objectives, strategy, infrastructure, soft skill resources and work plans for shared impact. In addition to the co-owners, the Hub collaborates with scaling partners (see Box 1) from diverse sectors, who translate the Hub's capacity and outputs into tangible outcomes.

### Box 1: Hub Partners

#### Co-owners as of October 2023:

Clean Team Ghana, Safisana Ghana Ltd, Jekora Ventures Ltd, Trimark Aquaculture Centre, Catholic Relief Services, Water and Sanitation for the Urban Poor (WSUP), MDF Training and Consultancy, CSIR-Institute of Industrial Research, Biotechnology and Nuclear Agriculture Research Institute (BINARI), University of Environment and Sustainable Development, Regional Water and Environmental Sanitation Center Kumasi, Institute for Environment and Sanitation Studies, Engineers without Borders – KNUST, Regional Center for Energy and Sustainable Development, Accra Compost and Recycling Plant(tbc), International Water Management Institute (IWMI).

#### Scaling partners as of October 2023:

Ministry of Sanitation and Water Resources, Ministry of Food and Agriculture - Directorate of Crop Services, International Fertilizer Development Center (IFDC) and Centre for National Distance Learning and Open Schooling.

### What the Hub offers

Guided by the identified sector challenges, co-defined objectives and goals, and the expectations of the co-owners, five strategic operational areas were proposed (see Figure 1).

These five areas, each with its specific focus, are aimed at enhancing competencies of professional stakeholders, nurturing change champions, and integrating circular concepts into school and university curricula.

### Pooled resources

The Hub's strategy of pooling resources from co-owners enables implementation of activities, while building on the infrastructure and soft capacities of its co-owners. This has resulted in the formation of a team of over 30 trainers with cross-cutting expertise in various aspects of the CBE, such as the set-up and production of CBE products, business and financial model development, green financing strategies, partnerships, stakeholder engagement, quality management, health and safety, innovation scaling, and gender diversity and inclusion.



Figure 1: Strategic operational areas of the CBE Hub in Ghana.



Figure 2: The living labs show hydroponics, wastewater aquaculture, organic waste (co)composting, the production of dry fuel, BSF turned into insect-based feed for pigs, poultry, and fish, agricultural test farms for waste-based fertiliser, etc. © IWMI

The trainers will support virtual or webinar training and run practical, hands-on sessions at the Hub's seven "living labs" across the country. The living labs are showcase, demonstration, training, and research spaces hosted by CBE businesses that co-own the Hub. Example showcase activities include the transformation of organic waste into safe compost and co-compost (with fecal sludge), dry fuel (briquettes), biochar, biogas, and black soldier fly (BSF) cultivation (see Figure 2).

In addition to transforming waste, the living labs also support a number of targeted beneficiaries with products. These include: professionals in the public and private sector (including engineers); informal sector actors; farmers; micro-, small-, and medium-sized enterprises; and the educational sector (from primary schools to Technical Vocational Education Training (TVET), to universities).



Figure 3: Introducing the concept of waste segregation to school children in Kumasi. © IWMI

### Outcomes so far

The Hub started operating in mid-2023, and as of October has facilitated training for representatives from five institutions in the operation of a non-carbonised briquette machine with the capacity to produce 1000 tons of dry fuel for households or industry each year. The demonstration site is operated by Jekora Ventures Limited, a co-owner.

In addition, an awareness initiative was conducted in ten primary/secondary schools to enhance the understanding of waste management and resource recovery and reuse (RRR) in schools (see Figure 3). This initiative trained 5,489 students to date (2,802 boys and 2,687 girls) between 6 and 14 years. More schools are already lined up, with spill-overs to Sri Lanka where IWMI supported in Oct/Nov 2023 awareness creation among 900 school children on responsible waste management. In Ghana, the events were supported by IWMI, Water and Sanitation for the Urban Poor (WSUP) and Engineers without Borders.

As part of the awareness creation, the bins used in demonstrations were gifted to the schools and 10 teachers per school were trained to take specific actions, including forming water, sanitation and hygiene (WASH) clubs, establishing waste reuse projects, preparing students for inter-school RRR competitions, and showcasing examples of waste reuse, such as using school-produced compost for farming and landscaping.



Figure 4: Urban agriculture in Ghana. © Nana Kofi Acquah, IWMI

### Next steps

The Hub's value proposition will be detailed on its website, currently under development. Meanwhile, one of the scaling partners, the Ministry of Sanitation and Water Resources, has involved the Hub in the review process of the National Sanitation Policy. This represents excellent recognition and well-aligned with the Hub's operational areas (see Figure 1).

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# Dietary and food environment assessments to help understand and address urban food system challenges

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Traditional methods of dietary intake data collection are time consuming and expensive, meaning there are gaps in dietary information in low and middle-income countries (LMICs). Under the CGIAR Resilient Cities initiative researchers from the International Food Policy Research Institute (IFPRI), together with their partners, are testing AI-assisted app- and phone-based innovations for potential cost savings, and are developing an urban food environment and diet toolkit for the selection of assessment tools to understand food and dietary challenges in particular contexts.



A Christmas tree made entirely from different vegetables in central Colombo, Sri Lanka. © IWMI

Urbanisation is occurring at a rapid pace in LMICs. This process has been accompanied by a nutrition transition that is driving overnutrition, micronutrient deficiencies and non-communicable diseases, spurred by the proliferation and marketing of unhealthy foods. Urban diets are also affected by the reduced time for food preparation, convenience and affordability of unhealthy foods. Higher levels of urbanisation are associated with reduced child diet diversity, iron-rich food consumption and anaemia. The morbidity and mortality impacts of this nutrition transition are burdensome to health systems.

Dietary data are essential to develop evidence-based nutrition actions that can help improve diets and prevent malnutrition, which are crucial to the population's resilience to food system challenges. Large-scale dietary assessments typically involve the multi-pass 24-hour recall (24HR) method, validated for use in adults self-reporting their intake and that of their young children<sup>1</sup>, and in adolescents<sup>2,3</sup>. Undertaking 24HR is complex and expensive, with costs of the order of \$500 per recall<sup>4</sup>. As a result, there are important gaps in the data on diets.

Although individual-level dietary intake data is scarce in LMICs in general, it is particularly scarce for school age children, adolescents and adult men. Technology-assisted dietary assessment tools have potential to address these challenges, but these innovations are limited by a lack of

feasibility and validity assessments, especially in LMIC contexts. Mobile phone-based assessments are particularly relevant in urban areas, where network coverage and mobile phones are near ubiquitous. In addition, social media and information and communications technology are promising channels for nutrition education, particularly among adolescents.

### CGIAR Resilient Cities initiative

The CGIAR Resilient Cities Research Initiative aims to strengthen knowledge on urban diets, nutrition and food environment challenges, and interventions to address them. As part of these activities there is a focus on understanding how to reduce the time and costs associated with collecting robust individual level dietary intake data. Specifically, we are conducting feasibility and validation studies of innovations in dietary assessment and use which, if successful, could introduce major cost savings in dietary data collection.

#### 1) Food Recognition Assistance and Nudging Insights (FRANI)

The AI-assisted FRANI app was developed by IFPRI, the University of Ghana, and Plant Village at Penn State University<sup>5</sup>. FRANI allows users to record foods and drinks they consume by simply taking pictures using mobile phone cameras, and uses AI technology to recognise foods and estimate portion sizes.

We found that FRANI accurately estimates nutrient intakes of female youth aged 18-24 years in urban Ghana at a fraction of the cost of traditional 24HR. In addition, preliminary results from a randomised feasibility study suggest that the personalised feedback provided by FRANI can “nudge” users towards healthier food choices and improve their diet. Previous studies

suggest that FRANI assisted diet assessment is valid in children and adolescents aged 9-19 years, suggesting that the technology is ripe for scale-up in Ghana. As a follow-up, plans are being made to pilot an adapted version of FRANI in 2024, for real-time monitoring of school meal quality in the Ghana School Feeding Program.

#### 2) Phone-based collection of dietary intake data

In 2024, we will also assess the validity of collecting dietary intake data using a phone-based approach in Sri Lanka. This method has been successfully used in collecting data during the COVID-19 pandemic in Sri Lanka, however it has yet to be rigorously validated for dietary assessment. We have completed the design of this study and will implement it in 2024. The study will compare the phone-based 24HR recall relative to in-person 24HR recalls, using weighted food records as the gold standard.

In addition to testing the validity of the phone-based method, we will compare the cost of each method of data collection in Sri Lanka. Using a phone-based approach could greatly reduce the financial and time costs associated with dietary data collection.

### Developing guidance on measurement, metrics and intervention design

Alongside these innovations in dietary intake data collection, we are developing a user-friendly toolkit for urban food environments and diets (UFED) to help implementers, policymakers and researchers address evidence gaps and design interventions.

The toolkit will walk users through a series of questions to help inform selection of diet and food environment



Urban farming at the Town Hall of Colombo, Sri Lanka. © IWMI

assessment tools needed to address the contextually specific data needs. The prototype for the toolkit has been developed and will be further refined and validated with key stakeholders in 2024. Once finalised, this will be a publicly available resource that can contribute to further closing data gaps related to diets and food environments in urban environments. With this data, programmes and policies can be designed to address the context specific challenges.

### Take-aways

- Data and evidence gaps exist on urban diets, nutrition and food environments in low- and middle-income countries.
- Promising innovations in individual level dietary data collection can substantially reduce time and financial data collection costs.
- FRANI may also serve as a useful intervention for “nudging” healthy dietary choices among adolescents, especially in urban contexts with high mobile phone usage.

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Fruits for sale in Ha Noi, Viet Nam. © Jef Leroy, FPRI

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# Innovation and collaboration for the resilience of the food system in Lima: the partnership between CGIAR and Incubagraria

Angela Fuentes  
Willy Pradel

**A collaboration between the CGIAR Resilient Cities initiative and Incubagraria, the business incubator of the National Agrarian University La Molina of Lima (UNALM), is supporting start-ups to develop and prototype innovative products geared towards tackling food system challenges faced by rapidly growing cities.**

The city of Lima was chosen as one of the five implementing cities of the CGIAR Resilient Cities initiative due to multiple challenges, such as rapid expansion and growth, increasing loss of agricultural land due to urbanisation, limited availability of water (since it is located in a desert), and high rates of urban poverty, malnutrition and anaemia, particularly in children.

Such challenges in emerging cities like Lima mean it is necessary to complement traditional research processes with more innovative approaches, and to collaborate with other stakeholders. Under the component on strengthening research and innovation capacities, the Resilient Cities initiative has been developing activities in

collaboration with Incubagraria. The aim of these activities has been to develop entrepreneurship and innovation programmes aimed at scientists and students, to boost innovation capabilities and promote scientific and technological-based business ideas in the areas of agricultural, food and environmental sciences.

Business incubators are organisations that seek to promote the growth and success of start-ups. Incubators typically offer training programmes, mentoring, support and even financing at a seed capital level for entrepreneurs with innovative business ideas. Since 2014, all licensed universities in Peru have been required to establish their own business incubator.



Opening of "Made in Agraria 2023" pre-incubation programme, May 2023

Incubagraria started in 2017 and is specialised in the incubation of 'bio' businesses – that is, business models that use biodiversity resources and promote both environmental and social sustainability. Due to UNALM's limited public budget, this incubator has successfully sought external financing, from national and international sources, to provide its training services. Additionally, thanks to funds from the Peruvian Ministry of Education, Incubagraria boasts a prototyping laboratory for entrepreneurs to build and test their innovations.

In 2023, the International Potato Center (CIP), part of CGIAR, established an agreement with Incubagraria to strengthen its training programmes on innovation and entrepreneurship, with the objective of promoting

innovative ideas that contribute to the objectives of the Resilient Cities initiative in Lima. Thanks to this partnership, several activities have been implemented in 2023.

By the end of 2023, 235 people will have been trained (of which 123 women), a result achieved thanks to the provision of resources – both human and financial – by both Incubagraria and CIP.

Thanks to the contribution of CIP, the training programmes to enable the best entrepreneurial teams to build their prototypes were expanded, with the addition of a programme focused on food tech. The focus on food tech business models was enabled by the collaboration and support of UNALM's Food Industries faculty.

## Featured Innovations and Startups

Among the innovations resulting from these programmes, the following stand out.

### Three Power Yoghurt

Functional yoghurt with three high sources of protein and iron: spirulina, cushuro (Andean seaweed) and bovine blood. The ingredients are encapsulated and introduced into the yoghurt to allow the correct assimilation of nutrients and probiotics.

The objective of this innovation is to contribute to combating anaemia and malnutrition in children from vulnerable populations in Lima, as well as contributing to brain development, providing better assimilation of nutrients, and enriching the intestinal microbiota.  
*State of innovation: prototype developed to be tested with the target audience.*



**Three Power Yogurt prototype.** Prototyping programme organised by Incubagraria in alliance with CIP.

### Bioshuro

Biol made from horse manure and cushuro, which provides high-value nutrients to crops and protects them from pests and diseases.

The objective of this innovation is to provide vulnerable populations in Lima with organic liquid fertiliser, at an affordable price and free of

agrochemicals to develop urban agriculture focused on short-term crops, counteracting pests, and diseases.

*State of innovation: prototype, being tested with various crops.*



**Nutripizza prototype.** Prototyping programme organised by Incubagraria in alliance with CIP.

### Nutripizza

Pizza made from broccoli stem flour, malt bran (by-products of the food industry) and other cereal and legume flours, with high protein and functional content.

The objective of this innovation is to provide healthy fast food for young people and adults who are looking for a healthy alternative to conventional pizzas.

*State of innovation: prototype developed to be tested with the target audience.*



**Bioshuro prototype.** Prototyping program organised by Incubagraria in alliance with CIP.



Award to the 3 best teams of the programme "Made in Agraria 2023"

### Future expectations

In 2024, the Resilient Cities initiative plans to continue supporting training programmes in entrepreneurship and innovation in collaboration with Incubagraria, and to develop an innovation challenge focused on addressing specific issues that have been identified in Lima.

There are plans to expand the scope of activities under the collaboration with the UNALM, which is currently building a technological and innovation park for agriculture that will host an Innovation Hub for the agricultural, food and environmental sciences. It is expected that the park will foster partnerships between the private sector, related industries, research centres specialised in agriculture, such as CIP, following the logic of the triple helix innovation model (that is, interactions between academia, industry and government to foster economic and social development).

The presence of CGIAR here will be a great opportunity to strengthen applied research and promote the generation of products with commercial value that contribute to the Sustainable Development Goals, especially in the field of agriculture and food security.

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One of Incubagraria's most notable startups is Bioflash, which participated in the incubation programme in 2018 and subsequently won an innovation contest in Mexico.

Bioflash's product is a liquid microbial accelerator that facilitates the decomposition of organic waste and converts it into compost in 30 days. This product quickly degrades forestry and agricultural waste, prepared foods, fats, animal manure and crop remains, converting it into organic compost. It is also used in the purification of wastewater so that it can be used in the agricultural sector. The product is highly efficient: Each litre of Bioflash can treat between 5 to 10 tons of organic waste and between 5 to 8 m<sup>3</sup> of wastewater.

The Bioflash project started in mid-2018 and the product has been on the market for 5 years. Bioflash has obtained various achievements such as: being the winner of the Startup Peru 7G in 2019, where it won seed capital for 55,000 soles (USD 14,000); being recognised among the 500 best green Latin American startups in the 2023 Green Awards; and being the winner of the 2023 Sustainable Agriculture Challenge carried out by the Monterrey Technology Institute in Mexico and the Pacific Alliance, where it won a fund of USD 20,000.

### An interview with Brenda Costas, Manager of Incubagraria

**How do you see the development of innovation processes and startups focused on urban food systems?**

Business incubators have traditionally focused on technological business ideas, information technologies and digital applications. Other types of business ideas have not been considered equally important, including ideas for food, agricultural products, or environmental management. In recent years this has started to change, and bio businesses are increasingly becoming a priority due to the current crises and climate change, and the need to use our natural resources in a more sustainable way.

In the next 30 years, one of the main challenges will be availability of food, as the population worldwide is growing and urbanising fast. In a context of climate change and high competition for resources such as water and land, access to quality food will be critical.

The National Agrarian University La Molina has a fundamental role in addressing this challenge, especially considering that we have Faculties of Food Industries and Agronomy. Therefore, together with other organisations, we must think about the nutritional quality and safety of food and develop agricultural policies that ensure sufficient supply of food for a growing population. Likewise, Incubagraria has positioned itself as an incubator specialised in bio business, with most innovations based on food and bio business models, all developed under the premise of triple impact – environmental, social, and economic.

**How was the experience of working with CIP in 2023? What are the main outcomes from this collaboration?**

We consider that CIP and Incubagraria are two leading entities on the subject, and that we have aligned objectives to generate innovation and ventures with impact and that provide solutions to the main challenges at a national and global level.

This year we have managed to work with future promoters who will make decisions about how to face these challenges in the future – they are students who are trained in our university classrooms. Working with undergraduate students and encouraging them to propose their innovative ideas to face these challenges has been enriching, due to the predisposition, creativity, and awareness that the students have.

In less than a year we have managed to execute an innovation challenge, "Made in Agraria"; a pre-incubation programme, "Food Design"; and a programme for the development of prototypes. Next, we will run an incubation programme. We are really showing that with effort and when the objectives coincide, things can be achieved.

**What opportunities and challenges do you see in agri-food business models in urban sectors?**

Regarding the challenges, I look to the sustainability of agri-food business models. To serve a population in a state of vulnerability, someone must pay for it. Entrepreneurships must be self-sustaining.



Brenda Costas, Manager of Incubagraria



Christian Lopez, Bioflash CEO and founder

In that context, support from the government or international institutions is key. Projects that have environmental and social impact must be supported through government incentives.

**What are your expectations for the future with the collaboration with CIP-CGIAR?**

Continue joining efforts so that, together, agri-food entrepreneurship can scale up. As a future project we have the technology and innovation park for agriculture, which will link the university with the business sector and with all the relevant actors – one of which could be CIP, with whom we have been working for years through a strategic alliance with UNALM.

# Youth-led resilience: the impact of Generation Food in the DRC

Bonnke Safari  
Aganze Nyangezi Arsène-Desman

In a world of constant change and complexity, the search for a stable food supply has become increasingly important. This article dives into the story of Generation Food in the Democratic Republic of Congo (DRC). We look at how young agrifood entrepreneurs are taking steps to reshape the food landscape in the DRC towards resilient, sustainable and inclusive urban food systems and beyond.

## Challenges and opportunities

Countries with low food resilience – the ability of a food system to withstand shocks and continue to provide food security for all – are highly vulnerable to disruptions such as pandemics and violent conflict. The DRC is particularly exposed to these threats. The country imports 75% of its food and spends about **\$3.9 billion a year on food imports**. This is compounded by the fact that 68% of the DRC's population is aged between 18 and 35, and around 84% is unemployed.

This challenge extends beyond the DRC and across the continent. African youth are increasingly educated and connected: by 2020, 44 % had completed high school, up from 27 % in 2000, and 570 million are internet users. However, securing employment remains a significant hurdle. Up to one million Africans enter the labour market each month, **but less than one in four secure formal employment**, according to the World Bank.

Goma, the capital of North Kivu province, and Bukavu, the capital of South Kivu province, are both located in the east of the DRC. While these cities have significant potential for the development of urban agriculture their populations face chronic malnutrition due to the numerous conflicts, political unrest and instability that affect the surrounding agricultural areas<sup>1</sup>.

Young people are at the heart of these challenges. They are disproportionately affected, but also represent a potential solution, for example in the creation of green jobs<sup>2</sup>, and the development of circular and sustainable business models. There is ample evidence of the impact of investing in businesses and policies that support youth entrepreneurship to achieve sustainable, resilient and inclusive food systems, so how can future young food entrepreneurs thrive in this landscape in the DRC?

## Generation Food: catalysing change

In 2022, the international NGO Rikolto launched the Generation Food initiative in the cities of Goma and Bukavu to stimulate innovation for sustainable food production and marketing, better access to healthy and nutritious food for their citizens. Through bottom-up (social) innovation projects, Rikolto aims to make urban food systems more sustainable and more inclusive<sup>3</sup>. A new generation of (young) entrepreneurs is crucial for this



Local produce market. © Orheol/Rikolto

transformation, especially in African cities where the urban population is growing rapidly, from an estimated 200 million in 1990 to an estimated **1,489 million (59%) by 2050<sup>4</sup>**.

Young people have the potential to create sustainable agri-food businesses that contribute to solutions to food and nutrition insecurity, the lack of jobs and other challenges linked to the resilience of food systems, if they are supported in refining their business ideas, understanding the market and its dynamics, and gaining access to adequate finance.

Through Generation Food, we seek to connect actors and their networks, to pool resources, incentives, and knowledge around the young food entrepreneurs and their sustainable start-ups. This collaborative approach aims to increase their chances of success by helping them to see their business as one part of a wider system. The Generation Food initiative in Goma and Bukavu was launched in partnership with the business learning centre Un Jour Nouveau (UJN) in Goma and the business incubator Orheol in Bukavu. Our focus is to offer training and support to young entrepreneurs to develop and scale up innovative solutions to urban food system challenges. Generation Food in the DRC consists of three phases:

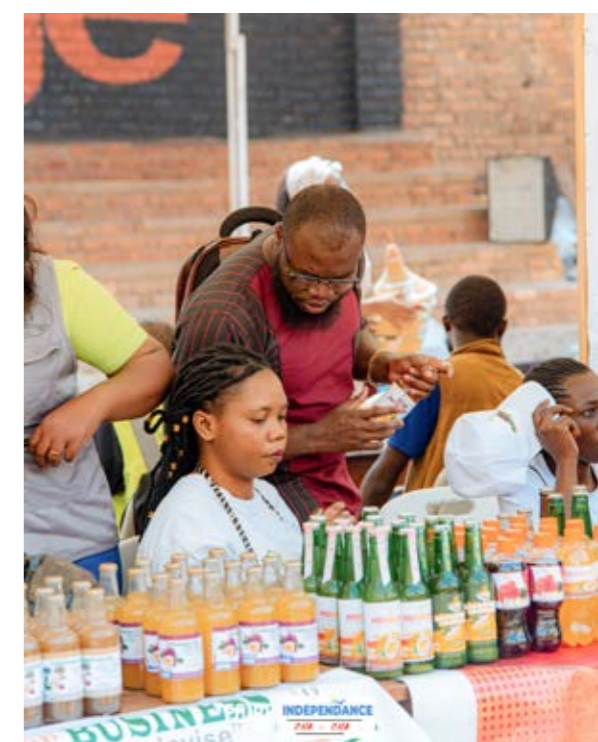
- 1) **Training & coaching:** this involves an incubation period during which young entrepreneurs receive trainings and master classes adapted to their specific business projects, and a business acceleration period where they are supported to strengthen their skills on market management, product quality, marketing and branding, financial management, insurance, business networking, taxation, and pricing, among other topics.
- 2) **Mentoring:** participants are paired with mentors who provide guidance and support as they develop and

implement their business ideas. In addition, their enterprises undergo personalised physical business assessments to support their development.

- 3) **Collective action:** the cohorts and young entrepreneurs come together in a "Groupement d'Intérêt Economique (GIE)" or "Joint Social Enterprise" which was set up to strengthen their collective power in engaging with potential business partners and government regulators. Entrepreneurs receive access to resources, services and support to help them scale up their businesses and are introduced to potential clients.



Local produce market. © Orheol/Rikolto



Local produce market. © Orheol/Rikolto



Mwema Manegabe Lydia. © Rikolto

## SUCCESS STORIES

### Lydia, Armel and Sadiki

**MWEMA MANEGABE LYDIA** is a Generation Food graduate. At the age of twenty-seven, she founded “JOSLY-Enterprise”, a local, safe, fresh juice company in Bukavu. After two failed business ventures, caused by focusing on the technical side of production to the detriment of the commercial side, led her to lose all her vegetables for lack of buyers, her determination was renewed.

*“Our business plan was strengthened by the incubation programme. Our sales increased significantly, especially since we participated in the first ‘Urban Business Show of Christmas in Bukavu’, an open market fair organised by Rikolto. Through our access to more networking events and market channels, we have also secured five contracts to supply schools with Safe Fresh Juice”* she expressed. Using \$200 in start-up funds from Generation Food, **her turnover reached \$1,060 in 7 months**. She is planning to invest in permanent vending machines in schools in Bukavu.

**ARMEL TEHNA**, a medical graduate, discovered his passion for culinary ventures at the age of twenty-nine. As the founder of Matunda Enterprise, Armel began by producing juices in Bukavu. But market response caused setbacks that forced him to move to Goma. The fruit and vegetable market in Bukavu is flooded with imported produce, mainly from Rwanda. Preference for local produce (perceived to be of better quality) has declined significantly due to low incomes, with customers preferring low-cost products.

In Goma, Armel attended the Generation Food bootcamp organised by the Un Jour Nouveau (UJN) hub. This bootcamp gave him tools to **structure his ideas and connect with cooperatives around Goma**. Despite the civil unrest in the city, caused by the repeated wars in the east of the DRC, which sometimes brought activities in the city to a halt for several days, Armel worked with the mentorship of the business hub to study food marketing and distribution.

In particular, Armel has been able to identify the needs of the households, restaurants and hotels that constitute his customer base as a result of the market management coaching. He then modified his business strategy to meet these needs and follow the recommendations of his customers. As a result, he opened a new shop and started offering a home delivery service to his customers, supplying them with a basket of products from his partner enterprises.



Armel Tehna. © Rikolto

After completing Generation Food, Matunda Enterprise signed contracts to **supply fruit and vegetables to more than thirty-nine urban households** and two restaurants in Goma. Six tonnes of Matunda produce have been delivered so far. He said the rewards of food entrepreneurship outweigh the pursuit of urban employment. His vision is to engage fifty young entrepreneurs. He hopes to harness their collective power to expand their impact in Bukavu. *“On the one hand, I need more staff for the distribution chain; on the other, I have a strong desire to reduce youth unemployment through my business,”* he explained.

**SADIKI MUKANDAMANA** is an inspirational bean farmer from the Masisi region who has overcome numerous challenges to contribute to strengthening the local bean sector and combating food insecurity. Despite the difficulties caused by attacks from M23 rebels in the region<sup>5</sup>, Sadiki has remained determined to farm the land. During his visits to supermarkets in Goma, Sadiki noticed a lack of packaged beans ready for cooking, with only imported beans of questionable quality available. Motivated by a desire to provide consistent, high-quality ready-to-cook beans, Sadiki began trading homogenised beans in the town.

However, entering the market posed a number of issues for Sadiki, such as setting up and organising his business, as well as dealing with administrative tasks, accounting, and tax management. He is currently the CEO of Madesu, a brand of homogenised and ready-to-cook beans. The entrepreneur credits Generation Food for providing him with business and marketing advice and guidance. The market response has been remarkable, with an 89% satisfaction rate among his customers. Since the beginning of 2023, the brand has successfully distributed 2,500 packs of 1 kg beans.

Sadiki has ambitious plans for the future. He intends to diversify packaging options to cater to the market's demands, which includes introducing 1kg, 5kg, and 10kg packs. Despite price fluctuations, he sees opportunities for bean distribution in Goma. Additionally, he recognises the importance of strengthening the supply chain for high-quality beans and is considering sourcing from cooperatives on Idjwi island that are moving towards regenerative agriculture practices with the support of Rikolto.



Products on sale in the Madesu shop. © Sadiki Mukandama



Sadiki Mukandama. © Rikolto.

By investing in the local food chain, young entrepreneurs in Bukavu and Goma have developed tactics to increase the availability of locally produced food, in particular by investing in the production and collection of food through a local network of suppliers, ensuring continuity of supply even in times of unrest. As well as providing economic opportunities for entrepreneurs, these initiatives have contributed to the sustainability and resilience of the local food system. By strengthening the local food chain, these young entrepreneurs are supporting the local economy, reducing dependence on imports and promoting food security in the region.



Products on sale in the Madesu shop. © Sadiki Mukandama



Local produce market. © Rikolto

### Take-aways

The lack of jobs is the main driver for young people to become entrepreneurs. Unfortunately, the path is fraught with obstacles and uncertainties especially in urban centres such as Goma and Bukavu. Entrepreneurs face problems such as access to seed capital, intense competition from imported products, limited professional business experience, difficulties in accessing credit, poor infrastructure, burdensome taxation structure, instability and violence in the region, and the failure of existing policies to support young food businesses.

In the face of these obstacles, business incubation structures play a key role as a source of business intelligence support in the region. Generation Food, for example, has helped young entrepreneurs to overcome fear of failure and inexperience. The initiative has helped formalise their businesses and connect them to potential buyers.

However, when it comes to securing access to credit, connecting young entrepreneurs with financial institutions is not enough. The short repayment periods and high interest rates (10% per month) are perceived as a major risk for young startups in DRC.

### Next steps

In 2022, the Generation Food programme supported **68 young entrepreneurs** to start or grow their businesses.

Owing to the business climate in the region, start-ups led by young entrepreneurs may not last beyond three years. This is due to fiscal pressures and unaccommodating policies for new enterprises. Therefore, Rikolto is introducing the Joint Social Enterprise (GIEs) scheme. This scheme unites all youth-led businesses, allowing them to pool business resources, access services at affordable cost-sharing, and jointly petition local authorities for tax reductions. The GIE can help youth-led businesses in the DRC to be more resilient. Rikolto also intends to help create a market space in Bukavu to promote the consumption of local, healthy food.

This article is adapted from a blog originally published on Rikolto's website. To read the full version, please visit <https://www.rikolto.org/stories/youth-led-resilience-generation-foods-impact-in-drc>

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# Valourising Africa's urban food cultures

Luke Metelerkamp  
Sinethemba Mthethwa

What and how we choose to eat has far-reaching implications beyond our streets and homes. Celebrating local food cultures not only keeps local traditions and cultures alive, it also preserves the regional ecosystems and agricultural biodiversity from which these cultures emerged. All food cultures after all, are a contextual evolution from local soils, climates and biodiversity. If we can preserve local food cultures as Africa urbanises, we will go a long way to preserving local food systems.

African food systems, when framed as places of hunger and scarcity, trigger the need for emergency action. This impetus for urgent response renders up visions for bulk food aid, the need for African governments to ensure access to affordable staples at all costs, and an acceptance of rapidly westernising diets. However, this framing of the narrative misses a vital part of the story and justifies a system that severs the link between food, culture and the landscapes these evolved from. As Africa urbanises and moves further from the rural contexts in which it evolved, the challenge of preserving local food cultures becomes more acute.

With this in mind, AfriFOODlinks, under the banner of #AfricanCITYFOODMonth, put out a call to photographers in cities across Africa to tell a different kind of story, a story celebrating their local food cultures and showcasing the recipes through which inhabitants of their cities used local ingredients to prepare tasty, affordable, and nutritious meals.

Through the lenses of these talented African photographers, this kind of storytelling highlights the great potential that lies in the African food system. By showcasing local recipes, these photographs encourage us to envision a future where resilient urban food systems are not just a dream, but an attainable reality.

The images and recipes offer a glimpse into Africa's vibrant and diverse food systems. It uncovers the transformative power of visual storytelling and stands testament to the ways in which Africa's rich culinary heritage is being blended with contemporary ingredients in order to carry it forward in the urban context of the 21st century.

To view the winners, visit <https://afrifoodlinks.org/photography-competition-2023-urban-recipes/>.

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### AfriFOODlinks



Launched in December 2022, AfriFOODlinks is an EU funded Horizon project. Coordinated by ICLEI Africa, the project gathers 28 partners across the globe to improve food security and urban sustainability in 65+ cities in Africa and Europe by:

- 1) Applying an urban food systems lens to promote shifts to healthy, sustainable diets
- 2) Transforming urban food environments through real-world socio-technical experiments
- 3) Promoting inclusive multi-actor governance to empower public officials, small businesses and communities with ownership and agency to shape their food systems
- 4) Accelerating innovative, women- and youth-led agri-food businesses to support local value addition and inclusive economic participation.

AfriFOODlinks aims to address the systemic underpinnings of food insecurity and environmental impact, to lead to real transformation. The project views urban food environments as the key area for improving nutrition and reducing environmental impact in African cities because this is where residents make the choices about the food they eat. It is also where the food security priorities of food availability, access, agency, utilisation and stability manifest.

By improving business innovation, infrastructure investment, and shaping cultural preference, AfriFOODlinks expects to contribute systemically to the realisation of fair, equitable, healthy and environmentally friendly urban food systems from primary production to consumption.

For more information visit [www.afrifoodlinks.org](http://www.afrifoodlinks.org).

## SELECTED entries



**LE KOKOTCHA  
FROM ABIDJAN,**  
from Côte d'Ivoire, by  
Esdras Okamon

Kokotcha is an emblematic dish of Ivorian cuisine, appreciated for its texture and unique taste. It is prepared from plantain bananas and accompanies delicious sauces. It occupies a central place in Ivorian culture and is often associated with festive moments and family gatherings. It represents the authenticity and friendliness of Ivorian cuisine. It embodies the richness and diversity of Ivorian gastronomy.



**ILA ALASEPO (OKRO  
SOUP) AND AMALA**  
from Ilorin, Nigeria,  
by Oluwapemi Oladipupo

Ila Alasepo (okro soup) and Amala is best eaten with hands, and thus is served with a bowl of water to rinse the hands. It is common among the Yoruba people, specifically, the Oyo(s). Ila Alasepo also known as "lady's fingers", it's a green flowering plant, and a nutritious food with many health benefits. It's rich in magnesium, folate, fiber, antioxidants, and vitamin C, K1, A. It also benefits pregnant women, heart health.





**HAJIA'S IRRESISTIBLE  
TUO ZAAFI WITH AYOYO,**  
from Accra, Ghana,  
by Steyn Hoogakker

Tuo Zaafi is a popular and highly nutritious dish from Northern Ghana, usually made with bovine meat (although vegetarian variations are possible) and eaten with ayoyo leaf soup and cooked in an electric pressure cooker. The name Tuo Zaafi comes from the Hausa language: tuo means 'stirring', and zaafi means 'hot'.

For the recipes to create these dishes, please visit  
<https://afrifoodlinks.org/photography-competition-2023-urban-recipes/>.

**The Resilient Cities Network's  
Urban Eats Campaign**

Amid rising food demand and prices, cities must take urgent action to reduce and repurpose food waste to provide food security for their residents while simultaneously achieving economic opportunities and emission reduction. The Resilient Cities Network's Urban Eats campaign is mobilising cities towards a more circular and resilient food system by:

- 1) Creating value out of food waste;
- 2) redistributing excess food;

- 3) producing more locally;
- 4) promoting food habit change among city residents and businesses, and;
- 5) strengthening collaboration across the whole food value chain.

The following articles on the food waste management practices in Milan and Sydney will provide inspiration for other cities to consider simple yet diverse ways to manage food waste.

**More information:**

<https://resilientcitiesnetwork.org/campaigns/urban-eats>.

# How Milan is winning the fight against food waste

Milan Food Policy

In a mere 9-year period, the city of Milan has transformed the way its residents manage and separate its waste. It was part of a thorough and well-executed plan by the city to analyse its food system and observe the main drivers shaping the food system. Through a study of their urban food cycle in 2014, the city developed a game-changing urban food policy in consultation with about 700 stakeholders.

The Milan Food Policy identifies five main areas of intervention around five key priorities:

- 1) Ensure healthy food and water for all citizens
- 2) Promote the sustainability of the food system
- 3) Promote food education
- 4) Fight against food waste
- 5) Support scientific research in agri-food sector

**The Fight Against Food Waste**

Under the priority to 'Fight against food waste', the city set itself the goal of reducing food waste by 50% by 2030 with the help of local players.

Research found that over 40% of food surplus is the result of the purchasing and consumption habits of households and the average value of domestic food waste for each family is approximately EUR 450 per year.

To reach its goals, the city created plans to:

- 1) Inform and educate citizens and local players to reduce food losses and waste.
- 2) Recover and redistribute food losses to create relations among the local players such as charities and food banks.
- 3) Build partnerships that stimulate changes in the way food is packaged and encourage consumers to disregard aesthetic standards as a criterion for selecting vegetables.
- 4) Apply the principles of circular good system management, such as in the re-use of organic waste to produce compost for local use.

More specifically, the city implemented the following actions:

- 1) A holistic action among big public food drivers, such as the Municipal Agency for School Canteens, in order to demonstrate that acting in the field of food policy enables set goals to be reached.
- 2) A local model to collect food losses in the neighbourhoods which will involve small, local players to develop local Food Waste Hubs.
- 3) A social action by other institutional drivers, for example open street markets with high work capacity and small quantities of food losses, and direct involvement of the end beneficiaries
- 4) A study on how to scale-up all the experiences.



© Milan Food Policy

### Results and Lessons Learned

The City of Milan has managed to involve nearly all of its 1.4 million inhabitants in collecting food waste which is then used for production of biogas and compost. Milan collects 95 kilograms of food waste per inhabitant with an overall 62% waste collection rate, resulting in approximately 9,000 tonnes of CO2 saved per year.

Some recommendations from the city following the implementation of the Milan Food Policy include:

- 1) Cities need to analyse their food system in order to tackle food losses. It is important to have local data and to observe the main drivers shaping the food system of the city to make the correct decisions.
- 2) Municipalities can act on the food system by facilitating the relations between the players involved, and playing the role of community leader and not just of administrative power.
- 3) Cities must implement umbrella actions (creation of platforms, networks, etc.) able to create the favourable context for the creation of initiatives involving social and economic players.
- 4) City networks play an important role in exchanging information and inspiring activities at different levels. It is equally fundamental to have municipal officers

dedicated to food matters who can involve players and facilitate common initiatives among departments, municipal agencies, research centres, food banks, social players and major food businesses.

The growing importance of cities in the fight against food waste is undeniable: municipalities are the key players in order to achieve a 50% waste reduction by 2030.

*This article is reproduced with permission from the website of the Resilient Cities Network. To view the original please visit <https://resilientcitiesnetwork.org/how-milan-is-winning-the-fight-against-food-waste>.*

#### More information

1. <https://foodpolicymilano.org/>.



# Little food scraps making a big difference

City of Sydney



© City of Sydney

The City of Sydney has committed to meaningful action on climate change, setting a bold goal to be net zero by 2035. A big part of reducing our overall emissions is finding solutions that address the amount of waste that ends up in landfill.

Food scraps make up around a third of what people in our area put in their general waste collection bins, and when that kind of rubbish makes its way to the tip it rots and emits methane.

City of Sydney Lord Mayor Clover Moore said the food scraps recycling programme has more benefits than drastically reducing the release of this potent greenhouse gas.

*"Instead of ending up in landfill, food scraps are sent to a facility where they're converted into compost for farms and gardens," the Lord Mayor said.*

*"This is a great outcome and delivers on our goals of having a more circular economy. Instead of generating methane, these food scraps have become more than 530 tonnes of compost that's helping enrich gardens and farms."*

The City of Sydney is working with other council areas as well as the NSW Government to work towards diverting 90% of residential waste away from landfill by 2030.

Food scraps can also be converted into energy to power homes or fertiliser to help grow more food.

*"Our goal is to provide solutions that will help people responsibly dispose of their waste, and for that waste to become a commodity that will help fuel and nourish our communities."*

The City of Sydney is currently working on ways to transition the food scraps trial into a broader programme that'll deliver more benefits to our community.

*This article is reproduced with permission from the website of the Resilient Cities Network. To view the original please visit <https://resilientcitiesnetwork.org/little-food-scraps-making-a-big-difference/>.*



Little food scraps making a big difference. © City of Sydney

# Green Cities Initiative: integrated support for more resilient and food secure cities

Interview by Jess Halliday

**Launched in 2020, the FAO's flagship Green Cities Initiative (GCI) focuses on improving the urban environment, strengthening urban-rural linkages and strengthening the resilience of urban food systems, services, and populations to external shocks, through integrated management and planning of green spaces and agrifood systems.**



Simone Borelli

Jess Halliday spoke with Simone Borelli, coordinator of the Green Cities Initiative (GCI), and Guido Santini, coordinator of the City Region Food Systems (CRFS) programme, about why the initiative is important both for cities and for FAO's approach to urban issues, and how it is being operationalised to build resilient urban food systems.

## Jess Halliday (JH): How did the Green Cities Initiative start, and why was it needed?

**Simone Borelli (SB):** A lot of the problems that usually exist in rural areas have been moving to urban areas. But even though FAO has been working on urban forestry since the 1980s or early '90s and on urban agriculture since around the same time, 'urban' is still seen as a novelty. We have to strengthen the footprint of urban work.

It was also felt that we needed to have an initiative because we had a few silos within FAO. Urban forestry was working by itself and similarly the work on urban and city region agrifood systems was working separately. The idea for a wider programme for FAO to work in a more integrated way to support cities came about following the UN Climate Summit in 2018.

**Guido Santini (GS):** We really need to have common tools to support cities in combining their resilience and environmental agenda with the food agenda, to manage different needs and requirements, to help them manage trade-offs, and to provide support in a more integrated manner.

But the GCI was also developed to address an internal issue in FAO, to have a real common umbrella to better

harmonise the work that we have been doing for decades, and support cities in a more integrated manner.

**SB:** For me, FAO's urban work should have a people-centred approach, so looking at what people need in cities and what FAO can do to provide some of those inputs. It's about clean water, clean air, healthy food, disaster risk reduction, shade – it's a wide range of different things that people need for their health and well-being in cities. As a group bringing together different specialties, we are better able to provide that.

## JH: What are the mechanisms of support that the Green Cities Initiative offers to cities?

**SB:** FAO is specialised in agriculture and forestry and food systems, essentially. We are looking at what value can we add to cities by providing technical support or knowledge or capacity building, to make sure the cities actually look at these things.

Many cities easily recognise the value of green spaces, like parks and urban forests, and urban agriculture is easy to 'sell' to city authorities. But the idea of food as something the city needs to take care of, that they have a critical role in food systems, is not so easy. That is what FAO is trying to push.

**GS:** GCI is an umbrella of FAO's urban work on urban forestry and urban agriculture, and also an entity for operational implementation. Along with all the other

projects, we consider the City Region Food System (CRFS) programme as part of the family of the GCI. We have been implementing the CRFS programme in countries since 2014, and it's an important instrument for the GCI. On the one hand it is really operationalising a more systemic approach on the ground, and on the other it is developing tools and instruments for assessment and planning that are also important for the GCI.

## JH: Can you please give some examples of interventions on the ground to date?

**GS:** Within the CRFS programme we have implemented some actions to reinforce capacity and to build resilience in production systems but also in the overall food system. For example, we ran training in Rwanda with extension officers on climate smart agriculture in urban and peri urban areas.

**SB:** I handle projects working with nature-based solutions (NbS) in Latin American and Europe, for example looking at the role of NbS in addressing urban challenges ranging from urban agriculture to flood control, to looking at climate resilience. It varies a lot.

Speaking of small-scale actions within the GCI, one example is in Dominica. We have been working with some of the local NGOS to do urban forestry in the city of Roseau, for climate change resilience and to create areas for people's wellbeing, through recreation and temperature reduction.



Horticulture training of extension officers in Kigali, Rwanda. © Isabella Trapani-FAO



Horticulture training site in Kigali. © Isabella Trapani-FAO

Another example is in Cape Verde, we worked with the neighbourhood of Praia called Pelourinho, which is just near the port. There we did a combination of different actions, determined through participatory analysis in the neighbourhood. We created a new area for a playground with a small urban forest around it, we distributed fruit trees to local communities, and we did some capacity building on composting and waste management. We try to work with the local population or neighbourhoods to understand what their primary needs are.

**JH: How exactly do you involve local stakeholders and citizens in identifying priorities and developing suitable actions?**

**SB:** It varies a lot from city to city. It depends on the institutional set up, and also the local capacity of FAO. There are two main levels at which we work. One is the city level, where we really try to create multistakeholder platforms. The idea is to break the silos and try to involve different levels of institutions and also local NGOs or local community associations in the decision-making process. The second is when you are looking at issues touching the most vulnerable in neighbourhoods. So often these people do not have a voice in the local community. We try to work at least through local community associations to reach, or at least collect the voices and preoccupations of the most vulnerable.

Another challenge is always making sure the private sector is adequately involved. We were having this discussion in a NbS project recently, 'Ok we are doing NBS, we are planning with the municipality, we are planning with the local communities. But then it is small and medium enterprises (SMEs) who are actually going to do the physical work to implement the projects'. We need to make sure they are fully involved in discussions, so we understand their needs and limitations. It is a process – co-planning, co-design and co-implementation.

**GS:** The GCI has adopted and built on the experiences we have had in the other initiatives and projects in the past. In the CRFS programme, the foundation of our work is identifying all the key stakeholders involved and engaging them from the beginning. One of the paramount approaches of the GCI is to work across the different sectors and involve stakeholders from different levels – from civil society to institutions, from urban to peri-urban to rural.

**JH: How do you measure effectiveness or impact on food system resilience?**

**GS:** It is important to highlight the indicator framework developed with RUAF, which we have tested in some cities. This has not been designed with the idea of monitoring the efforts of cities ourselves, but for cities to have an instrument to create the baseline and to formulate policies. The indicator framework is based on the framework that we previously developed for the Milan Urban Food Policy Pact (MUFPP), and we added a number of indicators to cover the areas related to urban forestry and climate.

**SB:** We have an urban forestry scheme called the Tree Cities of the World scheme that has a different purpose. Here we recognise cities that have been particularly virtuous in taking care of trees. There are five criteria:

- i) decide who is responsible for trees;
- ii) have clear rules on how they should be managed;
- iii) know what trees you have (do an inventory);
- iv) allocate resources;
- v) have an annual celebration of trees.



Launch of Plant it Up Roseau Project at Lindo Park which took place on May 31st 2022. © SHAPE



Horticulture training in Kigali, Rwanda. © Isabella Trapani-FAO

They sound fairly simple but you would be surprised how many cities do not have an inventory of what trees they have. Only 50% of cities have municipal regulations on how to manage trees.

**JH: The Green Cities Initiative aims to build a network of 1000 cities by 2030. How does the Green Cities Network cooperate with other networks in the urban food systems space?**

**GS:** Our aim is not to create an alternative city network like MUFPP, UCLG, ICLEI. Our purpose is to create a sort of community of practice to engage with cities, and to cooperate with the existing city networks.

**SB:** We want to make sure we can create the technical knowledge base and messages that cities can have access to, working on projects, and promoting exchange.

It is about making people reflect on the importance of certain elements that are not normally considered in urban planning, like food and related systems – how to make things happen through food waste reduction, public

procurement, market management, creating attractive green spaces using land in a multifunctional way, and also providing ecosystem services.

**JH: The GCI was established three years ago already. What are the next steps?**

**SB:** Since the Director General (DG) launched the GCI in 2020, and we have been building it up. We are trying to raise the profile of the initiative.

Imagine 25 years of work with separate bosses. We have blocks lying around the place, we try to put these blocks under one another. It is going to take some time to build a coherent, attractive label. That is something we will concentrate on in the coming months. We really appreciate that opportunity to have dialogue with partners to say, 'maybe you should do it this way, or maybe you should be more clear on that'.

The DG is very supportive of the initiative. We want to see it grow exponentially. Let's see if we can pull it off!

**UA Magazine**

Urban Agriculture Magazine (UA Magazine) is produced by the Secretariat of the RUAF Global Partnership on Sustainable Urban Agriculture and Food Systems, in collaboration with strategic partners.

UA Magazine is a vehicle for sharing information on urban agriculture and urban food systems. It publishes good practices and impact stories.

UA Magazine welcomes contributions on new initiatives at individual, neighbourhood, city and national levels. Attention is given to technical, socioeconomic, institutional and policy aspects of sustainable urban and peri-urban food production, marketing, processing and distribution systems. Although articles on any related issue are welcome and considered for publication, each UA Magazine focuses on a selected theme (for previous issues, visit [www.ruaf.org](http://www.ruaf.org)).

**Editors, No. 40**

This issue was compiled by Etienne Claereboudt, CGIAR Resilient Cities initiative co-lead, Dr. Silvia Alonso, Initiative co-lead, Martha Awino, Initiative Senior Communication Specialist, and Jess Halliday of the Secretariat of the RUAF Global Partnership.

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Publication coordination by Lucia Lenci

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# Call for contributions: Urban Agriculture Magazine 41 (Summer 2024)

RUAF, in collaboration with the European Forum on Urban Agriculture (EFUA), invites proposals to contribute to the 41th issue of Urban Agriculture Magazine (UAM) on the topic of **Next Practices & Future Policies for Urban Agriculture**.

The EFUA project is entering its final year! This four-year project, funded by the EU Horizon 2020 programme, has been unlocking the potentials of urban agriculture (UA) by mapping best practices and policies, and enabling networks in and outside of Europe. The forthcoming issue of UAM will include a dedicated EFUA section that outlines some of the key lessons, reflections and recommendations that came out of the project. Moreover, EFUA also intends to take a glance into the future, beyond the end of the project. What challenges and opportunities lie ahead of us?

To this end, RUAF and EFUA invite contributions from UA practitioners and experts around the globe. We welcome proposals for articles on future pathways for UA development, as well as on promising policy approaches that help valorise the multiple benefits of UA.

Contributions analysing effective support strategies and networks for UA are also welcomed. Please send a short abstract of your proposed contribution (max 500 words) to [j.halliday@ruaf.org](mailto:j.halliday@ruaf.org) and [s.smaal@aeres.org](mailto:s.smaal@aeres.org) by February 18th.



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