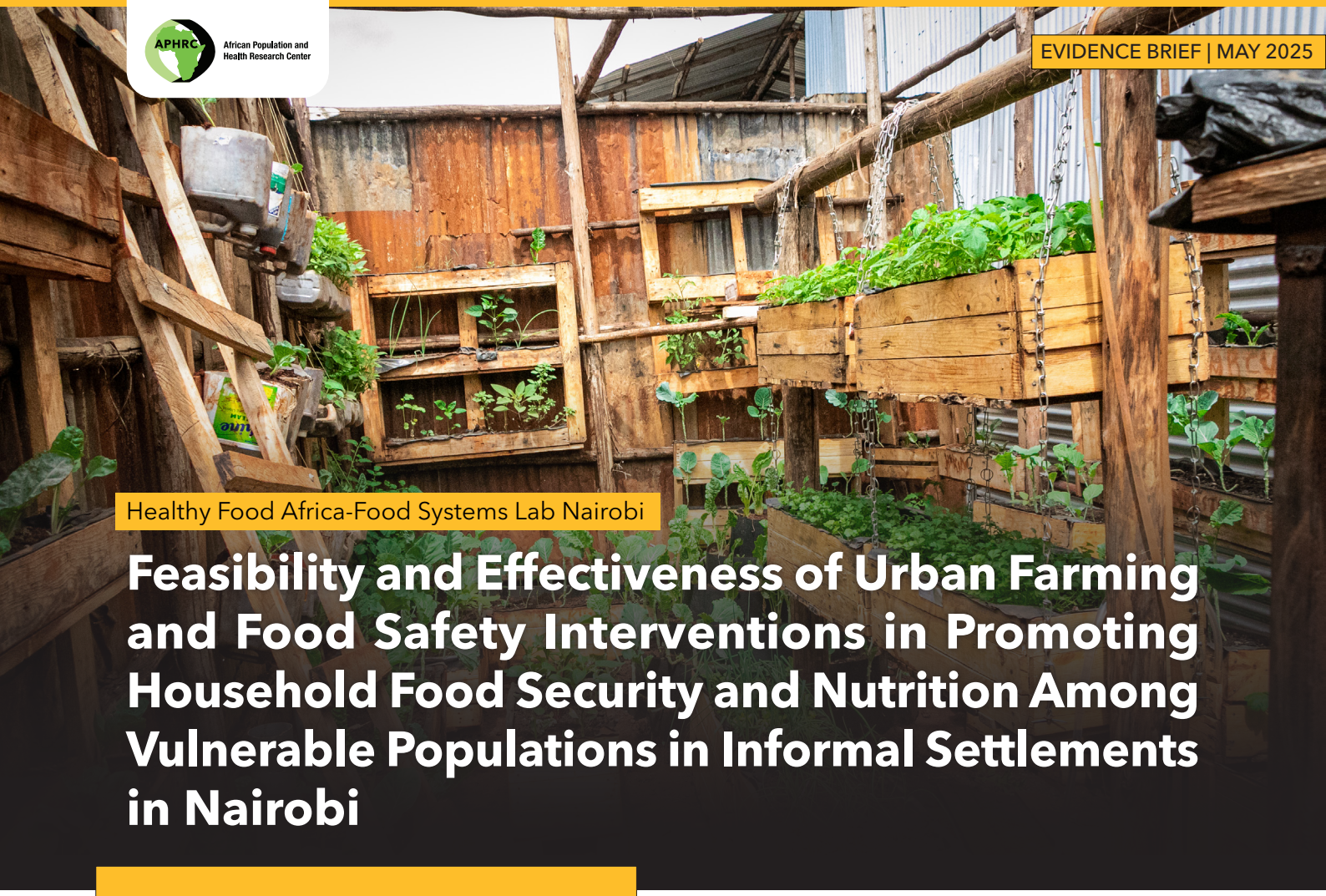

Healthy Food Africa-Food Systems Lab Nairobi

Feasibility and Effectiveness of Urban Farming and Food Safety Interventions in Promoting Household Food Security and Nutrition Among Vulnerable Populations in Informal Settlements in Nairobi

Key Messages

- Urban farming in informal settlements is feasible and effective. It significantly improves dietary diversity among children and women and reduces food expenditure.
- Food safety training for street vendors improves their knowledge, attitudes and practices around hygienic food handling, contributing to safer food environments in informal settlements.
- Collaboration with local stakeholders such as county governments, grassroots organizations, and public health officers enhances intervention uptake and community ownership.
- Community-led and evidence-based interventions are critical for creating sustainable, equitable, and resilient urban food systems.

Challenge

People living in Nairobi's informal settlements face many challenges. For instance, they experience high levels of poverty, poor water and sanitation, and consequent food insecurity, poor dietary intake, and food safety problems. As a result, many children suffer from malnutrition (close to 50% of children are stunted). Most of the households depend on food purchased from street vendors, but this food is often prepared in unhygienic conditions,raising concerns about food safety.

Promotion of urban agriculture, accompanied by women and youth empowerment, and hygienic handling of food by food vendors could partly address these challenges. However, more evidence is needed to show how well these solutions actually work.

Healthy Food Africa Project

The Healthy Food Africa (HFA)[1] was a four-and-a-half-year (2021-2025) research & innovation project funded by the European Union. The project was conceptualized to improve African food systems, which are negatively affected by climate change and rapid urbanization. The project aimed to develop food systems that are sustainable, equitable, and resilient in 10 African cities located in six African countries (Kenya, Uganda, Zambia, Ethiopia, Benin, Ghana) by testing different food systems interventions in each city.

Each city was referred to as a food system laboratory and interventions on the five project focus areas: healthy nutrition, innovative food products, sustainable food production, food chain governance and food packaging and safety (figure 1). The focus areas were implemented depending on the cities' needs. The project was a collaborative effort by 17 partners in Africa and Europe.

Figure 1: Focus areas of the Healthy Food Africa Project

In Kenya, the project was implemented in Kisumu and Nairobi. The African Population and Health Research Center (APHRC) led the implementation of the work in Nairobi. This evidence brief presents a summary of findings from Nairobi.

Food Systems Lab Nairobi (FSL Na)

Aims

In Nairobi, we aimed to promote:
Consumption of healthy, diverse diets through the promotion of small-scale crop and livestock production in two informal settlements (Korogocho and Viwandani).
Food safety through improving food vendor knowledge, attitudes, and practices in Korogocho and Viwandani.

1. https://healthyfoodafrica.eu/

Interventions

Urban farming

This was implemented in Nairobi, where we supported 21 community-organized groups (COGs), 10 in Korogocho and 11 in Viwandani, to set up farms in the two informal settlements. Two of the COGs included people living with disability, while the rest were women and youth groups. The COGs were trained and mentored on urban farming by two grassroots organizations with expertise in agro-ecological urban farming: Resources Oriented Development Initiatives (RODI Kenya) and City Shamba, with support from Agricultural Extension Officers from the Nairobi City County Government. They also received seed grants in the form of farm inputs to enable them to set up farms.

Food Safety Intervention

In collaboration with the Nairobi City County and the University of Nairobi we developed a food safety manual for street food vendors. This manual, intended for use beyond the project's duration, served as the basis for training public health officers who subsequently provided three months of field-based training and monthly supervisory support to food vendors in Korogocho and Viwandani.

Research Component

To assess the feasibility and effectiveness of the proposed interventions, we conducted research to test the: 1) feasibility and effectiveness of innovative urban farming interventions and 2) feasibility of the food safety interventions among food handlers in informal settlements in Nairobi.

Methodology

We conducted a mixed methods (quantitative and qualitative) study in Korogocho and Viwandani informal settlements, which were our intervention sites, and Mathare, which was our control site. For the urban farming intervention, baseline and end-line household surveys were used to collect quantitative data on socio-demographics, farming practices, women's and children's dietary practices. Children were considered to have a diverse diet if they consumed at least 5 out of the following 8 food groups (breast milk, grains, legumes, dairy, flesh foods, eggs, vitamin A-rich fruits and vegetables, and other fruits and vegetables) while women were considered to have achieved dietary diversity if they consumed at least 5 out of 10 food groups (grains, white roots and tubers, and plantains, pulses (beans, peas, and lentils), nuts and seeds, dairy (milk, yogurt, and cheese), flesh foods (meat, fish, poultry, and organ meats), eggs, dark green leafy vegetables, other vitamin A-rich fruits and vegetables, other vegetables, other fruits). Information on nutritional status, and women's empowerment was also collected.

For the food safety intervention, we used a controlled before-and-after study design where we assessed food vendor knowledge, attitudes, and practices before and after the intervention. Qualitative data on acceptability, enablers of, and barriers to urban farming and the food safety intervention were also collected using key informant interviews (KIIs), focus group discussions (FGDs), and in-depth interviews (IDIs).

Findings

Urban Farming Intervention

We recruited 837 child caregiver pairs (intervention n= 507; control n= 330). We found that it is feasible to set up urban farms in informal settlements and that urban farming has the potential to improve dietary diversity. A higher proportion of children aged 6-23 months achieved minimum dietary diversity, compared to those in control , after the intervention (Figure 1). Children in the intervention group were 3.5 times more likely to achieve dietary diversity than children in the control group (odds ratio= 3.53, 95%CI: 1.75-7.11, p<0.001), indicating a strong association between exposure to urban farming and improved dietary quality among children 6-23 months.

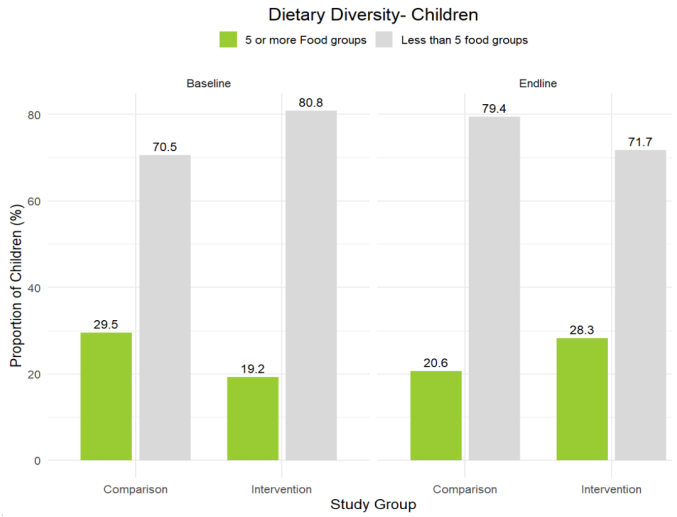

Figure 1: Shows proportion of children achieving dietary diversity in the intervention and control groups.

Similarly, a greater proportion of women in the intervention group achieved dietary diversity compared to those in control after intervention (Figure 2). Women in the intervention group were three times more likely to achieve dietary diversity than women in the control group (odds ratio =3.06, 95%CI: 1.02- 9.23; p=0.047), suggesting that involvement in urban areas may also enhance diet quality among women of reproductive age.

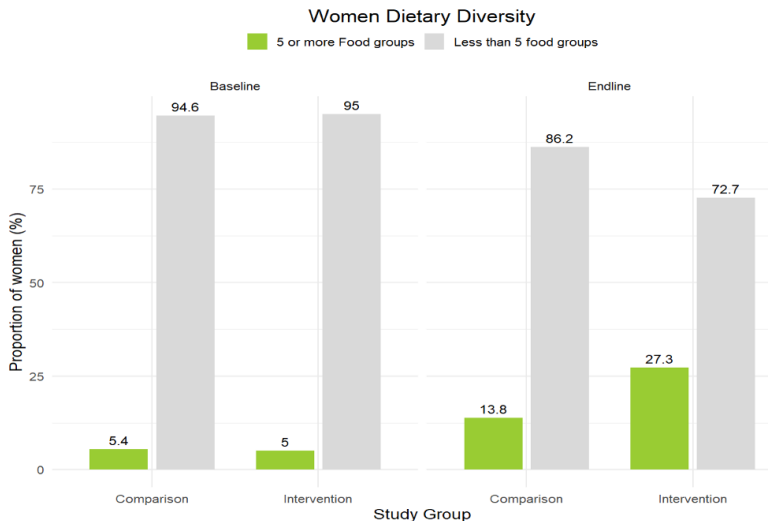

Figure 2: Shows proportion of women achieving dietary diversity in the intervention and control groups .

Reported benefits of urban farming

The following were reported benefits of urban farming:

- Increased dietary diversity as families have access to a variety of vegetables and animal source proteins as a result of farming activities.
- Reduced expenditure on food and increased savings which enhances access to food.
- Empowerment of communities, women and youth through economic empowerment and capacity strengthening.

"Urban farming supports us as youths so that we have come to see that there is no need of looking for employment as we have ideas, we have [inaudible] that we have been given. At the end of it all, hard work carries the day..." FGD, Food Vendor, Viwandani.

- Source of income and food and it also enhances community cohesion: Farmers are able to sell their produce for money or exchange for other food products. Extra produce is also shared with neighbours.

"You can sell eggs, and if there is a function, people come to promote you by buying your chickens. But as for kales and spinach- like I am a vegetable vendor- I sell some of the vegetables from my farm. And if you see someone who is poor and overwhelmed, you can donate some of the vegetables to them so her children don't go to bed hungry. You support them. And when people buy from you, you make some profit..." -FGD, mixed group, Viwandani

Enablers and barriers of urban farming

Enablers

1. Working through community organized groups ensured success of the urban farms because they have more access to resources and manpower which enables them to sustain their farming activities.

"Although there are individuals who try their hands at urban farming successfully, groups do better because they are able to acquire an ample space. Because as a group, they can't squeeze into a small space. They will find a way to acquire a big space. And when it comes to farming, whenever you have a large space, you get more output..." - Photovoice, Viwandani

2. Access to information and technical expertise on urban farming enabled the groups to set up farms and sustain farms in the small spaces they worked in.
3. Providing farm inputs, including soil and manure, supported agricultural activities. Initial support with tools and demonstrations was crucial for adopting new farming practices and fostering self-sufficiency, enabling individuals to independently continue farming.

Barriers

- Limited space for urban farming practices especially in informal settlements. This was due to either the unwillingness of landlords to allow farming activities on their property, or the existence of very small spaces which limit farming activities.
- Insecurity and environmental hazards such as floods and fires: Cases of theft of produce due to the insecure nature of urban informal settlements and the portability of the innovative farming structures which makes them susceptible to theft were reported as barriers to urban farming. Destruction of farms because of fires and floods was also reported.
- Inadequate knowledge: Limited farming knowledge hinders effective agricultural practices and the optimal use of available resources.
- Challenges with Water Access in Informal Settlements for Farming: While rainwater harvesting and micro-irrigation offer some benefits, their overall impact remains limited. Enhanced farming activities could be achieved through improved access to water storage facilities within these settlements.

"We try to harvest rain water using iron sheet gutters. That saves us a lot. But like right now- the water we use comes from very far; about 200 Metres. The water comes from another constituency. So we are always careful to use the water carefully because we lack enough storage. We try to use drip irrigation and the capillary gardens…so that is still limiting. So if we can have enough storage, and if we can be given someone who can help us get water even if one [inaudible], it can stay for three months…" -FGD, mixed group, Viwandani

- Lack of an established market for farm produce was a challenge especially for poultry farmers. This hindered their ability to sell their poultry products effectively, leading to reduced income, and undermining the sustainability of their farming operations within the project.
- Group dynamics: Challenges to active farming participation include conflicts among group members and unmet expectations. Some registered youth expect benefits solely from membership, without active involvement. This leads to non-commitment, where not all registered members are genuinely interested or passionate about farming.

Food Safety Intervention

We recruited a total of 181 vendors (intervention n=100). We observed a positive change in attitudes (p=0.04) and practices (p<0.001) but no significant change in their knowledge.

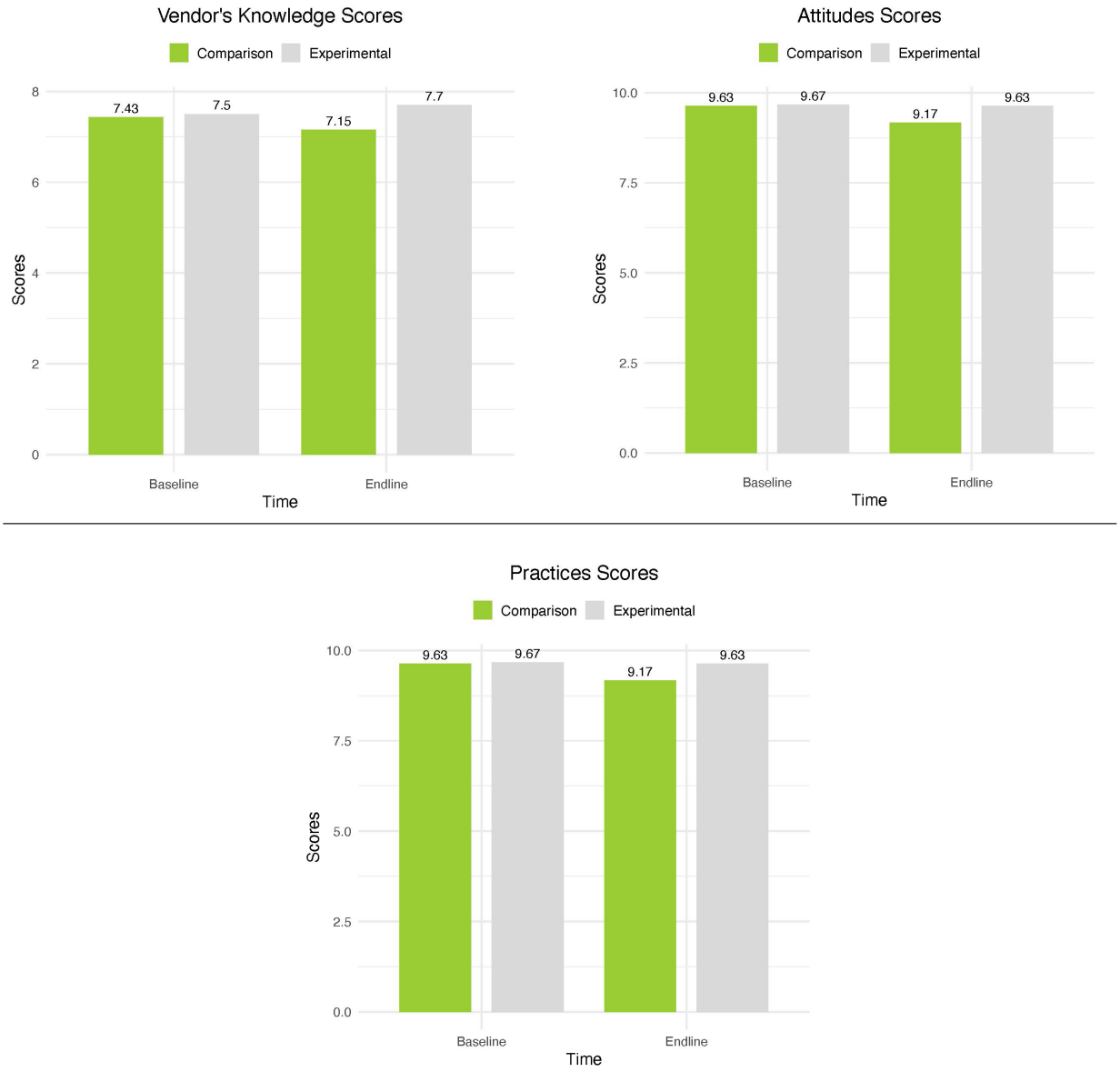

Figure 3: Changes in food vendors knowledge, attitudes and practices at baseline and endline mean (standard deviation)

Enablers

1. In collaboration with the Nairobi City County Council, we developed a food safety manual for street food vendors. This manual served as a key resource in building the capacity of both public health officers responsible for food safety oversight and the street food vendors themselves.
2. We used a mentorship model where public health officers had one-on-one engagements with the vendors in their trading sites enabling them to identify and address food safety issues that the vendors were facing.

Barriers

1. The limited three-month implementation period and budget constrained the duration of follow-up with vendors within the Healthy Food Africa project. This short timeframe potentially impacted the ability to observe long-term changes in vendor practices and the sustainability of any adopted food safety knowledge, attitudes and practices.

   An extended engagement period could have allowed for a deeper understanding of the challenges faced by vendors, provided more opportunities for reinforcement and support, and yielded more robust evidence regarding the project's impact on the local food environment.

Recommendations

1. To foster sustainable urban farming activities within community-organized groups, comprehensive training programs are essential. These programs should include a range of topics, including entrepreneurship skills to manage farming as a viable business, agro-ecological farming techniques to promote environmentally sound and resilient agricultural practices, and effective support supervision strategies to ensure knowledge transfer and ongoing improvement.

   Furthermore, establishing strong and reliable linkages with local retailers will allow groups to sell their produce and generate income.
2. To promote farming in informal settlements, small space farming methods should be promoted to optimize space. This can be accompanied by the set up of community-based farming hubs which operate on communal spaces such as schools, church grounds, or idle land).
3. Strategies such as landlord sensitization campaigns to educate landlords on the benefits of urban agriculture and provision of incentives for landlords supporting farming can go a long way in promoting urban farming activities in informal settlements.

4. Improving food safety requires integrating soft skills training with essential infrastructure improvements. These include adequate drainage to control contamination, better sanitation for hygienic conditions, and accessible clean water for food processing.
5. To improve food safety, consistent engagement and rapport between food vendors and public health officials are essential.
6. The involvement of other relevant stakeholders is also key for sustainability.

Conclusion

The Nairobi Food System Lab has shown that urban farming and food safety interventions are both feasible and effective in improving food and nutrition security in informal settlements. Crucially, the project advanced the realization of the right to adequate food, as guaranteed by the Kenyan Constitution through enhancing access to diverse diets and fostering safer food environments.

The project underscores the need for sustained investment in urban agriculture and food safety—particularly in informal settlements. Continued support through inputs, training, market access, and infrastructure development is essential to maintain and scale the gains achieved. The project also highlighted the importance of a systemic, multi-stakeholder approach involving communities, government actors, researchers, and civil society. Such collaboration will be vital for scaling up successful interventions and building inclusive, resilient, and rights-based urban food systems across Kenya and beyond.

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*Scan the QR code below to access the food safety manual developed for street food vendors in Nairobi:

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