U20

RIYADH 2020

URBAN

Empowering cities for the development of sustainable food system policies

Nature-based Urban Solutions

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List of Definitions and Acronyms

AMIS – Agriculture Market Information System

CFS – Committee on World Food Security

EU – European Union

FAO – Food and Agriculture Organization of the United Nations

ICLEI – Local Governments for Sustainability

IFAD – International Fund for Agricultural Development

MUFPP – Milan Urban Food Policy Pact

SDGs – Sustainable Development Goals

URLs – Urban-Rural Linkages

WFP – World Food Program

About Urban 20

Urban20 (U20) is a city diplomacy initiative that brings together cities from G20 member states and observer cities from non-G20 states to discuss and form a common position on climate action, social inclusion and integration, and sustainable economic growth. Recommendations are then issued for consideration by the G20. The initiative is convened by C40 Cities, in collaboration with United Cities and Local Governments, under the leadership of a Chair city that rotates annually. The first U20 Mayors Summit took place in Buenos Aires in 2018, and the second took place in Tokyo in 2019. For 2020, Riyadh City is the Chair city and host of the annual Mayors Summit. The first meeting of U20 Sherpas was convened in Riyadh, Saudi Arabia, on the 5th – 6th February during which the foundations were laid for the U20 2020 Mayors Summit in the Saudi capital later this year.

About the Urban 20 Taskforces

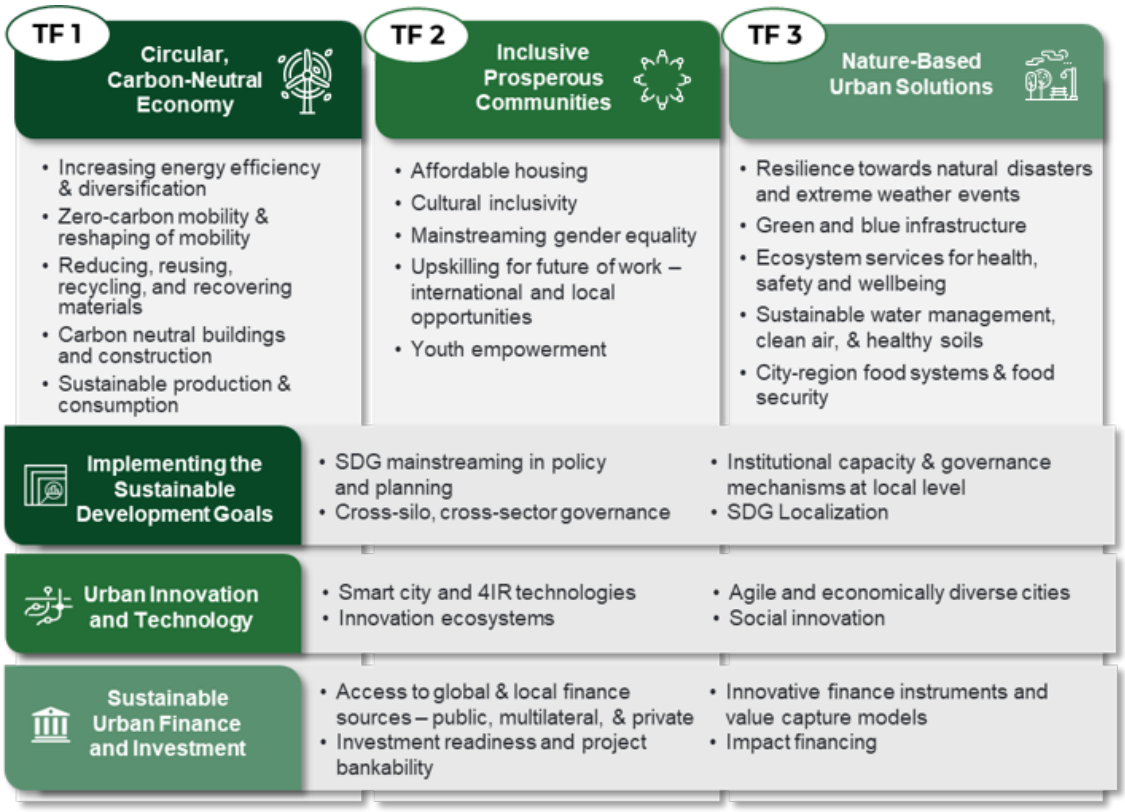
As U20 Chair, Riyadh has introduced taskforces to add additional structure and focus to the U20. These taskforces explore specific priority issues and bring evidence-based solutions to the final Communique.

Each taskforce has commissioned whitepapers led by chair cities, and with input from participating cities and knowledge partners. These whitepapers help us build an evidence-based, credible and achievable set of policy recommendations.

Taskforces activation

The taskforces workstream was an innovative and recent introduction to the three-year-old U20 initiative by the chairmanship of the city of Riyadh this year. Three thematic taskforces, each guided by one of the U20 Riyadh 2020 overarching themes of Circular, Carbon-neutral economy, Inclusive Prosperous Communities, and Nature-based Urban Solutions, were officially launched and activated during the U20 First Sherpa meeting back in February. During the meeting, the U20 priority topics that fell within the three overarching themes and intersecting with the three cross-sectional dimensions of Implementing the Sustainable Development Goals, Urban Innovation and Technology, and Urban Finance and Investment were prioritized and refined through the statements delivered by all attending cities. The top 5 topics were then chosen to be the focus of whitepapers for each taskforce.

The top 5 topics under each of the three taskforces and cross cutting dimensions were then chosen to be the focus of whitepapers for each taskforce:



Cities and Partner Engagement

The vast majority of the twenty-three cities who attended the first Sherpa meeting, representing 12 G20 countries, along with the U20 Conveners, agreed to the importance of having taskforces as interactive platforms to produce knowledge-based and evidence-based outcomes that can effectively feed into an actionable U20 Communique. During and following the meeting, several cities demonstrated interest in volunteering in the capacity of chairs and co-chairs, leading and overseeing the activities of each taskforce. The cities of Rome and Tshwane co-chaired Taskforce 1 on Circular, Carbon-neutral Economy, Izmir Taskforce 2 on Inclusive Prosperous Communities, and Durban on Nature-based Urban Solutions. Others expressed interest to participate in the taskforces, some in more than one, both during and after the meeting.

Alongside interested U20 cities, several regional and international organizations proffered to engage in the work of the taskforces, in the capacity of knowledge partners, to share their knowledge and experiences with cities in producing whitepapers. Some of the knowledge partners volunteered to play a leading role as Lead Knowledge Partners, supporting the taskforces' co/chairs in review and guidance.

All participants who actively took part of the taskforces were subject matter experts nominated by the cities and knowledge partners and have enriched the taskforces' discussions with their know-how and experiences. In over 3 months, all three taskforces, with great effort and commitment from all their participants, produced a total of 15 evidence-based focused whitepapers, bringing about more than 160 policy recommendations addressing the national governments of the G20 Member States.

The taskforces content development efforts is comprised of 23 U20 cities and 31 U20 knowledge partners. The 100+ experts and city representatives produced 15 whitepapers which widely benefited and informed the development of the first draft of the communique.

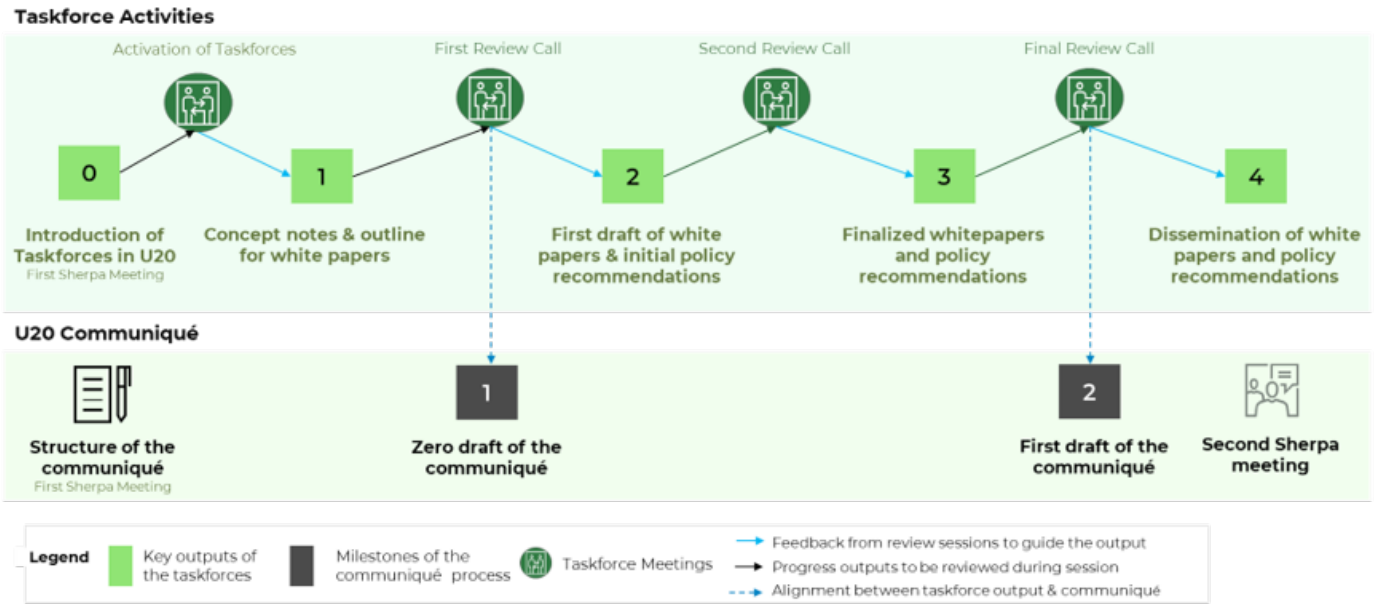
Content Development

Under the leadership and guidance of the chair city, Durban, and the lead knowledge partner, ICLEI, the work of Task Force 3 kicked off with an orientation for all participants in mid-March.

During the period between March and April, the participants of Taskforce 3 presented more than 23 concept ideas and 12 concept notes and developed initial outlines for the whitepapers focusing on topics of interest. Teaming up into six author groupings, the cities and knowledge partners developed six outlines of whitepapers. Refined and revised outlines were then developed into draft whitepapers that underwent several iterations for development and finalization, ensuring that each paper delivers a set of concrete and targeted policy recommendations that address the different U20 stakeholders.

The six whitepapers under task force 3 (listed below) explore priority topics on food systems, urban sanitation and waste management, urban healthy and safety, resilience and biodiversity:

1. Towards transformative change: urban contributions to achieving the global biodiversity agendas
2. Resilience in the Anthropocene: mainstreaming nature-based solutions to build resilient cities
3. Addressing finance and capacity barriers for nature-based solutions implementation at city level
4. Urban health, safety, and well-being: cities enabling the provision and access of ecosystem services
5. Empowering cities for the development of sustainable food system policies
6. Urban sanitation and waste management for all



Along the taskforces timeline of activities, three review meetings were held where co/chairs and lead knowledge partners presented and discussed with the U20 Executive Team the progress and findings of the taskforces they represent, leading to the U20 Second Sherpa meeting that took place during the first week of July. Parallel to the taskforces activities, the first draft of the U20 communique was developed by the U20 Executive team incorporating recommendations presented at the third (and final) review meeting.

About the Nature-based Urban Solutions Taskforce

Nature-Based Solutions need to be mainstreamed in city planning and development to provide a healthy urban environment with productive ecosystem services, such as the provision of clean air and freshwater, food and nutrition, recreation and tourism, as well as livelihoods for local populations and resilience to climate change impacts.

Cities are highly dependent on a healthy local environment and productive ecosystem services. Rapid environmental degradation and biodiversity loss due to climate change, habitat destruction and pollution, threaten the foundation for life in and around cities across the globe. Local ecosystems need to be restored, protected, and upgraded to enable and improve the prosperity and well-being of people in cities. Water and food systems within which the city draws resources from, must be managed sustainably to ensure long-term security. Nature-based solutions like endemic and biodiverse urban greening, ecosystem restoration, green roofs and walls, and natural water-retention methods, need to be mainstreamed and designed in city planning and development, taking into account the multiple co-benefits of policy choices. These can improve air and water quality, provide cost efficient cooling for districts and buildings and increase the physical and mental health of residents. They build the green and blue infrastructure needed for resilience against extreme weather events and the adverse effects of climate change, and attract global talent and sustainable tourism to the city. Nature must be integrated into urban environments. This increases both biological and economic prosperity and productivity, enabling new business opportunities for entrepreneurs and innovators, while providing habitats for biodiversity in harmony with traditional urban infrastructure.

15 cities

U20 Participating cities

Madrid
Mexico city
Montréal
Moscow
Rio de Janeiro
Riyadh
Rome
Sao Paulo
Strasbourg

Chair city

Durban

U20 Observer cities

Amman
Dammam
Helsinki
Rotterdam
Singapore

14 knowledge partners

Lead knowledge partner

ICLEI – Local Governments for Sustainability, Cities Biodiversity Centre

Knowledge partners

- Asian Development Bank Institute
- French Development Agency
- Global Alliance for Health and Pollution
- Inter-American Development Bank
- International Union for Conservation of Nature
- Lee Kuan Yew Center for Innovative Cities
- Metropolis
- National Institute of Urban Affairs
- The Nature Conservancy
- University Bocconi Milano – GREEN Centre
- University of Pennsylvania
- World Economic Forum
- World Wildlife Fund

About the Authors & About the Contributors

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Disclaimer Note
The views, opinions, positions and recommendations expressed in this White Paper are developed under the chairmanship of the City of Riyadh as U20 Chair City 2020 and are those of the authors and contributors, including contributing U20 cities and partners. They do not necessarily represent the views of all the U20 cities or any of its chairs, conveners, and partners. Many of the references in this White Paper will direct the reader to sites operated by third parties. Neither the institutions nor the authors of this White Paper have reviewed all the information on these sites or the accuracy or reliability of any information, data, opinions, advice or statements on these sites.

Executive Summary

Executive Summary

Food system policies must be designed in order to offer and guarantee food and nutrition security to its beneficiaries in a sustainable and inclusive manner. More than improving the world productivity of commodities and food, food policies must enhance the continued access to food and encourage the use of sustainable practices in order to mitigate the risks of climate change.

In 2011, the G20 acknowledged its important role in achieving food safety for all and started to address it in its meetings and communiqués. As cities, we reinforce this important movement and we call attention to the role of local governments in promoting sustainable agriculture, increasing productivity, fomenting a circular economy on food that will bring life back to our territories, anchor local development and strengthening international policy coordination, especially during difficult times as the COVID-19 pandemic spreads through the world.

Local, regional and national governments must work together to tackle the structural and economic dimensions of food security and nutrition in order to contribute to the wellbeing of its citizens and endorse the promotion of sustainable food systems that are inclusive and efficient.

This whitepaper is structured in three main pillars:

1. achieving food and nutrition security in cities;
2. promoting sustainable urban food policies; and
3. enhancing international cooperation, investments and innovation in agriculture to mitigate the impacts of crisis in promoting sustainable, inclusive and nutritious food systems.

Background

Background

The Food and Agriculture Organization of the United Nations (FAO) estimates that, in 2018, 2 billion people did not have regular access to safe, nutritious and sufficient food.[1]

The advocacy of the implementation of policies that promote accessible, inclusive, and sustainable food systems is fundamental to guarantee the well-being of their population, as shown by policies applied in response to the food price crisis in 2008, as well as in the emerging COVID-19 pandemic crisis.

Since 2011, the G20 countries address in its meetings and communiqués measures to achieve food security as a way to ensure the basic rights of citizens, as well as to promote economic growth and job creation. As cities, the U20 reinforces this important movement and calls attention to the role of local governments in promoting sustainable agriculture, increasing productivity, fomenting a circular economy on food and strengthening international policy coordination.

In past U20 meetings, the U20 Buenos Aires Communiqué called on G20 member states to "Develop a Safe and Sustainable Food Future" by addressing food security, particularly in a rapidly urbanizing world, in order to ensure the access, availability, stability, and utilization of food to overcome challenges such as childhood obesity/undernutrition, and "food deserts" in urban neighborhoods. The document also highlighted the necessity to ensure that sustainable production, distribution, retail, and consumption patterns are supported throughout urban-rural food systems and to the need to improve the access to quality food supply, facilitating the recovery and redistribution channels for surplus food and further implement the "3Rs" – reusing, reducing and recycling food.

The U20 Tokyo communiqué called on the G20 to collaborate with cities to "Increase resource efficiency and promote circularity" by halving the per capita food waste and reducing food loss by 2030 as set out by SDG 12, pursuing food security for all, encouraging local economic production and fair trade.

In line with the G20 Food and Nutrition Security Framework, the G20 declarations, the G20 Agriculture Ministers Meetings, and with the Milan Urban Food Policy Pact, that commits local governments to address food challenges in cities, the U20 Communiqués aims for the concrete implementation of political commitments to promote food security and a sustainable and resilient agricultural production based on a circular economy for food. Hence, food security and nutrition must be considered a top priority in the G20 Agenda.

Thus, we must continue to address the issue of nutritious and healthy food for all through sustainable and resilient production and based on a circular economy for food. The cities of the Urban 20 Initiative aims for the concrete implementation of political commitments to promote food security and sustainable agricultural production.

[1] FAO. The State of Food Security and Nutrition in the World. 2019. Available at: <http://www.fao.org/3/ca5162en/ca5162en.pdf>.

Introduction

Introduction

By 2050 the population living in cities will exceed two-thirds of the world's population[2], posing great challenges to city administrations, especially regarding urban food policies. The urbanization process comes along with the need for food and the migration of people from rural to urban areas represents a direct impact on the way food is produced and consumed.

In accordance to its widely accepted definition[3], food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Growing urban poverty and food insecurity resulting in malnutrition, are also indirect consequences of the urbanization process. Malnutrition includes three dimensions of under-nutrition, overnutrition or micronutrient deficiencies.[4]

In international law, the right to food has two meanings: access to an adequate level of food and the right to live free from hunger. However,the term "food" (food system) reflects the transversality of rights that go beyond nutritional values alone to become cultural, social, environmental, and economic rights. We, therefore, refer to all the elements (environment, society, processes, infrastructure, institutions, etc.) and activities related to the production, processing, distribution, final consumption of food, and treatment of food waste, together with the socio-economic and environmental impacts of these actions.

Local and regional governments are increasingly recognized as key players in the sustainability and resilience of local food systems that promote food security. This role was recognized by the New Urban Agenda, which addresses food and nutrition security as one of the current and future challenges for cities, and highlights integrated territorial approaches and strengthen rural-urban linkages.

Outlining a shared strategy on the city's relationship with "food" as a complex system from production to product processing means dealing not only with the fundamental right to healthy nutrition but also with the relations between city and countryside through a territorial approach to food security the landscape in cities, the social value of production, the relationships within the supply chains, workers' rights, the environment and the planning of green areas, the regeneration of spaces, inclusive practices, local democracy, and solidarity.

[2] United Nations Department of Economic and Social Affairs (2018). Available at: <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>.
[3] World Food Summit (1996). Rome Declaration on World Food Security.
[4] International Food Policy Research Institute. Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030; International Food Policy Research Institute: Washington, DC, USA, 2016.

Introduction

To that end, the implementation of the circular economy model offers to the economic production the necessary complexity to integrate the above-mentioned elements. This model aims to redefine economic growth, with a focus on benefits for the whole society, not only intending to minimize the effects of economic activity but eliminating waste and pollution, keeping products and materials in use, and regenerating natural systems, creating economic, natural and social capital. An important point for this economic model is that circularity occurs in a diffuse and inclusive way, so it is necessary to consider the importance of its functioning at all scales of the process. Thus, with the active participation and collaboration between small and large companies, countries, and cities with local communities, all actors involved in the production cycle are beneficiaries and can conceive social innovation as a gain. In addition, contributions from the scientific community are needed to identify, test, assess and ultimately strengthen mechanisms for implementing sustainable food systems through a circular economy.

The failure of the global food system to meet the needs of citizens equitably, has resulted in challenges that currently dominate the Sustainable Development Agenda[5]. The importance of food systems for the achievement of the Sustainable Development Goals (SDGs) is highlighted in the ambition to 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture', as stated in SDG 2. However, all the SDGs are connected through food, e.g. nutritious food is critical for learning (SDG 4); water scarcity can be addressed through sustainable agriculture (SDG 6); growth in agricultural production of low-income economies can reduce poverty (SDG 8) and implementation of sustainable and climate smart agriculture and selection of low-carbon diets (SDG 13 and 15)[6]. The impact of food on all SDGs highlights the need for the food system to be considered holistically. This is particularly critical given that food systems are currently failing to deliver healthy diets, while concurrently being a major driver negative environmental impacts.[7]

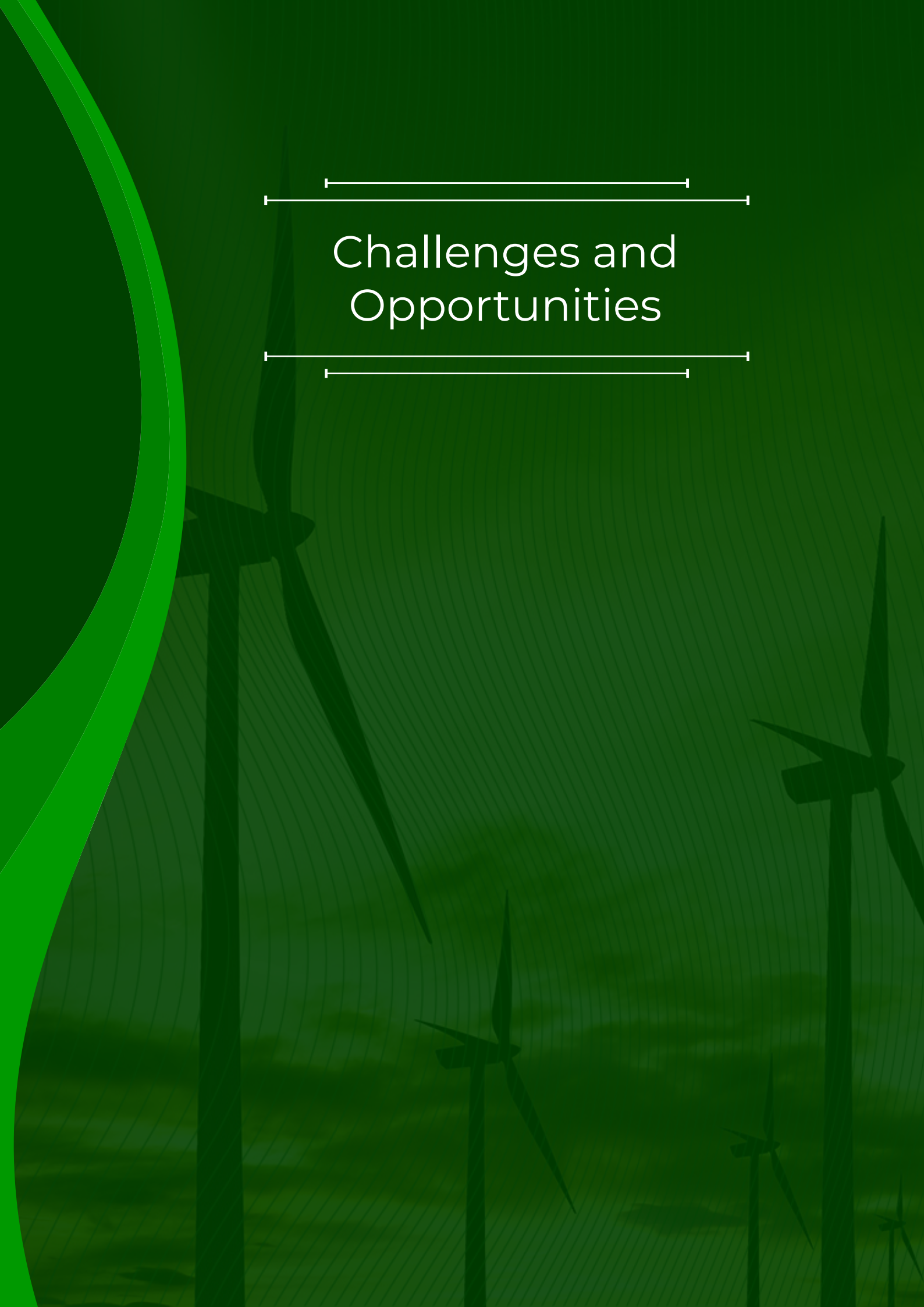
The circular economy for food, in particular, contributes mainly to the fulfillment of SDG 12 – Responsible consumption and production. However, at least 12 of the 17 Goals are linked to food and nutrition, as malnutrition represents an invisible barrier to the achievement of the goals and is directly related to inequalities, education, health, sanitation, access to resources, economic growth and sustainability. Inclusive, sustainable, nutritious, and healthy food systems require multi-actor engagement, scalable action, and significant ongoing impact.

[5] Mabhaudhi, T., Chibarabada, T.P., Chimonyo, V.G.P., Murugani, V.G., Pereira, L.M., Sobratee, N., Govender, L., Slotow, R., Modi, A.T., 2018. Mainstreaming underutilized indigenous and traditional crops into food systems: A South African perspective. Sustain. 11. https://doi.org/10.3390/su11010172

[6] FAO (2017) Food and agriculture. Driving action across the 2030 Agenda for Sustainable development. Food and Agriculture Organization of the United Nations, Rome, Italy. *http://www.fao.org/3/a-i7454e.pdf*

[7] Röös, E., Garnett, T., Watz, V., Sjörs, C., 2018. The role of dairy and plant based dairy alternatives in sustainable diets, SLU Future Food Reports 3.

Challenges and Opportunities



Challenges and Opportunities

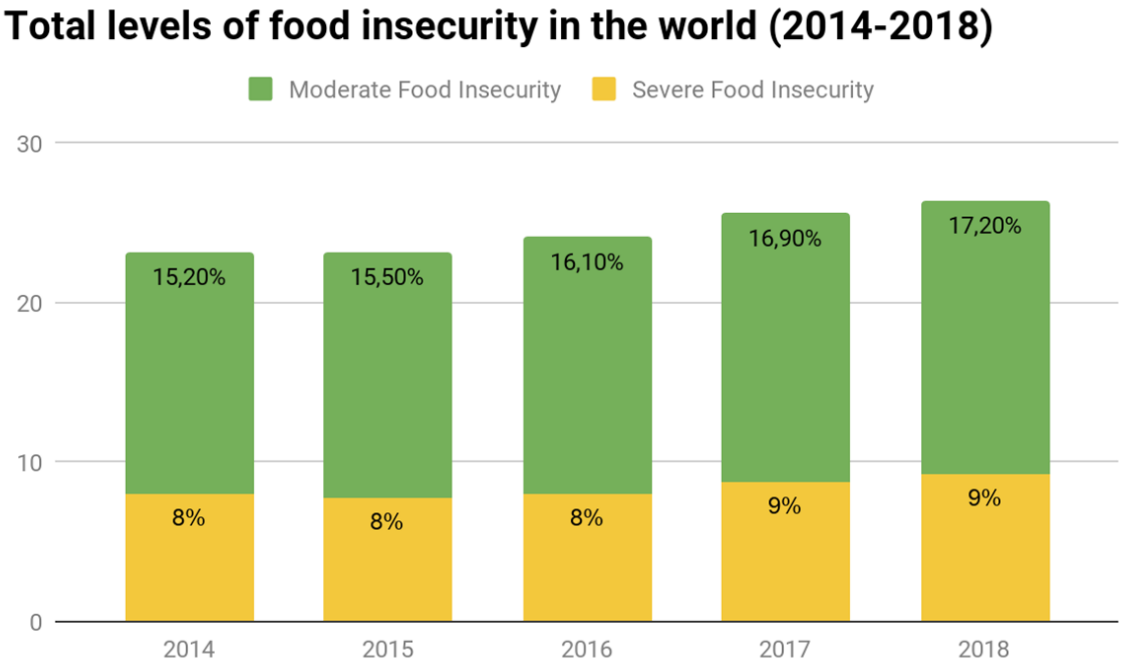
1. Promoting Food and Nutrition Security in Cities

According to FAO[8], 2 billion people in the world are still facing severe food insecurity, without regular access to safe, nutritious and sufficient food. A good part of this figure is not due to world productivity of food but rather the regular access, physical and financial, to sufficient food.

The same picture of inequality in access to food afflicts the G20 countries. Although almost 80 percent of the world's cereal and agriculture production comes from these countries, about half of the world's population unable to meet basic food requirements lives in these countries.

Table 1

Total levels of food insecurity in the world (2014 to 2018)



Source: FAO[9]

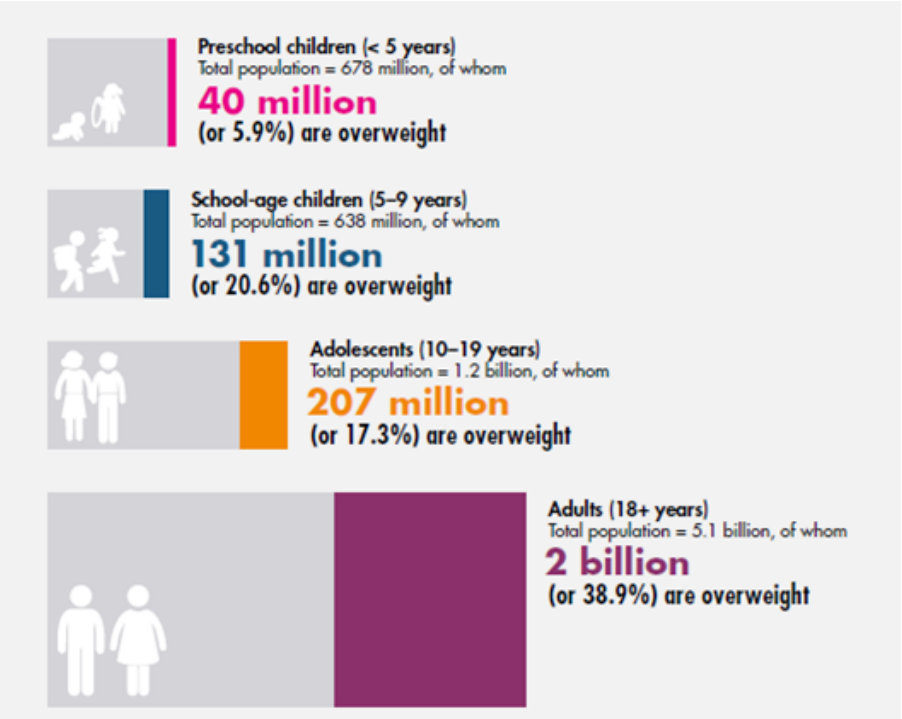
[8] FAO. The State of Food Security and Nutrition in the World (2019). Available at: <http://www.fao.org/3/ca5162en/ca5162en.pdf>.
[9] Ibidem 8.

Challenges and Opportunities

More deaths are caused by obesity than by being underweight globally,[10] with obesity contributing to 4 million deaths per year. The main risk factors for loss of disability-adjusted life years (DALYs) are 'dietary risks' of high intake of sodium, and low intake of fruit, vegetables, whole grains, nuts and seeds.[11] City governments have an essential role in offering nutritional education and regulation in order to promote the importance of keeping a diet based on fresh and nutritious food, discouraging the offer of processed foods. In schools, hospitals, restaurants and canteens, local governments have the responsibility of offering healthy and nutritious food.

Figure 1.

Overweight world prevalence



Source: FAO[12]

[10] WHO, 2009

[11] Forouzanfar et al. (2015) Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990– 2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet 5;386 (10010):2287–323.

[12] Gadient

Challenges and Opportunities

Cities must act together to tackle these global trends by promoting food systems that are inclusive and nutritious.

From 2016 to 2025, countries are committed to the UN Decade of Action on Nutrition aiming at undertaking ten years of sustained and coherent elaboration and implementation of policies and programmes in order to foster the progress towards sustainable food systems and food and nutrition security for all.

Just the increase of production is insufficient to achieve food security. The real problem is to address the physical and economic accessibility of groups and communities to nutritious and healthy food.

It is important to design urban food policies that are sensitive and inclusive in terms of access to food with a territorial perspective. Besides, there must be the encouragement of programmes such as social protection and school feeding focused on the most vulnerable groups and initiatives aiming at the redistribution of unsold food, such as food banks.

For the promotion of food and nutritional security, integrated action by governmental spheres and health professionals is crucial for actions that lead to better nutrition and health of the entire population, especially of the most vulnerable groups.

Understanding the structure and underlying causes of food insecurity are required to identify and prioritize actions to promote food security and nutrition and the right to adequate food for all. A central issue in the promotion of it is the presence of structures that allow governance actions that are capable of establishing policies and programs to guarantee it.

Considering a scenario of contemporary global, national and local changes, there are challenges for governance, such as: elaborating coherent action between the different sectors, both globally and locally; commitment of the parties involved; sufficient capacity and resource to perform such action; conflict of interest management and transparency of costs.

Municipal governance needs to be strengthened to articulate and share innovative resources and strategies to implement policies that promote healthy and sustainable food systems and qualify the living conditions of its citizens and future generations.

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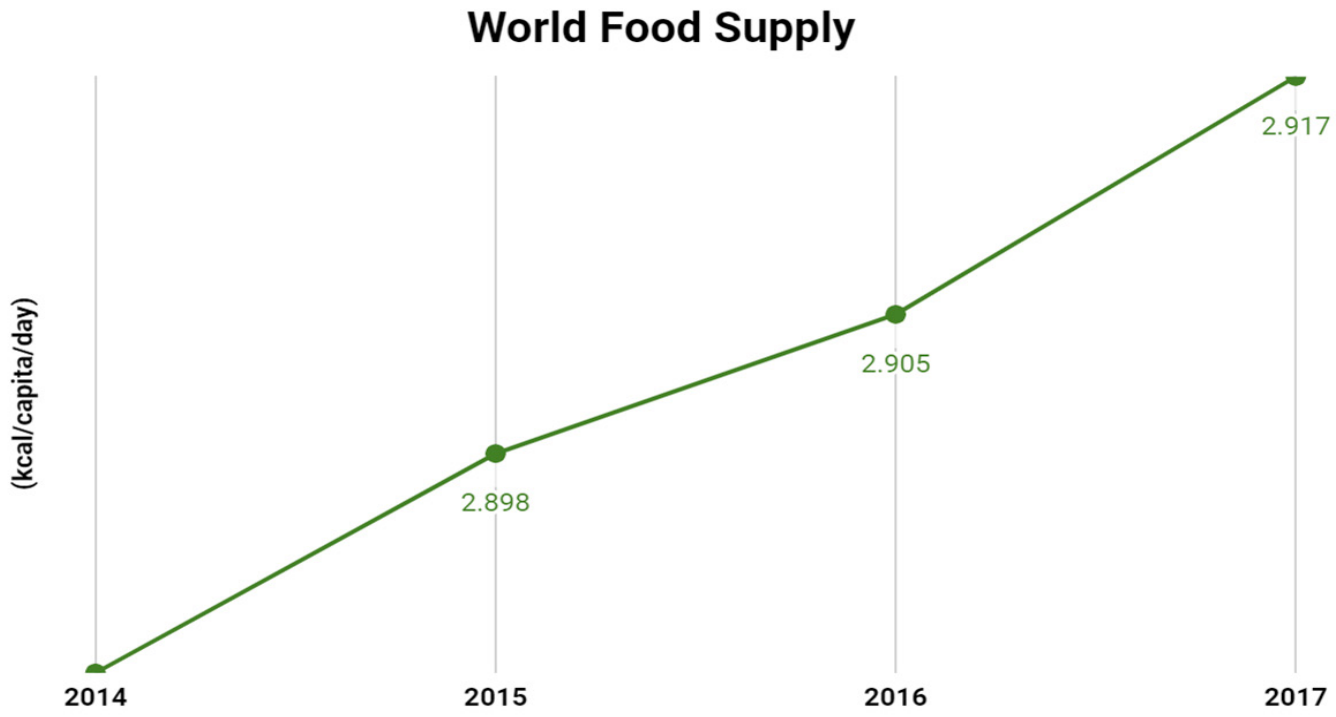
[13] UN. United Nations Decade of Action on Nutrition. More information at: <https://www.un.org/nutrition/home>.

Challenges and Opportunities

Table 3

New Food Balance - World Food Supply (kcal/capita/day) (2014-2017)



Source: FAO[14]

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[14] FAOSTAT. Available at: <*http://www.fao.org/faostat/en/#data/FBS/visualize*>.

Challenges and Opportunities

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When designing and implementing urban food policies, it is key to include regional produced food and take into consideration the cultural aspects of people's diet in order to promote a food system that is inclusive and regional-based. Different food cultures represent an important reality in the world and are interlinked with territorial contexts and peoples' mobility. Discussions around food systems may focus on whether – and how – food is an unifying element in local, national and regional contexts and food customs and traditions.

Cities must therefore strengthen urban and territorial food systems based on people's food identity, food culture and food traditions.

There is a need to report and monitor the state of food security and nutrition in cities and countries. Therefore, we encourage the use of indicators aiming at collecting data to better support policy decisions regarding food systems. The indicators related to the SDG 2 and the MUFPP indicators are a start to recognize strengths and weaknesses in urban food systems.

2. The rights of food workers

In 2050, the world rural population will reach 3.1 billion.[15] Agriculture is an important economic activity worldwide, especially in Latin American countries, as much of their land is used for cultivation. An interesting feature of the region is that about 70 percent of agricultural production comes from small and medium-sized farms, producing beans, potatoes, yams, corn, and cassava.

The United Nations designated 2019-2028 as the Decade of Family Farming in order to highlight the importance of family farmers production and its role in achieving zero hunger. FAO estimates that about 80 percent of the food in the world is produced by family farmers.[16]

According to FAO,[17] small family farms are more vulnerable and at greater risk of increased food insecurity and malnutrition. Despite the great advance in agricultural practices seen in recent years, which is reflected in crop growth, the effort has still been insufficient to bring about a real improvement in the social reality of small rural citizens. The challenges are settled mainly on environmental protection, social inclusion, and economic expansion.

[15] UN. 68% of the world population projected to live in urban areas by 2050, says UN. Available at: <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>.
[16] FAO. The State of Food Security and Nutrition in the World (2014). Available at: http://www.fao.org/3/a-i4040e.pdf
[17] FAO. The State of Food Security and Nutrition in the World (2018). Available at: <http://www.fao.org/3/i9553en/i9553en.pdf>.

Challenges and Opportunities

Local, regional and national governments must work to improve policies that are oriented to small farmers, especially women and youngsters, encouraging sustainable job creation and proximity markets, and assist them in managing risk and promote convenient access to markets .

Also, there must be efforts to increase investment in human resources together with policies for health, education and culture in rural areas, providing adequate conditions for workers and technical capacities. Equal social conditions and a more sustainable model of development in both urban and rural areas will decrease the inequalities and increase the attractiveness in working in rural regions, fostering the interest of youth in agriculture.

3. Women in agriculture

Despite being responsible for more than half of the food production worldwide, rural working women live under the situation of political and social inequality as they do not have equal access to the resources and opportunities to increase their productivity.

Data from the European Institute for Gender Equality shows that women farmers in the European Union have significantly smaller farms than men and the percentage of female labor on farms without clear specialization in animal husbandry or agricultural production is particularly high.[18] A FAO study on rural women in Latin America and the Caribbean observes less concentration of female-headed farms in territories with greater agricultural potential and detects greater difficulty for women in accessing technical assistance, training and agricultural credit.[19]

The inequality related to women land ownership has historically been related to factors such as male preference in inheritance, men's privileges in marriage, the tendency of men to favor the distribution of land by peasant and indigenous communities and also in state redistribution programs, as well as gender issues in the land market.[20]

In addition, the unpaid work of women from family farming is an invisible universe to the statistics and prevent them from receiving support, as many do not receive an income separate from their husband or other family members for agricultural work. In helping their husbands and other family farm workers, women don't have access to social rights such as social security and often do not have property rights to land or farms[21]. This disparity is aggravated by the overload of activities of women rural workers who, besides to agricultural work, due to a sexual division of labor, are also responsible for the care of children, the elderly, and the sick family members.[22]

[20] Ibdem 16
[21] Ibdem 15
[22] Miriam Nobre, Karla Hora and Claudia Brito, Soledad Parada. FAO.2017. Atlas de las mujeres rurales de America Latina y Caribe. Available at: http://www.fao.org/3/a-i7916s.pdf.
[23] United Nations. Registro de produção mostra importância das mulheres na agricultura familiar brasileira. Available at : https://nacoesunidas.org/registro-de-producao-mostra-importancia-das-mulheres-na-agricultura-familiar-brasileira/

Challenges and Opportunities

In Brazil, a simple idea has been adopted to increase the visibility of women's agricultural production. A four-column notebook where women from family farming register how much of their production is sold, distributed, exchanged or consumed has changed the way women and their partners value their production. The registration serves as proof to obtain a certificate of aptitude to the National Family Farming Strengthening Program that allows those women to benefit from financing programs for family farming and participate in a governmental program that purchases 30 percent of food from small family farms for school meals.[23]

To overcome inequality in access to land, gender-sensitive initiatives, such as shared ownership of farms and agricultural companies must be implemented. Many countries recognized the unequal gender situation and reformed their land laws, civil and family codes, approving laws that recognize equal rights between men and women, including property rights.[24]

Women's right to land ownership is directly related to food security. A study on rural domestic economics in rural Nicaragua and Honduras shows that families in which women have property rights over land spend more money on food than those in which women do not own: 5.5 percent more in Nicaragua and 2.5 percent more in Honduras.[25]

Inequities in social and political conditions of rural women workers must be taken into account in rural development policies and programs. In order to eliminate gender inequalities, it is necessary to implement work programs that meet the needs of women as rural producers as well as as rural family members.[26]

The traditional capitalist gender roles restrict women to domestic unpaid work, while men have access to paid productive activities, which guarantee their financial autonomy and, consequently, social power. Women's restriction on accessing financial and material resources, such as the uneven distribution of land mentioned above, is the main explanation for the gap in poverty between men and women. This gap is called feminization of poverty, a phenomenon in which women experience poverty at rates that are disproportionately high in comparison to men.

In this sense, as an effect of the feminization of poverty, women face greater challenges in accessing food with better nutritional quality, which translates into different forms of malnutrition, from the lack of micronutrients to the excess of weight. A World Bank document (2013) relates the low status of women in South Asia as an aggravating factor in the malnutrition of women and their children,[27] as they tend to spend more income and resources in food and health for the household[28]. Besides the lack of resources, the Panorama of Food and Nutrition Security in Latin America and Caribe,[29] 2018, points to cultural factors, such as overload of domestic work, responsibility for child care and difficulty in self-care, as unfavorable conditions for adequate nutrition, resulting in undernutrition as well as a higher prevalence of overweight and obesity in women.

[24] Ibdem 16
[25] FAO. FAO Regional Office for Latin America and the Caribbean. Más tierra para las mujeres, mayor seguridad alimentaria para todos. Available at: *http://www.fao.org/americas/noticias/ver/pt/c/320313/*
[26] Ibden 16
[27] Blumberg, L.R., Dewhurst, K. & Sen, S.G. 2013. Gender-inclusive nutrition activities in South Asia. Vol. 2. Lessons from global experiences. Washington, DC, World Bank. Available at: *http://documents.worldbank.org/curated/en/221411468302503628/pdf/710890v20REVIS0balExperiences0FINAL.pdf*
[28] FAO.2013. The State of Food and Agriculture,Available at: *http://www.fao.org/3/i3300e/i3300e.pdf*
[29] FAO, OPS, WFP y UNICEF. 2018.Food and Nutrition Security in Latin America and Caribe. Available at: *http://www.fao.org/3/CA2127ES/CA2127ES.pdf*

Challenges and Opportunities

Food security is also influenced by access to education, particularly that of women. Nutrition education can influence food choices, promote healthy eating and reduce social inequalities in diets. Good nutrition is crucial for the health and quality of life of women, and if they are mothers, the adequate consumption of nutrients is also important for the health of their children during pregnancy and breastfeeding.

To ensure food security for women, it is necessary to overcome the conditions that result in the feminisation of poverty and to adopt policies that provide education, productive resources and income for women, aiming at improving women's access to healthy food and providing autonomy over their food choices.

Case Study: Popular Restaurants in Rio de Janeiro

The Rio de Janeiro City Hall manages three Popular Restaurants that provide balanced meals, offering not just food security but also dignity for people in vulnerable situations. The meals include fresh and minimally processed food. Ultra-processed foods are forbidden.

In March 2020, the program reached the mark of 4 million meals served, proving the success of the program and showing that food safety practices have a strong impact on the quality of life and health. The popular restaurant provides a way out of food insecurity for the cost of R$ 0,50 (0,10 USD) per breakfast and R$ 2,00 (0,40 USD) per lunch. Together, all three restaurants serve daily 7.200 meals, from Monday to Friday.

Case Study: School feeding programme in Rio de Janeiro

With currently 641.564 students in the 1.542 public education units, the municipal education network of the City of Rio de Janeiro is one of the biggest in Latin America at a local level. School feeding is a right for every student of the basic education system and is provided twice a day with no fee.

The Annes Dias Institute of Nutrition, responsible for the technical coordination of Rio de Janeiro's food policy, elaborates an especial menu for the students based on their nutrition needs, specially envisioning their development process and attentive to their health conditions and food intolerances. The menu is also designed according to the local food identities and without processed food.

These meals are prepared inside the schools and some of them also dispose of a green garden which grows fruits and vegetables that will be used to feed the students and serves as a way to teach children the importance of agriculture, healthy habits and balanced meals.

[30] Ibdem 25.Blumberg, L.R., Dewhurst, K. & Sen, S.G. 2013. Gender-inclusive nutrition activities in South Asia. Vol. 2. Lessons from global experiences. Washington, DC, World Bank.
[31] Ibdem 28

Challenges and Opportunities

4. Climate impacts of food systems

According to the United Nations, 55 percent of the world's population lived in urban areas in 2019. However, cities represent more than 70 percent of greenhouse gases (GHG) emissions. As the center of greenhouse gas emissions, urban areas have the potential to adopt high impact mitigating measures for climate change. In this context, sustainable urban agriculture offers solutions to these challenges, creating resilient environments.[32]

The biggest source of urban consumption-based greenhouse gas emission comes from food, 13 percent of the total. A C40 study shows that the use of rural lands, agricultural and livestock production are the origins of the majority of these emissions, accounting 60 percent, 16 percent of the food emissions are related to electricity-use, 9 percent relate to fossil-fuel production and 5 percent to the transportation of food. The study also points out that the consumption of animal-based food represents roughly 75 percent of food-related emissions, versus 25 percent from plant-based foods. Therefore, dietary shifts are decisive for reducing emissions.[33]

Livestock production has weighty environmental impacts throughout its supply chain, from production to processing and retail. Taking cattle production for instance,, the feed processing represents 45 percent of the sector's emissions and enteric fermentation of ruminants accounts for 39 percent. Manure storage and processing generate 10 percent of its emission and the rest is attributable to the processing and transportation of products of animal origin. It is important to highlight that the expansion of pastures and food for forests is responsible for about 9 percent of the sector's emissions.[34]

Aiming at generating globally agreed scientific goals for healthy diets and sustainable food production, in order to feed 10 million planet inhabitants projected for 2050, the 37 leading scientists from 16 countries convened by EAT-Lancet Commission recommended more than doubling the consumption of healthy foods such as fruits, vegetables, legumes and nuts, and a greater than 50 percent reduction in global consumption of less healthy foods such as added sugars and red meat.

However, considering the reality faced by some populations dependent on agro-pastoral livelihoods and animal protein from livestock, besides those who face the significant burdens of undernutrition and have difficulties to obtaining adequate quantities of micronutrients from plant source foods[35], The Food and Agriculture Organization of the United Nations endorses efficient practices of livestock production to reduce emissions.

[32] Marielle Dubbeling, René van Veenhuizen and Jess Halliday (2019). Urban agriculture as a climate change and disaster risk reduction strategy. Urban Agriculture: Another Way to Feed Cities. Special Issue 20 | 2019. Electronic version p. 32-39. Available at: *<http://journals.openedition.org/factsreports/5650>.*

[33] C40. In Focus: Addressing food-related consumption-based emissions in C40 Cities. Available at: *<https://www.c40knowledgehub.org/s/article/In-Focus-Addressing-food-related-consumption-based-emissions-in-C40-Cities?language=en_US>.*

[34] FAO. 2013. Tackling climate change through livestock. A global assessment of emissions and mitigation opportunities. Available at: *http://www.fao.org/3/i3437e/i3437e.p*

[35] The EAT-Lancet Commission. Healthy Diets From Sustainable Food Systems Food Planet Health. Available at: *https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf*

Challenges and Opportunities

Based on technologies and practices that improve production efficiency at animal and livestock levels, measures to scale down the GHG emissions include, for example, the use of better quality food and balancing food to reduce enteric and manure emissions. Another recommended practice is to reduce emissions of methane resulting from the manure by developing renewable energy production and investing in anaerobic digesters for the production of biogas. Regarding deforestation caused by illegal agricultural expansion, a study from Climate Policy Initiative shows that the monitoring via satellite combined with law enforcement proved to be effective in the fight against the deforestation caused by agricultural practices in the Brazilian Amazon Forest.

Alerts issue via satellites which identify deforested areas, followed by the prompt response from the Brazilian Institute of Environment and Renewable Natural Resources and other inspection agencies, prevented the loss of 27,000 km of forests per year, from 2007 to 2016 which avoided the annual emission of 1 billion tons of CO. The Real-Time Deforestation Detection System was the first of its kind to be used for monitoring vegetation over such a vast geographical area and it is a solution that can be used around the world to prevent deforestation, without jeopardizing legal livestock production.

Climate change and climate-related disasters represent one of the main challenges for urban areas. According to IPCC (2018), human activities have caused approximately 1.0°C of global warming above pre-industrial levels and, within the next ten to thirty years, it is likely to reach 1.5°C. The rise of the global average temperature entails several environmental hazards, such as heavy rains, floods, landslides, forest fires and droughts, threatening the environment, food production, and, directly or indirectly, human life.

In order to avoid the adverse effects of climate change, cities must adopt resilient food systems, which is, systems with the capacity to provide, over time, healthy, sustainable food, even in the face of chronic tensions, natural disasters, and unforeseen events. In this sense, the sustainable urban agriculture plays an important role in the resilience of the food system regarding the effects of climate changes as it increases rainwater infiltration, enhances carbon sequestration, reduces the use of fertilizer and energy consumption by productive reuse of urban organic waste, mitigates urban heat island effect by increasing the surface of green areas, and reduces food “miles” by producing fresh food close to urban markets.

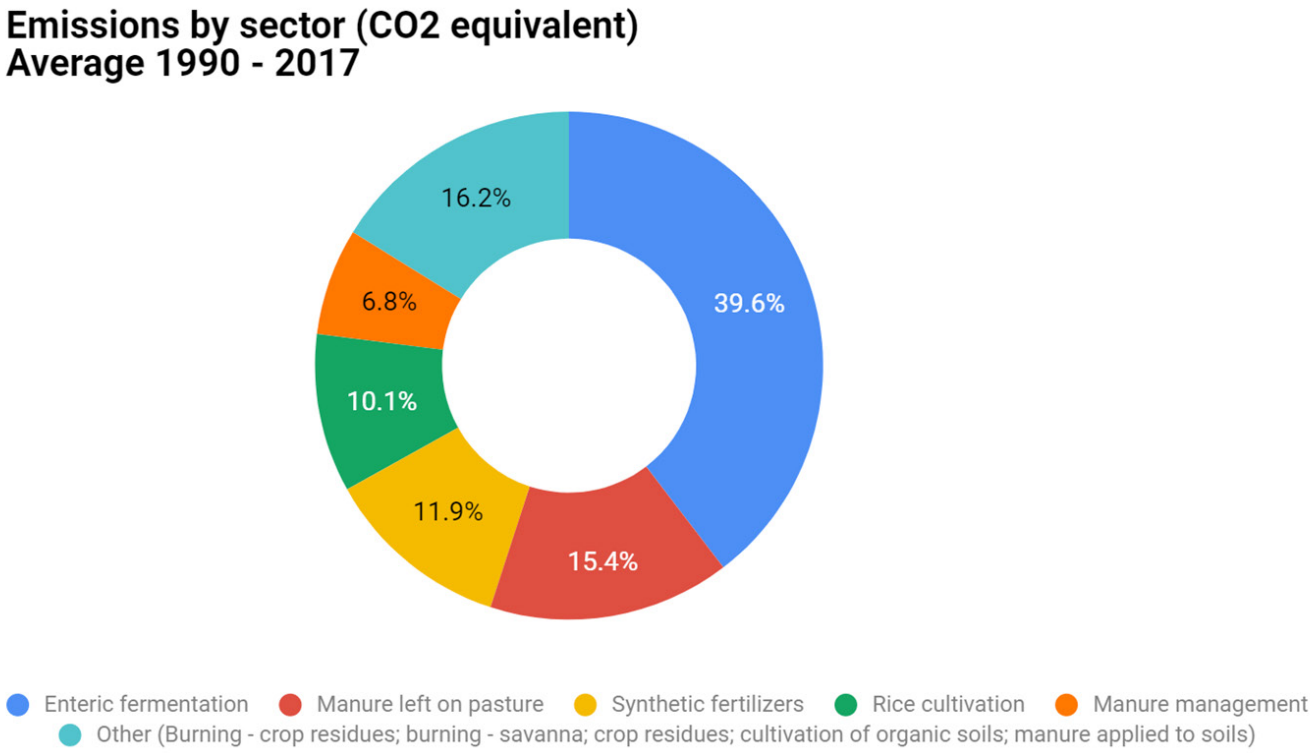
Resilient urban food systems must claim the sustainable use of natural resources taking into consideration the diversity of conditions and the possible impact of climate change and natural disasters.

[36] Assunção J. and Gandour C.2019. Brazil knows what to do to fight deforestation in the Amazon. Climate Policy Initiative. Available at: *https://climatepolicyinitiative.org/publication/brazil-knows-what-to-do-to-fight-deforestation-in-the-amazon/*
[37] IPCC (2018). Global warming of 1.5°C. Available at: *<https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf>*.
[38] Marielle Dubbeling, René van Veenhuizen and Jess Halliday (2019). Urban agriculture as a climate change and disaster risk reduction strategy. Urban Agriculture: Another Way to Feed Cities. Special Issue 20 | 2019. Electronic version p. 32-39. Available at: *<http://journals.openedition.org/factsreports/5650>*.

Challenges and Opportunities

Table 2

Emissions by sector (CO2 equivalent) Average (1990-2017)



Source: FAO[39]

Administrations must commit themselves to the diffusion of programs for the re-naturalisation of urbanized areas: reforestation, brownfield regeneration, and the development of policies aimed at limiting soil consumption. These concepts must underpin the development of urban policies and urban regeneration projects as the landscape is a fundamental resource.

Reducing food loss and waste, decreasing the distance between producers and consumers and using sustainable techniques in agriculture can have a direct impact in the environment, helping to mitigate climate impacts of food systems.

[39] FAOSTAT. Available at: <http://www.fao.org/faostat/en/#data>.

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There are already pressures on land use and water due to climate change, like extreme weather conditions and change on fish migration patterns, and it may affect agriculture productivity if central and local governments do not support farmholders to adapt its techniques and protocols to sustainable ones.

Consumers must do their part too by choosing to consume healthier food, avoiding processed food, and verifying the origin of the products consumed.

Urban Agriculture

Urban agriculture can be defined as 1) food and fuel grown within urban areas, typically processed and marketed by farmers for the marketplace40 or 2) the means of production, processing and distribution of food within urban confines for feeding local populations.[41] [42] Urban agriculture includes backyard gardening, pot culture, rooftops, and small pieces of land for growing food and raising livestock. This broad definition allows for multiple actors to be considered, from households, to schools and small-scale farmers.[43]

Case Study: Rooftop gardens in Durban, Johannesburg and Cape Town

In South Africa, urban land use planning has started to incorporate urban farming strategies in the last two decades. In Cape Town, the Urban Agricultural Policy of 2006, facilitates the integration of urban agriculture into future development planning.[44] In Johannesburg, the Urban Agriculture Initiative has facilitated rooftop farms on numerous buildings in the city, through partnerships between government, property owners and farmers.[45] In addition to the production of a variety of vegetables and herbs, these 'farms in the sky' have provided numerous jobs, training and skills development. Durban has facilitated the regeneration of public inner-city spaces as food gardens. The rooftop farm in Durban's Urban Management Zone grows a variety of vegetables and plants, and host visitors from schools and garden clubs. This farm was showcased during COP17, when the city hosted the conference. These policy initiatives have largely been aimed at increasing food security for the urban poor, but have resulted in numerous additional benefits of increasing biodiversity, climate mitigation, education and opportunities forincreased social cohesion.

[40] Anastasiou, A.; De Valenca, A.; Amare, E.; De Oca, G.M.; Widyaningrum, I.; Bokhorst, K.; Liu, S. The Role of Urban Agriculture in Urban Organic Waste Management in the Hague, The Netherlands. Master's Thesis, Wageningen University, Wageningen, The Netherlands, 2014

[41] Van Veenhuizen, R. Cities Farming for the Future: Urban Agriculture for Green and Productive Cities; IDRC/RUAF: Ottawa, ON, Canada, 2006.

[42] Menyuka, N.N., Sibanda, M., Bob, U., 2020. Perceptions of the challenges and opportunities of utilising organic waste through urban agriculture in the durban south basin. Int. J. Environ. Res. Public Health 17. *https://doi.org/10.3390/ijerph17041158*

[43] Calfee, C.; Weissman, E. Permission to transition: Zoning and the transition movement. Plan. Environ. Law. 2012, 64, 3–10.)

[44] *https://ubwp.buffalo.edu/foodlab/wp-content/uploads/sites/68/2019/03/Urban-Agricultural-Policy-for-the-City-of-Cape-Town-approved-on-07-December-2006-Cape-Town-South-Africa.pdf*

[45] *https://www.jicp.org.za/urban-agriculture-initiative/*

[46] *http://www.iolproperty.co.za/roller/news/entry/a_sustainable_urban_oasis_on*

Challenges and Opportunities

Case Study: RU-URBAN: Urban agriculture for resilient cities, Rome

Rome has an agricultural area of 57,948 hectares (equal to about half of the total 128,530 hectares of its territory) and is home to about 2,656 farms, many established networks of distribution and sustainable and conscious consumption, many are engaged in activities aimed at reducing food waste. The Municipality manages 19 farms and owns three of them: Castel di Guido, Tenuta del Cavaliere/Tor San Giovanni, and Tenuta Città del Pieve, for a total of over 2,300 hectares of agricultural land. The strategic plans of the Municipality address the management, enhancement and renaturation of green areas.

Case Study: The farms present on the territory of Rome

The authorization is issued for traditional agricultural activities such as crops, animal husbandry, fish farming and forestry; and related activities such as agritourism, processing and direct sale of products, tasting of typical products, cultural activities, educational, social, recreational and therapeutic rehabilitation; handling, conservation, processing, marketing and valorisation of the products obtained from the cultivation of the land, the forest or from the breeding of animals; supply of goods and services linked to the valorisation of the territory and of the rural and forestry heritage; accommodation and rural tourism; reception and assistance of animals.

Within the city there is a very extensive network of urban gardens that includes more than 150 gardens, shared gardens and "spot gardens" created and managed by citizens and associations who are personally responsible for their creation and/or management.

RU-URBAN Is a network built upon the "Management model of Urban gardens in Rome" Good Practice, in order to transfer to cities from the European Union geographically distant from each other to ensure sharing of experiences to enhance the capacities of local governance. Transfer efforts will be given to 3 distinct, interlinked, thematic components/elements that the Good Practice is divided into: Capacity building in organizing urban gardens, Inspiring and training people to manage urban gardens (Gardeners) and urban gardens governance & regulations.

[47] More information available at: <https://urbact.eu/rurban>.

Challenges and Opportunities

Case Study: The Urban Natural Park, Strasbourg

The Urban Natural Park experience works under a trust-based, participatory system where the land is taken over, transformed, and animated by volunteers. The method consists of bringing inhabitants and local stakeholders together to identify the spaces to be protected, the practices to be transformed, and the projects to be materialized. It is therefore a question of carrying out a shared diagnosis, followed by a shared project translated into a proposal, and then an action program. In the end, a charter will be proposed to the Mayor and to the partners so that everyone can get involved and identify the actions they wish to contribute.

The participatory method brings out a collective intelligence. It leads to promoting innovative actions in favor of biodiversity, the revegetation of tree stems, the development of shared gardens, collective urban vegetable gardens, collective orchards, the creation of an urban farm project, etc. It is not only a question of managing and enhancing green or natural spaces apart from urbanized districts, but of creating an ecosystem favorable to nature, to the city, and to its inhabitants.

Since 2008, Strasbourg has been working to boost urban gardening. The city of Strasbourg encourages local people to do gardening and proposes 4758 allotment gardens, 32 shared gardens, 77 collective urban vegetable patches and gardens in primary schools.

During the first period of time dedicated to the Ill-Bruche area, the development of the neighbourhood entrance was co-constructed with the stakeholders based on the guidelines of the NUP White Paper. A garden park was created with new public spaces and 5 shared gardens. A 17 acre meadow, close to a refurbished area has been transformed into a playful and demonstrative space: a plant area fitted out with benches, wooden hut, chestnut tree folds, wickerwork.

Participatory workcamps were proposed to learn how to build fences and plant structures favourable to biodiversity: planting of shrubs to be braided and a fruit hedge. On this territory, the Association “Jardins de la Montagne Verte” welcomes people returning to work by training them in market gardening activities and maintenance of green spaces.

The second NUP Charter (2019-2023) increased the surface area of the Urban Natural Park by 2043 ha. Within the frame of a respectful development of the territory, it aims to promote urban agriculture and the city-nature interface.

Challenges and Opportunities

Case Study: The Urban Natural Park, Strasbourg

The action programme promotes new social and solidarity economy activities, the creation of an urban farm, the establishment of eco-grazing, as well as gardening and market gardening for the inhabitants.

In the Ill-Rhine area, the objective for the next years is to:

- Update the conditions for the success of urban agriculture (particularly market gardening), limiting the damage to biodiversity;
- Support farmers and market gardeners to facilitate their recognition by the inhabitants and encourage environmentally friendly practices;
- Continue to support the evolution of gardeners' practices towards respect for biodiversity;
- Continue to develop the dynamics of shared gardens, the greening of public or private spaces, and composting.

The NUP provides a structuring and global approach of the territory fabric in coherence with the Local Plan of Inter-Communal Urbanism to allow an articulation between the strong dynamic of urban development and the requirement of climate change and adaptation.

This methodology makes it possible to enhance a territory by putting its heritage elements and its inhabitants' needs into perspective. It is particularly suited to the outskirts of cities when the center generally draws all the attention. It brings to building a short distance city or a 5 mn city, taking into account the inhabitants' time in the city's construction. It moves for a cross-cutting approach within the framework of the United Nations' Sustainable Development Goals, tackling several SDGs. [48]

[48] For more information : *https://www.strasbourg.eu/parc-naturel-urbain*

Challenges and Opportunities

Case Study: Urban Green Gardens in Rio de Janeiro

Created in 2006, Hortas Cariocas (Urban Green Gardens) encourages urban agroecology and provides access to healthy food in the city's most vulnerable regions. By identifying areas with the potential to hold urban farms, the project offers local population the inputs and material supplies to develop organic agriculture while also fostering environmental education. . There are currently 42 urban farms: 18 located in municipal schools and 24 in vulnerable communities. About 80 tons of food are produced yearly without the use of fertilizers, agrochemicals or pesticides, benefiting more than 20 thousand inhabitants.

In the urban farms located at schools, the agricultural practice shows students the importance of agroecology, the process of food production and the need to have a balanced and healthy diet. All the food produced is used to complement the children's diet during school meals.

In vulnerable communities, Rio encourages urban farms by offering a monthly remuneration to those responsible for food production. Half of the food produced is distributed among inhabitants, public schools, and elderly daycare centers and the other half can be sold to generate additional income for the urban farmers and to purchase agriculture supplies.

This initiative fosters the agriculture potential in poor communities; disseminates sustainable agriculture principles; strengthens the sustainable occupation of underutilized lands; produces organic vegetables, and sells the surplus through street fairs. [49]

5. Biodiversity and ecosystem services for food systems

Natural resources underpin food systems and influence food and nutrition security.[50] For agriculture to be sustainable, natural resources must be managed appropriately.[51] Ecosystem services are critical for agricultural production, through provisioning and regulating services of water supply, pollination of crops, soil formation, pest and climate control, and cultural services related to indigenous knowledge of food production, amongst others. However, agriculture can have negative impacts on biodiversity and ecosystem services through direct modifications of biota: predators, pests and parasites of domestic species; indirect changes to biogeochemical and hydrological cycles; and changes to the habitats of native species. [52]

A study in Durban highlighted the potential for policy action to avoid impacts on ecosystem services from spatial planning proposals, related to future agricultural areas.[53]

[50] Pinstrup-Andersen, P. 2013. Nutrition-sensitive food systems: from rhetoric to action. Lancet, 382(9890): 375– 376. http://dx.doi.org/10.1016/S0140-6736(13)61053-3

[51] HLPE. 2017. Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

[52] Baudron F, Giller KE. 2014. Agriculture and nature: trouble and strife? Biological Conservation 170:232–245 DOI 10.1016/j.biocon.2013.12.009.

[53] Davids, R., Rouget, M., Boon, R., Roberts, D., 2018. Spatial analyses of threats to ecosystem service hotspots in Greater Durban , South Africa 1–25. *https://doi.org/10.7717/peerj.5723*

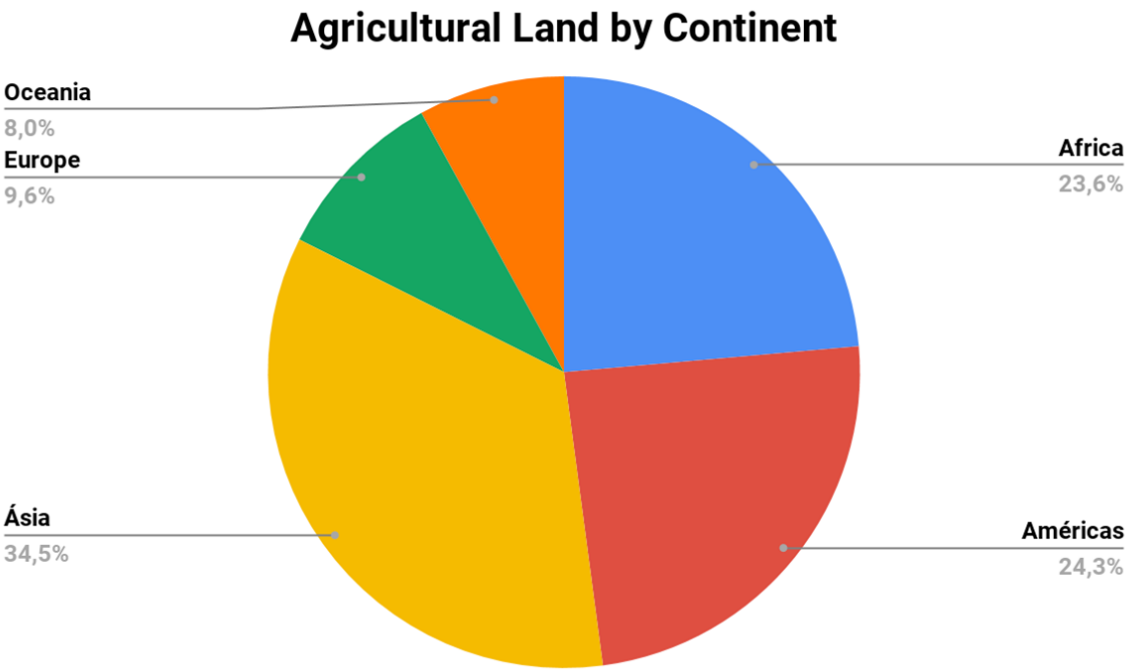
Challenges and Opportunities

6. A green and circular economy for food

The G20 accounts for about 65 percent of all agricultural land. Agricultural activity is fundamental not only for the production of food but also for its contribution to designing the landscape, protecting the environment and the territory and preserving biodiversity.

Table 4

Agricultural Land by Continent



Source: FAO[54]

[54] FAOSTAT. Available at: <http://www.fao.org/faostat/en/#data/RL/visualize>.

Challenges and Opportunities

The development of a correct balance between production and consumption introduces effects of circular economy and construction of alternative and innovative economy networks.

The promotion of food-saving strategies in cities, metropolises, and regions is essential in the development of solutions incrementing environmental, social and economic resiliency. Food saving strategies, aims to tackle food loss and waste by finding a use for food surplus. Access to big data and quantitative inputs about situations of surplus food is primordial to ensure a repartition in the areas of territory where it's needed, rather than incrementing food waste. Close cooperation between all government levels and partnerships with the private sector and NGOs can help food-savings strategies to be easily and quickly promoted and implemented throughout a territory.

About 14 percent of food produced worldwide is lost before reaching markets and consumers.[55] This number has impacts on the price of food and the amount of food at disposal for consumers, decreasing the efficiency of food systems in terms of food security and sustainability.

The loss of food is major due to climate impacts, practices applied in the agriculture procedures, markets dynamics, transportation, packaging and the need for food products to meet aesthetic standards. Reducing it can surely generate economic benefits.

Cities and countries must gather information on where exactly food is lost and provide alternatives to this figure. An important suggestion is to assimilate policies and indicators to SDG Target 12.3.

Case Study: Food production to meet the demand for school canteens, Rome

By 2030 all countries, companies, municipalities must work towards achieving the Sustainable Development Goals (SDGs) adopted by the United Nations in September 2015. The Roman model based at the adoption of biological criteria in school canteens, ecological systems for the separation of waste, research into the seasonality and quality of products, methods for short-range transport, which guarantee the freshness of food and lower environmental impact, can be part of best practices of sustainable development to be shared and studied.

7. Strengthening Urban-rural linkages

The flow of people, goods and services, including the flow of food and its delivery services, are interdependent and interwoven between urban, peri-urban and rural locations.[56] The process of urbanization and the development of rural locations and practices must be addressed together in order to be mutually reinforced and through an integrated planning across the urban-rural continuum to ensure that no one and no place is left behind.

[55] FAO. The State of Food and Agriculture (2019). Available at: <http://www.fao.org/state-of-food-agriculture/en/>.
[56] UN-HABITAT. Urban-rural linkages: Guiding principles (2019).

Challenges and Opportunities

A key element to strengthen the linkages between urban and rural areas is to invest in connective elements and infrastructure to build inclusive and functioning territories. This requires a set of integrated governance structures and an environment-sensitive approach.

Local governments can adapt to this approach by promoting actions that dialogue with metropolitan, intermediary cities, and rural surrounding areas, enhancing the participation of rural and urban actors in the design and implementation of plans and projects. Important partnerships and networks of rural and urban actors can also promote a local-based strategy to tackle economic, social and environmental challenges and reaffirm essential rights like the right to food, health and housing.

It is essential to reaffirm coherent and harmonized norms taking into consideration the urban dimension of rural policies and the rural dimensions of urban policies. Plans, projects and interventions must promote the interlink between rural and urban regions, and not separating it or considering it two different and apart structures. Cities must reassure that their policies are integrative, functional and cross-sectorial, overcoming potential spatial gaps.

Food, agriculture and water systems can work as an interlink mechanism for urban and rural areas, unifying its frameworks for action. Food systems must therefore be linked with the sustainable, economic and inclusive use of lands, enable regional and seasonal production and raise awareness of rural livelihoods.

Case Study: Food Security Policies and Fighting Food Waste, São Paulo

The fight against food waste and the promotion of food security have been an important concern for the city of São Paulo. In 2018, the city generated 5.68 million tons of Municipal Solid Waste from mailing household waste and urban cleaning services, of which about 50 percent is related to organic waste. One of the biggest challenges in the city is to guarantee the adequate disposal for 2.84 million tons of organic waste.

Through the Coordination of Food and Nutritional Security of the Secretariat for Economic Development and Labor and the projects led by the Municipal Authority for Urban Cleaning (Amlurb) , the city has been fighting hunger with a healthy diet, promoting waste collection, generating work and promoting environmental sustainability.

Launched in December 2015, the Program “Fairs and Sustainable Gardens” (Feiras e Jardins Sustentáveis), is an initiative of the Municipal Authority for Urban Cleaning (Amlurb) that offers environmentally appropriate treatment for the remains of organic waste from free markets in the capital.

Challenges and Opportunities

Their environmental education teams do the orientation work with the marketers to leave the remains of fruits, vegetables and vegetables that would go to waste, disposed of in bags from the City Hall. At the end of the fair, cleaning agents pass to collect this material and send it to the composting yards. These residues are mixed with pruning remains of chopped tree and straw. After that, they are disposed of in beds where the composting process takes place, around 120 days. Finally, these residues are transformed into quality organic compost, distributed free of charge to the population.

São Paulo has five municipal composting yards (Pátios de Compostagem) and its units have the capacity to receive up to three thousand tons of waste per year and process up to 600 tons of compost in the same period. The compost generated in the yards is used as an input in gardens and public squares, generating significant economic and environmental gains for the municipality, besides avoiding the dumping of more volume in landfills, reducing the displacement of trucks and emissions of carbon dioxide to the environment.

Since the beginning of the Sustainable Gardens and Fairs project, with the launch of “Lapa Yard” (Pátio Lapa), which has the capacity to receive 60 tons / week of waste, São Paulo has stopped sending about 3,900 tons of organic waste to landfills. , transforming them into 624 tons of high quality compost.

Another important initiative is the Municipal Program to Combat Food Waste and Lossa instituted in July 2019. It aims to collect fruits and vegetables that would be discarded, but are in good condition for consumption, and donate to institutions that serve people who are in a situation of food insecurity. In this program, 200 job vacancies were also created for people responsible for the collection, selection and sorting of food, who are in a situation of socioeconomic vulnerability, victims of domestic or family violence. In addition, training was offered through qualification courses on good practices in food handling, permaculture and socio-emotional monitoring.

The donated food is destined to the Municipal Food Bank. The food Bank aims to acquire foods that are outside the standards of commercialization, but without restrictions of a sanitary nature for consumption, coming from family farming, food industries, retail chains and wholesalers. These foods are donated to assistance entities, previously registered in the program, thus contributing to the fight against hunger and food waste. In return, the entities participated in training and food and nutrition education activities.

One of the great challenges to be faced by Latin American cities is to establish a sustainable relationship between urban and rural areas. São Paulo was the winner of the Mayors Challenge 2016 award, promoted by Bloomberg Philanthropies with the project "Connect the dots". The organization awarded innovative public policy initiatives in cities in Latin America and the Caribbean.

Challenges and Opportunities

Connect the Dots main goal is promoting the socio-environmental sustainability of the rural territory in the southern area of the city of São Paulo through strengthening the value chain of local agriculture with the use of technology as a tool for integration and coordination between initiatives and stakeholders associated with the public sector and civil society. Thus, the project is structured in three axes:

- Strengthening Agriculture: offering technical assistance and rural extension to all farmers in the Southern Rural Zone, regardless of the type of production.
- Value Chain: strengthening access to markets and encouraging new businesses related to agriculture and the food chain inside and outside the property.
- Data and Evidence: collecting data on rural areas and agriculture of São Paulo to support the formulation of public policies

Currently, about 400 families occupy 50 km² of arable land. However, urban sprawl still threatens an area equivalent to 2.5 times the area of Manhattan. By linking the dots in the local agriculture value chain, making a cost-effective production, farmers are encouraged to stay on their land and even expand their production. By connecting the productive potential of the rural territory to the dynamics of the largest brazilian urban economy, São Paulo creates sustainable bonds. By encouraging a consistent green economy, the city prevents cultivable areas from being occupied by urbanization and city's water security from being jeopardized.

Together with London and New York, Sao Paulo was selected to take part in the Ellen MacArthur Foundation's Food Initiative of Circular Economy for Food, an affiliate project of the World Economic Forum's Platform for Accelerating the Circular Economy (PACE). Within this program, since 2019, Sao Paulo is addressing a variety of sustainability issues, including disordered urban growth, food insecurity, and disposal of organic waste. To deal with these issues systematically, the municipal government has an overall objective to support regenerative food production. It has begun with a broad stakeholder engagement process by establishing five working groups, each attacking a set of problems. They are:

1. Large generators with a focus on upcycling and composting;
2. digital approaches inclusive of connecting large generators with treatment centers and monitoring;
3. co-production of a recovery center(s) with mixed technologies for compost, energy, biogas and bio fertilizers;
4. restaurant collection system for redistribution and recovery;
5. circular economy restaurants/chefs to develop seasonal menus with local foods and combat waste.

With technical support from the Ellen MacArthur Foundation, the city of Sao Paulo will work to develop large-scale circular economy food solutions. The multi-year project is part of Ellen MacArthur's Food Initiative project that seeks to reach a global transition towards a regenerative food system based on the principles of circular economy.

Challenges and Opportunities

Finally, it is key to highlight the Municipal Plan for Agroecology and Sustainable and Solidary Rural Development. Its main goal is to seek the union of various existing public policies that address this theme, integrating and improving the set of actions for the promotion of food and nutritional security, food sovereignty, strategic territorial development in the perspective of the rural area and urban agriculture and the human right to adequate food.

It has 17 thematic axes that propose actions to be applied by the government for the next eight years, encouraging the sustainability of territorial development integrated with the conservation of natural resources. The thematic axes of the Rural Plan point to a series of objectives aimed at basic sanitation; tourism; culture; security and inspection; health and protection; indigenous population, youth and women; environmental conservation; teaching and education; urban agriculture; income generation; regularization; among others.

8. Food systems resilient towards economic, social, and health crises

8.1 Sanitary Crises

Updated numbers from FAO show that 75 percent of recently emerging infectious diseases affecting humans are of animal origin and 60 percent percent of all human pathogens are zoonotic.[57] These data are explained by human and livestock population growth, changes in livestock production, the emergence of worldwide agro-food networks, wild animal trade, and significant changes in personal mobility.[58]

In order to satisfy this higher demand for meat products, livestock production and densities have significantly increased. Industrial systems are characterized by large numbers of animals of similar genotype being raised, mostly in confinement, with rapid population turnover at a single site. The breeding conditions increases the likelihood of transfer of pathogens within and between these populations, with consequent impacts on rates of pathogen evolution. In addition, part of the waste produced by the confined animals, which may contain large quantities of pathogens, is disposed of on land, posing an infection risk for wild mammals or avians.[59] On the other hand, climate change and greater personal mobility is altering patterns of livestock disease incidence, as pathogens and the insects and other vectors that carry them enter new ecological zones.[60]

Humans can be contaminated by pathogens through direct ingestion of contaminated animals, by ingestion of intermediate hosts or even through direct transmission by evolved pathogenic agents able to latch on to human cells. In recent history, there have been several epidemics stemming from animal sources such as the H1N1 influenza virus, the H7N9 bird flu and the ongoing Covid-19 virus, which the origin of transmission to humans is still unknown.

[57] FAO. FAO and emergencies, helping to build a world without hunger. Online. Available at: <http://www.fao.org/emergencies/en/>.
[58] J. Otte, D. Roland-Holst at al. Industrial Livestock Production and Global Health Risks (2007). Available at: <http://www.fao.org/3/a-bp285e.pdf>.
[59] FAO. FAO and emergencies, helping to build a world without hunger. Online. Available at: <http://www.fao.org/emergencies/en/>.
[60] J. Otte, D. Roland-Holst at al. Industrial Livestock Production and Global Health Risks (2007). Available at: <http://www.fao.org/3/a-bp285e.pdf>.

Challenges and Opportunities

Measures for reducing risks from livestock diseases include the promotion of sustainable animal breeding, in which biological diversity and space availability are stimulated. The strengthening animal-health and food safety systems, including information and the engagement of all stakeholders adapted to specific local circumstances are equally important. Considering the cross-border nature of these diseases, the international cooperation is essential to avoid the rapid spread and evolution through the collaboration between, local, regional, national and international animal-health and food-safety authorities. [61]

8.2 Economic crisis

The economic crisis that affected global food prices demonstrated the excessive volatility and its negative impacts on access and production of food. In order to address this challenge and decrease the risks for economies and food producers from the G20 countries, the group advocated for the Action Plan of Food Price Volatility and Agriculture Plan, aiming at putting in practice measures to increase investments, disseminate market information, coordinate policies and mitigate risks management

It is notable that economic policies play an important role in addressing the productivity and accessibilities of food and governments at all levels should work to precipitate the turmoil in global food markets in order to mitigate its impact.

We have seen the impacts of the 2007-2008 crisis on the increase of food prices and, consequently, disrupting the accessibility to food, especially for the most vulnerable groups in the society. Therefore, we must join efforts to prevent similar situations in the near future.

8.3 Social Crises

Food insecurity is also interlinked to conflict and violence. The current 19 countries that FAO considers as in a protracted crisis - with a significant proportion of the population acutely vulnerable to hunger, disease and disruptions to livelihoods over prolonged periods, is also facing experienced violent conflict over prolonged periods of time.[62] Food insecurity is not only a consequence of conflict but also a cause of it.

Access to land and natural resources for economic activities and the increase of food price are commonly an indirect and direct causes of conflict. And, ending up in a vicious cycle, conflict disrupts local economies and increases food prices, impulses forced migration consequently risking land tenure and agriculture, and collapses social protection systems.

[61] FAO. World Livestock 2013 Changing disease landscape. Available at: <http://www.fao.org/3/i3440e/i3440e.pdf>.
[62] FAO. Resilience in Protracted Crises. Available at: <http://www.fao.org/policy-support/policy-themes/resilience-protracted-crises/en/>.

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8.4 The COVID-19 pandemic

As stated by FAO Director-General, the COVID-19 pandemic is also a threat to global food security and "[p]reserving access to safe food and nutrition is an essential part of the health response".[63] Pegged as having the potential to spark an African food security crisis, COVID-19 responses require innovations to reduce the predicted decline of agricultural production of between 2,6 – 7 percent and the array humanitarian impacts that have emerged. The effects of the coronavirus lockdown on informal traders in sub-Saharan Africa has been devastating, as majority of African urbanites not only earn their living in informal markets, and also access their main source of food there.[64] The food crisis borne from COVID-19 have highlighted the issue of food access, rather than shortage, and malnourishment rather than hunger, raising the importance of diverse forms of food procurement and productions, including small-scale agro-forestry, foraging and gardening.[65]

The Covid-19 pandemic impacts deeply the way people access food and the measures taken to respond to the spread of the virus could generate a food crisis. In order to reinforce physical distancing in some cities, local and street markets have been shut down and small farmers are facing difficulties to transport their product into city markets. The market disruption impacts the price and accessibility of food, overcharging the difficult economical condition that a lot of vulnerable groups are now facing. The lack of transparency in the decision-making of public measures and fake news about disponibility of food may have a strong impact and generate stockpiling and panic purchases that must be discouraged.

There is a need to highlight that there is no evidence that the new coronavirus can be transmitted by food or food-producing animals,[66] though personal hygiene and the cleaning of all equipment, tools and surfaces are critical. Therefore, there is no need to restrict food-export/import and increase the dangers of the Covid-19 pandemic into food security and food supply chains. Countries that strongly rely on food imports could be directly impacted and experience a collapse of food access, as exemplified by the 2007-2008 food crisis.

This movement is also seen on the local level by imposing lockdown in cities. There is a need to consider agriculture and food-supply activities as essentials to daily routine so the restriction of movement do not hinder food-related logistic services and do not impact the availability of food and its supply chains.

We must ensure the free flow of food products into countries and cities by safeguarding its availability.

[63] FAO urges at G20 meeting protection of food supply chains amid COVID-19 threat. Available at: *<http://www.fao.org/news/story/pt/item/1272077/icode/>*.
[64] Resnick, D. (2020). COVID-19 lockdowns threaten Africa's vital informal urban food trade. IFPRI. *https://www.ifpri.org/blog/covid-19-lockdowns-threaten-africas-vital-informal-urban-food-trade accessed 08/04/2020*
[65] *https://www.ukzn.ac.za/news/food-disruptions-highlight-importance-of-transdisciplinary-research-and-action/*
[66] FAO. Food safety in the time of COVID-19. 2020. Available at: *<http://www.fao.org/3/ca8623en/CA8623EN.pdf>*.

Challenges and Opportunities

Nevertheless, the closing of schools and public cafeterias is also an obstacle to guarantee nutrition security to millions of children who depend on school meal programmes and popular restaurants as the only meals they have access per day. It is necessary to implement alternatives that do not affect the health of children with limited home diet and with the lack of nutritious food.

To mitigate the effects of the pandemic of agricultural decline and humanitarian impacts of increased poverty and food insecurity, innovation and partnerships are required that can generate novel knowledge and tools to inform food system policy and practice. One way to overcome challenges of food accessibility must also come from innovative solutions, such as ecommerce tools and marketplaces, that bring food producers and consumers closer. The extending of open hours of food markets and the enforcement of food delivery services must also be considered. These types of actions demonstrate the importance of working together with private partners.

During this crisis, it is important the G20 members take action to manage the increasing of food price in the global market, as seen in the 2007-2008 crisis, andsupport the immediate needs of the vulnerable population affected.67 We must reinforce the need to mitigate risks associated with price volatility of food and agriculture commodities along with transparency.

We recommend the enhancement of the Agricultural Market Information System from G20 with information also from cities in order to monitor world supply and price developments during food and health crises as reliable information on market is strongly needed.

Case Study: Adaptation of Rio's Popular Restaurants during the Covid-19 pandemic

Aiming at maintaining food distribution to high-risk groups of vulnerable communities, who must meet the recommendation of social isolation to prevent the spread of the new coronavirus, the popular restaurants of the Rio de Janeiro City Hall began to accept orders for take away meals.

The action takes place in partnership with the Residents' Associations, religious entities, and other civil society entities that can buy up to 100 meals, at the cost of R$ 2, 00 (0, 40 USD) per meal, to distribute in the homes of the most vulnerable citizens. The civil entities must register with the Municipal Secretariat for Development, Employment and Innovation and place the order up to 48 hours in advance.

Challenges and Opportunities

9. Integrating strategy on food issues to overarching urban strategies

An integrative and strong global and local governance is key to address food policies that promote sustainable and inclusive food systems. The role of multilateral organizations, in global and local levels as FAO, WFP, CFS, IFAD, MUFPP, C40, ICLEI etc, and of civil society is vital to support countries and cities to achieve no hunger. International cooperation must be the enabler of our goals regarding food for all.

Policy-makers have the role to promote integrated, nutrition and sustainable systems and safety nets that will contribute to concrete and effective networks of knowledge-sharing on food policies.

At local level, it is indispensable to discuss the role of food systems, taking into consideration the specificities of communities and regions, at a participatory manner taking into account the contexts of both metropolises as well as intermediary cities and rural towns. Groups of discussions, events and food policy councils, for example, could promote an open and free place to dialogue with different stakeholders, from citizens to civil society organizations. The product of these debates could therefore be included in municipal policy plans and strategies.

There is a role for transdisciplinary research to inform policy towards sustainable and healthy food systems.

Case Study: The Strategic Plan of Urban Economic Development in Rome

The Rome City Government is developing a strategy related to food issues, which is part of “The Strategic Plan of Urban Economic Development” which responds to the need of Roma Capitale to define and articulate a clear and programmatic vision of the city's economic and urban system.

Since the strategic plan was conceived as an instrument capable of declining the Vision through a "path of related stages", within it will be deepened some specific vertical areas that are considered particularly relevant and therefore to be considered such as Tourism (Agrifood, Smart Business, Cultural Heritage and Creativity).

In this framework for each vertical area will be developed a plan with objectives and actions for their achievement identified also through the tool of the “Town Meeting” that involves the highest representatives and stakeholders of the individual sectors of reference where, thanks to brainstorming sessions and operational tables will emerge ideas, proposals and guidelines that will subsequently contribute to the definition of the strategic lines of the Plan.

[67] *https://www.ukzn.ac.za/news/food-disruptions-highlight-importance-of-transdisciplinary-research-and-action/*
[68] This measure is suggested according to the Action Plan on Food Price Volatility and Agriculture, adopted in Paris, during the Meeting of G20 Agriculture Ministers, on 22 and 23 June 2011.

Challenges and Opportunities

Case Study: Rio de Janeiro Food Security Council

The Food Security Council of the City of Rio de Janeiro, Consea-Rio, is a municipal advisory council for social control, monitoring and proposing public programs and policies related to food and nutritional security and the human right to adequate food, through the integration of the municipal public power (represented by 8 councilors) and civil society entities (who fill the remaining 16 seats and exercise the presidency of the board).

Its mission is to integrate the municipal public power as entity representing civil society and the bodies of the municipal, state, national spheres, to implement measures to combat hunger and food insecurity, to equitably distribute the food resources of the municipality of Rio Janeiro, to promote and guarantee the right to food and the rationalization of natural resources, and to control and monitor through a Food and Nutrition Security Plan.

Case Study: Sustainable and Healthy Food Systems (SHEFS)

SHEFS is a multi-disciplinary boundary organization operating across three country sites, South Africa, the United Kingdom and India. SHEFS aims to influence policy towards achieving sustainable food systems, that deliver improved health outcomes and reduced environmental impacts.[69] SHEFS participants include over 80 academic, government practitioners and other stakeholders, from over 20 different discipline spheres within and related to the food-health-environment nexus. The SHEFS vision is grounded in the SDGs and research projects for the program towards sustainable food systems were identified as part of a transdisciplinary approach, that facilitated inputs from the broad range of SHEFS participants, through food systems mapping. The Durban Research Action Partnership (D'RAP), that already existed between eThekwini Municipality and the University of KwaZulu-Natal, provided the foundation for SHEFS implementation in South Africa.

[69] (SHEFS Global, 2019. Sustainable and Healthy Food Systems (SHEFS). URL *https://shefsglobal.lshtm.ac.uk/partners-and-researchers/*

Challenges and Opportunities

10. Urban Innovation Technology

Knowledge and practice of both traditional and advanced production methods is essential for the efficiency of agricultural systems. Technology transfer, and the connections between research, innovation and production are vital and cities must foster the creation of cultural "ecosystems" capable of developing innovation.

Creating research and information ecosystems means increasing citizens' awareness of the value of sustainable development, of the sense of citizenship and of the actions needed to promote sustainable processes.

Agriculture research should be strengthened through innovative instruments for risk management and participation of producers, consumers and international organizations. It is also important to highlight the key role of transparency of data and information.

Another key measure to enhance agriculture productivity is to promote technology transfers, knowledge sharing and capacity building to all facets of society including the most vulnerable. International cooperation between cities and countries should therefore be incentivated.

Case Study: Disused hospital Santa Maria della Pietà, Rome

In order to developing a metropolitan pole, an ecosystem of businesses, research centres and start-ups to ensure greater integration with general urban policies, the Government of the City of Rome is working on a plan to encourage the establishment in a disused complex of XIX-XX century pavillons, of enterprises, local markets, start-up, research institutes, universities that invest in knowledge about food.

The project involves the recovery of an old building complex, an abandoned hospital: Santa Maria della Pietà. It is planned to transform it in a place to promote technology transfer and develop policies of citizen involvement by also sharing similar case studies, policies and projects to strengthen the role of cities as centres of production of knowledge.[70]

[70] More information available at:
<http://www.urbanistica.comune.roma.it/images/santa-maria-pieta/presentazione-SMDP-giugno-2019.pdf>.

Challenges and Opportunities

11. Financing for sustainable food systems

The achievement of zero hunger and the offer of healthy and nutritious diets for all must be aligned with strategies to build economic growth, employment, innovation and strategic partnerships. It is important for countries and cities to mobilize financial resources and offer support to private investments in order to develop infrastructures and technologies that increase a sustainable productivity, and consequently, generate income to food producers, especially small farmers.

There must be more concrete measures oriented to finance research and implementation of sustainable solutions to agriculture. The increase of public and private partnerships is key to foster this activity.

One way that governments can contribute to the well-being of agriculture finance is to promote public procurement with the participation of small farmers and by working together with finance institutions, like Ifad.

Case Study: Federal finance for the promotion of school feeding by local governments in Brazil

The Brazilian National School Feeding Program (PNAE) offers school meals and food and nutrition education actions to students from all stages of public basic education through the transfer of financial resources to regional and local governments in order to achieve students' nutritional needs. Implemented in the 1950s, It is considered one of the largest programs in the field of school meals in the world and is the only one with universal service.

The program is designed to offer financial support for municipalities and federal schools for a coverage of 200 days, according to the number of students enrolled in each school system.

The transfer is made directly to the states and municipalities, based on the School Census conducted in the year prior to the service. The PNAE is monitored and supervised directly by society, through the School Meals Councils (CAE), by the National Fund for the Development of Education (FNDE), the Federal Audit Court (TCU), the Federal Comptroller General (CGU) and the Public Prosecution.

Since 2009, 30 percent of the amount paid by PNAE must be invested in the direct purchase of products from family farming, a measure that stimulates the economic and sustainable development of communities.

Recommendations

Recommendations

1. Recommendations to local and national leaders

1.1 The right for healthy nutrition in cities

- Regional and local governments must implement food policies based on SMART (specific, measurable, achievable, relevant and time-bound) actions to eliminate food insecurity and malnutrition.
- When designing urban food policies, governments must take into account territorial, social, economic and gender perspectives as well as food identity, culture and habits to promote inclusiveness.
- Programmes such as social protection and school feeding focused on the most vulnerable groups and initiatives aiming at the redistribution of unsold food, like food banks could be promoted.
- Inclusion of food and nutrition education in the basic school curriculum, aiming to guide the consumption of varied, healthy and sustainable foods, respecting the local culture.
- In order to sustainably and healthy feed the 10 million planet inhabitants projected for 2050, the reduction of consumption of less healthy foods such as added sugars and red meat must be encouraged.

1.2 Promoting sustainable urban food systems

- Urban food policies must be adapted and serve as mitigation for climate change in order to contribute to the reduction of greenhouse gas emissions: the promotion of fast circuit chains, urban and vertical gardens, the use of green energy and sustainable agriculture are examples.
- Agroecology should be encouraged in order to minimize and mitigate the impacts of climate change in food systems. It also supports economic diversification and reduces risks for small farmers.
- Monitoring the amount of and where food is waste and lost is important to design policies that increase sustainability and can promote circle economies.
- Strengthen the linkages between urban and rural areas by investing in connective elements and infrastructure to build inclusive and functioning territories leaving no one and no place behind.

Recommendations

- Regulation for sustainable livestock production, valuing animal welfare, in order to reduce emissions such as the use of better quality food to reduce enteric and manure emissions; management of the manure in order to guarantee the recovery and recycling of nutrients and its contained energy; surveillance and law enforcement to avoid illegal deforestation for agricultural purposes.
- Promote a consumer behavior change pathway in order to make healthier food choices and waste no food.
- Ensure access to land, water, education, infrastructure and financial mechanisms, especially for youngsters and women, in order to create more employment opportunities and conditions in rural areas.
- Address the main drivers of migration from rural to urban areas aiming at promoting adequate conditions of living and development.
- Governments must regulate the food inventory in order to guarantee its safety, by controlling the temperature and humidity with sensors, spread throughout the hot and cold food chain (storage / distribution / retail), and once it enters city jurisdictions alongside stringent requirements to integrate data along the food chain for acceptance to ensure end-to-end food safety.

1.3 Tackling crisis impacts on food systems

- Governments must look to the current COVID-19 pandemic as an opportunity to stimulate sustainable food systems as key to rebuild cities' economies.
- During the health crisis, the free flow of food products into countries and cities should be guaranteed, consequently safeguarding the availability of food and its supply chains. The restriction of movement should not hinder food-related logistic services nor affect food prices.
- Regular programmes that foster the access of food, such as school feeding and popular restaurants, should be adapted and alternatives must be designed to provide the continuous access to food to their beneficiaries.
- Crisis situations call attention to agri-food workers as critical staff. The rights of agri-food workers, especially regarding safe and health working conditions plays a major role in building fair, strong and sustainable food systems.
- Post-Covid-19 green economic stimulus packages should include sustainable food systems as a priority, aiming at building food resilience in cities.

Recommendations

1.4 Enablers for sustainable food systems

- The achievement of zero hunger and the offer of healthy and nutritious diets for all must be aligned with strategies to build economic growth, employment, innovation and strategic partnerships.
- An integrated, multilevel, governance structure and environment-sensitive approach to (re) design and implement food policies must be set.
- The governance structures must consider discussions about the role of food systems and the specificities of communities and regions through a participatory manner.
- It is vital to encourage technology transfer, knowledge sharing, capacity building and connections between research, innovation and production and to foster the creation of cultural "ecosystems" capable of developing innovation regarding food production and distribution.
- Agriculture research should be strengthened through innovative instruments for risk management and participation of producers, consumers and international organizations. It is also important to highlight the key role of transparency of data and information.
- Cooperation between local, regional, central governments, international organizations and networks should be incentivated.
- Mobilize financial resources, increase fiscal decentralization, and offer support to private investments in order to develop infrastructures and technologies that increase a sustainable productivity, and consequently, generate income to food producers, especially small farmers.
- Financial support to agriculture must be aligned with climate, nutrition and health outcomes in order to incentivize the production of healthy and sustainable food.
- Promote public procurement with the participation of small farmers and by working together with finance institutions.
- Guarantee the affordability of healthy and sustainable food prices, in order to be the most accessible type of food, through fiscal and financial incentives.

Recommendations

Recommendations to the private sector and civil society

- Civil society organizations are essential to push governments and citizens to a more sustainable, green and inclusive choice for food policies and habits. An active participation in the planning, elaboration, implementation and review of public policies related to food is vital.
- The private sector must implement a sustainable livestock production, valuing animal welfare and quality food to reduce enteric and manure emissions.
- It is essential that livestock producers value animal manure management in order to recover and recycle the nutrients and energy contained, decreasing the pollution generated by the production.
- It is a duty of the private sector to guarantee the rights of agri-food workers, especially regarding safe and health working conditions and proper remuneration.
- Food business must be attentive to the way food is transported, prepared, sold and disposed. Options should include favoring green energy while producing and stocking, opting for sustainable and reusable packaging and local ingredients.
- Civil society and the private sector must promote a healthy and sustainable food consumer behavior.
- Restaurants and supermarket chains should adhere to initiatives of redistribution of unsold food, such as food banks.

References

Please see embedded footnotes in the text above.

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