Pathways towards resilient urban food systems
In this issue

Resilient cities need resilient food production systems: getting it right from the start!
Donny Coyne, Ivy Nyambura, Ralph Roosnaert and Mary Kibira

Building resilient cities, one garden at a time
Sandhya Kumar, Md. Abdus Salam, Lukas Pawera, Debashish Chanda and Pepijn Schreinemachers

Informal food vendors: an ignored opportunity for resilient urban food systems
Silvia Alonso and Gordon Prain

Towards resilient cities: strengthening business skills of small food vendors in Metro Manila
Lisa van der Biezen, Phoebe Ricarte and Matty Demont

Policy insights on evidence-based transformation of food systems in Quezon City, the Philippines
Emmanuel Hugh “Nonong” F. Velasco II and Francis Ian L. Agape, in conversation with Gordon Prain

United for progress: Ghana’s multi-institutional circular bioeconomy Innovation Hub
Dzifa Agbefu, Pau Drechsel and Philip Amoah

Dietary and food environment assessments to help understand and address urban food system challenges
Aulo Gelli, Amy Margolies and Deanna Olney

Innovation and collaboration for the resilience of the food system in Lima: the partnership between CGIAR and Incubagraria
Angelo Fuentes and Willy Pradel

Youth-led resilience: the impact of Generation Food in the DRC
Bonnke Safari and Aganze Nyangezi Arsène-Desman

Valourising Africa’s urban food cultures
Lule Metelenhamp and Sinethemba Mtethwa

How Milan is winning the fight against food waste
Milan Food Policy

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

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

Green Cities Initiative: integrated support for more resilient and food secure cities
© Isabella Trapani-FAO

Dietary and food environment assessments to help understand and address urban food system challenges
© International Rice Research Institute (IRRI)

Innovation and collaboration for the resilience of the food system in Lima: the partnership between CGIAR and Incubagraria
© Isabella Trapani-FAO

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

Valourising Africa’s urban food cultures
© Kabir Dhanji

How Milan is winning the fight against food waste
© Milan Food Policy
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.

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.
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 Incubagri 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 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. Valanco II and Francis Ian L. Agapay, 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.
Resilient cities need resilient food production systems: getting it right from the start!

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. 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.

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 combating the effects of a changing climate.

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-lying 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.

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

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-lying 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.

“...they didn’t suffer after transplanting, we harvested sooner and they produced more leaves. They were also less damaged by pests!”

- Farmer from Kiambu

“...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

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

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

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-lying 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.

“...they didn’t suffer after transplanting, we harvested sooner and they produced more leaves. They were also less damaged by pests!”

- Farmer from Kiambu

“...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

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

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

References
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 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 combating 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.

Sandhya Kumar is Associate Scientist – Agricultural Economics at World Vegetable Center, Hyderabad, India.

Md. Abdus Salam is Professor at the Department of Aquaculture, Bangladesh Agricultural University, Mymensingh, Bangladesh.

Lukas Pawera is Agronomist/Agroecologist at World Vegetable Center, Shanhua, Tainan, Taiwan.

Debashish Chanda is Country Program Coordinator at International Potato Center (CIP), Dhaka, Bangladesh.

Pepijn Schreinemachers is Lead Scientist – Impact Evaluation at World Vegetable Center, Bangkok, Thailand.

References


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. 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. 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. 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.

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

In Quezon City, the VBS draws on prior experiences with adult learning innovations with farmers in the Philippines known as the Farmer Business School. 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 national regulations.

The VBS in Nairobi draws on prior experience with dairy vendors in a medium-sized city in Kenya known as the MoreFtilik project, 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.

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 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.
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 to engage the informal sector towards improved food safety management in their food systems.

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 underattened 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.

Silvia Alonso is Principal Scientist, Epidemiologist, at the International Livestock Research Institute, Addis Ababa, Ethiopia.

Gordon Prain is Senior Advisor, CGIAR Resilient Cities initiative.

References
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.

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 CGAR 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 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.
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 and networking, and offer the opportunity to obtain permits and promote 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.

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 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
6. Back to index

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.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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 recognize 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 customized 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.

The focus of VBS should be on improving practical skills. This necessitates the strengthening business skills in Metro Manila, it 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.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.

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.

Lisa van der Biezen is a dual MSc student ‘Resilient Farming and Food Systems’ at Wageningen University & Research (WUR), and ‘Public Interventions and Policy’ at Utrecht University.

Phoebe Ricarte is an associate scientist for agricultural economics at the International Rice Research Institute, based in the Philippines.

Lisa van der Biezen, Matty DeMont

Matty Demont is a principal scientist for market and food systems research at the International Rice Research Institute, based in the Philippines.
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 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 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 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...
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 disruptions, 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 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 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.

Emmanuel Hugh "Nonong" F. Velasco II is Sustainable Development Projects Officer and Co-chairperson and Action Officer of the Food Security Task Force (FSTF).

Francis Ian L. Agatep, Consultant, Quezon City Food Security Task Force, Quezon City Government, Philippines.

Gordon Prais is Senior Advisor, CGIAR Resilient Cities initiative.

Contributions by Armo Bertusa, Focal Person (Philippines), CGIAR Resilient Cities initiative and Martha Awinah, Senior Communication Specialist, CGIAR Resilient Cities initiative.

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. This may seem simple in theory, but there are numerous logistical, financial and institutional challenges to putting this recommendation into practice. These challenges have led to calls for a multi-disciplinary business approach to resource recovery for reuse.

While significant steps have been taken towards viable solutions, these have not translated into increased capacities and more implementation on the ground. As organic waste ending up in landfills makes a non-negligible contribution to global warming, 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’ Initiatives. Sixteen institutions from various sectors (see Box 1) have pooled resources to support the CBE approaches through 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.

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

Dzifa Agbefu
Pay Drechsel
Philip Amoah

References

To return to the index, please click here.
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.

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), 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.

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 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 fertilizer, etc. © IWMI

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

Deeja Agbefu is the CBE Hub coordinator at the International Water Management Institute, Ghana.

Pay Drechsel is the Circular Economy Work Package Leader of the CGIAR ResilientCities initiative at the International Water Management Institute, Sri Lanka.

Philip Amoah is a consultant and trainer associated with the International Water Management Institute, Ghana.

References

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. Undertaking 24HR is complex and expensive, with costs of the order of $500 per recall. 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. 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 it 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 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.

Aulo Gelli is a Senior Research Fellow in the Nutrition, Diets, and Health Unit at the International Food Policy Research Institute.

Amy Margolies is a Research Fellow in the Nutrition, Diets, and Health Unit at the International Food Policy Research Institute.

Deanna Olney is the Director of the Nutrition, Diets, and Health Unit at the International Food Policy Research Institute.

---


https://doi.org/10.1111/mcn.13014.


https://doi.org/10.1111/mcn.13014.


https://doi.org/10.1093/ajcn/nqac216.


https://doi.org/10.1017/Bjn20210710109.


https://doi.org/10.1093/jn/nq0162021.0001.

---


https://doi.org/10.3947/int.20170726.


https://doi.org/10.1111/mcn.13014.


https://doi.org/10.1017/Bjn20210710109.


https://doi.org/10.1017/Bjn20210710109.


https://doi.org/10.1093/jn/nq0162021.0001.
Innovation and collaboration for the resilience of the food system in Lima: the partnership between CGIAR and Incubagraria

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 assimilate the incorporation 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.

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

- **State of innovation**: prototype, being tested with various crops.
- **Objective**: to contribute to combating anemia and malnutrition in children from vulnerable populations in Lima, as well as combating brain development, providing better assimilation of nutrients, and enriching the intestinal microbiota.
- **Ingredients**: Functional yoghurt with three high sources of protein and iron: spinach, cow’s blood, and horse’s blood. The ingredients are encapsulated and introduced into the yoghurt to allow the correct assimilation of nutrients and probiotics.
- **Partnership**: CGIAR and Incubagraria

Nutripizza

- **State of innovation**: prototype, being tested with various crops.
- **Objective**: to provide healthy fast food for young people and adults who are looking for a healthy alternative to conventional pizzas.
- **Ingredients**: 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.
- **Partnership**: CGIAR and Incubagraria

Biochar

- **State of innovation**: prototype, being tested with various crops.
- **Objective**: 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, countering pests, and diseases.
- **Ingredients**: Biochar made from horse manure and cuschuro, which provides high-value nutrients to crops and protects them from pests and diseases.
- **Partnership**: CGIAR and Incubagraria

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

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

Biochar prototype. Prototyping programme organised by Incubagraria in alliance with CIP.
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 CSBAN 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.

Angela Fuentes is Associate Scientist at the International Potato Center and Innovation Specialist of the Resilient Cities initiative in Lima, Peru.

Willy Pradel is Associate Social Scientist at International Potato Center and Facal Point of Inclusive Market Component in Lima, Peru for the Resilient Cities initiative.

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 in this sector are increasingly becoming 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 organizations, 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 specialized in this 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?

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 2023”, 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.

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?

Continuing the effort so that, together, agri-food entrepreneurship can scale up. As a future project we have the technology and innovation park for agri culture, 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

Bonike Safari
Aganze Nyangezi Arsène-Désmene

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 79% 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 exposed to these threats. The country imports 79% 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.

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.

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 jobs1, 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. A new generation of (young) entrepreneurs is crucial for this transformation, especially in African countries where the urban population is growing rapidly, from an estimated 200 million in 1990 to an estimated 1,489 million (59%) by 20502.

Youth have the potential to create sustainable agrifood 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 personalized physical business assessments to support their development.

3) Collective action: the cohorts and young entrepreneurs come together in a “Groupeement 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.

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 personalized physical business assessments to support their development.

3) Collective action: the cohorts and young entrepreneurs come together in a “Groupeement 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.
SUCCESS STORIES
Lydia, Armel and Sadiki

MWE 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 $1,066 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.

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, 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.

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.
Create a market space in Bukavu to promote the DRC to be more resilient. Rikolto also intends to help reductions. The GIE can help youth-led businesses in the introducing the Joint Social Enterprise (GIEs) scheme. This policies for new enterprises. Therefore, Rikolto is. This is due to fiscal pressures and unaccommodating young entrepreneurs may not last beyond three years.

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

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 become more resilient. Rikolto also intends to help create a market space in Bukavu to promote the consumption of local, healthy food.

With this in mind, AfriFOODlinks, under the banner of GenerationFoodMonth, 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 evolving 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.

AfriFOODlinks aims to address the systemic underpinnings of food insecurity and environmental impact, to lead to real transformation. The project aims to improve food systems as the key area for improving nutrition and reducing environmental impact in African cities because this is where residents make the choices about what 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 preferences, 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.

AfriFOODlinks
Launched in December 2022, AfriFOODlinks is an EU funded Horizon project. Coordinated by ICLEI Africa, the project gathers 25 partners across the globe to improve food security and urban sustainability in 66 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: GenerationFoodMonth
GenerationFoodMonth 2022

With this in mind, AfriFOODlinks, under the banner of GenerationFoodMonth, 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-2022-urban-recipes

Luke Metelker Kamp
Senior Professional Officer
Urban Systems, at ICLEI Africa.

Sinethemba Mthethwa
Professional Officer
Urban Systems, at ICLEI Africa.
ILA ALASEPO (OKRO SOUP) AND AMALA
from Ilorin, Nigeria, by Oluwapami 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.

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

Tuɔ Zaafii 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 Tuɔ Zaafii 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 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/how-milan-is-winning-the-fight-against-food-waste.

More information

---

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/little-food-scraps-making-a-big-difference.

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

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.

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 America 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 well-being, through recreation and temperature reduction.

Horticulture training of extension officers in Kigali, Rwanda. © Isabella Trapani-FAO
Another example is in Cape Verde, where 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 carry 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 recognize cities that have been particularly virtuous in taking care of trees. There are five criteria:

1. decide who is responsible for trees;
2. have clear rules on how they should be managed;
3. know what trees you have (do an inventory);
4. allocate resources;
5. have an annual celebration of trees.

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, UC3G, 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!
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 and s.smaal@aeres.org by February 18th.