

# Model to promote Urban Agriculture based on SDG 2 and 11 in the District of Barranquilla

Modelo para promover la Agricultura Urbana basado en los ODS 2 y 11 en el Distrito de Barranquilla  
 Modelo para promover a agricultura urbana com base nos ODS 2 e 11 no distrito de Barranquilla.

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## Abstract

**Introduction:** Urban agriculture has its roots in the 1950s, when the war forced peasants to abandon their land and migrate to the cities, which were dominated by the convenience of canned food. These agricultural traditions have been passed down keeping the legacy of urban agriculture. **Objective:** The Food and Agriculture Organization of the United Nations (FAO) highlights five crucial points: balance between population growth and economic growth; the detriment of forests, savannahs and wetlands; the excessive use of nitrogen fertilizers, the overexploitation of the oceans and the accelerated use of fossil fuels. **Reflection:** the article seeks to expose the arguments presented by FAO which have led 193 countries to join efforts searching for effective solutions to counteract the devastating impacts of these practices. **Conclusion:** Among the purposes of this reflection is the generation of awareness to care for the environment to ensure a sustainable future. Therefore, creating models to promote Urban Agriculture as a strategy in the consolidation of the goals of SDG #2 (Zero Hunger) and #11 (Sustainable Development Goal) in the District of Barranquilla, can be one of the proposals to mitigate damage to the environment, help eliminate hunger, food insecurity and malnutrition.

**Palabras clave:** Urban agriculture, self-sufficiency, food security, sustainable development goals and sustainable cities.

## Resumen

**Introducción:** La agricultura urbana hunde sus raíces en la década de 1950, cuando la guerra obligó a los campesinos a abandonar sus tierras y emigrar a las ciudades, dominadas por la comodidad de la comida enlatada. Estas tradiciones agrícolas se han transmitido manteniendo el legado de la agricultura urbana. **Objetivo:** La Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO) destaca cinco puntos cruciales: el equilibrio entre el crecimiento demográfico y el crecimiento económico; el detrimento de los bosques, sabanas y humedales; el uso excesivo de fertilizantes nitrogenados, la sobreexplotación de los océanos y el uso acelerado de combustibles fósiles. **Reflexión:** el artículo pretende exponer los argumentos presentados por la FAO que han llevado a 193 países a aunar esfuerzos en busca de soluciones eficaces para contrarrestar los impactos devastadores de estas prácticas. **Conclusiones:** Entre los propósitos de esta reflexión está la generación de conciencia para el cuidado del medio ambiente que garantice un futuro sostenible. Por lo tanto, crear modelos para promover la Agricultura Urbana como estrategia en la consolidación de las metas del ODS #2 (Hambre Cero) y #11 (Objetivo de Desarrollo Sostenible) en el Distrito de Barranquilla, puede ser una de las propuestas para mitigar los daños al medio ambiente, contribuir a eliminar el hambre, la inseguridad alimentaria y la desnutrición.

**Palabras clave:** Agricultura urbana, autoabastecimiento, seguridad alimentaria, objetivos de desarrollo sostenible y ciudades sustentables

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## Resumo

**Introdução:** A agricultura urbana tem suas raízes na década de 1950, quando a guerra forçou os camponeses a abandonar suas terras e migrar para cidades dominadas pela conveniência dos alimentos enlatados. Essas tradições agrícolas foram passadas adiante, mantendo o legado da agricultura urbana. **Objetivo:** a Organização das Nações Unidas para Alimentação e Agricultura (FAO) destaca cinco pontos cruciais: o equilíbrio entre o crescimento populacional e o crescimento econômico; o prejuízo das florestas, savanas e áreas úmidas; o uso excessivo de fertilizantes nitrogenados; a superexploração dos oceanos; e o uso acelerado de combustíveis fósseis. **Reflexão:** o artigo tem como objetivo expor os argumentos apresentados pela FAO que levaram 193 países a unir forças em busca de soluções eficazes para combater os impactos devastadores dessas práticas. **Conclusões:** Entre os objetivos dessa reflexão está a geração de consciência para o cuidado com o meio ambiente que garanta um futuro sustentável. Portanto, a criação de modelos para promover a agricultura urbana como estratégia na consolidação das metas dos ODS 2 (Fome Zero) e 11 (Objetivo de Desenvolvimento Sustentável) no Distrito de Barranquilla pode ser uma das propostas para mitigar os danos ao meio ambiente e contribuir para eliminar a fome, a insegurança alimentar e a desnutrição.

**Palavras-chave:** Agricultura urbana, autossuficiência, segurança alimentar, Objetivos de Desenvolvimento Sustentável e cidades sustentáveis



## INTRODUCTION

The FAO, Food and Agriculture Organization of the United Nations, defines urban agriculture as the production of food in areas within cities, such as backyards, terraces, community gardens, fruit orchards and unused public spaces. This practice has become a guarantee for the population. The evolution of urban agriculture in the world has been remarkable, with an increasingly intensive approach in northern European countries, as Mougeot (2006) points out. Today, cities such as Amsterdam, London, Stockholm, Berlin and St. Petersburg in Europe, and New York, Philadelphia, Cleveland, Montreal, Toronto, and Vancouver in North America, have integrated urban agriculture into various facets, such as recycling and resource conservation, therapy and recreation, education and safe food supply, green architecture, and open space management.

For example, in Montreal, urban agriculture has been incorporated into municipal parks, while in Lisbon, educational gardens are used on farms that receive many visitors each year. The city of Delft in the Netherlands has combined urban agriculture with various land uses, and in the Parisian suburbs, companies and institutions have joined forces to promote urban agriculture. In Vancouver, a food policy council has been created. These examples, among many others, reflect the growing relevance of urban agriculture globally.

The Sustainable Development Goals also known as Global Goals, according to the UNDP (United Nations Development Program), were adopted by all member states in 2015 as a universal call to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. Likewise, within the 17 goals proposed by the member countries, I highlight the goals number 2 (Zero Hunger) and 11 (Sustainable Cities and Communities), and goes in accordance with the researched topic, urban agriculture is one of the many vehicles to improve and protect the environment, quality of life and above all achieve sustainable cities and communities, it must first transform mentalities to reach a change in the cities, hand in hand with the government, private enterprise and educational institutions.

The environment is undergoing serious deterioration, caused by factors such as the imbalance between population growth and economic growth, the transformation of 50% of the planet's habitable areas into livestock and agriculture, the use of nitrogen fertilizers, the overexploitation of the oceans and the accelerated consumption of fossil fuels. According to data from Agenda 2030 and various organizations, it is estimated that 8% of the 8,300 known animal breeds are extinct and 22% are endangered. Forests, which are home to great biodiversity and play a crucial role in ecological balance, are also under threat. Although the rate of destruction has slowed down in recent years, 13 million hectares of forest are still lost annually and another 3.6 million are affected by desertification due to persistent degradation in different regions. Forests are home to 80% of terrestrial species and their preservation is vital for the livelihood of approximately 1.6 million people, as exposed in words by Antúnez et al. (2019).

In this context, urban agriculture and the Sustainable Development Goals are presented as indispensable tools to maintain an adequate environment and promote sustainable development in three dimensions: social, economic, and environmental. Therefore, the question arises as to how to create a model that promotes Urban Agriculture as a strategy to consolidate the goals of SDG #11 in the District of Barranquilla.



## 2. THEORETICAL FRAMEWORK

### FOOD SAFETY

The tireless search for the eradication of hunger in the world has led countries to create a global agenda with common objectives, aligning the stars of 193 countries and seeking a single goal, the improvement of living conditions in the world. This purpose requires a commitment from everyone, government, private and public companies, schools, and universities; this is a social problem that concerns us all. Likewise, there is a worldwide mobilization for the defense of the environment, the recovery of water resources, the awareness of not cutting down trees, the care of animals, campaigns at regional, national and international level, take more strength every day to preserve these resources that are being depleted.

The above shows that Colombia is going through a complicated situation in the countryside, the labor force is migrating to the villages, towns and surrounding cities, abandoning their dreams in the countryside for various reasons, including violence, lack of government aid, children, and young people in search of a different future. Rural areas are running out of people, because they do not find clear policies and have turned their backs on children, youth and adults who still believe in the countryside. Having fertile lands of great extension, where hectares of exportable products required by large companies worldwide can be planted.

According to the FAO bulletin entitled "FAO and the 17 Sustainable Development Goals", (2015; 2017;2019) it is highlighted that currently enough food is produced to feed the entire world population. However, it is of concern that around 800 million people still suffer from chronic hunger. This fact highlights the importance of ensuring access to food, as food affordability is closely linked to people's income. Thus, ensuring access to food remains one of the fundamental pillars in addressing food security and the fight against poverty in general.

The FAO bulletin also provides significant data for analysis, such as the fact that approximately 80% of people living in extremely poor conditions reside in rural areas, where agriculture is their main source of livelihood. It also highlights the fact that agriculture is the economic sector that generates the most employment in the world. An important fact highlighted by FAO is that agricultural growth in agrarian and low-income economies is at least twice as effective in reducing hunger and poverty compared to growth in other economic sectors.

The lack of inputs, machinery, technology, and financial support generates a shortage of income and products for large, medium, and small farmers, foresters, fishermen and others; in some way they depend directly or indirectly on rural production in the cities; if there is no production in rural areas, it will affect urban areas. The lack of support from the government, private enterprise and ordinary people, and all the above arguments, is the result of the displacement of these farmers to the cities, bringing with them many years of experience in planting, animal husbandry, knowledge in forestry and fish farming, thus adopting their patios, terraces, rooftops, plots and others, in the new space for planting, looking for their daily sustenance and ensuring their food.

The field work conducted for this research showed that more than 90% of the affected population live in vulnerable conditions due to forced displacement or in search of improving their quality of life, but they have the great potential to be of peasant origin and with knowledge of planting, being one of the reasons for which this strategy was born, which in short allows reconnecting these communities with their customs and



show them that they have new opportunities.

The Sustainable Development Goals (SDGs) especially Goal #2 "zero hunger", seeks to end this scourge by 2030 with appropriate tools and techniques, end hunger, achieve food security and improved nutrition and promote sustainable agriculture, is the goal that the world seeks for its citizens, these goals are accompanied by other objectives that help to meet this achievement and alludes to the subject investigated and is Goal # 11 (Sustainable cities and communities), underdeveloped countries and with difficulties of all kinds: political, social, economic, such as Colombia, welcomes to meet these objectives with a single purpose, global development for the coming years.

## SUSTAINABLE DEVELOPMENT

The Universidad de los Andes diploma course "Sustainable Development Goals for Latin America and the Caribbean", organized by the Center for Sustainable Development Goals CODS. organized by the Center for Sustainable Development Goals (CODS), defines sustainable development according to the Brundtland Commission as the type of development that should meet the needs of present generations without prejudice to the satisfaction of the needs of future generations. Sustainable development implies limits - not absolute limits, but limitations imposed on environmental resources by the present state of technology and social organization and the capacity of the biosphere to absorb the effects of human activities, but both technology and social organization can be organized and improved in ways that open the way to a new era of economic growth (Rodríguez, 1994; 2017; Simanca et al., 2019).

Gro Harlem Brundtland was Norway's first female minister, went on to serve as director general of the World Health Organization and is currently vice president of the NGO The Elders, founded by Nelson Mandela. According to López et al. (2005), in their article Sustainable Development: A Conceptual Definition, explains that the team known as the Brundtland Commission initiated several studies, debates and public hearings in the five continents for almost three years, which culminated in April 1987 with the publication of the document called "Our Common Future" or "Brundtland Report".

In the article they quote Boada and Toledo, 2003. stating that the Brundtland Commission document warned that humanity must change the modes of life and business interaction, if it did not want the advent of an era with unacceptable levels of human suffering and ecological degradation, it should be clarified that the report is a basic political document that reflects the opinion of 21 prominent politicians, scientists, and environmentalists.

Sustainable Development in Latin America is very different from the rest of the world, Latin America is a deeply unequal region, where there is a huge concentration of wealth in a few, where more than 150 million people live in poverty, economic growth in the region has been disappointing, partly because we have low productivity rates and also lack of innovation processes, science and technology, to give an example, According to the CODS (2020), the average investment in Latin America is 0.7 of regional GDP, while countries like Korea and Israel invest 4% of GDP in science, technology and innovation; We also have higher rates of violence and corruption than similar countries in other regions.

We have a great commitment with our region, to take care of the natural resources, to make them extensive for our future generations, to take advantage of the advantages that our land has, to take good advantage of our Amazon, our diversity in flora and fauna. Sustainable development is possible, where the commit-



ment of the government, private sector, civil society organizations and us as individuals must converge to make it viable.

## SUSTAINABLE DEVELOPMENT GOALS

To understand the scope of this article, which is to establish a model to promote urban agriculture as a strategy to consolidate the goals of SDG #11 in the District of Barranquilla and serve as a model for any region, city, or country, it is important to explain what the Sustainable Development Goals are and what they seek.

In the FAO report (2019), "FAO's support to achieve the Sustainable Development Goals in South America". It exposes that in 2015 193 heads of states signed the 2030 Agenda for Sustainable Development and its Sustainable Development Goals. This agenda approved a set of universal goals and targets, with the aim of eradicating poverty and extreme poverty. One of the most important aspects of the agenda is that it allows countries to work under their different realities, capacities, and levels of development, respecting their national policies and priorities. The 17 Sustainable Development Goals and their 169 Targets were designed to be met; each country decides how to incorporate them into its national planning processes, policies, and strategies. The 17 Goals and their scope are presented below.

### 3. METHODS

To understand the scope of this article, which is to establish a model to promote urban agriculture as a strategy to consolidate the goals of SDG #11 in the District of Barranquilla and serve as a model for any region, city, or country, it is important to explain what the Sustainable Development Goals are and what they seek.

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The FAO (2019) outlines the objectives in the following manner: Goal #1 is to eradicate poverty in all its manifestations universally. Goal #2 aims to terminate hunger. Goal #3 strives for the promotion of well-being and the assurance of health across all age groups. Goal #4 aspires to provide an inclusive, equitable, and high-quality education while encouraging lifelong learning for all. Goal #5 seeks to attain gender equality and empower women and girls. Goal #6 is dedicated to ensuring accessible and sustainable water and sanitation management for all. Goal #7 emphasizes the accessibility of affordable, secure, sustainable, and modern energy for everyone. Goal #8 endeavors to promote comprehensive economic growth, full employment, and decent work. Goal #9 focuses on building resilient infrastructure, fostering sustainable industrialization, and encouraging innovation. Goal #10 aims to diminish disparities within and between nations.



**Figure 1.**

*Sustainable development goals*



Source: FAO (2019)

As far as Goal #11 goes, is committed to creating inclusive, secure, resilient, and sustainable urban and human settlements. Goal #12 is dedicated to promoting sustainable consumption and production practices. Goal #13 involves taking immediate action to combat climate change and its repercussions. Goal #14 is about the conservation and sustainable utilization of marine resources for sustainable development. Goal #15 pertains to safeguarding, rejuvenating, and endorsing the sustainable management of terrestrial ecosystems, including sustainable forest management, combating desertification, halting land degradation, and preventing biodiversity loss. Goal #16 focuses on promoting peaceful, inclusive societies, providing access to justice for all, and establishing effective, accountable, and inclusive institutions at all levels. Lastly, Goal #17 involves strengthening the means of implementation and revitalizing the Global Partnership for Sustainable Development.

Figures revealed by FAO in 2015, referring to goal #2 (Zero Hunger), show that the number of undernourished people has decreased by 216 million since 1990-92, but one in nine of the planet’s inhabitants still goes hungry. Only a small fraction of the approximately 800 million hungry people have access to some form of social protection. Malnutrition has a high economic and social cost. While 2 billion people lack sufficient vitamins and minerals, obesity rates have doubled in the last 30 years. Nearly 1.4 billion people are overweight and 500 million are obese.

Contributing with an initiative such as urban agriculture in the regions is an important contribution to the food security of families and in turn contributes to the fulfillment of SDG #2, as well as generating sustainable development and care for the environment. This implementation will adopt new life practices and sustainable work, accompanied by the goodwill of the different sectors of a community.

**GOAL #2 (ZERO HUNGER) AND #11 (SUSTAINABLE CITIES AND COMMUNITIES).**

This is one of the 17 sustainable development goals set by world leaders and seeks to end all forms of



hunger and malnutrition by the year 2030. The development of this research allowed to show a real way, how hunger in the world can be reduced in some points. Urban agriculture is an effective method where several important factors are involved, which help mitigate hunger, gives enough tools to establish food security in each home, accompanied by educational topics in favor of the environment and the sustainability of communities.

According to the united nations program, some figures to keep in mind are, it is estimated that 821 million people suffer from chronic malnutrition as of 2017, more than 90 million children under the age of 5 are dangerously underweight, malnutrition and food insecurity seem to be increasing in almost all regions of Africa and South America, 1 in 8 adults is obese, 1 in 3 women of reproductive age suffers from anemia and 26% of workers are employed in agriculture.

### **GOAL #11 SUSTAINABLE CITIES AND COMMUNITIES:**

Goal #11 was proposed so that cities and communities contribute to the sustainability of the planet. The United Nations program states that by the year 2030 the population is expected to increase by 60%, this would represent more use of natural resources, of course, more inhabitants in cities and communities, making these lands poorer and with more needs.

Likewise, using urban agriculture in cities and communities would represent sustainability over time, being able to shorten the basic physiological needs of the inhabitants, and prolong life for a few more years. Having a fresh product at hand would generate food security for children, adults and the elderly, the environment would be cared for, employment would be generated, food would be healthier, without preservatives or dangerous additives, this tool would improve our quality of life.

## **4. FINDINGS**

### **MODEL FOR PROMOTING URBAN AGRICULTURE**

Urban gardens: The economic recession, social problems, forced displacement, lack of government support, prompted grandparents, parents and children to take advantage of gardens and backyards of their homes in spaces for urban agriculture; planting seeds of hope for their food security. This is an activity that dates to the sixties in the United States in the state of New York, as stated by Morán (2010) in his article Urban Agriculture: A contribution to comprehensive rehabilitation. The Green Guerrilla is created, where gardens are used as a tool for community support, in relation to environmental quality, social cohesion and education. They are promoted by community-based collectives and are conceived on the theoretical basis of counterculture and environmentalism.

Similar initiatives were developed in Europe in the 1970s. In Great Britain, the City Farms and Community Gardens movement emerged in these years and developed projects not only for vegetable gardens but also for raising farm animals and horses in urban environments, incorporating a strong environmental education component through activities aimed at children, such as workshops and theater.

Nowadays, the topic of urban gardens has gained great relevance worldwide. According to the UN,





around 15 percent of the world's food is grown in cities. Urban gardens contribute to the supply of these communities and highlight the importance of agricultural development. For example, in New York in the area known as the Brooklyn Navy Yard, urban agriculture is practiced on the rooftops of some buildings, Gwen Schantz Co-founder and Chief Operating Officer of Brooklyn Grange created in 2010, went from promoting crops in cities to selling these products to families and restaurants. In addition, Gwen says it brings more oxygen into the environment and removes carbon dioxide. Rainwater is reused with new technology to irrigate their plants. They are currently helping the UN NY Garden with their experience and knowledge.

According to the German international chain DW, in Berlin, Germany today they prefer to consume products produced in a sustainable way, a trend that is gaining momentum in Germany and throughout Europe. This practice is very important for food safety and educational issues. For example, the Prinzessinnengarten project, in 2009 volunteers cleaned up an abandoned area in Berlin's Kreuzberg district and created a space for agriculture, sharing, teaching and above all feeding. Today this space is recognized nationally and internationally, where it is visited by locals and tourists where they are guided by an expert explaining the more than 600 products planted.

In Havana - Cuba urban agriculture is being used as a solution to food security, due to political and economic issues, this country entered a recession of products and services, which led them to know this viable alternative for the self-sufficiency of the cities, based on a healthy and organic food. Today, from a social point of view, urban agriculture represents the opportunity for everyone to be equal.

According to FAO estimates (2019), there are more than 50 million malnourished people living in the continent. Urban agriculture is presented, however, as an effective way to ensure more food for the population, favorable levels of financial income, secure jobs, and a way to alleviate in some way the effect of the growing exodus of the rural population to major cities.

In Latin America hunger and poverty is evident to the naked eye, the mismanagement of resources is the common denominator of these countries, the FAO establishes more than 50 million malnourished people surviving in the continent, the current policies and strategies of these countries are far from achieving food security (Torres, 2003); which is why Urban Agriculture is an effective tool to supply families, generate employment and stop the displacement of many people to the big cities.

## 5. DISCUSSION

The District of Barranquilla has been with an important boom in urban agriculture issues, since 2018 the Environmental Public Establishment Barranquilla Verde begins to manage the Center for Environmental Interaction VIVERDE (today called Center for Production and Environmental Education, VIVERDE), which is located in the Ecopark Armando Dugand Gnecco Botanical Garden in La Victoria neighborhood, being a public and free space at the service of its communities to reconnect them with nature from a strategy of environmental conservation that goes hand in hand with agriculture and urban forestry. Through a greenhouse of 590 square meters, public and private schools, universities, companies, and the community in general enjoy guided tours and planting workshops so that they can start from their homes to replicate gardens for self-consumption.



That is why, as a strategy by Barranquilla Verde, the initiatives managed on the implementation of urban agriculture and strengthening of urban forestry were forced to reinvent themselves, achieving the creation of one of the flagship programs of the entity: BAQ CULTIVA, in order to reach the communities and benefit them with projects that involve citizen participation, thus being born the Project of "Mi Huerta en Casa" through a pilot plan that began with 20 families comprised between the neighborhoods Los Olivos I and Por Fin, being a success with great reception by its participants and that went viral through social networks, press and newscasts in the country, It caused the desire of many families to be beneficiaries with vegetable gardens in their homes and allowed later to be replicated in other neighborhoods such as La Paz, La Manga, La Esmeralda, Nueva Colombia, Lipaya, Chiquinquirá, Villanueva and La Cangrejera, with the support of the Community Action Boards and Social Leaders for the identification of families in vulnerable conditions and that in turn were recognized for their commitment and ownership of productive projects, achieving a total of 128 families who are part of the direct beneficiaries of BAQ CULTIVA: Huertos Caseros, located in 4 of the 5 localities of the District such as Suroccidente, Suroriente, Norte - Centro Histórico and Riomar.

Little by little, the "BAQ CULTIVA" program led by the District's Environmental Authority has achieved sufficient reputation to obtain sponsorship for its initiatives from two private sector companies to benefit their nearby communities and fulfill the full role of their social and environmental responsibility.

In the future, it is expected to form working groups with public and private companies to obtain support to reach new scenarios in the different localities of the district to continue benefiting more families and vulnerable groups. We will begin to develop entrepreneurship pilots in the communities based on the commercialization of sprouts and vegetable gardens with emphasis on the production of monocultures that will serve as a business model and source of income for the families.

## 6. CONCLUSIONS

It has been proven worldwide that Urban Agriculture serves as a strategy for transforming the quality of life of communities, as said by authors such as FAO (2019), Lara (2018), López et al. (2005), meeting basic needs such as food security and even generating employment, but that in turn has a number of underlying benefits as we have found with the projects in which we have been working with different groups, highlighting the improvement of coexistence in the environments, increasing the sense of belonging to nature, the use of free time in functional activities, psychological and constructive therapy of the social fabric, economic savings by reducing the purchase of part of the products of the family basket, the adoption of good environmental practices (reduction of agrochemicals, use of organic waste, conservation of flora and fauna), resilience and reduction of climate change, rescue of agricultural traditions and a valuation of the farmers' guild to their great work that many of us do not know.

It is required to allocate more investment in the implementation and/or strengthening of projects with socio-environmental purposes, looking for the State to create public policy mechanisms to give continuity to many of the projects that bet on building a city with a view to Sustainable Development.

### *Conflictos de interés*

No se precisan posibles conflictos de interés frente al artículo remitido para publicación.



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