



Milan Urban Food Policy Pact Monitoring Framework

Draft version, July 2018

Indicator 29: Proportion of agricultural land in the municipal area under sustainable agriculture

MUFPP framework of actions' category: Food production

The indicators measures the total agricultural area in the municipality (also referred to as urban and peri-urban agriculture) under sustainable agriculture as per the total area of agricultural land in the municipal area.

Overview table

MUFPP Work stream	Food production
MUFPP action	Apply an ecosystem approach to guide holistic and integrated land use planning and management in collaboration with both urban and rural authorities and other natural resource managers by combining landscape features, for example with risk-minimising strategies to enhance opportunities for agro-ecological production, conservation of biodiversity and farmland, climate change adaptation, tourism, leisure and other ecosystem services
What the indicator measures	The indicators measures the total agricultural area in the municipality (also referred to as urban and peri-urban agriculture) under sustainable agriculture as per the total area of agricultural land in the municipal area Note: Depending on specific city interests and political priorities, a city may be interested in specifically monitoring the proportion of agricultural land being farmed as agro-ecological or organic agriculture (or conservation agriculture, climate smart agriculture, nature-based farming, multifunctional farming or any other locally relevant denomination of "sustainable agriculture").
Which variables need to be measured / what data are needed	Total surface area of agricultural land within the municipal area/boundaries Total surface area of agricultural land under sustainable agriculture If data are available: Geo-spatialisation and location of agriculture areas/areas under sustainable agriculture
Unit of measurement <i>(i.e. Percentages, averages, number, etc.)</i>	Total surface area Percentage

Unit(s) of Analysis (i.e. people under 5 years old, etc.)	Agricultural area under sustainable production If data are available/desired: Categorisation of land by land ownership/land use types or production systems
Possible sources of information of such data	-Agricultural land (management) records held by the municipal or national department for agriculture or cadastre. -Agricultural or farm surveys or household surveys with an agricultural components -Land use and GIS maps
Possible methods/tools for data-collection	Analysis of existing records or surveys or new survey design and implementation
Expertise required	Agronomy GIS
Resources required/ estimated costs	
Specific observations	
Examples of application	

Rationale/evidence

This indicator is related to SDG Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), Target 2.4: 'By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality'¹.

Many cities promote ecological gardening methods and allow only environmentally friendly methods to control bugs, plant diseases and weed infestation in the city's urban agriculture and community gardens. For example, the urban agriculture programme in Havana (Cuba) prohibits the use of agrochemicals in the city and supports the establishment of decentralised low-cost facilities for compost production and the production and supply of bio-fertilisers and bio-pesticides (packaged in small quantities) to urban farmers through a network of 52 agricultural stores that also provide technical services, advice and training to the city's farmers. The Havana urban agriculture programme has calculated that producing 1 million tonnes of vegetables applying agro-ecological production methods saves over US\$41 million in the costs of fertilization and pest control as compared to conventional agriculture². In Quito (Ecuador) and Rosario (Argentina), production practices stimulated by the municipality are also based on agroecology principles which lead to greater autonomy by reducing dependence on energy, knowledge, inputs and intermediaries³.

Since 2000, Mexico City's government has increased its support to agriculture in the Federal District, with the main objective of protecting the ecosystem services that suburban and peri-urban areas provide to the city, and to a lesser extent, to ensure a local food supply. The Federal Environmental Law promotes organic farming systems and prohibits the use of agrochemicals and synthetic fertilisers in a demarcated conservation zone. Training, technology development, agro-processing and marketing

¹ The related indicator is: 2.4.1 Proportion of agricultural area under productive and sustainable agriculture.

² FAO, 2014. Growing greener cities in Latin America and the Caribbean. An FAO report on urban and peri-urban agriculture in the region. <http://www.fao.org/3/a-i3696e.pdf>. For some African case studies see: <http://www.fao.org/docrep/016/i3002e/i3002e.pdf>

³ See case studies on Quito and Rosario in: Dubbeling M., C. Bucatariu, G. Santini, C. Vogt and K. Eisenbeiß (2016). City Region Food Systems and Food Waste Management Linking Urban and Rural Areas for Sustainable and Resilient Development. Deutsche Gesellschaft für Internationale Zusammenarbeit / GIZ, RUAF Foundation, Food and Agriculture Organization of the United Nations / FAO. Available from <http://www.ruaf.org/publications/city-region-food-systems-and-food-waste-management-2016> and <http://www.fao.org/3/a-i6233e.pdf>. See also footnote 2.

support are provided to the producers. Another programme, for the promotion of traditional food culture, provides subsidies to farmers who preserve local maize varieties under traditional production systems with low environmental impact. Meanwhile, the city's Secretariat for the Environment has instituted Mexico's first system of organic certification of produce, known as the Green Seal, and has set standards for organic agriculture in the conservation zone.⁴

Other cities provide incentives for agricultural practices that maintain water quality, enhance biodiversity, protect fish and wildlife habitat and historic resources, maintain flood conveyance and storage, reduce greenhouse gas emissions, and prevent erosion of valuable agricultural soils while maintaining the functions needed for agricultural production.

Glossary/concepts/definitions used

Agricultural land in the municipal area is understood as land used for various types of agricultural activities within the municipal boundaries. This land may be city owned land, private, or institutionally owned.

There has been considerable discussion over the past thirty years on how to define “**sustainable agriculture**.” It is well established that sustainability needs to be considered in terms of its social, environmental and economic dimensions. This indicator tries to principally capture the environmental dimension of sustainability. It looks at agricultural production and management practices that:

1. Minimise the risk for environmental contamination by promoting agro-ecological, organic or conservation agriculture
2. Protect and improve the natural resource base (soil, water) in order to ensure sufficient productivity for the foreseeable future
3. Conserve and enhance biodiversity and wildlife habitat
4. Maintain other ecosystem services and/or enhance climate adaptation (climate smart agriculture).
5. Reduce or remove Green House Gas emissions.

Note: Depending on specific city interests and political priorities, a city may be interested in specifically monitoring the proportion of agricultural land being farmed as agro-ecological or organic agriculture (or conservation agriculture, climate smart agriculture, nature-based farming, multifunctional farming or any other locally relevant denomination of “sustainable agriculture”).

Organic agriculture can be defined as: an integrated farming system that strives for sustainability, the enhancement of soil fertility and biological diversity whilst, with rare exceptions, prohibiting synthetic pesticides, antibiotics, synthetic fertilizers, genetically modified organisms, and growth hormones. Organic farming relies on fertilisers of organic origin such as compost manure, green manure, and bonemeal, and places emphasis on techniques such as crop rotation and companion planting. Biological pest control, mixed cropping and the fostering of insect predators are encouraged. In general, organic standards are designed to allow the use of naturally occurring substances while prohibiting or strictly limiting synthetic substances. Organic agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements (IFOAM), an international umbrella organisation for organic farming organisations established in 1972.

Agroecology provides a broad approach to sustainable urban food policies, going beyond organic farming towards a perspective of food justice and ecosystem services provided by food systems.

⁴ Baker L. and H. de Zeeuw, 2015. Urban food policies and programmes. In: Drechsel and De Zeeuw (ed). Cities and agriculture-Developing resilient urban food systems, 2015. Earthscan-Routledge London and New York. <http://www.ruaf.org/urban-food-policies-and-programmes-overview>.

Sustainable production practices are promoted and embedded in broader programmes of food sovereignty and justice, and equitable access to resources and benefits⁵.

Conservation agriculture (CA) is defined by FAO as a form of agriculture that aims to achieve sustainable and profitable agriculture and subsequently aims at improved livelihoods of farmers through the application of the three CA principles: minimal soil disturbance, permanent soil cover and crop rotations⁶.

Climate-smart agriculture (CSA) is defined by FAO as an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. CSA aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gas emissions, where possible⁷.

Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth⁸.

Biodiversity is the variability among living organisms. It includes diversity within and among species and diversity within and among ecosystems. Biodiversity is the source of many ecosystem goods, such as food and genetic resources, and changes in biodiversity can influence the supply of ecosystem services.

Preparations

By defining sustainability across its environmental (and if desired also across other social and economic) dimensions, cities can select those dimensions for monitoring that best capture the priorities most relevant to them.

If data are not available from existing records or surveys, new farm/agricultural surveys will need to be designed in order to cover the selected dimensions of sustainability.

Sampling

If agricultural land records provide the required information, no sampling is required. If information has to be collected through agricultural, farm or household surveys, the following sampling method can be applied:

Agricultural and farm surveys: A list of different farm and agricultural production systems should be drawn up. These can include:

- Urban agriculture and community gardens supported by government and no-government organisations
- Urban and peri-urban commercial farms (depending on the local context these farms could be categorised as horticulture, other crop, livestock and mixed farms amongst others).

A sample of 10% of each of these farm and production systems is recommended.

⁵ See for a discussion on urban agro-ecology, practice and policy examples: [Urban Agriculture Magazine no 33](#) - Urban Agroecology, 2017. RUAF Foundation and the Centre for Agroecology Water and Resilience (CAWR).

⁶ <http://www.fao.org/ag/ca/>

⁷ <http://www.fao.org/climate-smart-agriculture/en/>

⁸ <https://www.millenniumassessment.org/documents/document.300.aspx.pdf>

Household surveys: Household representativity can be ensured by using a sample frame of 10% of the total number of households in the municipal area.

Data collection and data disaggregation

The total agricultural area within the municipal area can be computed from agricultural and land records and registers or from Indicator 27: *Surface area of (potential) agricultural spaces in the municipal area*.

Data on sustainable production, if not available in these records or earlier surveys, should be obtained from farm/agricultural surveys or household surveys with an agricultural component. Survey data can be validated by additional field observations and verifications.

Depending on specific local interests, data can be disaggregated for surface areas that involve one or more of the following –or other to be defined- management practices:

1. Minimise the risk for environmental contamination by promoting agro-ecological, organic or conservation agriculture
2. Protect and improve the natural resource base (soil, water) in order to ensure sufficient productivity for the foreseeable future
3. Conserve and enhance biodiversity and wildlife habitat
4. Maintain other ecosystem services and/or enhance climate adaptation (climate smart agriculture).
5. Reduce or remove Green House Gas emissions.

If farm or household surveys are used, depending on the survey information, data can also be disaggregated for size and type of agricultural system/enterprises; gender and age of the farm/garden manager and public versus private farming areas.

Data analysis/calculation of the indicator

The indicator is computed by the following formula:

$$\text{Proportion of agricultural land in the municipal area under sustainable agriculture} \\ = \text{Area under sustainable agriculture} / \text{Total agricultural area}$$

Changes would be measured against a baseline, which would show trends over time.