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Landscape analysis of early childhood development and agriculture in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka

Resilient Cities - Agriculture and Early Child Development, Project Note 1

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Introduction

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In low- and middle-income countries (LMIC), 40% of pre-school-aged children have poor development,[1] which undermines educational attainment and earnings later in life.[2] To reach their full developmental potential, children require adequate nutrition, good health, responsive care, and opportunities for early learning.[3] Early childhood development (ECD) interventions can mitigate multiple risk factors related to responsive care and opportunities for early learning,[4] whereas agricultural interventions can mitigate health and nutrition risk factors.[5] In addition, organic farming and agroecological interventions more broadly can promote ECD by reducing pesticide exposure, a known environmental risk factor for poor ECD.[6,7] Despite this potential of individual interventions to promote and protect ECD, evidence is lacking on the potential additive or synergistic effects of combining agricultural and ECD interventions. Moreover, little is known about the acceptability and feasibility of combining agricultural and ECD interventions among different stakeholders (e.g., beneficiaries, implementers). To date, most agricultural and ECD interventions to promote and protect child outcomes in LMICs have largely been conducted in

rural settings. Thus, little is known about what the design of these types of interventions could look like in urban and peri-urban settings.

IFPRI researchers working on the CGIAR Initiative "Resilient Cities Through Sustainable Urban and Peri-Urban Agrifood Systems" conducted a series of landscape reviews[1] to understand the potential of combining agriculture and ECD interventions in five priority countries: Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka. These landscape reviews had the following objectives. Details on the methodology are provided in **Appendix 1**.

1. To describe the key socio-economic and demographic statistics related to agriculture and ECD.
2. To understand the main policies, strategies, and action plans related to agriculture (organic farming, sustainable and climate-smart agriculture, pesticide use) and early childhood development.
3. To describe the main stakeholders and working groups related to agriculture and ECD.
4. To summarize key ECD programs at the national, sub-national, peri-urban, and urban levels of each country.
5. To summarize key agriculture programs at the national, sub-national, peri-urban, and urban levels in each country.

Results

Objective 1: To describe the key socio-economic and demographic statistics related to agriculture and ECD.

Of the five countries of focus, Peru had the highest urban population with 79% of the country's population living in urban areas followed by Bangladesh (39%), Kenya (28%), Sri Lanka (19%), and Rwanda (18%).[8] In all five countries, the urban population is steadily increasing, in line with global urbanization trends.[8]

Table 1: Key indicators of early childhood development and agriculture in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka

Indicator	Bangladesh	Kenya	Peru	Rwanda	Sri Lanka
Population living in urban areas	39%	28%	79%	18%	19%
Early Childhood Development					
Children who are developmentally on track[b] (urban)	78%	NA	*NA*	86%	*NA*
Children who attend some form of ECD program	19%	16%	77%	13%	60%

[1] Landscape reviews are summary-style non-systematic reviews which comprise broad overview and deep-dive into multiple topics comparing them across contexts.

Children who play with two or more playthings in the home	67%	*NA*	*NA*	47%	*NA*
Children with three or more children's books in the home	6%	*NA*	*NA*	5%	*NA*
Children with adequate stimulation in home[c]	64%	*NA*	*NA*	36%	94%
Agriculture					
Agriculture land (% of land area)	76%	49%	18%	59%	45%
Population engaged in agriculture	38%	54%	27%	62%	25%
Agricultural households using fertilizer – organic	*NA*	87%	59%[c]	70%	34%
Agricultural households using fertilizer – inorganic	*NA*	93%		39%	58%
Agriculture households using pesticides	*NA*	87%	64%	30%	27%

Source: National indicators were presented where indicators for urban only areas were not available. Data sources: Bangladesh 2019 Multiple Indicator Cluster Surveys (MICS)[9], UNICEF "Countdown to 2023"[10], and Rwanda Demographic and Health Survey (DHS)[11]. Abbreviations used: NA, not available.

[a] In at least three of the following domains: literacy-numeracy, physical development, social-emotional development, and learning.

[b] Defined as children receiving four or more early stimulation (e.g., reading, singing, playing) activities by any household member in the last three days.

c Data for organic and inorganic fertilizer use not available separately.

Key ECD and agriculture indicators are summarized in **Table 1**. The availability of ECD data at the national level varied across the five study countries. Bangladesh and Rwanda had the highest level of data availability with recent nationally representative surveys, namely the Bangladesh Multiple Indicators Cluster Survey (2019)[9] and the Rwanda DHS (2019/2020),[11] including modules that covered ECD, stimulation, and early learning materials. Data on Kenya, Peru, and Sri Lanka were available through the UNICEF - "Countdown to 2030" Collaboration on the Nurturing Care website (https://nurturing-care.org/). Results from these surveys showed that the proportion of children developmentally on track was higher in Rwanda (86%) than Bangladesh (78%). However, the availability of playthings and books in the home was higher in Bangladesh than Rwanda (67% vs 47% for two or more playthings; 6% vs 5% for three or more children's books). The proportion of children receiving adequate stimulation was highest in Sri Lanka at 94%[10] followed by Bangladesh (64%) and Rwanda (47%). Finally, Peru (77%) and Sri Lanka (60%) had the highest ECD program attendance followed by Bangladesh (19%), Kenya (16%) and Rwanda (13%).[10]

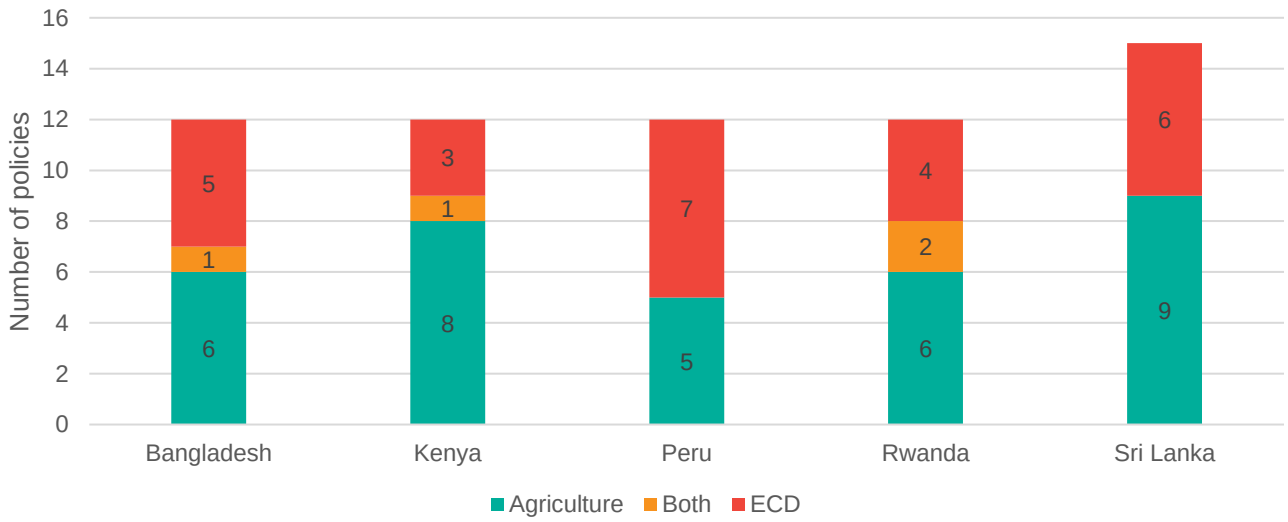
While relatively high in all countries, the proportion of the country's population engaged in agriculture was highest in Rwanda and Kenya at 62% and 54%, respectively.[12] The availability of data on fertilizer

and pesticide use varied across countries: use of these products was highest in Kenya with 87% of agriculture households using organic fertilizer, 93% using inorganic fertilizer, and 87% using pesticides.[13]

Objective 2: To understand the main policies, strategies, and action plans related to agriculture, organic farming, sustainable and climate-smart agriculture, pesticide use, and early childhood development.

To understand the policy environment, we reviewed agriculture- and ECD-related documents (referred to as policies) related to policies, strategies, and action plans. We reviewed 12 policies for Bangladesh, Kenya, Peru, and Rwanda each, and 15 for Sri Lanka. The list of policies reviewed is provided in **Appendix 2**. Results are summarized in **Figure 1**.

Figure 1: Documents related to agriculture and early childhood development in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka. Abbreviations used: ECD, early childhood development.



Most policies were national except for two Kenyan documents focused on urban areas: the Nairobi Urban Agriculture Promotion and Regulation Act and the National Agribusiness Strategy which explicitly mentioned agrifood markets in urban areas. In addition, several policies placed a focus on specific urban areas. The Rwandan development strategy "Vision 2050" placed a focus on emerging urban cities, whereas the Bangladesh National Sustainable Development Strategy and Perspective Plan of Bangladesh (Vision 2041) made frequent mention of Dhaka. Lastly, specific actions within the Sri Lanka National Agricultural Policy gave priority to urban areas.

Early childhood development policies

Several policies have been recently endorsed in all five countries that guide national and sub-national ECD services and programming with seven policies in Peru, six in Sri Lanka, five in Bangladesh, four in Rwanda, and three in Kenya (**Figure 1**). The Government of Rwanda has demonstrated a strong commitment to early childhood development through its comprehensive ECD policy agenda. The National Social and Behavior Change Strategy for Integrated Early Childhood Development, Nutrition, and Water Sanitation and Hygiene (National SBCC Strategy; 2018-2024) outlines the key behaviors to be pro-

moted across sectors to ensure the optimal development of children 0-6 years of age. Example behaviors include providing age-appropriate communication, preventive and curative care for health and nutrition, and age-appropriate introduction of nutrient-rich and balanced complementary foods.

ECD has also been a recent national priority in Peru. Notably, the Early Childhood First (2019) strategy promotes effective interventions to ensure children under 6 years of age develop their full capacities and reach their full potential. This document also includes a robust set of indicators for monitoring and evaluation of interventions.

In Bangladesh, the Comprehensive Policy for Early Child Care and Development (2013) aims to establish a solid foundation for ECD by providing support to children and families of children, from pregnancy through age eight with guiding principles such as parenting engagement, continuity of care and services, and the engagement of the community. In Sri Lanka, the National Policy on Preschool Education (2019 revision) recognizes the importance of comprehensive and integrated ECD services for young children.

Finally, despite having the fewest number of ECD policies, Kenya also has a strong national policy framework for early childhood development with the National Early Childhood Development Policy Framework (2006) and the National Pre-Primary Education Policy (2017) both aiming to improve the quality, accessibility, and equity of early childhood services for children. This includes intersectoral training programs for ECD and the implementation of standard guidelines relating to the quality of ECD service provision.

Agriculture policies

Globally, agriculture production is extremely sensitive to the impacts of climate change, which includes, for example, longer periods of drought, coastal flooding, invasive pests, and extreme weather events. Therefore, it is no surprise that the promotion of sustainable, climate-smart, organic sustainable agriculture is at the forefront of the national agriculture policies across all five countries. Organic agriculture and reduced pesticide use were also widely covered.

In Sri Lanka (n=9 policies), organic agriculture was widely covered throughout the country's agricultural policies. For example, among other mandates, Sri Lanka's Public Investment Program (2021-2024) includes a focus on transitioning farmers from inorganic to organic fertilizers and plans to develop one million home gardens using organic fertilizer to promote consumption of organic produce within households. Sustainable agriculture is also promoted throughout several polices including the National Climate Change Policy (2012), which promotes sustainable consumption and production. The Control of Pesticides Act No 33 (2020) ensures that only less hazardous pesticides are available. However, Sri Lanka has also had less successful policies. Specifically, in 2021, Sri Lanka completely and abruptly banned the import of over 600 chemicals, including fertilizers,[14] a ban which was subsequently reversed.[15–17]

In Kenya (n=8 policies), four policies related to sustainable and climate-smart agriculture have been recently implemented, including the Climate Smart Agriculture Strategy (2017-2026) and Implementation Framework (2018-2027). Together these documents support the resilience of agricultural systems and the reduction of greenhouse gas emissions through institutional coordination, use of new technologies, and enhanced dissemination of climate information services. Further, the Pest Control Products Act, endorsed by the Government of Kenya in 1982, regulates the importation, labeling, use, and disposal of pest control products.

In Bangladesh, all six policies identified include goals or objectives related to sustainable and climate-smart agriculture. For example, the Bangladesh Climate Change Strategy and Action Plan promotes sustainable and climate-smart agriculture through institutional capacity building and the development of climate resilient cropping systems. The National Agriculture Policy (2018) encourages the research and promotion of environmentally friendly pesticides, improved training, and awareness of the safe use of pesticides, and the use of organic pesticides.

Six policies were also reviewed in Rwanda. Both the National Agriculture Policy and the Green Growth and Climate Resilience Strategy promote sustainable pest management technologies. Three policies encourage the use of organic and bio fertilizers. Five policies promote specific actions that aim to mitigate vulnerability to climate change and promote sustainable agriculture such as resource recovery and reuse, improved climate data, and the expansion of climate-resilient crop varieties.

Lastly, Peru (n=5 policies) is the only country to have a policy document whose primary focus is on promoting organic agriculture production: Peru's Concerted National Plan for the Promotion and Development of Organic and Ecological Production (2021-2030). This strategy seeks to improve the competitiveness and sustainability of organic production, with priority given to family farming. Two policies were related to sustainable agriculture, including the National Agrarian Policy (2021-2030) which includes objectives to increase access to natural resources for agricultural producers, to implement agricultural practices that achieve sustainable use of resources in agricultural production, and to increase the generation of information regarding the use of agricultural resources for agricultural production. Through national mandates, Peru has banned the use of organochloride insecticides (e.g. DDT) since 1991 and pesticides that contain Fornate and/or Methamidophos as active indigents.[18]

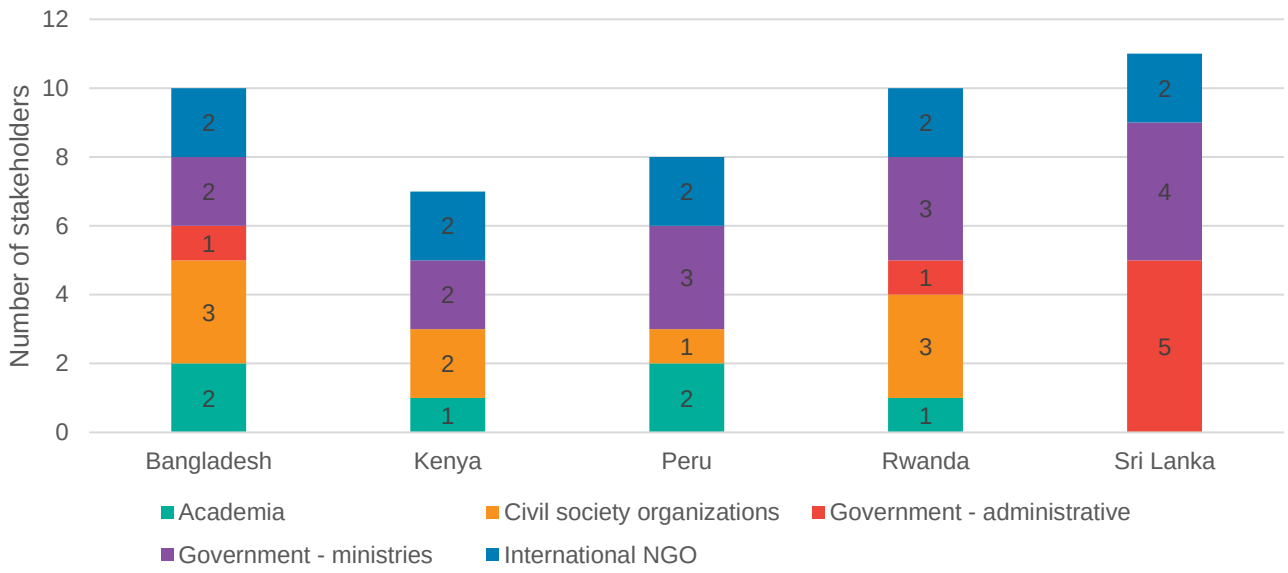
Agriculture and ECD policies

The number of policies covering both agriculture and ECD was limited to two policies in Rwanda and one policy each in Bangladesh and Kenya (**Figure 1**). None of the policies reviewed for Peru and Sri Lanka covered both agriculture and ECD. In Rwanda, the National Early Childhood Development Program Strategic Plan (2018-2024) was established to guide the implementation of ECD programs at the national level. It also specifically discourages the use of chemical fertilizers, further supporting Rwanda's multi-sectoral commitment to ECD. Similarly, agriculture and ECD were priority areas in the National Strategy for Transformation. In Bangladesh, the 8th Five-Year Plan promotes urban agriculture through increased rainfed rooftop and vertical farming and pre-primary and early childhood education through development of appropriate curricula and training of teachers. Kenya's Third Medium-Term Plan (Vision 2030) promotes sustainable agriculture (including crop diversification and expansion of irrigation coverage) as well as early childhood development through improved basic education competency-based curricula.

Objective 3: To describe the main stakeholders and working groups related to agriculture and ECD.

ECD Stakeholders

Figure 2: Early childhood development by country and type in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka.



Note: Abbreviations used: ECD, early childhood development; NGO, non-governmental organization.

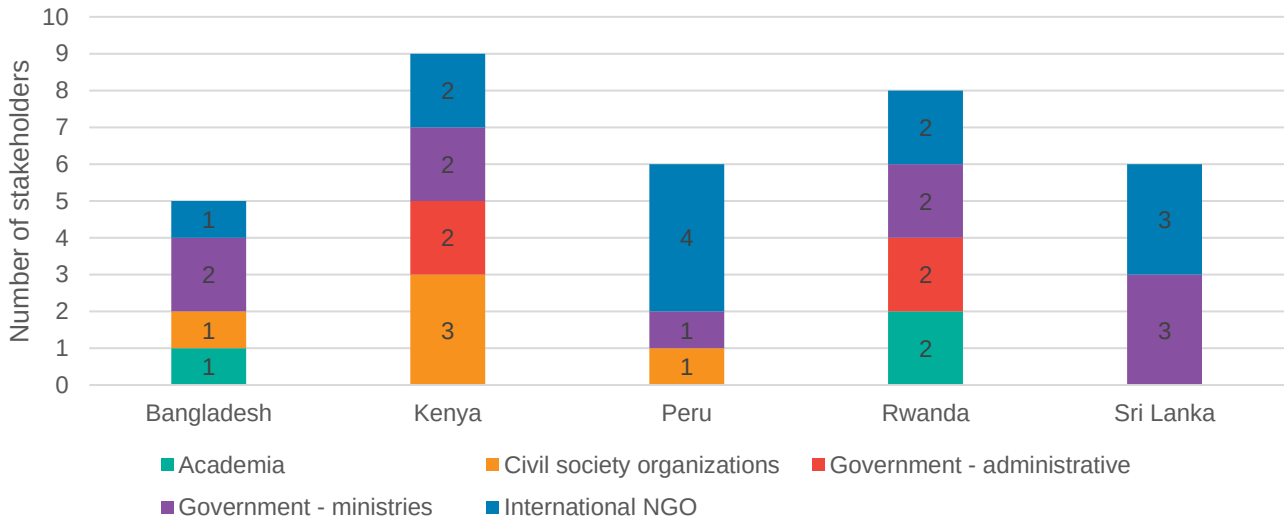
Overall, a range of stakeholders were involved in ECD program implementation in all five countries including academic institutions, civil society organizations (CSO), government administrative organizations, government ministries, and international non-governmental organizations (NGOs) (**Figure 2**). Government ministries play a key role in ECD activities at the national level in all five countries with four relevant ministries in Sri Lanka, three ministries in Rwanda and Peru, and two ministries in Bangladesh and Kenya. Specifically, each country's Ministry of Education was responsible for overseeing the national pre-primary education programs, with Rwanda's Ministry of Education specifically tasked with the coordination of ECD programs and services broadly under the National ECD Policy (2016). In Bangladesh and Sri Lanka, ECD coordination fell under the Ministry of Women and Child Affairs and the State Ministry of Women and Child Development, Preschool and Primary Education, School Infrastructure and Education Services respectively.

In Sri Lanka, five additional decentralized administrative organizations that implemented ECD programs were identified. For example, the Plantation Human Development Trust has been instrumental in developing early childhood care and education facilities in the estate sector.[19] Peru, Bangladesh, and Rwanda each had administrative organizations within the government tasked with coordinating multi-sectoral ECD activities. This included a multi-sectoral working group that was created under the Early Childhood First Policy (2019) in Peru, the National Child Development Agency in Rwanda, and the Bangladesh ECD Network.

In all five countries, organizations such as CSOs, local NGOs, and international NGOs supplemented the work conducted by the national governments. Finally, stakeholders in academia played a key role in ECD program implementation and evaluation. Specifically, in Bangladesh and Peru two academic institutions were identified through this landscape review while one institution was identified each in Kenya and Rwanda.

Agriculture stakeholders

Figure 3: Agriculture stakeholders by country and type in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka.



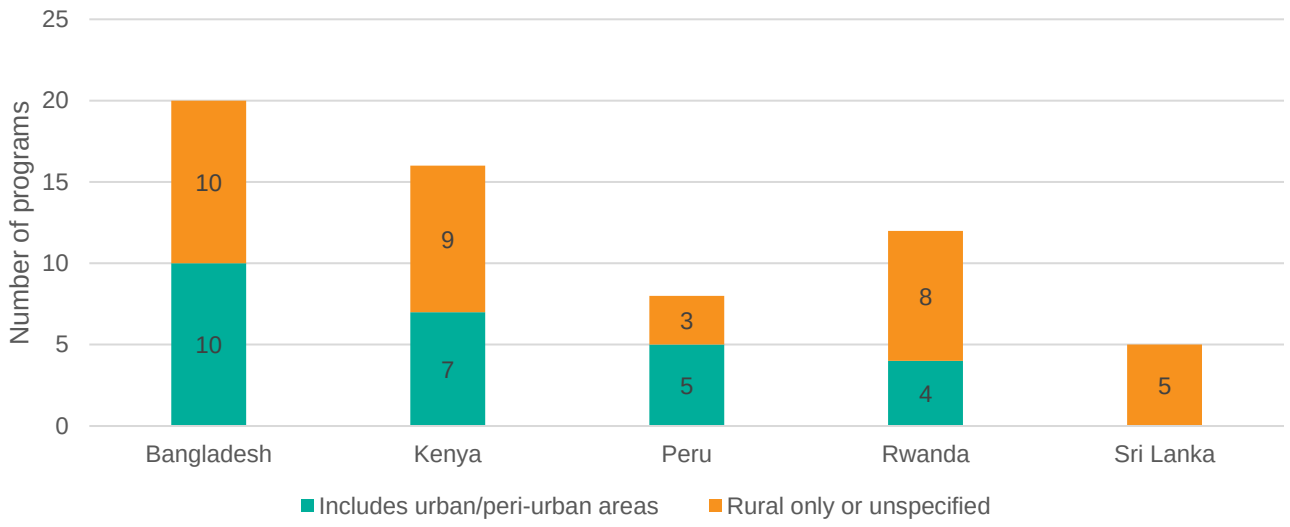
Note: Abbreviations used: NGO, non-governmental organization.

Similar to findings from the ECD stakeholder analysis, government ministries played an instrumental role in agriculture policy implementation and program development (**Figure 3**). Specifically, the greatest number of ministries with activities in the agriculture sector were identified in Sri Lanka (five ministries) followed by Kenya, Bangladesh, and Rwanda (two ministries each), and finally Peru with one relevant ministry. In addition to countries' ministries of agriculture, other key ministries included the ministries of environment (Bangladesh, Kenya, Rwanda, and Sri Lanka), and the Ministry of Economic Policies and Plan Implementation (Sri Lanka). Additional government administrative organizations were identified in Rwanda and Kenya including, for example, the Rwanda Agriculture and Animal Resources Development Board and the Pest Control Products Board in Kenya.

Peru and Sri Lanka both have had a relatively strong presence of notable international NGOs implementing agriculture programs with four and three identified organizations, respectively. As compared to the ECD programs, fewer CSOs and local NGOs were identified as playing a key role in agriculture programing across the five countries. However, a key CSO stakeholder in Kenya included the Kenya Organic Agriculture Network (KOAN), a network that brings together producers, exporters, traders, NGOs, and others to promote organic agriculture in Kenya. Finally, academic institutions served as main stakeholders in Rwanda (two institutions) and Bangladesh (one institutions), providing support for monitoring and evaluation for sustainable agriculture programs.

Objective 4: To summarize key ECD programs at the national, sub-national, peri-urban, and urban levels of each country.

Figure 4: Early childhood development programs by country and setting in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka.

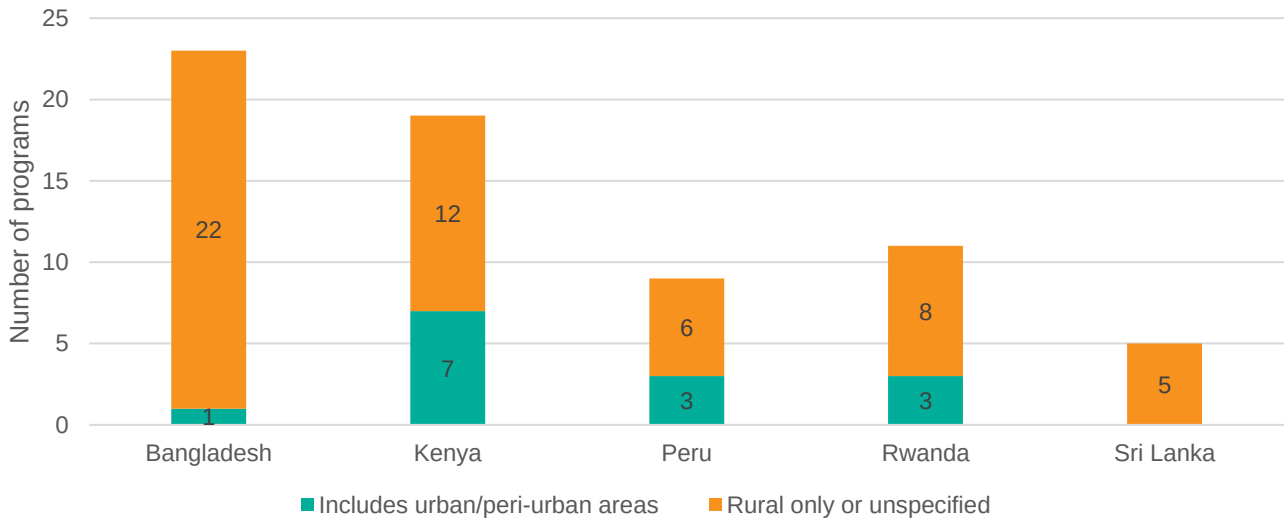


The number of ECD programs in each of the five focus countries is summarized in **Figure 4**. ECD programming in urban and peri-urban areas was common in Bangladesh (10 programs), Kenya (seven programs), and Peru (five programs). Only four urban/peri-urban programs were identified in Rwanda and no programs in Sri Lanka were specified as being conducted in an urban or peri-urban setting. The scarcity of peri-urban/urban ECD programs in these two countries is likely related to the low proportion of the population living in urban areas: 18% in Rwanda and 19% in Sri Lanka (**Table 1**).

In Bangladesh, most urban/peri-urban ECD programs were conducted in urban slums and refugee camps. For example, through the Sesame Workshop's Play to Learn program, BRAC delivered a play-based education in child-friendly spaces to Rohingya refugees living within the Cox Bazaar refugee camps.[20] In 2020, this program unveiled new Rohingya muppet characters, Noor and Aziz, who were featured on video segments that promote social-emotional learning, math, science, and health and safety. Key urban/peri-urban programs in Kenya included the Kidogo program[21] which aims to improve access to quality, affordable early childhood care and education in Kenya's low-income communities in informal settlement across Nairobi. These community childcare centers are supported through a micro-financing program in which the local women who run informal childcare centers, or "Mamapreneurs," are provided relevant training materials, resources, and support. Additionally, a mobile phone application launched in Nairobi's informal settlements provided caregivers with guidance on how to promote ECD.[22] In Peru, the Cuna Mas program provided a day care service in urban areas to children aged 6 to 36 months.[23]

Objective 5: To summarize key agriculture programs at the national, sub-national, peri-urban, and urban levels in each country.

Figure 5: Agriculture programs by country and setting in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka.



Overall, few agriculture programs identified though this review were specifically conducted in urban and peri-urban settings (**Figure 5**). For example, while 23 agriculture programs were identified in Bangladesh, which were mostly related to climate-smart and sustainable agriculture practices, only one of these programs specifically targeted urban or peri-urban areas. Agriculture programs conducted in urban/peri-urban settings were most common in Kenya where seven programs were identified. One notable program in Kenya is the H2Grow Hydroponics Loan Programme[24] in which the World Food Programme provides hydroponic units to individuals and community groups as an asset-based loan. Hydroponic farming is a soilless agriculture cultivation technique that allows for plant growth in arid or peri-urban/urban areas. Three urban/peri-urban agriculture programs were identified each in Peru and Rwanda. Specifically, the City Region Food Systems Program[25] in the City of Kigali, Rwanda and nearby peri-urban and rural areas aimed to build a climate-resilient city region food system by scaling up climate-resilient agriculture practices among smallholder farmers and improving the ecosystem services in the city region. Finally, two programs were identified in urban/peri-urban areas of Sri Lanka. For example, one program sought to understand how organic urban waste and sanitation systems could provide inputs to smallholder farmers.[26]

Discussion

This brief aimed to summarize key findings from a landscape analysis of agriculture and ECD policies, programs, and stakeholders in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka. Through the country profile analysis, clear differences emerged in terms of agriculture and ECD contexts. Notably, Peru had a much higher proportion of its population living in urban areas (78%), in stark contrast to Rwanda and Sri Lanka, for example, where only 19% and 18% of the population lived in urban areas, respectively. The primarily rural population of these countries other than Peru limited to an extent the policy and programming focus on peri-urban and urban areas as compared to rural areas. Nevertheless, in line with global trends, all five countries are currently witnessing similar patterns of urbanization as individuals

migrate to urban centers and the boundaries of urban areas expand. As a result, the implementation of innovative climate-smart programs in urban and peri-urban areas will be critical in the future, especially as climate change introduces increasingly unfavorable conditions for agricultural production such as drought and extreme weather.

The potential for government backing of future sustainable urban- and peri-urban agriculture programs is also supported by the current policy landscape in these five countries. Each country included at least one national policy with objectives to improve the agriculture sector's resilience to climate change and promote organic agriculture. Notably, Kenya's Climate-Smart Agriculture Strategy (2017-2026) and Implementation Framework (2018-2027) provided clear and detailed guidance for future sustainable agriculture programing, highlighting their country's emphasis on the design and implementation of innovative agricultural solutions to combat the increasing threat of climate change. Furthermore, all countries included in this landscape review have enacted policies and regulations related to organic agriculture and hazardous pesticides. Despite the inclusion of organic agriculture and pesticide use in the policy agendas, few agriculture programs identified in this review targeted organic farming and pesticide use and instead focused on climate-smart agriculture techniques. One exception is Peru where several organic farming programs were identified; however, these were primarily conducted in rural areas.

The concentration of sustainable and organic agriculture programming in rural areas was a common trend across all focus countries. For example, in Bangladesh only one out of the 23 identified programs specifically targeted urban or peri-urban areas. This disparity is certainly a result of the concentration of agricultural land and agricultural households in rural areas. Despite this, agriculture programs in urban areas in Kenya, Rwanda, and Sri Lanka highlighted innovative strategies that could be potentially scaled up or adapted to other settings in the future. In particular, the use of hydroponics in Kenya and the transformation of organic urban waste and sanitation systems into smallholder agricultural inputs in Sri Lanka provide promising solutions for urban organic farming in a changing climate that can be potentially incorporated into future programs.

When considering the integration of early childhood development components into agriculture programs, Rwanda's policy landscape is particularly promising. Multi-sectoral coordination of ECD policies and programs is a key priority of the Government of Rwanda as highlighted in the National Early Childhood Development Program Strategic Plan (2018-2024) and the National Social and Behavior Change Strategy for Integrated Early Childhood Development, Nutrition, and Water Sanitation and Hygiene (2018-2024). Additionally, due to its inter-sectoral nature, the National Child Development Agency in Rwanda would be a strong stakeholder to support the multi-sectoral coordination of future ECD activities to be integrated into agriculture programs. Strong opportunities for multi-sectoral urban and peri-urban ECD and agriculture programming also exists in Kenya, Bangladesh, and Peru where several national and international NGOs are currently working in urban and peri-urban areas to implement innovative ECD programs. These include a mobile phone program in Kenya and a culturally relevant video series in Bangladesh.

Limitations

This landscape review benefited from obtaining information from a wide range of sources including peer-reviewed articles, reports, and organization websites. However, there were some limitations in the approach. Most notably, this review cannot be considered systematic despite having a clearly defined methodology. As a result, it is possible that some programs, policies, or key stakeholders may not have

been captured in our results. Additionally, the availability of data for policies, programs, and stakeholders varied both within and across countries, which may have led to further gaps in this landscape review. To gain more in-depth insights into the current landscape of ECD and agriculture programing in peri-urban and urban areas, future research could benefit from conducting key-informant interviews with relevant stakeholders that have been identified in this landscape review. Through such interviews, these stakeholders could highlight any additional potential barriers for future programming that did not emerge in this initial landscape review.

Conclusions

In conclusion, this landscape analysis highlighted that there are many windows of opportunity for future integrated agriculture and ECD interventions in urban and peri-urban settings in Bangladesh, Kenya, Peru, Rwanda, and Sri Lanka. Specifically, all country governments demonstrated strong commitments to organic and sustainable agriculture through key policies, which could provide an enabling environment for future programming in these areas. Additionally, prior agriculture and ECD interventions provided valuable insights into the innovative strategies required to design effective urban and peri-urban programs as rapid urbanization and the threats of climate change continue to rise.

ABOUT THE AUTHORS

Juliet McCann and Katie Sproule were independent consultants at the time the work was conducted. Lilia Bliznashka is a Research Fellow 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.

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