


The role of urban and peri-urban agriculture in global food security from post-war to the COVID-19 crisis: new perspectives on food justice, global health, and sustainability^{1,2}

O papel da agricultura urbana e periurbana na segurança alimentar global do pós-guerra à crise da covid-19: novas perspectivas em justiça alimentar, saúde global e sustentabilidade

Ana Maria Bertolini^a

 <https://orcid.org/0000-0002-6833-8249>


E-mail: ana.bertolini@usp.br

Patricia Constante Jaime^a

 <https://orcid.org/0000-0003-2291-8536>

E-mail: constant@usp.br

Gabriela Marques Di Giulio^a

 <https://orcid.org/0000-0003-1396-9788>

E-mail: ggiulio@usp.br

^aUniversidade de São Paulo. Faculdade de Saúde Pública. São Paulo, SP, Brasil.

Abstract

The current global syndemic, amplified by the COVID-19 pandemic, highlights the collapse of current food systems. Urban and peri-urban agriculture (UPA) initiatives have been recognised as strategies of opposition to the dominant food system model based on their multiple positive impacts. Thus, the aim of this article is to discuss the evolution of the concept of food and nutrition security (FNS) at the international level from its proposition (in the post-World War II period) to the COVID-19 crisis, understanding the contributions of UPA in this agenda. To this end, the document is based on a critical literature review. The FNS field has evolved, and different dimensions have been included in its characterisation; however, institutional responses are concentrated in times of crises, whose impacts affect it and favour the maintenance of globalised and unsustainable food systems. The UPA practices, on the other hand, appear with peaks of rise and decline, as their contributions gain new contours, evolving along with the FNS agenda. With a view to broadening

Correspondence

Ana Maria Bertolini

Av. Dr. Arnaldo, 715. São Paulo, SP, Brasil. CEP 01246-904.

1 This work was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) from the direct doctoral scholarship granted to Bertolini in the Graduate Program in Global Health and Sustainability (Process N^o: 88887.615675/2021-00).

2 The article is an updated and revised version of the original chapter "Entrelaçamentos entre a segurança alimentar e nutricional, pandemia de Covid-19 e sustentabilidade" - BERTOLINI, A. M.; JAIME, P. C.; DI GIULIO, G published in VENTURA, D. F. L.; RIBEIRO, H. (Orgs.) As múltiplas dimensões da crise de Covid-19: perspectivas críticas da Saúde Global e Sustentabilidade. São Paulo: Faculdade de Saúde Pública da USP, 2023 The authors would like to thank the organizers of the book for their authorization to publish it.

and adding to the current discussions on FNS and UPA, we finally discuss the need to incorporate the concepts of justice, global health, and a multidimensional view on sustainability.

Keywords: Global syndemic; COVID-19; Food and nutrition security; Urban and peri-urban agriculture.

Resumo

A atual sindemia global, amplificada pela pandemia de covid-19, evidencia o colapso dos sistemas alimentares atuais. As iniciativas de agricultura urbana e periurbana (AUP) têm sido reconhecidas como estratégias de oposição ao modelo de sistema alimentar dominante, a partir de seus múltiplos impactos positivos. Assim, o objetivo deste artigo é discutir a evolução do conceito de segurança alimentar e nutricional (SAN) no âmbito internacional, desde sua proposição (no pós-Segunda Guerra Mundial) até a crise da covid-19, compreendendo quais as contribuições a AUP ocupa nesta agenda. Para isso, o documento estrutura-se a partir de uma revisão crítica de literatura. O campo da SAN evoluiu e foram incluídas diferentes dimensões à sua caracterização, contudo, as respostas institucionais concentram-se em momentos de crise, cujos impactos incidem sobre ela e privilegiam a manutenção de sistemas alimentares globalizados e insustentáveis. Já as práticas de AUP aparecem com picos de ascensão e declínio, a medida em que suas contribuições ganham vão ganhando novos contornos, evoluindo junto com a agenda de SAN. Na perspectiva de ampliar e somar às discussões atuais sobre SAN e AUP, discute-se, finalmente, a necessidade de incorporação dos conceitos de justiça, saúde global e de uma visão multidimensional sobre sustentabilidade.

Palavras-chave: Sindemia global; covid-19; Segurança alimentar e nutricional; Agricultura urbana e periurbana.

Introduction

The beginning of the 2020s is marked by a global crisis of food and nutrition insecurity (FNI). It is estimated that, in 2022, hunger affected between 691 and 783 million people worldwide; and in the same year, 29.6% of the global population (2.4 billion people) was in moderate or severe FNI (FAO et al., 2023). In addition to this complex picture of the double burden of malnutrition, we also face the challenges of obesity and other diet-related chronic non-communicable diseases (NCDs), in which affect 650 million people worldwide (FAO et al., 2022). In children under five, the prevalence of overweight increased from 5.3% (33 million) in 2000 to 5.6% (37.0 million) in 2022; in adults, the prevalence of obesity almost doubled in absolute values, from 8.7% (343.1 million) in 2000 to 13.1% (675.7 million) in 2016 (FAO et al., 2022).

The imminence of COVID-19 in 2020 contributed to intensify the hunger crisis, representing an increase of 150 million people in severe FNI when compared to 2019 (FAO et al., 2022). It's worth to highlight that, the FNI and COVID-19 crises coexist (and reinforce each other) in a syndemic context, aggravated by the climate and biodiversity loss crises (Swinburn et al., 2019). The externalities arising from the unsustainability of current globalized agri-food systems, with the increasing and concentrated participation of a small number of transnational ultra-processed food industries, have been pointed out as a common root relative to systemic crises (Swinburn et al., 2019).

Other transformative trends that aggravate this crisis scenario are population growth and accelerated urbanization. The most recent demographic forecasts suggest that the world population will reach 9 billion people by 2050, of which 68% will reside in urban areas—it is estimated that 7 out of 10 people will live in cities by that time (FAO et al., 2023). Urbanization directly impacts food systems by geographically altering access to food and affecting consumer preferences. Currently, the main challenges of the urban food

agenda, in addition to the FNI scenario observed globally, involve the difficulty in accessing fresh and minimally processed foods (especially the so-called food deserts), in contrast to the facilitated access to ultra-processed foods; the low diversity of dietary patterns; the exclusion of small farmers from production chains; and urban expansion over natural areas and urban ecosystem services (FAO et al., 2023).

In opposition to this scenario, urban and peri-urban agriculture (UPA) practices are gaining strength, which have been placed as a powerful measure to confront the FNI scenario on a global scale, by strengthening small food supply chains and facilitating access to healthy, sustainable, affordable, and biodiverse diets. Beyond the food supply function, more recently, UPA has received prominence for strengthening the planning of sustainable, resilient, and ecological cities; containing urban sprawl over natural areas; stimulating regional economies and reducing dependence on the global food market; contributing to climate change mitigation and adaptation; protecting and increasing biodiversity (as pollinators); reducing food loss and waste; recovering ecosystem services; among others (Simon, 2023; Abramovay et al., 2023).

Historically, the development of UPA actions has been closely linked to the discussion on guaranteeing food and nutritional security (FNS), above all by providing food in times of crises, high prices, and shortages. However, both agendas have evolved as new social, political, environmental, and health challenges arise, affecting food systems and threatening FNS. COVID-19, in particular, represented an emblematic moment that raised issues about the productive logic of food and reinforced the urgency of a necessary shift towards sustainability. These factors demonstrate the need for a joint and detailed analysis of the new paths that FNS and UPA actions have taken over the years.

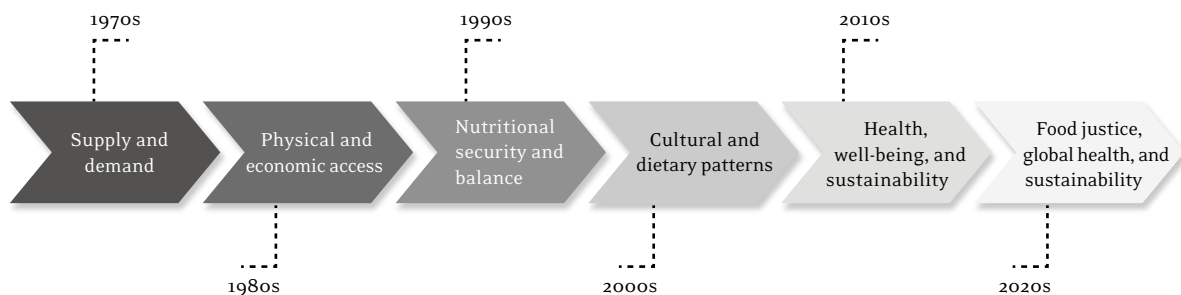
This article, structured as a critical review of literature and guiding documents, aims to

discuss the evolution of the concept of FNS in the international context from its proposition (in the post-World War II - WWII) to the COVID-19 crisis, understanding the contributions and paths of the UPA in this agenda. It also seeks to incorporate new links and conceptualizations to this discussion, from the perspectives of food justice, global health, and a multidimensional view of sustainability.

Evolution of the concept of food and nutrition security, and the contribution of urban and peri-urban agriculture

The field of FNS has evolved and been constituted over history as the technical, political, and social arena for establishing policies aimed at guaranteeing the right to food (Jaime, 2019). Currently, its most emblematic concept recognizes that FNS exists when everyone has physical, economic, and social access to healthy and nutritious food in adequate quantities, which meet their food needs and contribute to environmental, cultural, economic, and social sustainability (FAO, 2002). Different dimensions support its guarantee, including food availability, stability in acquisition, access (physical and monetary), and food utilization (Ingram; Ericksen; Liverman, 2010; Mbow et al., 2019). The historical incorporation of these dimensions is shown in Figure 1. UPA, historically linked to the field of FNS, is related to food production in urban centers and gains relevance in times of supply crises, rising food prices, and poverty (Simon, 2023). However, its functions take new shapes and nuances over the period, evolving along with the FNS agenda. The evolution drivers of FNS and UPA are the political and historical events, which have shaped the incorporation of new dimensions into their contextualization, to respond directly to broader events, such as wars and crises. The following topics summarize some of the major events in the period from 1950 to 2020.

Figure 1 – Incorporation of different dimensions to the concept of Food and Nutrition Security since the 1970s



1950s to 1980s – FNI, fundamentals and institutionalization of FNS and UPA as a strategy to mitigate hunger

In the period comprising the post-WWII, characterized by intense population growth, hunger, and poverty, concerns about food availability and supply inspired the first conceptualization of FNS, which, although not recognized as an institutional agenda, already inspired measures to act on these determinants (Clapp; Moseley, 2020). The actions of UPA, in this context, were related as the main strategy for survival and combating hunger and urban poverty, during and after the War, contributing to the production and access to food by vulnerable individuals. Examples of these actions were the

“Liberty and Victory Gardens” program and the “Dig for Victory” campaign (Corrêa et al., 2020).

In the 1950-70 period, an advance in the fight against FNI was the recognition of food as an essential human and social right to life by the United Nations (UN) General Assembly, from the promulgation of the Universal Declaration of Human Rights, and, later, the International Covenant on Economic, Social and Cultural Rights (Silva, 2014). These international agreements indicated a concern about concrete measures and projects to eradicate hunger in the world, especially by international cooperation, coinciding with the creation and founding of several organizations linked to the UN and dedicated to dealing with the agenda of human rights, health, nutrition, and FNS, illustrated in Table 1 (Jaime, 2019).

Table 1 – Examples of global agencies working on the issues of food, nutrition, and food and nutrition security

Agency	Characterization
United Nations (UN)	Multilateral organization whose objective, among others, is to facilitate international cooperation between countries with a view to law, security, social progress, human rights, and world peace.
World Health Organization (WHO)	Agency linked to the UN, whose central theme is the fight against diseases, health promotion—more recently planetary health—and produces a series of references that must be adapted to local realities.
Food and Agriculture Organization (FAO)	Agency linked to the UN, dedicated to discussing and proposing themes and solutions in the field of food and food production, aiming to lead international efforts to end food insecurity and hunger.
World Food Programme (WFP)	Agency linked to the UN, whose focus is on humanitarian aid and the fight against hunger, acting mainly in emergency and conflict situations.
United Nations Children’s Fund – UNICEF	Agency linked to the UN, dedicated to ensuring the rights to life, health, and good nutrition of children and adolescents.

Source: Jaime, 2019.

The institutional effort to combat the humanitarian and food crisis of this period was a global impulse to encourage and increase agricultural production. This incentive occurred with the coordination of FAO and the Marshall Plan, carried out by the United States (U.S.). This institutional action not only helped Western Europe's recovery, but also solidified the economic and political divisions between East and West in the context of the Cold War. According to Carvalho (2018), at this time the fight against hunger on an international scale became a strategic element in the disputes over global geopolitical control. Furthermore, the promotion of the UPA in this period of economy recovery was marked, particularly, by the need to produce food for subsistence; however, its weakening was intensified in later years, when the association between agriculture and the urban environment began to break down and there was a process of displacement of agricultural production away from the big cities. This movement was inspired by the innovations and technological transformations of the green revolution (Oliveira, 2020).

Unlike the UPA, the type of agriculture inspired by these innovations was institutionalized by the UN in 1974 in response to a new food crisis (UN, 1974). On this occasion, there was the first appearance and political-institutional definition of the concept of FNS, in the Universal Declaration on the Eradication of Hunger and Malnutrition. The Declaration was regarded as an effective instrument for the creation of new international economic relations based on principles of equity and justice. However, in practice, it was an international instrument that legitimized and promoted the international monopoly of the agri-food industry from the production of agricultural commodities, in contrast to the production of food from the UPA, which was mostly disregarded within the global institutional context (Hoyos; D'Agostini, 2017; Smit, 1996).

The understanding of hunger as an expression of the decreasing availability and unstable supply of food contributed to an institutional response focused on (1) supporting the industrialization of modern agriculture, to increase production in rich and poor countries; (2) encouraging imports in poor countries; and (3) boosting exports in industrialized

countries. The adoption of these policies has contributed to industrializing production on a global scale, producing surpluses in countries of the global North and creating dependence on food imports in developing countries, at the same time that some became major global exporters—such as Brazil (Clapp; Moseley, 2020).

1980s – Consolidation and crisis of the neoliberal model of food production and distribution, resurgence and institutional recognition of the UPA

The consolidation of neoliberal policies to increase food production and distribution contributed to the outbreak of a new food crisis in the late 1970s and early 1980s. The crisis, which occurred in the context of a severe global economic recession, was marked by a decline in the market value of commodities, concerns about the oversupply of food, and the growing precariousness of farmers' livelihoods both in rich and poor countries (Clapp; Moseley, 2020).

During this period, the World Bank (WB) had an important influence in getting the countries of the global South to take on structural adjustment loans. In addition, government support for small-scale production was reduced, while the opening of trade for food exports and imports was favored. An important impetus for the liberalization of agricultural trade was the General Agreement on Tariffs and Trade, known as the "Uruguay Round." Later, this agreement was replaced by the World Trade Organization (WTO), which sought to open the foreign market to agricultural products with reduced tariffs (Clapp; Moseley, 2020).

For Monteiro and Cannon (2019), the consequences of these economic policies and trade agreements, formulated by global governance institutions and supported by governments with strong influence, such as the U.S., have strengthened the consolidation of transnational corporations and a global food system, whose profits are the result of the manufacture and sale of ultra-processed foods. Neoliberal policies promoted greater foreign investment, capital flows, and deregulation of industry, as well as enabled transnational companies to buy and take over domestic companies.

Additionally, in the field of agriculture, the consequences lead to an increased dependence on food imports by developing countries, the opening up of agricultural trade—serving the interests of industrialized countries—specialization and competition in export markets, as well as the consolidation of large-scale food production companies, to the detriment of small farmers (Clapp; Moseley, 2020).

Canfield, Anderson and McMichael (2021) argue that these institutional measures related to food systems, which were created mainly by the WTO's action, have had substantial repercussions on the definition of FNS. In 1983, FAO proposed a revision of the term, considering the need to “ensure that all people at all times have both physical and economic access to the basic foods that they need,” emphasizing the pillar of access to food (FAO, 1983). Later, from the strong influence of the WB with the publication of the Poverty and Hunger Report, food insecurity and hunger were emphasized as problems derived from the low income of individuals, continuous or structural poverty, or the “ability to buy food” (The World Bank, 1986). These factors have contributed to decentralizing the FAO's governance on this agenda and strengthening a marketing vision of food systems and FNS, based on the production of primary commodities and ultra-processed foods to supply global markets.

While the context of the food crisis created a sense of urgency among policymakers, incorporating FNS robustly into the political agenda (Dijk; Meijerink, 2014), the scarcity and difficulty in accessing food were responsible for the resurgence, prominence, and visibility of UPA experiences (IE, 2021). As a result of efforts among multilateral organizations, organized civil society, local governments, and research institutions, important organizations linked to the UN were created, incorporating the UPA into the institutional agenda,

based on the constitution of an international network of promotion, research, and actions of UPA (Almeida, 2016).

The main exponent of the incorporation of UPA into the institutional agenda was the report “Our Common Future” (or Brundtland Report), in 1987, which mentioned the UPA as a practice that would help in the fight against FNI and improve dietary and health standards from access to fresh foods, especially in urban and peripheral areas. By bringing the concept of sustainable development to the heart of the discussion—and overcoming the ills of hunger and misery as a fundamental circumstance for its achievement—the report also cited the importance of the UPA for generating jobs and income, increasing green areas and urban planning that promotes greater use of the areas of the city destined for waste deposits, as well as stimulating recycling (CMMAD, 1988). The publication of this report legitimized UPA as a practice of food provision and combating hunger, aligned with FNS, but which also encompasses the precepts of sustainable development.

1990s – Recognition of the multidimensionality of FNS and political-institutional incorporation of UPA in the global agenda

In the early 1990s, the official definition of FNS was refined, with the recognition of the importance of food preference dimensions and the nutritional context at the first International Conference on Nutrition, held in 1992. Later, in 1996, at the World Food Summit (WFS), the four pillars were included: availability, access, utilization, and stability, reinforcing the multidimensional nature of FNS (FAO, 2006). The definition of each of the pillars, according to the High Level Panel of Experts (HLPE, 2020), is summarized in Table 2.

Table 2 – Pillars of Food and Nutrition Security (FNS)

FSN Dimension	Definition:
Availability	Having a quantity and quality of food sufficient to satisfy the dietary needs of individuals, free from adverse substances and acceptable within a given culture, supplied through domestic production or imports.

continues...

Table 2 – Continuation

FSN Dimension	Definition:
Access	Having personal or household financial means to acquire food for an adequate diet without compromising other basic needs; and that adequate food is accessible to everyone, including vulnerable individuals and groups.
Utilization	Having an adequate diet, clean water, sanitation, and health care to reach a state of nutritional well-being where all physiological needs are met.
Stability	Having the ability to ensure food security in the event of sudden shocks (e.g. an economic, health, conflict, or climatic crisis) or cyclical events (e.g. seasonal food insecurity).

Source: HLPE, 2020

Still in 1996, there was concern that the expansion of the hunger scenario, from a vision that encompassed social and political issues, was based on the WFS. However, the orientation of this meeting was inherited from the decentralization of FAO governance in the 1970s, focusing its efforts on increasing the production of staple foods and creating a “global trade system” (Canfield; Anderson; McMichael, 2021).

On this occasion, the Rome Declaration on World Food Security and the World Food Summit Plan of Action were agreed. According to the latter document, FNS exists when “all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996). Although strongly directed towards the productive perspective, which resulted in debates led by social movements and academia, these documents incorporated the UPA as an important strategy to combat hunger (IE, 2021).

Throughout the 1990s, in the wake of the movement initiated by FAO, there was already a notable number of international cooperation agencies with formal recognition of the UPA (such as the RUAF Foundation – Resource Centres on Urban Agriculture and Food Security), which formally integrated the concept of UPA and contributed to the increase of courses, conferences, publications, and other actions on the subject during this period (Almeida, 2016).

However, the dominant view on FNS inherited from the WFS motivated the preparation of an alternative forum of organizations and social movements, such as La Via Campesina, to claim food sovereignty at the expense of the commodified

vision. The movements blamed the economic and fiscal adjustment policies of the WTO and WB for favoring trade liberalization, globalizing hunger and poverty, and hindering the autonomy of countries in the production of their own food at the local level, preventing the access of small farmers to natural resources such as land, water, and seeds, in order to favor transnational companies (Thompson, 2015). Food sovereignty would therefore be a way of opposing the injustices associated with the globalization of food systems, dominated by transnational corporations and shaped by global trade, without the participation of the small farmers (Wittman; Desmarais; Wiebe, 2010).

Still in this period, marked by the end of the conflict between the U.S. and the Soviet Union, the reaction that emerged from social movements resonated with the rise of UPA practices. The Cuban experience is the most emblematic case of the strengthening of food production in the city and of post-Cold War agroecology, configuring itself as an effort by the population (and, later, government) to mitigate the supply problems and the food crisis resulting from the trade rupture, aggravated by the economic embargo promoted by the U.S. (Lopes; Lopes, 2012; Corrêa et al., 2020; IE, 2021).

2000s – Food crisis due to rising food prices and the deepening of the UPA agenda

The field of nutrition and FNS in the 2000s is marked by the decrease of chronic hunger worldwide, while the prevalence of NCDs – particularly those related to inadequate diet and the consumption of ultra-processed foods—became notable public health problems (WHO, 2003). According to FAO (2002),

between the years 1990-1992 and 1999-2001, more than 80 million people were lifted out of chronic hunger by the progress of fundamental elements for guaranteeing FNS, including economic and agricultural sector growth, and the consolidation of social networks and income guarantee. In this same period, it is estimated that NCDs contributed approximately 46% of the global burden of diseases and 60% of the total 56.5 million deaths reported worldwide (WHO, 2003).

However, the fight against hunger still dominated the international narrative, especially since the global agreement on the Millennium Development Goals (MDGs) (Rome, 2019). This agreement aimed to define goals and deadlines to be assumed by UN member states in the areas of health, education, human rights, among others (Ribeiro, 2016). In relation to FNS, poverty and hunger reduction targets were presented. The UPA was included in this agenda as a complementary strategy for achieving these goals (Almeida, 2016).

In the global context, however, FNI and hunger, which had been showing signs of decline, were aggravated in 2007/08 by the emblematic crisis in rising food prices. According to initial FAO estimates (2008), in 2007, around 923 million people were in a situation of hunger; in 2008, an additional 40 million people joined this contingent, totaling 963 million. During this period, the prices of staple foods, such as corn, wheat, and rice, rised (Headey; Fan, 2008). The impacts of rising prices were felt more intensely by low-income groups in developing countries, because a large part of their limited family income is dedicated to purchasing food (FAO et al., 2008).

From an economic point of view, the crisis was the result of a conflagration of factors or a “perfect storm” of events, which included the increased demand for grains for biofuel production in the U.S. and the European Union; trade restrictions on exports; weather events; increased demand for food protein sources; financial speculation in agricultural commodities; and rising energy and fuel prices—essential to the production and distribution stages of food systems (Headey; Fan, 2008). It is important to emphasize that, in previous years, the consolidation of the neoliberal economic model led governments to

encourage the production of agricultural products for export to developing countries, to the detriment of staple foods to supply domestic consumption, which, in this case, had to be imported. These factors played a role in the dramatization of hunger during the 2007/08 crisis.

This crisis created a sense of urgency among policymakers, strengthening FNS on the political agenda, especially at the Conference on World Food Security in 2008. However, this drive, motivated by the high cost of food and fuel, was an incentive to increase private sector investment in global agri-food systems, again benefiting large transnational ultra-processed food corporations related to commodity trade, agricultural inputs, and food processing and distribution. This scenario contributed to consolidating important vulnerabilities within food systems, weakening small food producers, while establishing the role of large ultra-processed food companies in the global food system, based on commodity production and global trade in ultra-processed foods. Such as, for example, the creation of a high-level task force to deal with the food crisis, composed by the FAO, WB, and WTO, which went against what the social movements were preaching, as they were fighting for the incorporation of food sovereignty and for the convening of a multilateral forum to address the discussions on FNS (Canfield; Anderson; McMichael, 2021). The UPA, however, was recognized for the first time in this task force as a strategy for mitigating FNI and building sustainable and resilient cities during the context of financial and food crises. FAO strongly incorporated the UPA into the FNS agenda, which was reflected in the launch of the “Food for the Cities” initiative, with the objective of publishing guidance materials for the inclusion of food production practices in cities as a way of building more sustainable food systems (Almeida, 2016).

Thus, in the early 2000s, the interest in the practice of UPA began to take new shapes, which were reflected in the significant increase in academic publications seeking to characterize the phenomenon, its scope, the number of individuals involved, and the number of existing experiences and typologies. The different expressions and

complexity of UPA also inspired an understanding of its differences between countries. Some studies described, for example, that in countries of the global South, the UPA holds as its primary function the provision of food, income, and guarantee of FNS; in the countries of the global North, its multifunctionality is detailed, including environmental functions and the provision of ecosystem services, positive impacts on mental health, and fostering inclusion and social justice (Corrêa et al., 2020; Orsini et al., 2020).

2010s – FNS and UPA according to food systems, climate emergency, and sustainability

Since the mid-2010s, there has been a growing understanding of the implications of food systems on other global systems, especially ecological ones, driving the analytical lens that understands FNS as a product (and UPA as a structuring part) of food systems. Its complex mosaic brings together a set of elements and activities related to the production, processing, distribution, preparation, consumption, and disposal of food, which are influenced by political-economic, infrastructure, technology and innovation, socio-cultural, and biophysical/environmental aspects (HLPE, 2017).

The consolidation of the hegemonic, globalized, and unsustainable model of current food systems has failed to feed everyone in a healthy and adequate way. In recent decades, dietary patterns have undergone important changes, above all due to a reduction in the consumption of nutritious foods—such as fruits and vegetables—and an increase in the intake of sugars, fats, and ultra-processed foods (WHO, 2003). This factor, together with other determinants, contributes to shaping the current epidemiological scenario: the coexistence of the three forms of malnutrition (undernutrition, micronutrient malnutrition, and overweight/obesity) related to the development of NCDs in all life cycles (United Nations Global Nutrition Agenda, 2015; Scrinis, 2020).

Accessing this complex scenario influenced by a myriad of factors was one of the goals of the Second International Conference on Nutrition (2014), organized by FAO. On this occasion, FAO pointed

out that meeting the challenge of eliminating malnutrition in all its forms depends on the reformulation of current food systems, reinforcing previous global pacts such as the Rome Declaration on FNS and the World Food Summit Plan of Action (FAO; WHO, 2015).

The direct implications of food systems on soil degradation, biodiversity loss, and climate change have also come to be discussed, with particular attention to threats to human and more-than-human health (Swinburn et al., 2019; Willett et al., 2019). Such effects were extensively described in the fifth report of the Intergovernmental Panel on Climate Change (IPCC), focusing on the contributions of food systems on the worsening of climate change and its impacts on all stages of food systems and FNS (Porter et al., 2014). In 2019, the Lancet Commission report (Swinburn et al., 2019) pointed out the structural problems caused by the hegemonic food system by integrating the climate emergency with the malnutrition outcomes. This system, according to the document, is controlled by a few corporations, encourages the standardization of food production and consumption, and values foods of low nutritional quality. Its externalities cause damage to the environment and planetary health and are at the origin of the global syndemic of undernutrition, obesity, and climate change. Such conditions act together and reinforce each other, as forceful political actions to contain the pressure and imbalance in power relations between governments and ultra-processed food corporations are not implemented (Bortoletto; Campello; Jaime, 2022).

The syndemic context reflected the urgent need to think about antagonistic actions to the hegemonic model of food systems aligned with sustainability. It is precisely in this context that food production practices in cities are reinforced in the institutional agenda, especially since the creation of the FAO Urban Food Agenda (2019), emphasizing the relevance of UPA in terms of: (1) multifunctionality; (2) potential to subsidize the income of small farmers; (3) potential to subsidize short supply chains - providing easy and cheap access to healthy food and fostering local businesses; (4) environmental dimension - including the preservation of biodiversity, mitigation of climate

change, among others; and (5) contribution to FNS - from the diversification of traditional diets and reduction of food waste. In this sense, more than a strategy for access to food, the UPA gains prominence as a powerful tool in the construction of resilient, equitable, fair, and sustainable food systems (FAO, 2019).

The intrinsic relationship between food and sustainability gains even more strength with the 2030 Agenda, which brought together 17 Sustainable Development Goals (SDGs) and development actions to be implemented by 2030. FNS plays a central role in this agenda, and SDG 2 “zero hunger and sustainable agriculture” focuses directly on actions to combat hunger, improve nutrition, promote sustainable agriculture, and ensure food security

(UN, 2015). UPA practices were also incorporated into this agenda as accessible and potent tools to address contemporary challenges, bringing together synergies among poverty eradication, zero hunger, sustainable communities and cities, and action against climate change in countries of the global North and South (Nicholls et al., 2020).

Inspired by the effervescent discussions on sustainability, there was a breakthrough in the conceptualization of FNS from the report published by the High Level Panel of Experts on Food Security and Nutrition (HLPE, 2020). In this document, the dimensions of availability, access, utilization, and stability are incorporated into the dimensions of “agency” and “sustainability” (explained in Table 3).

Table 3 – Pillars incorporated to Food and Nutrition Security

FNS Dimension	Definition
Agency	Individuals or groups with the capacity of acting independently in choosing what they eat; the food they produce; how the food is produced, processed, and distributed, and those with the capacity to engage in political processes that shape the food systems. Protecting agency requires socio-political systems that support governance structures that enable the realization of FNS for all.
Sustainability	Food system practices that contribute to the long-term regeneration of natural, social, and economic systems, ensuring that the food needs of current generations are met without compromising the food needs of the future generations.

2020s – Impacts of the COVID-19 pandemic: UPA and agroecology as a possible way to tackle systemic crises

Despite the evolution of the concept of FNS and its incorporation into policy-making, there is still little progress in guaranteeing it. The most recent data from FAO et al. (2023) point out that in 2022, an average of 735 million people were in a situation of hunger, which represents a regression of the targets agreed under the 2030 Agenda. This increase is related to the COVID-19 pandemic outbreak in 2020, which represented a cataclysmic event for the global system and amplified the global food crisis, disrupting food systems. The 2020 Global Report on Food Crises, produced by the Global Network against Food Crises, estimated that an additional 130 million people faced acute hunger during this period (Food Security Information Network - FSIN,

2020). Added to this scenario are the unequal trends in food prices, dramatizing hunger and FNI from the reduction of access, availability, and accessibility to food (FAO et al., 2021).

However, the increase in hunger worldwide over the last two years has shown an apparent stagnation: in 2022, 3.8 million fewer people were in a situation of hunger compared to the previous year (FAO et al., 2023). This scenario is the result of the post-pandemic economic recovery; however, there is no doubt that the modest progress was hampered by the acute and medium/long-term effects of the ongoing war between Ukraine and Russia, which add to the pandemic and contribute to worsening the global FNI picture (FSIN, 2022).

COVID-19 revealed the fragility of current agri-food systems, exposing their vulnerabilities in relation to food supply, access, and stability. The perverse combination of the effects of the

pandemic and the war also raises a warning about the geopolitical consequences of this configuration: the dependence of human food on a world trade of a few foodstuffs, whose supply is concentrated in only five countries, distributed by a restricted number of corporations, which represents a great concern regarding multilateral relations and FNS (Abramovay et al., 2023).

The production model based on a few crops threatens FNS, reduces dietary diversity, favors food monotony, and threatens ecological systems. Currently, wheat, corn, and soybeans represent the staple food of 50% of individuals (FAO, 2019); these foods are also raw materials for the production of ultra-processed foods, the consumption of which has been linked to the global obesity pandemic. Food monotony also amplifies the progressive loss of biodiversity that sustains food systems and promotes imbalances in access to fresh and minimally processed foods (Abramovay et al., 2023).

The post-pandemic recovery has sparked debates about the urgent need to transition to more socially just, sustainable, and local food systems. This transition has been pointed out from the actions of UPA and agroecology as a productive system (Altieri; Nicholls, 2020). Food shortages and FNI during the pandemic have contributed to UPA experiences gaining greater prominence, visibility, and motivation, in view of the emergency provision of food to mitigate hunger (Simon, 2023). However, the complexity of the challenges that mark the field of FNS at the beginning of this decade is reflected in new outlines regarding its multifunctionality and application.

The potential of food production in cities aligned with agroecological practices as a path of opposition to the dominant model of food systems is valid for reducing dependence on the global food market, favoring greater diversity of diets, stimulating regional economies and the subsistence of small farmers (Altieri; Nicholls, 2020). Within urban systems, they are pointed out as an important engine for the consolidation of urban food systems, which, by including the concepts of short circuits and circular economy, can contribute to meet the growing demand for fresh and healthy food in cities, food diversity, ensure the formation of

healthy food environments, and reduce food loss and waste (Abramovay et al., 2023). In addition, they are nature-based solutions, strategic to think about the planning of sustainable, resilient, and ecological cities, contain urban sprawl, protect biodiversity, and strengthen adaptation to climate change (Simon, 2023).

Future perspectives in food and nutrition security: justice, global health, and a multidimensional view on sustainability

Given this complex scenario, in which the collapse of globalized food systems and their consequences are engines of the construction and expansion of inequalities and impacts that go beyond the field of FNS, the construction of antagonistic alternatives that can confront this scenario becomes crucial. Here, three essential perspectives are discussed: justice (in particular food justice), global health, and sustainability.

Food justice is related to the ability to construct alternatives and fundamental resistances that refute the dominant food system (Gottlieb, 2013). By accessing issues related to class, gender, inequities, race, and the social, economic, environmental, and health consequences associated with the dominant food system, this approach can contribute to guide political actions from a social point of view, evoking discussions and actions focusing on equity, disparities, the struggles of the most vulnerable, and power imbalances within food systems. It can also contribute, from an environmental point of view, by shedding light on the interconnections among health and environment, globalization, climate change, sustainable land use, among others (Gottlieb, 2013).

The field of sustainability, on the other hand, has been guided mainly from the perspective of the 2030 Agenda. And, while this global pact for sustainable development has gained ground in recent years, several documents since 2016 (and especially during the COVID-19 pandemic) have shown that, despite the commitment to a more sustainable, equitable, and inclusive model,

little progress has been made to achieve the agreed goals. The permanence of an unsustainable developmentalist model, together with the lack of funding by developed countries from UN agencies and multilateral agencies such as the WB—whose discourse is built on the 2030 Agenda—added to poverty and inequity at an accelerated rate during the pandemic (Di Giulio et al., 2021). It is in this context that we understand that the challenges posed to the FNS agenda, and the UPA practices themselves, must be anchored in a multidimensional perspective on sustainability, understood as a critical and interdisciplinary concept that evokes issues beyond the social-environmental-economic tripod, including cultural diversity, solidarity with the planet (and its biodiversity), equity and ethical values, rights, justice, and autonomy (Ventura et al., 2020).

The incorporation of this analytical and multidimensional lens of sustainability gains strength with critical studies of global health. For Biehl (2014), the field of global health is configured as a new terrain in which old ideological, geopolitical, and methodological disputes are reconfigured in the global sphere. By addressing these disputes that permeate the international health agenda, as well as the power struggles among different stakeholders, including countries, governments, international public and private institutions, critical studies of global health have as their central challenge to go beyond dominant and homogenizing visions (Di Giulio; Nunes, 2022). They seek, above all, to unveil how the continuous production of inequality, the distribution of power, and the production of patterns of domination and neglect have produced and continue to produce the current systemic crises, such as the FNI crisis itself.

There is no doubt about the urgency and need for concrete measures of transformation in the face of the collapse of current globalized food systems, as well as their negative repercussions on planetary health. Besides being an important food provision tool that mitigates the FNI crisis and contributes to a healthy and biodiverse eating pattern, the UPA should be interpreted as an important structural element for the construction of a path of opposition to the global model of food system that has been

established over the years. If based on a broad perspective of sustainability and aligned with a productive model inspired by agroecology, it has the potential to be an element of resistance against the asymmetries and inequities of food systems, their negative impacts on human and more-than-human health, in addition to managing resilient agricultural systems in times of crisis.

Finally, it is argued that the necessary change requires a reconfiguration of powers and disputes of narratives of global FNS governance and multilateralism, which, although threatened, must be strengthened. These narratives can contribute to a coordinated, systematized response during current (and future) and long-term crises by being sensitive to the social, economic, and environmental dynamics related to food systems; committed to globally agreed agreements and targets; in agreement with the leading role of FAO; and by asking governments and UN agencies to recognize that the food industry will not be responsible for self-regulating and leading the shift to healthy and sustainable food systems.

References

- ABRAMOVAY, R. et al. *Promoting diversity in agricultural production towards healthy and sustainable consumption*: T20 policy brief. New Delhi: Observer Research Foundation, 2023
- ALMEIDA, D.A.O. *Isto e aquilo*: agriculturas e produção do espaço na Região Metropolitana de Belo Horizonte. 2016. 438 f. Tese (doutorado em geografia) - Universidade Federal de Minas Gerais, Minas Gerais, 2016.
- ALTIERI, M. A.; NICHOLLS, C. I. Agroecology, and the emergence of a post COVID-19 agriculture. *Agriculture and Human Values*, Berlim, v. 37, p. 525-526, 2020. DOI: 10.1007/s10460-020-10043-7
- BIEHL, J. P. Peopling global health. *Saúde e Sociedade*, São Paulo, v. 23, n. 2, p. 376-389, 2014. DOI: 10.1590/S0104-12902014000200003
- BORTOLETTO, A. P.; CAMPELLO, T.; JAIME, P. C. A sindemia global na perspectiva brasileira. *Nexo jornal*, São Paulo, 1 abr. 2022. Políticas Públicas.

- CANFIELD, M.; ANDERSON, M.; MCMICHAEL, P. UN food systems summit 2021: dismantling democracy and resetting corporate control of food systems. *Frontiers in Sustainable*, Lausanne, v. 5, 2021. DOI: 10.3389/fsufs.2021.661552
- CARVALHO, P. N. Da crise à abundância: Segurança alimentar e modernização agrícola na Europa no pós-Segunda Guerra Mundial. *História & Perspectivas*, Uberlândia, v. 31, n. 59, p. 141-154, 2018. DOI: 10.14393/HeP-v31n59p141-154
- CLAPP, J.; MOSELEY, W.G. This food crisis is different: COVID-19 and the fragility of the neoliberal food security order. *The Journal of Peasant Studies*, Abingdon, v. 47, n. 4, p. 1393-1417, 2020.
- CMMAD - COMISSÃO MUNDIAL SOBRE MEIO AMBIENTE E DESENVOLVIMENTO. *Nosso futuro comum*. Rio de Janeiro: Fundação Getulio Vargas, 1988.
- CORRÊA, C. J. P. et al. Semeando a cidade: histórico e atualidades da agricultura urbana. *Ambiente e sociedade*, São Paulo, v. 23, 2020. DOI: 10.1590/1809-4422asoc201800751vu2020L1AO
- DI GIULIO, G. M. et al. Saúde Global e Saúde Planetária: perspectivas para uma transição para um mundo mais sustentável pós-COVID-19. *Ciência e saúde coletiva*, Rio de Janeiro, v. 26, n. 10, 2021. DOI: 10.1590/1413-812320212610.14332021
- DI GIULIO, G. M.; NUNES, J. 2022: entre marcos e crises, a urgência de ações transformadoras. *Jornal da USP*, São Paulo, 2022. Artigos. Disponível em: <<https://jornal.usp.br/?p=538458>>. Acesso em: 11 maio 2023.
- DIJK, M. V.; MEIJERINK G.W. A review of global food security scenario and assessment studies: Results, gaps and research priorities. *Global Food Security*, Amsterdam, v. 3, n. 3-4, p. 227-238, 2014. DOI: 10.1016/j.gfs.2014.09.004
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA. *World Food Security: A Reappraisal of the Concepts and Approaches*. Director Generals Report, Rome, 1983.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA. *Rome Declaration and Plan of Action on World Food Security*. Rome, 1996. Disponível em: <<https://www.fao.org/3/w3613e/w3613e00.htm>>. Acesso em: 10 set. 2020.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA. *World Food Summit: five years later*. Rome, 2002.
- FAO - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. *Report of the 32nd session of the committee on World Food Security*. Rome, 2006. Disponível em: <<https://www.fao.org/3/78689e/78689e.pdf>>. Acesso em: 10 set. 2022.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA. *FAO framework for the Urban Food Agenda*. Rome: FAO, 2019.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA et al. *The State of Food Security and Nutrition in the World 2008*. High food prices and food security - threats and opportunities. Rome: FAO, 2008.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA et al. *The State of Food Security and Nutrition in the World 2021*. Transforming food systems for food security, improved nutrition, and affordable healthy diets for all. Rome: FAO, 2021.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA et al. *The State of Food Security and Nutrition in the World 2022*. Repurposing food and agricultural policies to make healthy diets more affordable. Rome: FAO, 2022.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA et al. *The State of Food Security and Nutrition in the World 2023*. Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum. Rome: FAO, 2023.
- FAO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA ALIMENTAÇÃO E AGRICULTURA; WHO - WORLD HEALTH ORGANIZATION. *Second International Conference on Nutrition*. Report of the Joint FAO/WHO Secretariat on the Conference. Rome, 2015.

FSIN - FOOD SECURITY INFORMATION NETWORK. *Global report on food crises 2020*. Rome, 2020.

FSIN - FOOD SECURITY INFORMATION NETWORK. *Global report on food crises 2022*. Rome, 2022.

GOTTLIEB, R. *Food Justice (Food, Health, and the Environment)*. New York: The MIT press, 2013.

HEADEY, D.; FAN, S. Anatomy of a crisis: the causes and consequences of surging food prices. *Agricultural Economics*, Hoboken, v. 39, n. s1, p. 375-391, 2008. DOI: 10.1111/j.1574-0862.2008.00345.x

HLPE - HIGH LEVEL PANEL OF EXPERTS ON FOOD SECURITY AND NUTRITION. *Nutrition and food systems*. Rome, 2017.

HLPE - HIGH LEVEL PANEL OF EXPERTS ON FOOD SECURITY AND NUTRITION. *Food security and nutrition: building a global narrative towards 2030*. Rome, 2020.

HOYOS, C. J. C.; D'AGOSTINI. Segurança alimentar e soberania alimentar: convergências e divergências. *Revista Nera*, São Paulo, n. 35, p. 174-198, 2017. DOI: 10.47946/rnera.voi35-4855

IE - INSTITUTO ESCOLHAS. *Beyond Food: urban agriculture's contribution to the well-being of the metropolis of São Paulo*. São Paulo, 2021.

INGRAM, J. S. I.; ERICKSEN, P. J.; LIVERMAN, D. M. Food Security and Global Environmental Change. In: ERICKSEN, P. et al. *The value of a food system approach*. London: Earthscan, 2010. p. 25-45.

JAIME, P.C. *Políticas Públicas de Alimentação e Nutrição*. Rio de Janeiro: Atheneu, 2019.

LOPES, C. L.; LOPES, K. C. S. A. Agricultura urbana ecológica: a experiência de Cuba. *Agriculturas*, Rio de Janeiro, v. 9, n. 2, p. 39-41, 2012.

MBOW, C. et al. *Chapter 5: Food security*. In: ARNETH, A. et al. (Org.). *IPCC special report: special report on climate change and land*. Geneva: IPCC, 2019.

MONTEIRO, C. A.; CANNON, J. The role of the transnational ultra-processed food industry

in the pandemic of obesity and its associated diseases: problems and solutions. *World Nutrition*, [s. l.], v. 10, n. 1, p. 89-99, 2019. DOI: 10.26596/wn.201910189-99

NICHOLLS, E. et al. The contribution of small-scale food production in urban areas to the sustainable development goals: a review and case study. *Sustainability Science*, Berlim, v. 15, p. 1585-1599, 2020. DOI: 10.1007/s11625-020-00792-z

OLIVEIRA, E. F. *A agricultura urbana e seus modos de organização: um estudo comparativo de casos em Curitiba*. 2020. 226 f. Dissertação (mestrado em administração) - Universidade Tecnológica Federal do Paraná, Paraná, 2020.

ORSINI, F. et al. Features and Functions of Multifunctional Urban Agriculture in the Global North: A Review. *Frontiers in Sustainable Food Systems*, Lausanne, v. 4, 2020. DOI: 10.3389/fsufs.2020.562513

PORTER, J. R. et al. Food security and food production systems. In: FIELD, C. B. et al. (Ed.). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, 2014. p. 485-533

RIBEIRO, H. *Saúde global: olhares do presente*. Rio de Janeiro: Fiocruz, 2016.

ROMA, J. C. Os objetivos de desenvolvimento do milênio e sua transição para os objetivos de desenvolvimento sustentável. *Ciência e Cultura*, São Paulo, v. 71, n. 1, p. 33-39, 2019.

SCRINIS, G. Reframing malnutrition in all its forms: a critique of the tripartite classification of malnutrition. *Global Food Security*, Amsterdam, v. 26, 2020. DOI: 10.1016/j.gfs.2020.100396

SILVA, S. P. *A trajetória histórica da segurança alimentar e nutricional na agenda política nacional: projetos, descontinuidades e consolidação*. Rio de Janeiro: IPEA, 2014.

- SIMON, S. The 'Covid-Trigger': new light on urban agriculture and systemic approach to urbanism to co-create a sustainable Lisbon. *Systemic Practice and Action Research*, Berlim, v. 36, n. 1, p. 87-109, 2023. DOI: 10.1007/s11213-022-09598-9
- SMIT, J. *Urban agriculture, progress and prospect: 1975-2005*. Washington, DC: The Urban Agriculture Network, 1996.
- SWINBURN, B. A. et al. The global syndemic of obesity, undernutrition, and climate change: the lancet commission report. *The Lancet*, Amsterdam, v. 393, n. 10173, p. 791-846, 2019.
- THE WORLD BANK. Poverty and hunger: issues and options for food security in developing countries. Washington DC, 1986.
- THOMPSON, P. From world hunger to food sovereignty: food ethics and human development. *Journal of Global Ethics*, Abingdon, v. 11, n. 3, p. 336-350, 2015.
- UN - UNITED NATIONS. *Universal declaration on the eradication of hunger and malnutrition*. Geneva, 1974. Disponível em: <<https://digitallibrary.un.org/record/701143>>. Acesso em: 10 set. 2022.
- UN - UNITED NATIONS. *Transforming our world: the 2030 Agenda for Sustainable Development*. New York, 2015.
- UNGNA - UNITED NATIONS GLOBAL NUTRITION AGENDA. *Delivering on the commitment to eradicate malnutrition in all its forms: the role of the UN System*. Rome: UNSCN, 2015.
- VENTURA, D. F. L. et al. Desafios da pandemia de COVID-19: por uma agenda brasileira de pesquisa em saúde global e sustentabilidade. *Cadernos de Saúde Pública*, Rio de Janeiro, v. 36, n. 4, 2020. DOI: 10.1590/0102-311X00040620
- WILLETT, W. et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, Amsterdam, v. 393, n. 10170, p. 447-492, 2019.
- WITTMAN, H, K.; DESMARAIS, A. A.; WIEBE, N. (Ed.). *Food Sovereignty: reconnecting food, nature and community*. Fernwood: Food First Books, 2010.
- WHO - WORLD HEALTH ORGANIZATION. Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. Geneva, 2003.

Authors' contributions

Bertolini, Jaime, and Di Giulio designed the research and data analysis, as well as the writing, analysis, and critical review of the article. All authors approved the final version to be published.

Received: 8/8/2023

Resubmitted: 8/8/2023

Approved: 8/12/2023